THE SYNTAX IN TLINGIT VERBS

by

James A. Crippen

B.A., University of Hawai'i at Mānoa, 2009
M.A., University of Hawai'i at Mānoa, 2010

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

in

THE FACULTY OF GRADUATE AND POSTDOCTORAL STUDIES
(Linguistics)

THE UNIVERSITY OF BRITISH COLUMBIA
(Vancouver)

December 2019

© James A. Crippen, 2019

The following individuals certify that they have read, and recommend to the Faculty of Graduate and Postdoctoral Studies for acceptance, the dissertation entitled:

The syntax in Tlingit verbs

submitted by James A. Crippen in partial fulfillment of the requirements for

the degree of Doctor of Philosophy

in Linguistics

Examining Committee:

Rose-Marie Déchaine (University of British Columbia)
Supervisor

Lisa Matthewson (University of British Columbia)
Supervisory Committee Member

Seth Cable (University of Massachusetts Amherst)
Supervisory Committee Member

Henry Davis (University of British Columbia)
University Examiner

Patrick Moore (University of British Columbia)
University Examiner

Heidi Harley (University of Arizona)
External Examiner

Additional Supervisory Committee Members:

Michael Rochemont (University of British Columbia; deceased)
Supervisory Committee Member

Abstract

Tlingit verbs appear to be single phonological words but they are constructed from a large number of distinct morphological elements that correspond to argument structure, event structure, aspect, mood, modality, tense, and qualia. Previous analyses have accounted for the verbal morphology of Tlingit with opaque position class template systems. These systems present the internal structure of verbs as arbitrary and do not address the many dependencies between elements. This dissertation argues that the Tlingit verb implements a regular syntax with each morpheme instantiating a syntactic terminal. Ordering within the verb word is a consequence of regular syntactic structure with all dependencies between elements reflecting selection and agreement phenomena. The verb-internal syntax requires no extraordinary theoretical mechanisms: Tlingit verb morphology is neither unique nor problematic from a theoretical perspective.

To demonstrate this argument, this dissertation develops a formal theoretical model of Tlingit verbal structure within the Minimalist Program framework. An acategorial root forms the basis of the syntactic structure, encoding the majority of lexical properties. Other verbal morphology is either functional heads such as v, Voice, and Asp, or minimal lexical elements such as D pronouns or N incorporates. As well as phonological form and encyclopedic meaning, roots also encode valency, qualia, durativity, stativity, and irrealis, along with other morphosyntactic properties. These properties influence both the syntactic functions and semantic interpretations of the functional heads, so that the syntax and semantics of each head is contextually dependent, fully predictable and compositional. Long distance dependencies arise from selection, movement, and agreement between heads. Every morpheme either saturates or restricts an event or an argument, thus predictably contributing to the structure and interpretation of the whole verb. Movement and spellout are determined by phases which correspond to regular domains in the phonological verb word and phrase. Careful attention is paid to many supposedly irregular or lexical phenomena, showing that most are extensions of regular phenomena, and that some actually reflect underdocumented grammatical patterns. The results of this research have many implications for linguistic theory and for related Na-Dene languages and provide a robust analytical foundation for Tlingit language teaching and revitalization.

Lay Summary

The Tlingit ('CLING-kit') language of Alaska, British Columbia, and Yukon Territory has a complex verb system that expresses many grammatical phenomena such as aspect, tense, subjects, objects, repetition, and event type in a single word. This dissertation argues that the structure of verbs in Tlingit fits into the same theory that is used to analyze sentences in languages like English, Japanese, Hindi, and Mandarin. The verb is built of many interlocking parts in a predictable manner and its interpretation is exactly the sum of its parts. Every verb word in Tlingit is built from one of around three thousand roots. Other parts of the verb depend predictably on properties of the root for their operations and interpretations. Previous accounts have treated dependencies between the root and other parts of the verb as arbitrary and unpredictable; this dissertation shows that they are predictable once the root properties are explicitly addressed.

Contents

Abstract . . . . . **iii**

Lay Summary . . . . . **iv**

Contents . . . . . **v**

List of Tables . . . . . **xvi**

List of Figures . . . . . **xix**

Abbreviations and symbols . . . . . **xxii**

Acknowledgements . . . . . **xxv**

Dedication . . . . . **xxviii**

Chapter 1 Introduction **1**

1 Metatheoretical background 10
- 1.1 Templatic morphology 10
- 1.2 Polysynthesis 15
- 1.3 Na-Dene verbs as syntactic structures 16

2 Major concepts 18
- 2.1 Roots encode lexical contrasts 19
- 2.2 Functional heads are multifunctional 22
- 2.3 Morphemes saturate or restrict events or arguments 24

3 Methodology 25
- 3.1 Holistic approach 25
- 3.2 Sources of data 26
- 3.3 Segmentation and glossing 28
- 3.4 Errors 29

4 Outline 30

Part I The first phase 37

Chapter 2 First Merge: Root and V 38
1 The root and its features 42
1.1 θ-features: Valency and argument structure 43
1.1.1 Patterns of root valency 43
1.1.2 Syntactic model and θ-features 47
1.1.3 Semantic model and the Θ functions 50
1.2 ϰ-features: Qualia and qualification 51
1.2.1 Patterns of qualification: Handling and motion 52
1.2.2 Syntactic model and ϰ-features 61
1.2.3 Semantic model and the $\mathcal{Q}$ function 63
1.3 ε-features: Aspect and eventuality structure 64
1.3.1 Patterns of eventuality: Imperfective aspect and more 65
1.3.1.1 Lexical durativity and roots 66
1.3.1.2 Lexical stativity and roots 71
1.3.1.3 Lexical stem variation and roots 72
1.3.1.4 Lexical conjugation class and roots 77
1.3.2 Syntactic model and ε-features 80
1.3.3 Semantic model and the $\mathcal{E}$ function 82
1.4 ι-features: Lexically specified irrealis 86
1.4.1 Patterns of irrealis: Unreal eventualities 86
1.4.2 Syntactic model and ι-features 88
1.4.3 Semantic model and the $\mathcal{I}$ function 89
2 V and stem variation 89
2.1 V-agreement and √ 96
2.2 V-agreement and Ɛ 99
2.3 V-agreement and Adv suffixes 101
2.3.1 Phonology of Adv and V 102
2.3.2 Position of Adv in VP 106
2.3.3 Aspects, moods, and modalities with V+Adv 114
2.3.3.1 Repetitive imperfectives with V+Adv 114
2.3.3.2 State imperfectives with V+Adv 120
2.3.3.3 Positional imperfectives with V+Adv 120
2.3.3.4 Progressive aspect with V+Adv 122
2.3.3.5 Habitual aspect with V+Adv 123
2.3.3.6 Conditional mood with V+Adv 126
2.3.3.7 Contingent modality with V+Adv 128
2.3.4 V+Adv can be lexicalized 129
2.3.5 Irregular V+Adv 131
2.4 V-agreement is absent with arguments 135
2.5 V-agreement is absent with *v* and Voice 137
2.6 V-agreement and Asp 139
2.6.1 Imperfective aspect and V 141

2.6.2 Prospective aspect and V . . . 145
2.6.3 Perfective aspect and V . . . 147
2.6.4 Realizational, consecutive, and admonitive and V . . . 149
2.6.5 Imperative mood and V . . . 152
2.6.6 Hortative modality and V . . . 157
2.6.7 Potential modality and V . . . 161
2.7 V-agreement and Neg . . . 164
2.8 V-agreement and Mod . . . 168
2.9 V-agreement and T . . . 170
2.10 V-agreement and C . . . 171

Chapter 3 ƐP: Eventuality structure . . . 175
1 Basic functions of *i-*: Lexical and grammatical states . . . 177
2 The Ɛ head is *i-* . . . 179
2.1 Phonology of the *i-* prefix . . . 179
2.1.1 Case i: Vowel *i* . . . 179
2.1.2 Case ii: Syllable *ya* . . . 181
2.1.3 Case iii: Syllable *wa* . . . 183
2.1.4 Case iv: Vowel lengthening . . . 187
2.1.4.1 Long *aa* . . . 187
2.1.4.2 Long *ee* . . . 188
2.1.4.3 Long *oo* . . . 189
2.1.5 Case v: Deletion with perfective and 2nd plural . . . 190
2.1.6 Disappearance of *i-* in Southern and Tongass . . . 191
2.2 Syntax of the Ɛ head . . . 192
2.2.1 Ɛ must contain only one value . . . 192
2.2.2 Ɛ must select VP . . . 193
2.2.3 Ɛ might specify arguments . . . 194
3 Indicating states with Ɛ . . . 198
3.1 Lexical states have overt Ɛ . . . 198
3.2 Grammatical states have overt Ɛ . . . 202
3.2.1 Basic grammatical states: Aspects and modalities . . . 206
3.2.2 Derived grammatical states: Repetitive imperfective states . . . 207
3.2.2.1 Alternating repetitive states with *yoo=i-...-k* . . . 210
3.2.2.2 Tendency states with *i-...-k(w)* . . . 211
3.2.2.3 Plural dimension states with *d-i-...-x'* . . . 212
3.2.2.4 Spotty states with *i-...-x̲* . . . 213
3.2.2.5 Repetitive states with *i-...-s'* or *i-...-l'* . . . 214
3.2.2.6 Repetitive motion states without a suffix . . . 215
4 Lack of overt Ɛ . . . 217
4.1 Suppression of Ɛ: Absent vs. covert . . . 218
4.1.1 Neg suppresses Ɛ . . . 221
4.1.2 Mod suppresses Ɛ . . . 224
4.1.3 T suppresses Ɛ . . . 226

4.1.4 C suppresses Ɛ . . . 227
4.2 States without Ɛ: Positional imperfectives . . . 229
4.3 Absence of Ɛ: The elsewhere case . . . 232
5 Evolution of Ɛ in Na-Dene . . . 235

Chapter 4 *v*P: Addition and restriction . . . 238
1 Basic functions of *s-*, *l-*, and *sh-* . . . 241
1.1 Additional argument contexts . . . 241
1.2 Meaning restriction contexts . . . 243
2 The *v* head is *s-*, *l-*, and *sh-* . . . 245
2.1 Phonology of the coronal fricative prefixes . . . 246
2.1.1 Coronal affricates and fricatives require l^{s}- . . . 246
2.1.2 Irregular coalescence with stem onset . . . 250
2.1.3 Irregular modification of stem onset . . . 252
2.1.4 Lack of the epenthetic *a* vowel . . . 254
2.2 Syntax of the *v* head . . . 258
2.2.1 *v* must contain only one value . . . 258
2.2.2 *v* can be covert in transitives and unergatives . . . 260
2.2.3 *v* can be absent in unaccusatives . . . 265
2.2.4 *v* must select ƐP or VP . . . 268
3 Adding arguments . . . 272
3.1 Intransitives: Derivation from nullivalent roots . . . 273
3.2 Causatives: Derivation from monovalent roots . . . 279
3.2.1 Causatives of unaccusatives . . . 279
3.2.2 Causatives of unergatives . . . 281
3.2.3 Change of eventuality class . . . 284
3.3 Applicatives: Derivation from bivalent roots . . . 288
3.3.1 Applicatives with *-ch* . . . 293
3.3.2 Applicatives with *-x'* . . . 297
3.3.3 Applicatives with *-t* . . . 298
3.3.4 Applicatives with *-x̲* . . . 299
3.3.5 Applicatives of unaccusatives . . . 300
4 Restricting meanings . . . 302
4.1 Qualification: Restriction of entities . . . 304
4.2 Extension: Restriction of eventualities . . . 308
4.3 Pejoratives: Restriction of evaluations . . . 310
5 Stacking of *v*P . . . 315
5.1 Deletion of overt *v* . . . 320
5.2 Overt *v* with covert *v* . . . 323
5.3 Covert *v* with overt *v* . . . 323
5.4 Covert *v* with covert *v* . . . 325
6 Exceptional cases of *s-*, *l-*, and *sh-* . . . 329
6.1 Roots with multiple different *v* . . . 330
6.1.1 See: covert *v*, *s-*, *l-*, and *sh-* . . . 330

6.1.2 Angry and hate: absent *v*, *s-*, *l-*, and *sh-* . . . 332
6.1.3 Hard: absent *v*, *s-*, *l-*, and *sh-* . . . 335
6.2 Lexically specified *sh-* . . . 339
6.3 The *d-*/*l-* alternation . . . 340
7 *v* in the Na-Dene family . . . 341

Part II The second phase . . . 343

Chapter 5 VoiceP: Suppression and restriction . . . 344
1 Basic functions of *d-* . . . 347
1.1 Antipassive contexts with *d-* . . . 347
1.2 Passive contexts with *d-* . . . 349
1.3 Middle contexts with *d-* . . . 351
1.3.1 Reflexives and reciprocals trigger *d-* . . . 351
1.3.1.1 Reflexive and reciprocal objects trigger *d-* . . . 352
1.3.1.2 Reflexive and reciprocal obliques trigger *d-* . . . 355
1.3.2 Self-benefactive triggers *d-* . . . 356
1.3.3 Revertive motion triggers *d-* . . . 357
2 The Voice head is *d-* . . . 358
2.1 Phonology of *d-* . . . 359
2.1.1 Realization of lone *d-* . . . 359
2.1.2 Realization of *d-* with *i-* . . . 360
2.1.3 Realization of *d-* with a fricative and *i-* . . . 360
2.1.4 Disappearance of *d-* with a fricative . . . 362
2.1.5 Forms without *d-* that overlap with *d-* forms . . . 364
2.1.6 Prolegomena for a phonological analysis of *d-* . . . 368
2.2 Syntax of *d-* . . . 368
2.2.1 Voice must be overt . . . 369
2.2.2 Voice triggers short distance subject raising . . . 370
2.2.3 Voice need not select *v*P . . . 375
3 Object suppression: Deriving antipassive voice . . . 379
3.1 Object suppressing syntax . . . 380
3.1.1 Selecting covert *v*: Lexical transitives . . . 382
3.1.1.1 Antipassives of handling (transitive motion) verbs . . . 383
3.1.2 Selecting overt *v*: Derived or modified transitives . . . 385
3.1.2.1 Antipassives with modificational *v* . . . 386
3.1.2.2 Antipassives with causative *v* . . . 388
3.1.2.3 Antipassives with applicative *v* . . . 389
3.2 Object suppressing semantics . . . 390
3.3 What antipassive *d-* doesn't do . . . 391
3.3.1 Antipassive *d-* doesn't select unaccusatives . . . 391
3.3.2 Antipassive *d-* doesn't demote or promote . . . 394
3.3.3 Antipassive *d-* isn't impersonal or indefinite . . . 396

3.3.4 Antipassive *d-* doesn't target PPs . . . 400
4 Subject suppression: Deriving passive voice . . . 402
4.1 Subject suppressing syntax . . . 404
4.1.1 Selecting covert *v*: lexical transitives . . . 404
4.1.2 Selecting overt *v*: derived or modified transitives . . . 405
4.1.2.1 Passives with modificational *v* . . . 405
4.1.2.2 Passives with causative *v* . . . 409
4.1.2.3 Passives with applicative *v* . . . 410
4.2 Subject suppressing semantics . . . 411
4.3 What passive *d-* doesn't do . . . 412
4.3.1 Passive *d-* doesn't select unergatives . . . 412
4.3.2 Passive *d-* doesn't demote or promote . . . 413
4.3.3 Passive *d-* isn't impersonal or indefinite . . . 414
5 Argument restriction: Deriving middle voice . . . 415
5.1 Pronouns are bound . . . 415
5.1.1 Reflexive objects . . . 416
5.1.2 Reflexive obliques . . . 420
5.1.3 Reciprocal objects . . . 423
5.1.4 Reciprocal obliques . . . 426
5.2 Other arguments are restricting . . . 428
5.2.1 Self-benefactive reflexive . . . 428
5.2.2 Linear revertive motion: 'back' . . . 430
5.2.3 Perambulative revertive motion: 'back around to' . . . 432
5.3 What middle *d-* doesn't do . . . 434
5.3.1 Middle *d-* doesn't probe adjuncts . . . 434
5.3.2 Middle *d-* doesn't suppress arguments . . . 434
6 Fourth subject *du-* interacts with *d-* . . . 435
6.1 Requirement for *d-* with *du-* . . . 436
6.2 Prohibition of *d-* with *du-* . . . 439
6.3 What about intransitives? . . . 441
6.4 Less common *du-* functions . . . 442
6.4.1 The *d-*/*du-* alternation . . . 443
6.4.2 Expletive or experiencer *du-* . . . 446
7 Exceptional cases of *d-* . . . 448
7.1 Self-affecting predicates . . . 448
7.2 The *d-*/*l-* alternation . . . 453
7.3 Other exceptional *d-* . . . 457
7.3.1 Required *d-* in plural dimension states . . . 458
7.3.2 Required *d-* in derivations . . . 460
7.3.3 Lexicalized *d-* elsewhere . . . 464
7.3.3.1 Unergatives with *d-* and expletive *a-* . . . 464
7.3.3.2 Intransitive motion verbs with *d-* . . . 467
7.3.3.3 Unergative activities with *d-* . . . 468
7.3.3.4 Unaccusative states with *d-* . . . 469

7.3.3.5 Unaccusative achievements with *d-* 471
8 Voice in the Na-Dene family 471

Chapter 6 Asp⁰: Aspect and modality 479
1 Modelling Asp⁰ as a subtree of morphemes 488
1.1 Four morphemes: perfective, conjugation, irrealis, modality 490
1.1.1 Perfective and conjugation 491
1.1.2 Modality and irrealis 496
1.1.3 Linear order of prefixes 499
1.2 Alternatives to the subtree model 504
1.3 Realizing conjugation class 505
2 Perfective and imperfective aspects: Many morphologies 511
2.1 Imperfective aspect 514
2.1.1 *Ø*-imperfective 520
2.1.1.1 Non-iterative *Ø*-imperfective 523
2.1.1.2 Iterative *Ø*-imperfective 527
2.1.2 *CNJ*-imperfective 537
2.1.2.1 Non-iterative *CNJ*-imperfective 537
2.1.2.2 Iterative *CNJ*-imperfective 540
2.2 Perfective aspect 541
2.2.1 *U*-perfective 549
2.2.1.1 Non-iterative *u*-perfective 558
2.2.1.2 Iterative *u*-perfective 559
2.2.2 *Wu*-perfective 560
2.2.2.1 Non-iterative *wu*-perfective 563
2.2.2.2 Iterative *wu*-perfective 567
2.2.3 *CNJ*-perfective 568
2.2.3.1 Non-iterative *CNJ*-perfective 569
2.2.3.2 Iterative *CNJ*-perfective 574
2.3 Relationship with Na-Dene 576
3 Conjugation prefixes and classes: Time and space 577
3.1 Conjugation prefixes versus conjugation classes 580
3.2 Spatial properties of the prefixes and classes 583
3.3 Motion derivations and conjugation class 586
3.3.1 *G*-conjugation is upward 589
3.3.2 *Ḡ*-conjugation is downward 592
3.3.3 *N*-conjugation is horizontal 595
3.3.4 *Ø*-conjugation is the elsewhere case 599
3.3.4.1 *Ø*-conjugation with *-μ* 601
3.3.4.2 *Ø*-conjugation with *-ch* 605
3.3.4.3 *Ø*-conjugation with *-x̲* 607
3.3.4.4 *Ø*-conjugation with *yoo=i-...-k* 608
3.3.4.5 *Ø*-conjugation with *ÿa-u-* and *-ch* 609
3.3.4.6 *Ø*-conjugation with *sha-ÿa-u-* and *-ch* 611

3.3.4.7 *Ø*-conjugation with *a-ÿa-u-d-* and *-x̲* 611
3.4 Lexically specified conjugation class 612
3.4.1 *G*-conjugation might be upward 619
3.4.2 *G̲*-conjugation might be downward 622
3.4.3 *N*-conjugation horizontality and alternation 624
3.4.4 *Ø*-conjugation is the elsewhere case 626
3.5 Conjugation prefixes and grammatical aspect 628
3.5.1 *G-* prefix: prospective aspect 631
3.5.2 *N-* prefix: progressive aspect 632
4 Irrealis *u-* 633
4.1 Some irrealis morphophonology 637
4.2 Lexically specified irrealis 641
4.2.1 Irrealis mental state verbs 642
4.2.2 Irrealis conative activity verbs 643
4.2.3 Irrealis resemblance verbs 646
4.2.4 Irrealis pejorative verbs 647
4.2.5 Inherently negative verbs 648
4.3 Derivationally specified irrealis 650
4.3.1 Derived comparative dimension states 651
4.3.2 Derived indirect motions 653
4.3.3 Derived pretend activities 654
4.3.4 Deriving extraordinary states 655
4.4 Aspectually conditioned irrealis 657
4.4.1 Prospective includes irrealis 657
4.4.2 Potential includes irrealis 658
4.4.3 Admonitive includes irrealis 659
4.5 Structurally conditioned irrealis 660
4.5.1 Negative selects irrealis 664
4.5.1.1 Negative irrealis does not stack 665
4.5.1.2 The negative particle *tléil* 667
4.5.2 Dubitative selects irrealis 670
4.5.2.1 Dubitative irrealis does not stack 672
4.5.2.2 The dubitative particle *gwál* 673
4.5.3 Optative selects irrealis 674
4.5.3.1 Optative irrealis does not stack 676
4.5.3.2 The optative particle *gu.aal* 676
4.5.4 Prohibitive selects irrealis 677
4.5.4.1 Prohibitive irrealis does not stack 679
4.5.4.2 The prohibitive particle *líl* 680

Chapter 7 AspP: The final phase 683
1 D^0 object subtree: Argument restriction and saturation 688
1.1 Structure and raising of the D^0 subtree 692
1.1.1 Syntactic categories in D^0 692

1.1.2 Organization within D⁰ . . . 693
1.1.3 Raising of D⁰ from VP to AspP . . . 696
1.2 Object D pronouns mostly saturate . . . 698
1.2.1 Relationships of objects with other pronouns . . . 706
1.2.1.1 First person singular *x̲at=* . . . 708
1.2.1.2 First person plural *haa=* . . . 709
1.2.1.3 Second person singular *i- ~ ee=* . . . 711
1.2.1.4 Second person plural *ÿi- ~ ÿee=* . . . 711
1.2.1.5 Third person *a-* . . . 713
1.2.1.6 Third person proximate *ash=* . . . 714
1.2.1.7 Fourth person human *k̲u-* . . . 715
1.2.1.8 Fourth person human *k̲aa=* . . . 716
1.2.1.9 Fourth person nonhuman *at=* . . . 716
1.2.1.10 Reflexive *sh=* . . . 717
1.2.1.11 Reflexive *chush=* . . . 718
1.2.1.12 Reciprocal *woosh= ~ wooch=* . . . 718
1.2.1.13 Partitive *aa=* . . . 720
1.2.2 Argument-marking *a-* . . . 721
1.2.2.1 Expletive antipassive-like *a-* . . . 722
1.2.2.2 Fourth person human subject *a-* . . . 725
1.2.2.3 Perambulative revertive motion *a-* . . . 727
1.2.3 Other non-saturating pronouns . . . 728
1.2.3.1 The partitive *aa=* . . . 729
1.2.3.2 The areal *k̲u-* . . . 730
1.2.3.3 The derivational *ash= ~ ach=* . . . 734
1.2.4 Proclitics vs. prefixes among the object D pronouns . . . 738
1.3 The Ns in D⁰ restrict or saturate . . . 741
1.3.1 Phonology of Ns . . . 746
1.3.2 Argument saturating ANs . . . 748
1.3.3 Argument restricting INs . . . 750
1.3.3.1 Qualification versus incorporation . . . 754
1.3.4 The *k-* and *ÿ-* prefixes . . . 756
1.3.4.1 The *k-* prefixes . . . 757
1.3.4.2 The *ÿ-* prefixes . . . 763
2 Plurality modifiers: Argument restriction . . . 768
2.1 Constraints on plurality modification . . . 769
2.1.1 Constraints on person: Only third . . . 770
2.1.2 Constraints on humanity: Human or nonhuman . . . 774
2.1.3 Constraints on arguments: Only subjects or objects . . . 776
2.2 Related plural elements . . . 778
2.2.1 Forms related to *has=* . . . 778
2.2.2 Forms related to *da x̲=* . . . 780

Part III The end 781

Appendix A Language background 782
1 Social situation 783
1.1 Geography 784
1.2 Social organization 786
2 Basic phonology 788
2.1 Consonants 789
2.2 Vowels 794
2.3 Syllables 798
3 Dialects and varieties 799
3.1 Tongass Tlingit 800
3.2 Southern Tlingit 801
3.3 Northern Tlingit 802
3.3.1 Transitional varieties of Northern Tlingit 803
3.3.2 Inland varieties of Northern Tlingit 804
3.3.3 Central varieties of Northern Tlingit 806
3.3.4 Gulf Coast varieties of Northern Tlingit 807
4 Orthographies 808
4.1 Current orthographies 809
4.1.1 RP consonants 810
4.1.2 RP vowels 812
4.1.3 Leer orthography 813
4.1.4 Email orthography 814
4.2 Older orthographies 815
5 Documentation and description 818
5.1 Early materials 819
5.2 Swanton, Boas, Shotridge, and Harrington 821
5.3 Modern lexicographic sources 824
5.4 Modern documentary sources 825
6 Historical situation 827
6.1 Internal reconstruction 829
6.1.1 Missing *sh'* 829
6.1.2 Tonogenesis 830
6.1.3 Gamma 830

Appendix B The verb stem 833
1 Stem phonotactics 838
2 Stem variation 840
2.1 Ejective coda $\sqrt{CVC'}$ roots prohibit -μ 842
2.2 'Glottalized' $\sqrt{CV'C}$ roots prohibit -μ 844
2.3 Open syllable $\sqrt{CV^{(h)}}$ roots may ablaut with -*eH* and -*e* 847
2.4 'Fading' $\sqrt{CV^{h}}$ roots occur with both -μ*H*/-*eH* and -μ/-*e* 851
2.5 Sonorant -*ÿ* instead of ablaut with $\sqrt{CV^{(h)}}$ roots 854

2.6 Truncation deletes a final segment . . . 856
2.7 Absence of null stem variation . . . 859
2.8 Comparison with Leer 1991 . . . 862
3 Invariable stems instead of invariable roots . . . 864
3.1 Kinds of derived invariable stems . . . 868
3.2 Monosyllabic stems with complex codas . . . 870
3.2.1 Suffixed monosyllabic stems with complex codas . . . 870
3.2.2 Denominal monosyllabic stems with complex codas . . . 873
3.2.3 Inscrutable monosyllabic stems with complex codas . . . 874
3.3 Disyllabic stems . . . 874
3.3.1 Suffixed disyllabic stems . . . 875
3.3.1.1 Miss target *-x̲aa* . . . 875
3.3.1.2 Deprivative *-ák̲w* . . . 876
3.3.1.3 Restorative *-án* . . . 877
3.3.1.4 Intensive *-ch'án* ~ *-shán* . . . 878
3.3.1.5 Suffix *-í* . . . 879
3.3.1.6 Suffix *-áa* ~ *-aa* . . . 880
3.3.1.7 Suffix *-ákw* . . . 882
3.3.1.8 Six hapax suffixes . . . 883
3.3.2 Denominal disyllabic stems . . . 884
4 Root phonotactics . . . 885
4.1 Onset consonants . . . 887
4.2 Vowels . . . 890
4.2.1 Variation between /i/ and /e/ . . . 891
4.2.2 Variation between /i/ and /u/ . . . 893
4.3 Coda consonants . . . 894

Bibliography . . . **895**

Colophon . . . **925**

List of Tables

1.1 Example of a verb template for Tlingit . . . 11

2.1 Patterns of valency and argument structure alternations . . . 46
2.2 Some morphologically simple activity verbs . . . 68
2.3 Some morphologically simple achievement verbs . . . 69
2.4 Root-specified stem variation for unmarked imperfective aspect . . . 73
2.5 Verb stem variation suffixes versus root shapes . . . 91
2.6 Possible semantic correlates of imperfective stem variation per Leer 1991: 244 . . . 96
2.7 Patterns of repetitive imperfectives based on conjugation class and root shape . . . 115
2.8 Patterns of progressives based on conjugation class and root shape . . . 122
2.9 Patterns of habituals based on conjugation class and root shape . . . 123
2.10 Patterns of conditionals based on conjugation class and root shape . . . 126
2.11 Patterns of contingents based on conjugation class and root shape . . . 128
2.12 Irregular lack of ablaut and high tone with Adv . . . 135
2.13 Distribution of stem variation (V) across aspect, mood, & modality categories . . . 140
2.14 Stem variation patterns in extensional state *CNJ*-imperfectives . . . 144
2.15 Patterns of prospectives based on conjugation class and root shape . . . 145
2.16 Patterns of perfectives based on conjugation class and root shape . . . 147
2.17 Patterns of realizationals, consecutives, and admonitives . . . 150
2.18 Patterns of imperatives based on conjugation class and root shape . . . 153
2.19 Documented roots with $\emptyset^{+}$-conjugation forms . . . 156
2.20 Patterns of hortatives based on conjugation class and root shape . . . 158
2.21 Patterns of potentials based on conjugation class and root shape . . . 162

3.1 Realizations of *i-* with *d-* and/or *s-*/*l-*/*sh-* . . . 180
3.2 Some lexical state verbs . . . 203

4.1 Adding arguments with *s-* or *l-* . . . 243
4.2 Distinctive phonological features for fricative phonemes . . . 247
4.3 Some unergative intransitive verbs with covert *v* . . . 263
4.4 Syntactic category of arguments added by *s-* or *l-* . . . 273
4.5 Some intransitive verbs derived with *s-* or *l-* . . . 276
4.6 Some causative verbs derived with *s-* or *l-* . . . 280
4.7 Some applicative verbs derived with *s-* or *l-* . . . 290
4.8 Some verbs with qualificational *s-*/*l-* . . . 307
4.9 Some verbs with an extensional *s-* or *l-* . . . 311

4.10 Some verbs with a lexicalized pejorative *sh-* . . . 316
4.11 Realizations of Voice, *v*, and Ɛ in the Classifier domain . . . 318
4.12 Properties of verbs based on $\sqrt[2]{tin}$ 'see' . . . 332
4.13 Properties of verbs based on $\sqrt[1]{x'a'n}$ 'anger' and $\sqrt[2]{k'an}$ 'hate' . . . 335
4.14 Properties of verbs based on $\sqrt[1]{t'ix'}$ 'hard' . . . 339
4.15 Some verbs with a lexicalized non-pejorative *sh-* . . . 340

5.1 Reflexive and reciprocal pronoun forms . . . 352
5.2 Some intransitive verbs with *d-* and no transitive counterparts . . . 376
5.3 Some transitive/antipassive pairs of verbs . . . 381
5.4 Some transitive/passive pairs of verbs . . . 403
5.5 Some verbs with self-benefactive *g-* . . . 430
5.6 Some verbs that exhibit the *d-*/*du-* alternation . . . 444
5.7 Lexicalized *du-* in unaccusative verbs . . . 446
5.8 Some transitive verbs with self-affecting *d-* . . . 450
5.9 Some verbs with unaccusative *d-* and transitive *l-*/*s-* . . . 454
5.10 Some dimension state verbs with *d-* for plurals . . . 459
5.11 Pretending derivation verbs with *sh=k̲'e-d-l-* . . . 461
5.12 Some intransitive verbs with *d-* and expletive *a-* . . . 465
5.13 Some intransitive motion verbs with *d-* . . . 468
5.14 Some unergative activity verbs with *d-* . . . 468
5.15 Some unaccusative state verbs with *d-* . . . 470
5.16 Some unaccusative achievement verbs with *d-* . . . 472

6.1 Four-way prefix division in the imperfective/perfective system . . . 512
6.2 Imperfective and perfective aspect morphologies . . . 513
6.3 Imperfective aspect diagnostics following Toews 2015 . . . 517
6.4 Imperfective aspect morphologies . . . 519
6.5 Some repetitive (ictive) activity imperfectives with *-t* . . . 532
6.6 Some repetitive activity imperfectives with *-s'* . . . 533
6.7 Some repetitive activity imperfectives with *-x'(w)* . . . 534
6.8 Some repetitive activity imperfectives with *-k(w)* . . . 535
6.9 Some repetitive state imperfectives with *-k(w)* . . . 535
6.10 Some repetitive activity imperfectives with *-t'* . . . 535
6.11 Some repetitive imperfectives with *-l'* . . . 535
6.12 Extensional state imperfectives . . . 537
6.13 Perfective aspect diagnostics following Toews 2015 . . . 543
6.14 Perfective aspect morphologies . . . 544
6.15 Contexts distinguishing *u-* versus *wu-* . . . 550
6.16 Morphological reflections of the conjugation classes . . . 582
6.17 Distributional properties of conjugation classes with spatial associations . . . 584
6.18 *G*-conjugation class motion derivations . . . 589
6.19 *G̲*-conjugation class motion derivations . . . 593
6.20 *N*-conjugation class motion derivations . . . 596

6.21 Some *∅*-conjugation class motion derivations . . . 600
6.22 More *∅*-conjugation class motion derivations . . . 601
6.23 Some non-stative *g*-conjugation verbs . . . 620
6.24 Some stative *g*-conjugation verbs . . . 621
6.25 Some *g*-conjugation verbs . . . 623
6.26 Some *n*-conjugation verbs . . . 625
6.27 Some *∅*-conjugation verbs . . . 627
6.28 Irrealis mental state verbs . . . 642
6.29 Irrealis conative activity verbs . . . 644
6.30 Irrealis resemblance verbs . . . 646
6.31 Irrealis pejorative verbs . . . 648
6.32 Inherently negative verbs . . . 649
6.33 Derived comparative dimension states . . . 652
6.34 Derived pretend activity verbs . . . 654
6.35 Derived extraordinary state verbs . . . 655
6.36 Negative particle forms . . . 667

7.1 Preverbs . . . 686
7.2 Object D pronoun inventory . . . 699
7.3 Comparison of object D pronouns with other pronouns . . . 708
7.4 ANs in D^0 associated with alienable nouns . . . 744
7.5 INs in D^0 associated with inalienable nouns . . . 745

A.1 Tlingit consonant inventory in IPA . . . 789
A.2 Tlingit vowel inventory in IPA . . . 795
A.3 Tone correspondences between Tongass, Southern, and Northern Tlingit . . . 799
A.4 Tlingit consonant inventory in RP. . . . 811
A.5 Northern Tlingit vowel inventory in RP. . . . 812
A.6 Tlingit consonant inventory in Leer orthography. . . . 813
A.7 Northern Tlingit vowel inventory in Leer orthography. . . . 814
A.8 Consonant inventory in Kelly and Willard's orthography . . . 817
A.9 Vowel inventory in Kelly and Willard's orthography . . . 818

B.1 Possible monosyllabic stem shapes from combined root and stem variation . . . 841
B.2 Some pairs of variable and invariable stem verbs . . . 866
B.3 Pairs of nouns and denominal invariable verb stems . . . 869

List of Figures

1.1 Syntactic structure of the verb in (3) . . . 5
1.2 Syntactic structure of the verb in (4) . . . 6
1.3 Syntactic structure of the verb in (5a) . . . 7
1.4 Correspondence between verbal syntax and verbal phonology . . . 9
1.5 Example of lexicographic documentation from Leer 1976a . . . 27

2.1 Simple VP with √ and V . . . 40
2.2 Tree for intransitive with nullivalent root . . . 47
2.3 Tree for intransitive with monovalent root . . . 48
2.4 Tree for transitive with bivalent root . . . 48
2.5 Activity imperfective 'weave' in (83a) . . . 81
2.6 State imperfective 'claim' in (83b) . . . 81
2.7 Imperative with *n*- conjugation prefix in (84) . . . 83
2.8 Lexically specified irrealis in (102) . . . 88
2.9 V-agreement with √ . . . 93
2.10 V-agreement with C . . . 93
2.11 V-agreement relationships across the clause . . . 95
2.12 High position of Adv in AspP . . . 107
2.13 Low position of Adv in VP . . . 107
2.14 High position of Adv in NegP . . . 110
2.15 High position of Adv in CP . . . 110
2.16 Neg V-agreement supersedes √ V-agreement . . . 165
2.17 Mod V-agreement supersedes Asp V-agreement . . . 170
2.18 T V-agreement supersedes Asp V-agreement . . . 171
2.19 C V-agreement supersedes Asp V-agreement . . . 172

3.1 Tree with comparative as an argument of ƐP . . . 197
3.2 Tree for intransitive state imperfective with overt Ɛ in (49b) . . . 199
3.3 Tree for grammatical state where Asp probes down for Ɛ . . . 205
3.4 Tree for grammatical state where Ɛ probes up for Asp . . . 205
3.5 Tree for derived grammatical state in (65a) where Asp probes Ɛ . . . 208
3.6 Tree for derived grammatical state in (65b) where Adv in AspP probes Ɛ . . . 208
3.7 Tree for derived grammatical state in (65c) where Adv in ƐP probes Ɛ . . . 209
3.8 Tree for derived grammatical state in (65d) where Adv in VP probes Ɛ . . . 210
3.9 Tree for repetitive imperfective with covert Adv suffix in (80a) . . . 216

3.10 Tree for Ɛ-suppression with absent Ɛ in (84b) . . . 219
3.11 Tree for Ɛ-suppression with covert Ɛ in (84b) . . . 220
3.12 Suggested evolution of Ɛ = **i*- in Na-Dene languages . . . 236

4.1 Tree for transitive with overt *v* in (48a) . . . 261
4.2 Tree for transitive with covert *v* in (49a) . . . 262
4.3 Tree for unergative with covert *v* in (50a) . . . 264
4.4 Tree for unergative with subject first merged in VP . . . 265
4.5 Tree for unaccusative achievement in (53a) . . . 267
4.6 Tree for intransitive with overt *v* in (72c) . . . 275
4.7 Tree for causative of unaccusative in (79b) . . . 282
4.8 Tree for causative of unergative in (85a) . . . 284
4.9 Tree for applicative of transitive in (94b) . . . 289
4.10 Tree for applicative of unaccusative in (116a) . . . 301
4.11 Qualificational *v* with a covert argument PP binding the object . . . 303
4.12 Tree for stacked *v*Ps in the applicative of a causative in (141a) . . . 319
4.13 Tree for stacked *v*Ps in the applicative of a transitive in (144b) . . . 324
4.14 Tree with a covert *v* and an overt *v* . . . 324
4.15 Tree with two covert *v*s for the unergative with argument PP in (150b) . . . 328

5.1 Sketch of an antipassive structure . . . 382
5.2 Structure of the antipassive with covert *v* in (76c) and (77c) . . . 383
5.3 Sketch of a passive structure . . . 404
5.4 Structure of the passive with covert *v* in (117c) and (118c) . . . 406
5.5 Subject binding a reflexive object in VP . . . 419
5.6 Reflexive possessor oblique where *d*- agrees with the pronoun . . . 421
5.7 Subject binds reflexive in argument PP and object does not . . . 422
5.8 Reciprocal possessor oblique where *d*- agrees with the pronoun . . . 427
5.9 Linear revertive motion with events ε_0 and ε_1 . . . 431
5.10 Linear revertive motion tree . . . 432
5.11 Perambulative revertive motion with events ε_0 and ε_1 . . . 433

6.1 Schematic representation of the complex Asp^0 head . . . 490
6.2 *Ø*-conjugation perfective . . . 493
6.3 Non-*Ø*-conjugation perfective . . . 493
6.4 Structure of Asp^0 with IRR ≺ MOD . . . 496
6.5 Structure of Asp^0 with IRR ≻ MOD . . . 496
6.6 Asp^0 with IRR on the left . . . 503
6.7 Asp^0 with IRR on the right . . . 503
6.8 Aspectual prefixes from Burge (2017: 65) . . . 504
6.9 Aspectual prefixes as heads with separate phrases . . . 505
6.10 Aspectual prefixes as modifiers of a single head . . . 505
6.11 Lexically specified *n*-conjugation imperative in (30b) . . . 507
6.12 Derivationally specified *n*-conjugation imperative in (31b) . . . 507

6.13 Derivational conjugation class supersedes lexical conjugation class 510
6.14 V-agreement with conjugation prefix in perfective aspect for (35) 511
6.15 Perfective aspect and conjugation prefix 521
6.16 Imperfective aspect and conjugation prefix 521
6.17 Imperfective aspect without conjugation prefix 523
6.18 Lack of V-agreement between empty Asp^0 and V in (54b) 527
6.19 *U-/wu*-perfective with covert conjugation prefix 569
6.20 *CNJ*-perfective with covert perfective prefix 569
6.21 Spatial orientations of the three non-*∅* conjugation classes 584
6.22 Overt progressive aspect prefix and covert conjugation class prefix 629
6.23 Negative as RP head 662
6.24 Prohibitive as RP head with -*k̲* as Mod 662
6.25 Prohibitive with -*k̲* as RP head 663
6.26 Negative with covert RP head 663

7.1 Example of plurality modifier and object in AspP 684
7.2 Tree for 'we have kept you from speaking' in (11) 690
7.3 Structure of (18) with D and N in D^0 695
7.4 Left merge 753
7.5 Right merge 753
7.6 High qualifier 753
7.7 Tree showing *has*= with a third person subject. 771

A.1 Constance Naish and Gillian Story 815
A.2 Ivan Veniaminov, St. Innocent 819
A.3 Example of Radloff's notes 820
A.4 George Thornton Emmons 821
A.5 John R. Swanton 821
A.6 Louis Shotridge 823
A.7 Franz Boas 823
A.8 Example from J.P. Harrington's notes 825
A.9 Nora Marks Dauenhauer and Richard Dauenhauer 826
A.10 Na-Dene language family 827

B.1 Categories of monosyllabic stems in Northern Tlingit 838
B.2 Categories of monosyllabic stems in Tongass Tlingit 840
B.3 Mapping of synchronic and diachronic stem variation systems to stem forms . . 862

Abbreviations and symbols

Gloss abbreviations and symbols

*α	ungrammatical α or reconstructed α
#α	infelicitous or nonsensical α
!α	remarkable or unexpected α
?α	questionable α
※α	unverified α
√α	verb root α
α-	prefix α
-α	suffix α
–α	α occurs with preceding elements (stem)
α=	proclitic α
=α	enclitic α
α.β	unsegmented morphemes α and β
α:β	lexeme α with inherent property β
α·β	unsegmented semantemes α and β
α^{n}	word α has occult final *n* [n]
α^{k}	word α has occult final *k* [k]
α^{w}	word α has irregular labialization
-μ	length suffix (mora)
-H	tone suffix (high tone)
-⊗	final consonant deletion (√*gut* + -⊗ → *gú*)
1	first person
2	second person
3	third person
3>3	third person subject and object
4	fourth person (indef., nonspec., nonref.)
ABES	abessive pp. *g̲óot* 'without'
ABL	ablative pp. *-dáx̲* 'away from'
ABMAR	abmarine *daak̲=* 'inland from shore, back from open, off of fire'
ACC	accusative case
ADES	adessive pp. *-g̲áa* ~ *-g̲aa* 'for purpose; near'
ADMAR	admarine *daak=* 'seaward from land, into open, down from sky, onto fire'
ADMON	admonitive 'lest'
ADV	adverb, adverbializer
ALL	allative pp. *-dé* ~ *-de* 'toward'
ALT	alternating *yoo=* 'back/forth, to/fro, up/down'
ANT	anterior (phonological feature)
APPL	applicative *s-*, *l-*, *sh-*
APSV	antipassive *d-*
AREAL	areal *k̲ú* 'area, extent nonspec. location'
ARG	verb argument prefix *a-*
ASP	unspecified aspect
AUX	auxiliary verb
BASE	meaningless postposition base *ee*
BEN	benefactive pp. *yís* ~ *-s* 'for, benefitting'
CIS	cislocal pron. haa^{n} 'here' (cf. transloc. TRN)
CLAN	untranslated clan name
CMPV	comparative *k-* ~ *g-*
CNJ	conjugation class
CONTR	contrastive pcl. *k̲u.aa* ~ *k̲wa* 'but; however'
CPL	complementizer copula *á* (cf. FOC)
CSV	causative *s-*, *l-*, *sh-*
CTNG	contingent 'whenever'
DEM	demonstrative
DERIV	derivational element
DIM	diminutive
DIR	directional
DISTB	distributive
DPL	distributive plural *dax̲=*
DPRV	deprivative 'lacking, removed'
DUB	dubitative
DUR	durative
e	semantic entity variable
ε	semantic eventuality (state ∪ event) variable
EMPH	emphatic
EMPTY	empty container
ERG	ergative *-ch* subject of transitive

EXH	exhaustive ‘completely’
FABRIC	fabric-like object
FILLED	filled container
FOC	focus *á* (cf. CPL)
GCNJ	*g*-conjugation class
GEN	genitive case
G̱CNJ	*g̱*-conjugation class
H	human
HAB	habitual
HSFC	horizontal surface *ká* ‘flat top of’
HUM	human
HYP	hypothetical ‘if only’
ICT	ictive *-t* ‘repeatedly striking’
IMP	imperative
IMPFV	imperfective aspect
INALB	inalienable noun req. possessor
INCEP	inceptive ‘starting, beginning’
INSTR	instrumental pp. *-n* ~ *teen* ‘with, using’
INTNS	intensive
INTR	intransitive
IRR	irrealis *u-* ~ *w-*
ITER	iterative (≈ REP)
LAB	labial (phonological feature)
LAR	laryngeal (phonological feature)
LEX	untranslated lexically specified element
LINK	linking element of unknown meaning
LOC	locative pp. *-x’* ~ *-’* ~ *-μ* ~ *-H* ~ *-i*
LOCP	locative predicate *-ú*
MDST	mesiodistal *wé* (cf. DIST distal)
MENT	mental phenomenon
MID	middle voice *d-*
MIR	mirative
MISS	missing target *-x̱áa*
MOD	modality (possibility, necessity)
MPRX	mesioproximal *hé* (cf. PROX proximal)
N	non-human
NAME	untranslated name
NCNJ	*n*-conjugation
NEG	negative
NMZ	nominalization, nominalizer
NSFX	*-n* verb suffix
O	object
OBJ	object
OLOC	obsolete locative suffix *-k*
OPT	optative ‘hopefully’
PART	partitive *aa* ‘one of, some of’
PAST	past tense
PASV	passive *d-*
PCL	untranslated particle
PEJ	pejorative *sh-*
PERL	perlative pp. *-nax̱* ‘through, along, across’
PERT	pertingent pp. *-x̱* ‘of, contacting’
PFV	perfective aspect
PHIB	prohibitive ‘don’t’
PL	plural
PLACE	untranslated placename
PNCT	punctual pp. *-t* ‘{at, to, around} a point’
PROG	progressive aspect
PROX	proximal *yá* (≠ PRX, cf. distal DIST)
PRSP	prospective aspect
PRX	proximate in discourse (≠ PROX)
PSS	posessive
Q	wh-question
QUAL	untranslated qualifier
QUOT	quotative *yóo=* ~ *yéi=*, *yú.á*
RECIP	reciprocal ‘each other’
REL	relative clause
REP	repetitive (≈ ITER)
REST	restorative *-án* ‘back to normal’
REV	revertive direction ‘back, returning’
RFLX	reflexive ‘self’
ROT	rotatory ‘turning over’
S	subject
SBEN	self-benefactive *g-*
SCNJ	*s*-conjugation (Dene lgs.)
SFC	surface
SFX	untranslated suffix
SG	singular
SIM	similative *yax̱* ‘like, as, resembling’
SPFV	*s*-perfective (Dene lgs.)
SRO	small round object *k-*
STV	stative
SUB	subordinate clause
SUBL	sublative pp. *ḵín* ‘short of, less than’
SUBJ	subject
SUP	superlative pp. *ÿáanax̱* ‘beyond, more than’
TERM	terminative *ÿán=* ~ *ÿax̱=* ‘ending, completing’
TR	transitive
TRN	translocal pron. *áa* ‘there’ (cf. cisloc. CIS)
VAR	stem variation
VCE	unspecified voice phenomenon
W/E	wooden object or empty container

WOOD	wooden
XPL	expletive argument
XPLN	explanatory particle *ách* 'that's why'
XTN	extension in space (spread out, long)
YN	polar yes/no question *gí* ~ *gé*
ZCNJ	*∅*-conjugation
ZPFV	*∅*-conjugation perfective
ŸSFX	*-ÿ* verb suffix
GCNJ	*ɢ*-conjugation (Eyak lg.)
ГCNJ	*ɣ*-conjugation (Dene lgs.)
ŁSFX	*-ł* verb suffix (Dene-Eyak lgs.)

Syntactic and semantic abbreviations and symbols

<α>	deleted constituent α (i.e. 'trace')
Adj	adjective
Adv	adverb
Asp	aspectual head
AspP	aspectual phrase
C	complementizer (clausal head)
CP	complementizer phrase (clausal phrase)
D	determiner
DP	determiner phrase
e	semantic variable/type for entity
ε	semantic variable/type for eventuality
Ɛ	eventuality head (ch. 3)
ƐP	eventuality phrase (ch. 3)
$\mathscr{E}$(...)	eventuality class restriction function
$\mathscr{I}$(...)	(ir)reality status restriction function
l	semantic variable/type for location
Mod	modal head
ModP	modal phrase
N	noun
NP	noun phrase
Neg	negation head
NegP	negation phrase
Nml	numeral
P	postposition, preposition
PP	postposition phrase, preposition phrase
Pl	argument pluralizer
Psr	possessor, possessive pronoun
Q	Q (question) head
QP	Q phrase
$\mathscr{Q}$(...)	qualia restriction function
R	irrealis-triggering head
RP	irrealis-triggering phrase
T	tense head
TP	tense phrase
Θ(...)	thematic role restriction function
V	verb
VP	verb phrase
v	Little *v*, VP-shell head
*v*P	Little *v* phrase

Miscellaneous abbreviations

ANLA	Alaska Native Language Archive
ANLC	Alaska Native Language Center
AGk.	Ancient Greek
Am.	American
Can.	Canadian
CJ	Chinook Jargon (pidgin trade language)
Eng.	English
Fr.	French
Gk.	Greek
id.	*idem* 'same'
IPA	International Phonetic Alphabet
JAC	James A. Crippen (author)
L.	Latin; Linnaeus in biological names
L1	first language (native speaker)
L2	second language (language learner)
OE	Old English
OED	Oxford English Dictionary
OF	Old French
p.c.	personal communication
PD	Proto-Dene (= Proto-Athabaskan)
PDE	Proto-Dene-Eyak (= Proto-Athabaskan-Eyak)
PIE	Proto-Indo-European
PND	Proto-Na-Dene (= Proto-Ath.-Eyak-Tlingit)
PT	Pre-Tlingit (internal reconstruction)
Ru.	Russian
Skt.	Sanskrit
UBC	University of British Columbia
YNLC	Yukon Native Language Centre

Acknowledgements

Ax tuwáx' sigóo gunalchéesh yéi yaxwsakaayí ldakát wé ax een wudishéeyi lingít. Tláx wáa sá has shayadahéinich, lidzée ldakát káa hasdu saayí yaa xwasaayí. Ch'a.aan ku.aayá kei kakkwa.áakw; i saayí tléil yáax' kaxwashxeedí kát, ch'a aadé sí yéi xat nay.oo.

Shux'áanáx áyá wé ax shagóon hás hasdu saayí kkwasáa ax tláa Oonyéik Tláa Andra Crippen, ax léelk'w Oonyéik Margaret Bakke Sturtevant, du shátxi hás Kutshee Lois Bakke Hope, Seenáa Seena Bakke Watson, ka Sakeekán Yvonne Bakke Stough, hasdu tláa Oonyéik Tláa Margaret Gunyah Bakke, ka du léelk'w Oonyéik Emma Dick Gunyah, ka du tláa Kináa Tláa. Ax shukaléelk'u xoo.aa áwé Kakaldeiní, Dzéiwsh Geetwéin, Kaatdaa, Kaakáak'w, Kak'weitshí, Tleix' Yaanagút, ka Gunyaa, hás tsú xwaasaa. Hásch áyú Lingítx xat wusitee.

Wé haa nák has woo.aadi ax kóo at latéewu áyá a ítdáx yéi kukasaayí Choosháa Elaine Abraham, Seidayaa S'agaxsháak'w Mary Anderson, Dagé Winnie Atlin, Yaxdulákt' Lillian Austin, Xwaayeenák Richard Dauenhauer, Keixwnéi Nora Marks Dauenhauer, Kaxwaan Éesh George Davis, Kawduk'eit Tláa Vida Davis, Yaanjiyeet Gaax Charles DeWitt, Shaksháani Margaret Dutson, Kaséix Selena Everson, Achkwéi Lena Farkas, Kóoshdaak'u Éesh William Fawcett, Kaalkáawu Cyril George, Kudeishgé Lydia George, Kudeina.át Margaret Gross-Hope, Tagooch Aasx'áak Clarence Jackson, Gáx Tlein Paul Jackson, Jeeshkú Jimmy Johnston, K'óox Johnny Marks, Keihéenák'w John Martin, Guná Doris McLean, James Martinez, Yaaxl.aat Irene Paul, Goox Tlein Clara Peratrovich, Woosh Jixoo Éesh George Ramos, Alicia Roberts, Theodore Roberts, Kaachku.aakw Helen Sarabia, Seit.oo Pauline Sidney, Chukateen Jane Smarch, Kaajaakwtí T'aawchán Walter Soboleff, Shuwuteen Martha Van Heel, Jigéi Yaxgóos' Jackie Williams, ka Gooch Tláa Lucy Wren. Ch'u tle kúdáx shayadihéin hasdu saayí. Ax tuwáx' sigóo yeisú haa een yéi yikgwateeyí yéeyi. Gu.aal kwshí hasdu yoo x'atángi ka hasdu ax ée yeeylitéewu át tóonáx l yan shuwjixíni kustí hasdu jée yéi teeyík.

Aatlein Lingít yoo x'atángi ashigóogu ax shukaadekáax'uch ax ée has awlitéew, yá haa yoo x'atángi. Ax tuwáa sigóo gunalchéesh yéi yiyaxwsakaayí, ldakát yeewháan Shuwuteen Margaret Bob, Jigeit Tláa Irene Cadiente, La.oos Tláa Ida Calmegane, Keiyishí Bessie Cooley, Yéil Tlein L'eiwtu.éesh Herman Davis, Kaanák Ruth Demmert, Yankáx Tláa Barb Hobbis, Guneiwtí Marsha Hotch, Kingeistí David Katzeek, Gooch Shaayí Kawóotk' Guwakaan Harold Jacobs, Shaax'sáani Kéek' Shirley Kendall, Kudagaan Madeline Jackson, Kaakligé Norman James, Goos'aduteen Bessie Jim, K'áank'i Aggie Johnston, Aanalahaash Sam Johnston, Daasdiyaa Ethel Makinen, Kinkawduneek Paul Marks Sr., K'altseen Carolyn Martin, Lugóon Sophie Smarch, ka Gunaak'w Fred White.

Tlax wáa sá shayadihéin ax Lingít xoonx'í, ldakát ax yéi jinéiyi tóonáx ax eet has wudasheeyí. Gunalchéesh yéi yiyaxwsikáa Neilatulatseen Allan, Shaagaaw Éesh Devlin Anderstrom, Gastánt' Duane Aucoin, Shayawdustee Deborah Baerg, Yaandakín Yéil George Bahm, Satóok' Linda Belarde, Yakwdushí Jamie Bradley, Lyanwudagaat Nae Brown, Kaajisdu.áxch Steve Brown, Ch'eetwú Joe

Binger, Yéil T'ooch' Tláa Collyne Bunn, Éedaa Heather Burge, T'aawyáat' Kevin Callahan, Frank Churchill, K̲aatwú Chickadee Churchill, Linda Churchill, Deikeenaa Shaawátk'i Sandy Churchill, K'iyéis' Tláa Natasha Clevenger, G̲ooch Shaayí Bonar Cooley, Yatudaandul.át Bonnie Cooley, K̲ees.éix̲ Sam-sam Dorothy Cooley, Shaan Tláa Lorraine Dewhurst, Yakwdushí Lisa DeWitt-Narino, Cindy DeWitt, Ts'eeteenáx̲ Meda DeWitt, Héenák'w Táax' Mike DeWitt, G̲altín Teresa DeWitt, X̲'aagi Sháawu Keri Eggleston, Daaljíni Mary Folletti, Tulatseen Victoria Fred, Chalyee Will Geiger, Yeidilatseen Millie Hall, Shkooyéil Yaa K̲udzigéiyi Tuk̲'atáal Tim Hall, K̲aagwáask' Ishmael Hope, Wooshk̲indeinda.aat Lily Hope, Katie Hoyt, Neish Ken Hoyt, G̲áshx̲ Aak'wtaatseen Mike Hoyt, K̲aashaxíshdi Roy Iutzi-Mitchell, K'eidukaa Jack, Shaadaax' David Jensen, Yadultín Marilyn Jensen, Guná Megan Jensen, Edwell John, Keinas.áx̲ Ldóos Gary Sidney Johnson, Taaklawéix̲ Wilfred Johnston, Zachary Jones, K̲aaganéi Connie Jules, Skaaydu.oo Tina Jules, G̲unaak'w Shaakundastóo Сергей Кан, Aanshawasnook Luella Knapp, S'iyeeltín Juanita Kremer, K'únts' Shaawát Betsy Kunibe, Steve Langdon, Weihá Jeff Leer, Shaakóon Blake Lepine, Lak̲du.oo Kassandra Eubank Littlefield, Koolyéik̲ Roby Littlefield, La.oos Georgianna Low, Kéet Yanaayí Paul Marks Jr., Ltaguháa Sean McDougall, Shaaw Tláa Shirley McLean, Yéilk' Vivian Mork, Richard Oliver, Xwaantlein Virginia Oliver, Ben Paul, MacKenzie Peterman-Byrd, Tis Peterman, K̲aa Saayí Tláa Amanda Porter, Lgeik'í Heather Powell, Yeils'íx'i Gordon Reed, Levi Rinehart, Melissa Rinehart, Nila Rinehart, Tasheey Richard Rinehart Jr., Vince Rinehart, Susan Ramsey, Shdewuteen Kathy Kolkhorst Ruddy, Sakéenyaa Stephanie Sidney, Yaadachóon Kim Smarch, U'yensegchia Sean Smith, Yatootéen Mallory Story, Ljaak̲k Alice Taff, Yaanjiyeet G̲áax̲ Thomas Thornton, Aandax̲ltín Stephanie Tripp, X̲aalnook Erin Tripp, Yeideesákw Ann Turner, Shaawatk'é Ava Twitchell, K̲ájaa Darian Twitchell, K̲aalk̲éis' Kiana Twitchell, Du Aaní Kawdinook X̲'unei Lance Twitchell, K̲álaa Miriah Twitchell, Shakeex̲'aan Rose Underhill, K̲aaswóot Gloria Wolfe, G̲ooch Xaayí Ralph Wolfe, k̲a Shuwuteen Peachie Ann Wolfe.

K'inchéiyi Tláa Rose-Marie Déchaine ax̲ ée awlitéew yak'éiyi linguistx̲ x̲at wusateeyí; a kookaadé ax̲ dlák'wx̲ x̲waliyéx̲. Awsikóo wáa sá du yát tux̲wlajaag̲ú, k̲a ax̲ toowú yak'éi ax̲ x̲oonix̲ sateeyí. Ax̲ committee tsú ax̲ tuwáa sigóo yéi has yax̲wsak̲aayí gunalchéesh ax̲ eet has wudasheeyí Ltudax'aan Shak'únts' Seth Cable, Lisa Matthewson, k̲a Michael Rochemont. Ax̲ toowú yanéekw Michaelch tléil yá yan x̲wasinéeyi aa awutéewu; ch'a at sóox̲k' haa nák̲ woogoot. Ax̲ reviewer hás tsú, gunalchéesh yá k̲únáx̲ koodáali át yeeytéewu Henry Davis, Heidi Harley, k̲a Dāyālītá Pat Moore. Woosh een jigax̲tudaneeyí sakk̲wasat'áan.

Ax̲ x̲oonx'í, tlax̲ wáa sá gunalchéesh yéi yiyax̲wsak̲aayí Yéil Shaan Arnold Cappy Bakke, Shanakwéiy Solvay Gillen-Bakke, La.oos Annika Rose Marie Gillen, Aseiyí Leeya Madge Gillen, Oonyéik Katie Hagan Calhoun, Tammi Meissner, Cinda Stough, Deenáa James Stough, Oonyéik Tláa Ruth Ann Stough, Shagunduteen Vena Stough. Ldakát yeewháan, yeex̲six̲án.

Tsaatsguyéig̲aa ax̲ shát yéi yanax̲sik̲áa gunalchéesh ax̲ k̲usteeyí tóox' k̲eesteeyí. Tléil ax̲ tuwáx' ushgú x̲wasakoowú wáa sá ax̲ k̲usteeyí ee g̲óot yéi teeyí.

Ldakát yeewháan, yee ax̲ eet wudashéeyi dáx̲ sh tóog̲aa x̲at ditee.

The research for this dissertation was supported by the following grants and awards:

- University of British Columbia Aboriginal Graduate Fellowship (James A. Crippen)
- The Pacific Century Graduate Scholarship (James A. Crippen)

- Dofasco Inc. First Nations Fellowship (James A. Crippen)
- University of British Columbia Faculty of Arts Graduate Award (James A. Crippen)
- Jacobs Research Funds individual grant (James A. Crippen)
- Jacobs Research Funds group grant (Rose-Marie Déchaine, James A. Crippen, & Heather Burge, University of British Columbia)
- Social Science and Humanities Research Council (Canada) Insight Development grant 430-2013-0230 "Across mountain and sea: Bringing Tlingit to linguists" (Rose-Marie Déchaine, University of British Columbia)
- Social Science and Humanities Research Council (Canada) Partnership grant no. 895-2012-1029 "First Nations languages in the twenty-first century: Looking back, looking forward" (Marianne Ignace, Simon Fraser University)
- Social Science and Humanities Research Council (Canada) Partnership Engage grant 892-2017-2044 "Haa Lákhdi Shugaxhtutáan; We Will Open Our Cedar Boxes" (Rose-Marie Déchaine, University of British Columbia & *Shkooyéil* Tim Hall, Teslin Tlingit Council)
- Social Science and Humanities Research Council (Canada) Connections grant 611-2018-0349 "Reawakening Tlingit: Knowledge of language as knowledge of culture" (Rose-Marie Déchaine, University of British Columbia & *Shkooyéil* Tim Hall, Teslin Tlingit Council)
- National Science Foundation (USA) award no. BCS-0756468 "Documenting Tlingit Raven Stories" (Richard Dauenhauer†, James A. Crippen, & Keri Eggleston, Tlingit Readers, Inc.)
- National Science Foundation (USA) award no. BCS-1322770 "The Verbal Morpho-semantics and Clausal Architecture of Tlingit" (Seth Cable, University of Massachusetts Amherst)

Dedication

Lingít yoo x̱’atángi sh tóo altéewu yís áyá.

For Tlingit language learners.

1 Introduction

Góos' nagáas'i ·	Wáa nganeins k̲óo laséix̲ ·	Dís latín dáx̲.
雲折々	人を休める	月見哉
kumo oriori	*hito wo yasumeru*	*tsukimi kana*

K̲eixwnéi N.M. Dauenhauer (1972, p. 50) after 芭蕉 *Bashō*

1 Metatheoretical background . . . 10
1.1 Templatic morphology . . . 10
1.2 Polysynthesis . . . 15
1.3 Na-Dene verbs as syntactic structures . . . 16
2 Major concepts . . . 18
2.1 Roots encode lexical contrasts . . . 19
2.2 Functional heads are multifunctional . . . 22
2.3 Morphemes saturate or restrict events or arguments . . . 24
3 Methodology . . . 25
3.1 Holistic approach . . . 25
3.2 Sources of data . . . 26
3.3 Segmentation and glossing . . . 28
3.4 Errors . . . 29
4 Outline . . . 30

In this dissertation I develop a formal model for the syntax in the Tlingit[1] verb. The Tlingit language is an indigenous language of Alaska, British Columbia, and the Yukon in North America. It is critically endangered with somewhere between 100 and 200 native speakers alive today. Tlingit is a member of the Na-Dene family (Krauss 1979; Leer 2010) and so is distantly related to Navajo (Young & Morgan 1987), Hupa (Golla 1970), Witsuwit'en (Hargus 2007), Slave (Rice 1989), Koyukon (Jetté & Jones 2000), and Eyak (Krauss 1965a) among others. Like other Na-Dene languages, Tlingit is noted by linguists for its large consonant inventory, its use of tonal contrasts for lexical and grammatical phenomena, and its relatively complex verbal morphology. See appendix A for more background on Tlingit.

1. Pronounced [ˈklɪŋ.ˌkɪt] or [ˈklɪŋ.ˌɡɪt] in English, from Tlingit *lingít* [ɬìn.ˈkít] 'person; Tlingit'.

Verbs in Tlingit have long been identified as phonological words (Veniaminov 1846; Swanton 1911; Boas 1917; Story 1966; Leer 1991).[2] But Tlingit verbs are intuitively closer to whole sentences than to single words because a lone verb can be the sole realization of arguments, voice, aspect, mood, modality, tense, and event structure. I argue that Tlingit verbs are complex structures rather than single elements in the syntax and support this using all of the major verbal phenomena in Tlingit.

Tlingit verbs contrast strikingly with nouns in their internal complexity. The forms in (1) compare a sentence consisting of a single verb word with a sentence consisting of a single noun word.[3]

(1) a. Ix̱wsidút'. *Tlingit verb*
[ˌʔìχʷ.sì.ˈtút'] i- wu-x̱- s- i- $^{1}\sqrt{}$dut' -H
2SG·O-PFV-1SG·S-CSV-STV-$^{1}\sqrt{}$hiccup-VAR
'I have made you hiccup.'

b. G̱uwakaan. *Tlingit noun*
[ˌqʷù.wà.ˈkʰà:n] g̱uwakaan
deer
'A deer.'

Both utterances in (1) are single trisyllabic words. But the verb word in (1a) expresses a complex eventuality that encompasses two entities ('I' and 'you'), an orientation in time (perfective aspect), an act of causation, and a result state (having hiccupped). In contrast, the noun word in (1b) describes an entity with no elaboration. The verb word in (1a) can be decomposed into seven distinct morphemes that each contribute to its interpretation whereas the noun word in (1b) cannot be decomposed.[4] The verb word is thus complex where the noun word is simplex.

Tlingit verbs form rich paradigms that are regularly organized along many different dimensions. To take one dimension, the data in (2) illustrates some basic temporal contrasts using the verb 'cook' (more literally 'make become cooked') with a first person singular subject and a third person object.

(2) a. X̱asa.ée. *imperfective*
[ˌχà.sà.ˈʔí:] x̱- s- $^{1}\sqrt{}$.i -μH
1SG·S-CSV-$^{1}\sqrt{}$cook-VAR
'I cook it.', 'I am cooking it.'

b. X̱wasi.ée. *perfective*
[ˌχʷà.sì.ˈʔí:] wu-x̱- s- i- $^{1}\sqrt{}$.i -μH
PFV-1SG·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
'I have cooked it.'

2. Leer more precisely describes a "verb complex" which is something like a phonological phrase (Leer 1991: 90).
3. The sentence in (1a) can answer the question *Wáa sá at woonee?* 'What happened?'. The sentence in (1b) can answer the question *Daa sáwé?* 'What is that?', but then it is an ellipsis of *G̱uwakaan áwé.* 'It is a deer.'.
4. Most polysyllabic nouns in Tlingit can be analyzed as derivations from verbs. This is not the case for *g̱uwakaan* 'deer' (*Odocoileus hemionus* Rafinesque, 1817) which has no synchronic internal structure. It probably was once derived from a verb but its morphology is now unidentifiable and speakers treat it as an indivisible lexical unit.

c. K̲asa.ee *hortative*
[ˌqʰà.sà.ˈʔìː]
g̲- x̲- s- $^{1}\sqrt{}$.i -μ
MOD-1SG·S-CSV-$^{1}\sqrt{}$COOK-VAR
'Let me cook it.'

d. K̲wasi.ee. *potential*
[ˌqʰʷà.sì.ˈʔìː]
u- g̲- x̲- s- i- $^{1}\sqrt{}$.i -μ
IRR-MOD-1SG·S-CSV-STV-$^{1}\sqrt{}$COOK-VAR
'I can cook it.', 'I may cook it.'

e. Ku̲kasa.ée. *prospective*
[kʷù.ˌqʰà.sà.ˈʔíː]
w- g- g̲- x̲- s- $^{1}\sqrt{}$.i -μH
IRR-GCNJ-MOD-1SG·S-CSV-$^{1}\sqrt{}$COOK-VAR
'I am going to cook it.'

The paradigm in (2) is only partial, limited to just a few aspect and modality contrasts. There are many other paradigmatic dimensions in Tlingit verbs such as subject, object, person, number, stativity or dynamicity, passive or antipassive or middle voice, inception, completion, iterativity, qualia (physical characteristics) of objects, tense, and clause type. A single verb form is only one instantiation of an enormous paradigm of possibilities formed by the verbal morphology system (cf. Cable 2015).

The paradigmatic complexity and the range of semantic expression possible for Tlingit verbs approach that of whole sentences. This is precisely why Sapir describes the verb in Na-Dene languages as "a sentence in miniature" (Sapir 1915: 544). He suggests that each morpheme within a Na-Dene verb word is like a small syntactic constituent and that verb words are built in a manner similar to sentences (Sapir 1915: 537).[5] I follow Sapir's analogy to its logical conclusion. If Tlingit verb words have a complexity and expressivity analogous to that of sentences then we can reasonably expect that they also have a grammatical structure analogous to sentences. Given that all human languages are founded on the same conceptual mechanisms, it should then be possible to develop a model of Tlingit verbs using the same machinery developed for modelling sentence structure in other languages. I do so in this dissertation, working out a formal syntactic framework that accounts for the morphological complexity of Tlingit verbs within a predictable and relatively simple system.

My syntactic framework is based in the Minimalist Program (Chomsky 1995, 2000; Hornstein, Nunes, & Grohmann 2005), with all syntactic structures formed by repeated binary merge operations (Fukui 2011; Nunes 2013) and with phases for movement (internal merge) and spellout (Chomsky 2001, 2008; Citko 2014). Each morpheme in a Tlingit verb is a single syntactic terminal. The derivation of verbs proceeeds from the bottom up: roots are the lexical entry to which all other syntactic elements are merged, and roots encode the lexical properties that determine the rest of the derivation and its interpretation. The semantic interpretation of the syntactic structure is fully compositional but I set aside the detailed semantic formalization of specific patterns for now.

5. Compare e.g. Goddard "[the Hupa verb] contains in itself all the elements of the sentence" (Goddard 1905: 37).

As an illustration of my approach I look here at a few particular examples and show how they are modelled in my system. A large verb like that in (3) contains many syntactic terminals which must be interpreted by a compositional semantics. The syntactic terminals are organized into a single AspP phrase by merge and movement, with agreement mechanisms that account for long distance dependencies between terminals. The syntactic structure of (3) is shown in figure 1.1 (p. 5); the agreement relations between terminals are omitted for simplicity of presentation.

(3) Yan yax̱ yiyakagax̱wdzi.ée. *terminative exhaustive self-benefactive causative perfective*
[ˌjàn ˌjàχ jì.ˌjà.kʰà.ˌkàχʷ.tsì.ˈʔíː]
ÿán= ÿáx̱=ÿi- ÿ- k- g- wu-x̱- d- s- i- $^{1}\sqrt{}$.i -μH
TERM=EXH=2PL·O-QUAL-SRO-SBEN-PFV-1SG·S-MID-CSV-STV-$^{1}\sqrt{}$cook-VAR
Adv Adv D N N PP Asp D Vce *v* Ɛ √ V
'I finished cooking you (plural, small round) all up for myself.' (*K̲'altseen* Carolyn Martin)

The structure in figure 1.1 is large and complex because the verb in (3) is large and complex. In contrast, the syntactic structure of morphologically simpler verbs like (4) is correspondingly smaller and less complex as seen in figure 1.2 (p. 6). This shows that the structural complexity is proportional to the morphological complexity of a given verb word. This might seem like an obvious point, but some previous analyses of Tlingit – and indeed of many other 'big verb' languages – have treated verbs as undifferentiated lumps with no sensitivity to their widely varying internal complexity.

(4) Ix̱waasháat. *transitive perfective*
[ˌʔì.χʷàː.ˈʃáːt]
i- wu-x̱- i- $^{2}\sqrt{}$sha't-μH
2SG·O-PFV-1SG·S-STV-$^{2}\sqrt{}$grab -VAR
'I have grabbed, caught you.'

The proportional relationship between structural and morphological complexity is modulated by the possible presence of empty (covert) syntactic terminals. These covert elements encode syntactic structure and semantic information that are not reflected by phonological content; one example is the empty *v* node in figure 1.2. This demonstrates the tradeoff involved with adopting zero morphology: on the one hand a covert element can explain a paradigmatic alternation, but on the other hand a covert element asymmetrically adds complexity to the syntax and semantics without any corresponding complexity in the phonology. Zero morphology can simplify the analysis of some patterns but necessarilty complicates the analysis of others. I discuss the possibility of covert elements repeatedly throughout this dissertation. In every case I avoid positing covert material unless it is unequivocally required by syntactic operations or semantic interpretations.

My approach of avoiding covert elements unless syntactically or semantically necessary sets it apart from previous analyses of Tlingit; one area of difference is *v*. Traditionally, every Tlingit verb includes a 'classifier' position immediately before the stem which can contain one of fifteen prefixes *ya-*, *da-*, *di-*, *sa-*, *si-*, *s-*, *dzi-*, *la-*, *li-*, *l-*, *dli-*, *sha-*, *shi-*, *sh-*, and *ji-*, and which can have a notional *∅* when nothing else is present (Story 1966: 63; Leer 1991: 94; Cable 2006: 7). I decompose this prefix into three separate and semantically independent functional heads Ɛ (ch. 3), *v* (ch. 4), and Voice (ch. 5). Because these three heads are semantically independent, any logical combination of all three functional heads is possible, and furthermore all of them can be absent in the right grammatical context. I sketch one such context below, namely unaccusative intransitives (cf. ch. 4 § 2.2.2 & 2.2.3).

Figure 1.1: Syntactic structure of the verb in (3)

Figure 1.2: Syntactic structure of the verb in (4)

The *v* head can contain one of the three prefixes *s-*, *l-*, or *sh-*. This functional head projects a phrase *v*P which is the initial merge site of the subject. Thus figure 1.1 shows the prefix *s-* in *v* and a first person singular subject *x̲-* 'I' which is merged in *v*P and later moved to VoiceP. In contrast, figure 1.2 has the same subject *x̲-* but there is no accompanying *s-*, *l-*, or *sh-*. Because subjects must be initially merged in *v*P, there must be an empty *v* in figure 1.2 to project the *v*P for the subject. Thus verbs with subjects but no overt *v* have a covert *v* corresponding to the traditional *Ø* classifier.

But not all verbs have subjects. In particular, unaccusative intransitives have only objects and lack subjects as illustrated by the forms in (5). The unaccusative form in (5a) has a first person singular object *x̲at=* 'me'. The equivalent unergative form in (5b) has a first person singular subject *x̲-* 'I' which is ungrammatical (see ch. 4 sec. 2.2.2 for grammatical unergatives). Furthermore, the transitive in (5c) has an object *x̲at=* 'me' as well as a second person singular subject *i-* 'you (sg.)' and this is also ungrammatical. Since an overt subject is not possible in either (5b) or (5c), the unaccusative in (5a) cannot have a covert subject. Then if there is no subject and there is no *s-*, *l-*, or *sh-* prefix then there is no need for *v* and consequently no head to project *v*P. Figure 1.3 (p. 7) represents the syntactic structure of (5a), showing that *v* and its *v*P simply do not exist. Although transitives and unergatives may have a covert *v*, unaccusatives may have no *v* at all.

(5) a. X̲at dút'x̲. *unaccusative repetitive imperfective*
[ˌχàt ˈtút'χ]
x̲at= ¹√dut' -H -x̲
1SG·O=¹√hiccup-VAR-REP
'I am repeatedly hiccuping.'

Figure 1.3: Syntactic structure of the verb in (5a)

b. *Xadút'x. **unergative repetitive imperfective*
[χà.ˈtút'χ]
x- 1√dut' -H
1SG·S-1√hiccup-VAR
intended: 'I am repeatedly hiccuping.'

c. *Xat idút'x. **transitive repetitive imperfective*
[ˌχàt ʔì.ˈtút'χ]
xat= i- 1√dut' -H
1SG·O=2SG·S-1√hiccup-VAR
intended: 'You are repeatedly hiccuping me.'

This avoidance of zero morphology contrasts with the traditional position class template approach. In a typical templatic morphology every position class ('slot') exists by definition in every form. The absence of an overt value in a position does not make the position disappear, so there must be a zero element in every unrealized position in a template. Because of this, the structural distinction that I draw between transitives with covert *v* and unaccusative intransitives without *v* cannot be represented with a typical verb template approach. Indeed, Story (1966), Leer (1991), and Edwards (2009) have all assumed that unaccusative intransitives with no overt classifier material must necessarily contain *Ø*.

A similar problem arises with covert subjects. I adopt a distinction between a covert D pronoun for an otherwise unspecified third person subject (i.e. *pro* as a subject) and the total lack of a subject in unaccusatives like (5a). With a template this distinction is not possible unless one asserts a difference between a position containing a subject *Ø* and a position containing nothing. This entails an ontologically suspicious distinction between different kinds of nothing which has difficult theoretical and empirical consequences. A non-templatic representation will generally not suffer from this problem. See section 1 for further discussion of the problems with templatic morphology.

Na-Dene languages are famed for the complexity and opacity of their verbal morphophonology. Some of this complexity may be an artifact of a descriptive tradition that has been strongly driven by historical reconstruction, with underlying forms deduced by diachronic comparison that might have poor synchronic justification. But there is no doubt that the spellout of morphemes in verbs is more complex than simple concatenation as in a 'beads on a string' model of affixation. Verb words are traditionally divided into a few phonological 'zones', 'domains', or 'boundaries'[6] that reflect differing patterns of spellout such as syllabification (e.g. concatenation, epenthesis) or tone realization (e.g. H prohibited, contour prohibited). The exact constraints on each domain differ from language to language, but the domains regularly correspond between languages (Kari 1975, 1989, 1992; Hargus 1991; Tuttle & Hargus 2004; McDonough 2000c; Rice 2000a: 401–405). From right to left (inside out) the three most commonly described are a 'stem domain' encompassing the verb stem and some suffixes, a 'conjunct domain' of the classifier, subject, and aspectual prefixes, and a 'disjunct domain' that is the remainder of the pre-stem material within the word. Additional subdivisions are proposed for individual languages but they are not consistently described across the family.

The Tlingit verb word contains phonological domains very similar to those of other Na-Dene languages. I have identified five primary domains as sketched in (6), based on a variety of phonological phenomena. The Stem domain encompasses the VP (√ and V) and its adjuncts (Adv suffixes) and is usually a single syllable and at most two syllables. The Classifier domain is the phonological realization of Voice, *v*, and Ɛ which is realized either as a single CV syllable or as a coda consonant. The Conjunct domain comprises Asp (up to three prefixes) and the subject D_{subj} and is constrained to be no more than two syllables. The Disjunct domain contains the prefixal material that is adjoined to the left of Asp, where each prefix is usually spelled out as a separate syllable unlike the Conjunct domain. Finally, the Preverb domain consists of all the remaining adjuncts of AspP which are phonological clitics that may be polysyllabic and that may include high tone unlike the Disjunct, Conjunct, and Classifier domains.

(6)

Adv Pl	D_{obj} N* PP	Asp* D_{subj}	Voice *v* Ɛ	√ V Adv	*phon. domains*
Preverb	Disjunct	Conjunct	Classifier	Stem	

Although I do not probe very deeply into the morphophonology, I have noticed a correspondence between the phonological domains and the syntactic structure which cannot be accidental. This is sketched in figure 1.4 (p. 9) which represents an abstract syntactic structure with aligned phonological domains along the bottom of the structure. The entire phonological verb phrase consists of a single AspP in the syntax so there is a one-to-one correspondence at the highest level of 'verb word'. The Stem domain also corresponds directly to the VP after its complements have been raised to AspP (ch. 2 & apx. B). The Classifier domain is the spellout of the Voice, *v*, and Ɛ heads and thus the non-Stem material below the phase at VoiceP. The most morphophonologically complex material in the Conjunct domain corresponds to the Asp^0 subtree (ch. 6 sec. 1), and the whole Conjunct domain including the subject corresponds to all the material below the phase at AspP that is not already spelled out in the Classifier and Stem domains. The Disjunct domain is a realization of the D^0 object subtree that is initially merged as the complement of VP but later raised to AspP (ch. 7 sec. 1). Then the Preverb domain contains everything else in AspP not in any other domain.

6. The term 'zone' is due to Kari 1989. A 'domain' is a specialization of the more general phonological concept and a 'boundary' refers to an edge between two zones or domains.

Figure 1.4: Correspondence between verbal syntax and verbal phonology

The remainder of this introduction is divided into four sections. Section 1 reviews some metatheoretical issues that run in the background of the analysis developed through this dissertation, specifically addressing template morphology, polysynthesis, and other models of Na-Dene verbs as syntactic structures. Section 2 sketches three fundamental concepts that lie behind all of the analyses in this dissertation, namely that roots encode lexical contrasts, that functional heads are multifunctional, and that morphemes saturate or restrict events or arguments. Section 3 reviews the methodology of the research in this dissertation, noting the synthesis of lexicographic, narrative, and elicited data. Section 4 then presents an outline and review of the facts and arguments in each chapter.

1. Metatheoretical background

In this section I discuss some of the metatheoretical background issues for the analysis developed through the rest of this dissertation. By 'metatheoeretical' I mean to capture the philosophical issues involved in both explicit and implicit linguistic theorization as it is applied to the description and analysis of languages like Tlingit. This section thus addresses some of the often unstated problems and assumptions in the ontology, epistemology, and metaphysics of studying Tlingit. Section 1.1 reviews the tradition of template or position class morphology and some of the problems it creates from implicit assumptions about how languages work. Section 1.2 reviews the concept of 'polysynthesis' and rejects its conceptual utility in the analysis of Tlingit and other Na-Dene languages. Section 1.3 reviews some previous approaches to Na-Dene verbs that model them as complex syntactic structures and compares these approaches to the one developed in this dissertation.

1.1. Templatic morphology

Tlingit and other Na-Dene languages are traditionally described with a template system, also known as a position class morphology or a 'slot-and-filler' morphology. In such systems there is an abstract word template that is used to catalogue the position and relative ordering of affixes in the verb.[7] Inkelas gives a good working definition: templates are "morphological systems in which morphemes or morpheme classes are organized into a total linear ordering that has no apparent connection to syntactic, semantic, or even phonological representation" (Inkelas 1993: 560). Rice further emphasizes that templates are not free orderings ("tossed salad") because affixes have fixed orders, but the ordering relation in a template must nonetheless be learned ab initio because there are apparently no a priori generalizations from other grammatical phenomena (Rice 2011: 189).

Templates appear early in the description of Na-Dene languages, with Goddard giving 7 positions for Hupa verbs (Goddard 1911: 112) and Boas the same number for Tlingit (Boas 1917: 22–24). Hoijer presents a table with 14 positions for the Southern Dene languages (Hoijer 1945b: 196), and this is echoed by e.g. Krauss on Eyak (Krauss 1965a: 171), Story on Tlingit (Story 1966: 74), Golla on Hupa (Golla 1970: 56), and Young on Navajo (Young & Morgan 1980, 1987; Young 2000). The extremely detailed templates published by Kari for Navajo, Ahtna, and Koyukon (Kari 1975, 1989, 1990, 1992, 1993; Kari in Jetté & Jones 2000) have been particularly influential for more recent descriptions whether for or against their richness (Hargus 1985; Rice 1989; Axelrod 1993; Bommelyn 1997; Cook 2004; Hargus 2007; Cook 2013).[8] Table 1.1 is a representative example of a template for Tlingit verbs.

7. Simpson & Withgott (1986) claim that the term 'template' was coined by Stanley (1969) for Navajo. Navajo is thus a prototype for templatic morphology regularly cited in discussions of the concept (Spencer 1991: 208–214).

8. For some comparisons of templates across the family see Rice 2000a and Vajda 2010.

Slot №	*Description*	*Morphemes*
+17 H	manner-μ_P	*g̲unayéi=* ~ *g̲unéi=*, *áa=*, *shóo=*
+17 G	location-$\acute{\imath}_P$	*héeni=*, *gági=*, *dáag̲i=*, *x̲áni=*, *gáani=*, *neilí=*, *ÿáni=*
+17 F	manner or location-$\{\ldots\}_P$	*k̲ut=*, *yux̲=*, *yaax̲=*, *héenx̲=*, *ux̲=*, *k̲wáak̲=*, *yatx̲*, *ÿanax̲=*
+17 E	location-$\{t, \underline{x}, dé\}_P$	*yan=*, *neil=*, *k̲ux̲=*, *haa^n=*, *yóo=*
+17 D	direction	*kei=*, *yei=*, *yeik̲=*, *daak̲=*, *daak=*
+17 C	manner	*yéi=*, *yóo=*
+17 B	mental	*ÿaa=*
+17 A	manner	*yoo=*, *ÿaa=*, *ÿax̲=*, *ÿax̲=*
+16	reciprocal and distributive	*woosh=* ~ *wooch=*, *dag̲a=* ~ *dax̲=*
+15	plural	*has=* ~ *s=*
+14	objects	*Ø*, *x̲at=* ~ *ax̲=*, *haa=*, *i-*, *ÿi-*, *ash=*, *ach=*, *a-*, *at=*, *k̲aa=*, *k̲u-*, *aa=*
+13	areal	*k̲u-*
+12	outer incorporates	*ÿaan-*, *k̲ee-*, *xee-*, *g̲ax̲-*, *hin-*, *sha.ax̲w-*, *yakw-*, *yee-*, *kanik-*, ...
+11	inner incorporates	*ji-*, *x̲'e-*, *tu-*, *le-*, *se-*, *daa-*, *duk-*, *tl'ik̲-*, *laka-*, *tuk̲-*, *wak̲-*, *s'ak̲-*, ...
+10	*y-* qualifiers	*ÿ-*, *ÿ-*
+9	*k-* qualifiers	*k-*, *k-*, *k-* ~ *g-*
+8	self-benefactive	*g-*
+7	outer conjugation	*g-*
+6	irrealis	*u-*, *w-*
+5	conjugation and aspect	*Ø*, *n-*, *g̲-*, *wu-*, *u-*
+4	modality	*g̲-*
+3	inner distributive	*dag̲-*
+2	subjects	*Ø*, *x̲-*, *tu-*, *i-*, *ÿi-*, *du-*
+1	classifier	*ÿa-*, *Ø*, *di-*, *da- si-*, *sa-*, *dzi-*, *s-*, *li-*, *la-*, *dli-*, *l-*, *shi-*, *sha-*, *ji-*, *sh-*
0	root	at least 3500 ($\sqrt{CV}$, $\sqrt{CV^h}$, $\sqrt{CVC}$, $\sqrt{CVC'}$, $\sqrt{CV'C}$)
–1	stem variation	*-ː*, *-^{h}*, *-$^?$*, *-ÿ*, *-n*
–2	repetitives and derivation	*-x̲*, *-k*, *-ch*, *-t*, *-t'*, *-x'*, *-s'*, *-l'*
–3	modality suffixes	*-k̲* ~ *-eek̲*, *-ní*, *-ín*
–4	tense	*Ø*, *-ín*
–5	clause type	*Ø*, *-i*, *-í*
–6	auxiliaries	*=nóok*, *=nooch*, *=noojín*, *=núkni*, *=g̲anúgún*

Table 1.1: Example of a verb template for Tlingit

From a purely descriptive perspective a template is a useful tool for charting the ordering of affixes and tracking their occurrences with each other. But from a theoretical perspective the template is inherently problematic (Spencer 1991: 214). Every effort to establish theoretical explanations or principles for templates (e.g. Simpson & Withgott 1986; Inkelas 1993; Hyman 2003; Nordlinger 2010; Good 2011, 2016) has been undermined by arguments that other mechanisms are necessary and sufficient to account for the same phenomena (e.g. Speas 1991; Stump 1992, 1993, 1997; McDonough 2000a; Caballero 2010; Korotkova & Lander 2010; Rice 2011; Gerner 2014; Guseva & Weisser 2018; Al Kaabi & Ntelitheos 2019; Banerjee 2019; Kastner 2019). At no point has any crosslinguistic formal theory of templatic morphology ever received widespread acceptance even though templates are used in the descriptive literature of many different language families.

Template morphology is a special case of the more general topic of affix ordering in morphology. Affix ordering can be motivated by grammatical or extra-grammatical principles. Manova & Aronoff (2010: 111) catalogue these and organize them into a typology that is repeated here in (7) and (8). They acknowledge the possibility of other unlisted extra-grammatical principles but also question the probability of their existence. Manova & Aronoff review some examples of each of these principles and point to further discussion in the literature (Manova & Aronoff 2010: 115–124).

(7) Grammatical principles of affix ordering

a. phonological: based on phonological structures and patterns
b. morphological: based on morphological information
c. syntactic: based on syntactic structure
d. semantic: based on meaning and interpretation (Manova & Aronoff 2010: 111)

(8) Extra-grammatical principles of affix ordering

a. statistical frequency
b. psycholinguistic processing and production
c. cognitive categorization
d. pragmatic speech-act context (Manova & Aronoff 2010: 111)

The crucial theoretical problem with template morphology is that none of the principles of affix ordering in (7) and (8) are at play in templates: although affixes are ordered in a template the ordering is inexplicable. This lack of principled affix ordering gives rise to a variety of other theoretical and analytical problems that lead to inadequate descriptions. I identify at least six issues in (9).

(9) Some issues with arbitrary affix ordering in templates

a. non-local relations have to be stipulated
b. dependencies between morphemes are arbitrary
c. phonological patterns are stipulated
d. individual affixes can be meaningless
e. null morphology is pervasive and unavoidable
f. forms are overgenerated

The issue in (9a) arises because templates are generally presented with only linear precedence relations and lack any kind of immediate or long-distance dominance relations. Templates are thus flat structures in contrast with hierarchical structures that have depth. Perversely, templates are usually presented as containing a root which implies a hierarchical relationship between base and affix, but this implication is generally ignored. Hierarchical structure provides an intrinsic explanation for syntactic categorization, semantic scope, and many other asymmetric relationships between elements in the system. Templates lack explanations for these phenomena without the addition of extra principles and machinery.

The issue in (9b) is that template models generally allow for arbitrary dependencies between affixes in the system. This means that any randomly chosen pair of morphemes in a template can in principle be specified for some kind of dependency, without any theoretical limit. Some possible dependencies include: a morpheme α requires the presence of a morpheme β, a morpheme γ blocks the presence of a morpheme δ, and a morpheme ε is interpreted uniquely with the presence of a morpheme ζ. Descriptions using template morphology present many different dependencies between morphemes but they generally cannot explain their presence or absence without additional mechanisms beyond the template. These dependencies arise naturally from hierarchically structured phonological, syntactic, and semantic representations. Conversely, templates also allow for systems with no dependencies between any morphemes. This contradicts the facts in every language where templates are used since there is no example of a templatic morphology without some dependencies between different elements. Hierarhical structures necessarily have asymmetric relationships between morphemes and thus do not predict the total absence of dependencies.

The issue in (9c) is that templates are generally defined without any reference to phonological phenomena. Consequently they do not offer any mechanisms for explaining things like phonological domains, syllabification, foot structure, phonologically motivated deletion or epenthesis, long-distance relationships like harmony, or attachment type (e.g. affix versus clitic). The way that templates present the morphological system also tends to obscure many phonological generalizations. In Tlingit for example, there is a remarkable lack of underlying fricative affixes between +10 and +1 in table 1.1 but the template does nothing to highlight this pattern. Similarly, there is no surface affrication between +10 and +1, but the template offers no explanation for why this should be so. Much of the research on verbal phonology in Na-Dene languages has been indirectly motivated by the template's lack of explanation for phonological phenomena, resulting in for example the domain-based approaches discussed earlier (p. 8) which are traditionally modelled as secondary dimensions on top of the template (e.g. Kari 1989).

The issue in (9d) is that templates frequently present with morphemes that are described as meaningless, existing only in combination with other morphemes. This is an analytical consequence of the arbitrariness of dependencies addressed in issue (9b). Because template models do not offer a cyclic, step-by-step mechanism for word building processes, there is no drive to analyze minimal forms. This is because a central assumption for template morphology is that "it is difficult or impossible to analyze the formation of such complex words as the addition of affixes one by one to a stem" (Spencer 1991: 208). Morphemes are not normally analyzed on their own and thus need not have an individual meaning identified for them. By assuming that morphology need not be concatenative, template models encourage the analysis of circumfixes and other non-concatenative structures where the individual elements may actually be independent. This leads to descriptions

where morphemes have no meaning on their own and thus an uncautious abandonment of the principle of compositionality.

The issue in (9e) is that templates necessarily entail the existence of zero morphemes; this was touched on earlier in the discussion on pages 4–7 and it is probably the most common criticism of template morphology. Templates cannot in principle differentiate between an empty position class and a position containing a null morpheme. This leads to null morphology without syntactic or semantic justification for its existence. For instance, the template for Tlingit in table 1.1 suggests that the activity imperfective in (10a) should actually be something like the analysis in (10b), though this representation still leaves out many other empty position classes.

(10) a. Xaxá. *transitive activity imperfective*
x- $\sqrt[2]{}$xa-H
1SG·S-$\sqrt[2]{}$eat-VAR
'I eat it.', 'I am eating it.'

b. Xaxá. *template-predicted null morphology*

Ø-	Ø-	Ø-	Ø-	Ø-	x-	Ø-	Ø-	Ø-	$\sqrt[2]{}$xa-H	-Ø	-Ø	-Ø	-Ø	
3·O-NSBEN-	REAL-	IMPFV-	NMOD-	1SG·S-	ACTV-	TRNS-	NSTV-	$\sqrt[2]{}$eat-	VAR-	NREP-	NMOD-	NPST-	MAIN	
+13	+8	+6	+5	+4	+2	+1D	+1S	+1I	0	−1	−2	−3	−4	−5

'I eat it.', 'I am eating it.'

The issue in (9f) is that templates generate potential forms that are not actually possible. Looking at various examples of verbs in this dissertation, it is striking that the majority have about five or six morphemes. This contrasts with the template in table 1.1 which has 30 positions. The typical Tlingit verb then has only around one fifth of the morpheme classes established by the template, a fact which is neither stated nor implied by the template representation. It is actually impossible to create a verb with every template position filled. The template thus predicts many potential verbs that should logically be ruled out, thus overgenerating a far larger paradigm than is actually possible.

Templates are sometimes excused as being the consequence of historical phenomena which by definition should be functionally irrelevant for synchronic analysis. Guseva & Weisser characterize this position as claiming that "while these templates emerge from outdated syntactic rules of a previous stage of the language, they bear no significant syntactic relevance synchronically" (Guseva & Weisser 2018: 1090). This position is unrealistic for Na-Dene languages because templates described across the family are all obviously consistent (Kari 1975, 1989; Rice 2000a: 401–405; Vajda 2001, 2010; Tuttle & Hargus 2004; Leer 2006). If affix ordering across the family was purely historical and of no consequence to synchronic grammar then we would expect a significant amount of variation arising from random perturbation in acquisition. Instead we find exactly the opposite: relative stability in affix ordering despite thousands of years of evolution, with only minor differences that are explained by phonological change (Hargus & Tuttle 1997; Tuttle & Hargus 2004). The consistent affix ordering in Na-Dene languages must be more than just a historical accident for it to be maintained intact over thousands of generations.

I agree with Rice (2000a: 11) in that Na-Dene templates are superficial epiphenomena that arise from language-specific networks of interaction between syntax, semantics, and phonology. Although the template in figure 1.1 is a useful fiction for organizing and viewing the order of affixes in the Tlingit verb word, I reject its ontological reality in the language. I argue instead that the apparent

templatic phenomena in Tlingit are an outgrowth of the syntactic structure and its relationship with semantics and phonology.

1.2. Polysynthesis

Na-Dene verbs are often described as 'polysynthetic' (e.g. Axelrod 1989; Fortescue 1992; Kibrik 1992; Rice 1993; Jung 1999; Rice, Libben, & Derwing 2002; Jelinek 2006; van Gelderen 2008). Researchers who use this term usually give no definition of it (Spencer 2004; Zúñiga 2019) and it seems to mean little more than 'verbs have lots of morphemes' (Murasugi 2014; Fortescue, Mithun, & Evans 2017; Haspelmath 2018). The concept of polysynthesis has hardly progressed at all from its original definition by Duponceau: "these complicated forms, which I call *polysynthetic*, appear to exist in all those languages, from Greenland to Cape Horn ... these forms appear to differ essentially from those of the ancient and modern languages of the old hemisphere" (Duponceau 1819: xxiii). I believe that the label of 'polysynthesis' has become a misleading distraction. Rather than confront the sentence-like properties of polysynthetic verbs across languages, many syntacticians view them as single unanalyzable lumps formed by inscrutable language-specific mechanisms. Consequently, such verbs are expected to have phonological and morpho-lexical explanations for their internal structure, and syntactic principles should be irrelevant. This leads to a circular blindness: if a phenomenon is not supposed to exist then researchers will not see it, and having not seen it researchers will believe it does not exist.

In the case of Na-Dene research, I believe that the special pleading of 'polysynthesis' reflects a deeper belief that the formation of verb words is essentially irregular, and hence that it cannot be coherently explained. This is rarely seen in print, but one example comes from Robert Young: "[The Navajo verb] often appears to be a hopeless maze of irregularities, and in reality it *is* irregular from our point of view" (Young & Morgan 1972: 40). Contributing to this belief is the rich and sui generis descriptive tradition established by early researchers like Jetté (1906), Morice (1907), Goddard (1909), Sapir (1914), and Boas (1917),[9] and later codified by Hoijer (1946a,b,c, 1945b, 1948, 1949) and Young (Young & Morgan 1943, 1980, 1987; Young 2000).[10] The peculiar vocabulary of this tradition – e.g. 'classifier', 'thematic', 'usitative', 'semitransitive', 'superaspect', 'areal' – makes the descriptions of Na-Dene languages inaccessible for purely artificial reasons. Furthermore, the unusual terminology and the convoluted descriptive framework have become reified as though they are the actual language rather than invented abstractions from linguistic phenomena. This can be seen in statements that emphasize the uniqueness of the family like "The classifier can justly be termed the hallmark of the Na-Dene languages" (Leer 1991: 94) when in fact morphological indicatiors of voice and valency are thoroughly documented around the world (McDonough 1989; Kibrik 1993, 1996; Thompson 1996; Rice 2000b; Legate 2014; D'Alessandro, Franco, & Gallego 2017). This reification calls to mind the Buddhist and Christian metaphor of confusing the finger pointing at the moon with the moon itself (Suzuki 1932: 193; Hipponensis 1995: 5); also compare Whitehead's fallacy of misplaced concreteness (Whitehead 1929: 64) and Korzybski's map-territory confusion (Korzybski 1933: 58).

I reject the ontological unity of polysynthesis, both in Na-Dene and in general. Just like my view on template morphology, I see the the phenomena labeled as 'polysynthetic' as a cluster of surface properties that arise from interactions between segmental, suprasegmental, metrical, and prosodic

9. For a history and chronology of early research on Na-Dene languages see Krauss 1980 and Krauss 1986.
10. For recent presentations of Na-Dene terminology see Kari 1989, Kari 1992, Axelrod 1993, and McDonough 2000b.

constraints on the phonological realization of large but entirely regular syntactic structures. I sympathize with Déchaine and with Barrie & Mathieu as quoted below, and I believe that Haspelmath captures exactly why this notion remains popular.

> Polysynthesis is at best a descriptive term for a constellation of surface properties which reflect the convergence of independent factors, some syntactic and some prosodic, whose net effect is to derive complex "words". (Déchaine 1999: 69)

> ... we view "wordhood" and the polysynthetic properties of such languages as a phonological phenomenon. (Barrie & Mathieu 2016: 1)

> I cannot help but feel that the notion of polysynthesis is primarily attractive because the languages concerned seem so exotic to linguists with a background in European languages. (Haspelmath 2018: 323)

Although a few theoreticians have taken a similar hard line against the existence of polysynthesis in formal syntactic theory, this position is apparently unpopular at present. Instead we see special principles or machinery – e.g. the Mirror Principle (Baker 1985), the Morphological Visibility Condition (Baker 1996) and the Pronominal Argument Hypothesis (Jelinek & Demers 1994; Jelinek 2006) – called upon to deal with the supposedly unique phenomena of polysynthesis while at the same time avoiding arbitrary templatic morphology (Murasugi 2014). I believe this arises from an implicit acceptance of polsynthesis as a descriptive fact rather than an emergent phenomenon, following directly from linguistic descriptions that assume the reality of polysynthesis. Instead, I claim that all of the purportedly polysynthetic phenomena in Na-Dene languages can be modelled successfully with ordinary generative syntax, ordinary constraint-based phonology, and ordinary compositional semantics. I demonstrate throughout this dissertation that no special theoretical principles and machinery are necessary for Tlingit.

1.3. Na-Dene verbs as syntactic structures

The analysis of Na-Dene verbs as syntactic structures is not particularly novel; there is a thread of research positing this that runs from at least the late 1980s through to the 2010s (Sandoval & Jelinek 1989; Speas 1990; Embick 1996; Willie & Jelinek 2000; Rice 2000a; Hale 2001, 2003; Rice & Saxon 2005; Harley 2011; Travis 2011). The most recent 'holistic' (see sec. 3.1) approach is that developed by Rice (Rice 2000a; Rice & Saxon 2005) which I review below, noting convergences and divergences with my approach.

Rice 2000a argues for the existence of a phrase structure within Dene verbs that is organized by semantic scope. Each morpheme is a syntactic terminal within a tree, and this tree is spelled out phonologically as a word: "the Athapaskan verb is a word from a phonological perspective but a phrase from a morphosyntactic perspective" (Rice 2000a: 5). The overall structure is presented only once as a schematic tree with no content (Rice 2000a: 28)[11] so it is difficult to evaluate the model for specific examples. A similar tree is presented in Rice & Saxon 2005 where again the tree is purely schematic and no specific examples are fitted into the model. The tree is formed entirely with binary branches, implicitly following the semantic Principle of Compositionality as reduced to binary (schönfinkelized, curried) function application.

11. This tree is accompanied by the incongruous statement "Part of this assumption is that the structure of the verb word is hierarchical rather than flat, or fanlike, in nature; I present no evidence for this" (Rice 2000a: 28).

In Rice's model the semantic scope relation between morphemes is the sole principle for the organization of the phrase structure tree that is spelled out as the verb in Dene languages:

> I argue that there is an overarching principle of scope, or semantic compositionality, that determines the ordering of morphemes within the verb of Athapaskan languages, and that requires morphemes of greater scope to occur in a fixed position with respect to morphemes within their scope. Specifically, in Athapaskan languages morphemes of greater scope appear to the right of morphemes within their scope. (Rice 2000a: 4)

The semantic scope relation is, in her model, represented in the syntactic structure by hierarchical dominance: "if a morpheme X has scope over a morpheme Y, then X must c-command Y" (Rice 2000a: 29). She does not address the left-to-right linear precedence relation noted above; linearization is unexplained in her account, though it could plausibly be a consequence of phonology given that most morphemes in the verbal complex are prefixes. Another significant issue is that the semantic effects of scope relations are not formalized because there is no formal representation offered for the semantic content of morphemes.

My approach to the syntax in the Tlingit verb is superficially similar to Rice's semantic approach for Dene verbs in that both argue for a regular structure that accounts for the morphological patterns. But the two approaches differ in several fundamental ways that make them incommensurate. Below I sketch five major differences between this semantic scope model and my syntactic model, but there are many more details that set them apart including the fact that the two analysis address different branches of the Na-Dene family.

The most significant difference between the semantic scope and syntactic approaches is that the syntactic approach is purely syntactic: the order of heads and phrases is due entirely to syntactic selection. This contrasts with Rice's approach which derives its ordering from semantic scope and which is therefore fundamentally semantic. A second difference is that the semantic approach predicts variation in morpheme order where no semantic scope relation exists. This is actually intentional because is meant to explain ordering variation across the family. But it erroneously predicts the same kind of variation within an individual language which certainly does not occur in Tlingit. The syntactic model derives semantic scope as a consequence of the syntax; structural asymmetries must exist regardless of whether they have semantic consequences, and these asymmetries will not vary for any given form. Variation in the syntactic approach is explained by the implementation of different grammars. Apparent reorderings in a single grammar – e.g. the realization of perfective *wu-* in *wutuwax̲áa* 'we ate it' versus *x̲waax̲áa* 'I ate it' – are explained by phonological processes that reflect syntactic organization but which are fundamentally irrelevant to the syntax so that the underlying affix order is identical.

A third difference between the semantic scope and syntactic models is that the semantic model has no account for stem variation. This gap is likely because stem variation is a purely syntactic agreement phenomenon and has no known consequences for semantics. By treating stem variation as a categorizing phenomenon, the syntactic approach naturally extends to similar phenomena found in nouns and consequently captures a fundamental structural parallelism between noun and verb domains that can be seen in noun stem variation such as the short high tone vowel in *a ká* 'its horizontal surface' versus the long low tone vowel in *a kaadé* 'toward its horizontal surface'.

A fourth difference between the semantic scope and syntactic models is that the semantic model

analyses the *d-* and *ł-* prefixes as realizations of a single complex V head. The syntactic model instead gives these as separate Voice and *v* heads. This predicts the possibility of one existing without the other which is impossible in the semantic scope model. In addition, the syntactic model provides a relatively straightforward explanation for the appearance of multiple heads with distinct semantic functions by recursive selection of phrases with the same category but different heads. These multiple phrases are straightforwardly associated with separate arguments because each phrase can host its own argument. In contrast, the head-multiplying approach in the semantic model instead must merge multiple argument structures in an ad hoc manner.

A fifth difference between the semantic and syntactic scope models is that the semantic model analyzes the subject and object prefixes as present in every form, implying that DPs outside of the verb word are not actually arguments. The syntactic model asserts a regular distinction between D pronouns and full DPs. Both D pronouns and DPs undergo movement, but DPs move further because of constraints on the verb word which is delineated by the phase for AspP. D and DP arguments are selected in exactly the same way, rejecting the Pronominal Argument Hypothesis and the Polysynthesis Parameter that are implicitly still possible with the semantic scope model. In addition, the syntactic model avoids the use of Agr heads whose sole purpose is to host the argument prefixes, instead merging the two core arguments in the syntactically unremarkable positions of Spec-VP and Spec-*v*P. Both the surface order of Obj > Subj and the surface appearance of VP-internal subjects are derived by regular DP movement without needing to distinguish between different classes of argument.

Hale offers another recent 'holistic' (sec. 3.1) approach to formalizing the internal syntax of verb words in Navajo (and implicitly other Dene languages). His system never received a full presentation and is only seen through a series of articles that treat the overall problem with a sensitivity to the many lexical issues but unfortunately lacks exemplification of the details due to its fragmentary presentation (Hale & Platero 1996; Hale 2000, 2001, 2003). Both Hale's model and my own are structured by syntactic selection rather than semantics. Hale assumes that the functional projections are left-headed as in my own model, in contrast with Rice's model where the functional projections are right-headed and consequently reordered by head movement to higher positions. Hale also adopts selection as the explanation for semantic relationships between the stem and other elements in the structure. But he introduces a reordering mechanism akin to a template that is meant to explain the different positions of these elements where my model instead resolves them on the one hand by DP and PP movement and on the other hand by agreement. Hale does not split Voice and *v*, adopts the Pronominal Argument Hypothesis (Hale 2003: 25), does not account for stem variation, and like Rice focuses on complex rather than simple structures which in my opinion cloud the presentation of phenomena. All in all Hale's model is much closer to mine than Rice's, but both show significant differences in the details and theoretical assumptions that make them fundamentally incompatible with my own model.

2. Major concepts

In this section I identify three major concepts that drive my analysis of the syntax in Tlingit verbs. These three concepts can be summarized by three slogans, each of which is detailed in its own subsection: (i) roots encode lexical contrasts (sec. 2.1), (ii) functional heads are multifunctional (sec. 2.2), and (iii) morphemes saturate or restrict events or arguments (sec. 2.3).

The slogan in (i) reflects how I believe the Tlingit lexicon functions. I argue that the root is the primary locus of all lexical specification and that lexical entries are consequently a single morphological unit. This contrasts with the traditional approach where a lexical entry is a complex, discontinuous morphological structure ('verb theme') that is interleaved with inflectional material (e.g. Kari 1992; Cable 2010).

The slogan in (ii) is a consequence of my root-based approach. What were previously analyzed as meaningless or only vaguely meaningful parts of a complex lexical entry must now be analyzed as independent elements in the syntax. The syntactic and semantic effects of these elements are predictably modulated by the lexical properties of roots and to a lesser extent other material in the syntactic structure. The net result of this is that each functional head displays a range of syntactically and semantically related functions that are contextually determined rather than lexically specified.

The slogan in (iii) unifies the multifunctionality across two variables of saturation versus restriction and event versus argument. The panoply of functions across the many different heads thus falls out of a consistent metatheoretic organization, giving rise to diversity from a set of relatively simple primitives.

2.1. Roots encode lexical contrasts

A central claim of this dissertation is that the root √ is the primary lexical entry for all verbs in Tlingit. Roots are minimally specified for phonological form and encylopedic meaning. Thus a root like √*x̲a* 'eat' has a lexically specified phonological form of /χa/ and a lexically specified encyclopedic meaning of eat(ε), i.e. an eventuality ε of eating. No root can lack either specification, so that soundless roots and meaningless roots do not exist. But all roots in Tlingit are lexically specified for more than just sound and meaning. Maximally a root may be specified for all of the following properties:

(11) a. phonological form
b. encylopedic meaning
c. valency (basic argument structure)
d. qualification of entities
e. durativity or instantaneity of the eventuality
f. stativity or dynamicity of the eventuality
g. stem variation selection
h. conjugation class
i. motion (location and path)
j. irrealis status of the eventuality

I summarize each property below, but an extensive overview of these properties is given in chapter 2 with further details on specific issues in later chapters. Some of these properties are essentially universal phenomena such as valency and durativity, but others are apparently unique to Tlingit and other Na-Dene languages such as conjugation class and stem variation selection. All of these lexically specified properties can be manipulated or superseded by derivational operations. In every case the diagnostic criteria for lexical specification rest in morphologically minimal forms where there are no identifiable derivational operations that could mask the properties of the lexical entry.

Valency is the lexical property that determines the number of entities required to be represented in a verbal structure. Roots can be nullivalent, monovalent, or bivalent, meaning that they require zero, one, or two entities in the structure. Root valency is diagnosed by argument structure in forms without an overt *v* head and without Voice; in this context the argument structure is otherwise unpredictable by the syntax and semantics. A nullivalent root will be ungrammatical without overt *v*, a monovalent root will form an intransitive without overt *v*, and a bivalent root will form a transitive without overt *v*. The addition of overt *v* can then add an argument, and the addition of overt Voice likewise can suppress an argument. The valency of a root thus determines the basic set of arguments available in a derivation, but argument structure can be further modified by the operation of higher functional heads.

Qualification is the restriction of physical characteristics (qualia) of an entity. Na-Dene languages are known for their classificatory verbs that indicate qualia like shape, solidity, and quantity among other phenomena (Hoijer 1945a; Krauss 1968; Witherspoon 1971; Carter 1976; Axelrod 2000; Willie 2000; de Reuse 2001; Meek & Jules 2001; Fernald 2002; Poser 2005), and Tlingit is no exception (Dauenhauer & Dauenhauer 1971, 2002; Leer, Hitch, & Ritter 2001). There is for example no generic verb for 'give' in Tlingit; a speaker must instead select a particular 'handle' root that is appropriate to the particular qualia of the object. Each handling root corresponds to different qualia such as 'long', 'empty', or 'fabric-like'. This is not predictable from any phonological, syntactic, or semantic properties, so it must be encoded in the lexical entry of the root.

Durativity is a semantic property of an eventuality where the eventuality takes time to complete rather than being perceptually instantaneous. This semantic property is reflected in the syntax by the availability of a basic imperfective aspect form based on the root. Some roots support a basic imperfective aspect form but others do not, and this cannot be predicted from any other phonological, syntactic, or semantic properties. Thus for example the root $\overset{2}{\sqrt{}}$*hun* 'sell' is lexically specified as durative and so can be used in an imperfective aspect form like (12a), but the root $\overset{2}{\sqrt{}}$*.u* 'buy' is lexically specified as instantaneous (non-durative) and so cannot be used in an imperfective aspect form like (12b).

(12) a. Téel x̲ahoon. *imperfective*
[tʰíːɬ χà.ˈhùːn]
téel x̲- $\overset{2}{\sqrt{}}$hun-μ
shoe 1SG·S-$\overset{2}{\sqrt{}}$sell -VAR
'I am selling shoes.'

b. *Téel x̲a.oo. **imperfective*
[tʰíːɬ χà.ˈʔùː]
téel x̲- $\overset{2}{\sqrt{}}$.u -μ
shoe 1SG·S-$\overset{2}{\sqrt{}}$buy-VAR
intended: 'I am buying shoes.'

Stativity is a semantic property of an eventuality where the eventuality is stable over time rather than involving dynamic change in the world. This semantic property is reflected in the syntax by the presence of the stative *i-* prefix as the Ɛ head in a basic imperfective aspect form. Some roots require *i-* in the imperfective aspect whereas others do not, and this cannot be predicted from any other phonological, syntactic, or semantic properties. For example, the root $\overset{2}{\sqrt{}}$*hen* 'claim' is lexically

specified as stative and so requires *i-* in its imperfective aspect forms as in (13). In contrast, the root $\sqrt[2]{}$*.ak* 'weave' is lexically specified as dynamic (non-stative) and so prohibits *i-* in its imperfective aspect forms as in (14).

(13) a. Yá k̲ákw x̲ayahéin. *state imperfective*
[já qʰákʷ ˌχà.jà.ˈhéːn]
yá k̲ákw x̲- i- $\sqrt[2]{}$hen -μH
PROX basket 1SG·S-STV-$\sqrt[2]{}$claim-VAR
'I claim this basket.'

b. *Yá k̲ákw x̲ahéin. **activity imperfective*
[já qʰákʷ χà.ˈhéːn]
yá k̲ákw x̲- $\sqrt[2]{}$hen -μH
PROX basket 1SG·S-$\sqrt[2]{}$claim-VAR
intended: 'I am claiming this basket.'

(14) a. *Yá k̲ákw x̲aya.áak. **state imperfective*
[já qʰákʷ ˌχà.jà.ˈʔáːk]
yá k̲ákw x̲- i- $\sqrt[2]{}$.ak -μH
PROX basket 1SG·S-STV-$\sqrt[2]{}$weave-VAR
intended: 'I weave this basket.'

b. Yá k̲ákw x̲a.áak. *activity imperfective*
[já qʰákʷ χà.ˈʔáːk]
yá k̲ákw x̲- $\sqrt[2]{}$.ak -μH
PROX basket 1SG·S-$\sqrt[2]{}$weave-VAR
'I am weaving this basket.'

Stem variation is the regular, paradigmatic change in length, tone, and sometimes quality of vowels in the verb stem. This is represented syntactically by the value of V as e.g. *-μH* for a long vowel with high tone, *-μ* for a long vowel with low tone, and *-H* for a short vowel with high tone. In most contexts stem variation is predictable from combinations of lexical and grammatical properties such as grammatical aspect, conjugation class, and phonological form of the root. But in basic imperfective aspect forms the selection of stem variation is mostly unpredictable. For example, the root $\sqrt[2]{}$*hun* 'sell' in (12a) above is lexically specified for *-μ* stem variation in its imperfective aspect form whereas the root $\sqrt[2]{}$*.ak* 'weave' in (14b) above is lexically specified for *-μH* stem variation. In other contexts it is possible for $\sqrt[2]{}$*hun* 'sell' to occur with *-μH* and for $\sqrt[2]{}$*.ak* 'weave' to occur with *-μ*, but not in their basic imperfective aspect forms. Since no other lexical properties and no other syntactic relations determine the selection of stem variation in this context, it must be lexically specified in the root.

Conjugation class is the requirement in certain verb forms for one of the three prefixes *n-* /n/, *g̲-* /q/, or *g-* /k/ or the absence of these prefixes as *∅*. Conjugation class membership also indirectly determines other kinds of allomorphy such as the selection of the *u-* /ù/ versus *wu-* /wù/ prefixes in the perfective aspect, the selection of *ÿaa=* /jàː/ 'along', *yei=* /jèː/ 'down', or *kei=* /kʰèː/ 'up' preverbs in progressive and prospective aspect, the selection of a repetitive suffix in some iterative forms, and the selection of stem variation in otherwise unrelated contexts. In motion verbs conjugation

class is predictable from path specifications ('motion derivation'), but in other verbs it is essentially unpredictable. Although there are some correlations between conjugation class and other syntactic and semantic properties, none of these correlations is strong enough to determine conjugation class. As such, many roots must be lexically specified for conjugation class.

Motion is the change of location of an entity over time. Verbs of motion in Tlingit characteristically require a path or location argument PP in addition to the argument structure of other verbs. The selection of a particular postposition in the path PP is partly dependent on the grammatical aspect, reflecting a kind of adpositional aspect (cf. Zwarts 2005). Motion verbs also show variation in conjugation class expression that is dependent on the path argument rather than on the lexical entry. There are no phonological, syntactic, or semantic properties that can be used to predict whether a given root is a motion root or not, so this information must be lexically specified.

Irrealis is the property of an eventuality where its world is disjoint with the actual world. This overlaps with other semantic phenomena like negation, modality, and futurity, but irrealis is morphologically distinct from these other phenomena in Tlingit. Most contexts where irrealis marking (*w-* or *u-* in Asp) is required are grammatically determined and hence predictable from other syntactic operations. In these contexts irrealis can seem like a kind of agreement with e.g. negation or dubitativity. But a number of roots require explicit irrealis marking in much the same way as stative roots require explicit stative marking. These roots have encyclopedic meanings that are intuitively associated with unreal worlds such as conation (attempting), resemblance, and negative evaluation. But there are many roots with similar meanings that do not require irrealis marking, and there are no other phonological, syntactic, or semantic properties that are reliably associated with the lexical requirement for irrealis marking. The only alternative is lexical specification for irrealis by the root.

Structures larger than roots may be stored in the lexicon, but these structures must be modelled as partial syntactic derivations. For example, I analyze invariable stems as lexicalized combinations of √ and V, and thus as lexicalized VPs (ch. 2 sec. 2 and apx. B sec. 3). Many apparently idiomatic and discontinuous combinations of incorporated nouns and roots are also analyzable as VPs stored in the lexicon. This is because although the object prefix complex (including incorporated nouns and qualifiers) surfaces in AspP above the aspectual prefixes, it is initially merged as a complement of VP (ch. 2 sec. 1.1 and ch. 7 sec. 1). Thus although the object prefix and other material appears to be discontinuous with the root, it in fact forms a constituent with the root early in the derivation. Such structures are then equivalent to verb-object idioms in other languages. Setting aside these atypical patterns, the vast majority of verbs can be analyzed with a single root-derived lexical entry.

2.2. Functional heads are multifunctional

The the verbal structure contains a number of distinct functional heads, namely Asp, Voice, *v*, and Ɛ. All of these heads are multifunctional with their syntactic and semantic behaviours dependent on context. To give one example, *v* head has two distinct functions: adding an argument to the derivation (ch. 4 sec. 3) or restricting the interpretation of an argument (ch. 4 sec. 4). The argument adding function of *v* is shown in (15) with an intransitive without *s-* /s/ and a causative with *s-* based on a monovalent root.

(15) a. Héen woodaa. *intransitive*
[héen wù.ˈtàː]
héen wu-i- $^{1}\sqrt{}$da -μ
water PFV-STV-$^{1}\sqrt{}$flow-VAR
'The water flowed.'

b. Héen wutusidaa. *causative with s-*
[héen wù.ˌtʰù.sì.ˈtàː]
héen wu-tu- s- i- $^{1}\sqrt{}$da -μ
water PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$flow-VAR
'We made the water flow.'

The meaning restricting function of *v* is shown in (16) with a contrast between two transitives based on a bivalent root. Here the unqualified form in (16a) can be applied to any singular entity whereas the qualified form in (16b) can only be applied to a long entity, i.e. one that is extended along one axis in space.

(16) a. Té wutuwagéex'. *unqualified object transitive*
[tʰé wù.ˌtʰù.wà.ˈqíːx']
té wu-tu- i- $^{2}\sqrt{}$gix' -μ
té PFV-1PL·S-STV-$^{2}\sqrt{}$throw·SG-VAR
'We threw a rock.'

b. Shaak wutusigéex'. *extended object transitive with s-*
[ʃàːq wù.ˌtʰù.sì.ˈqíːx']
shaak wu-tu- s- i- $^{2}\sqrt{}$gix' -μ
driftlog PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$throw·SG-VAR
'We threw a driftlog.'

Both (15) and (16) have the same syntactic structure with the same *s-* in *v*, but the different roots give rise to different functions of *s-*. This multifunctionality of heads is pervasive in Tlingit; it is implicit in previous descriptions but it has never been explicitly defined or even commented on before. I demonstrate the functions listed in (17) for each functional head in the verbal structure in chapters 3 through 6.

(17) a. Ɛ (ch. 3) – lexical state, grammatical state, derived state
b. *v* (ch. 4) – argument addition, entity qualification, eventuality qualification, pejorative
c. Voice (ch. 5) – antipassive, passive, middle (argument coreference)
d. Asp (ch. 6) – grammatical aspect, conjugation class and spatial orientation

The multifunctionality of *s-* in (15) and (16) is determined by the root, specifically involving each root's qualification behaviour. Many other functional splits are similarly dependent on the root, but this is not always the case. For example, the grammatical aspect function of the *n-* conjugation prefix in Asp is entirely independent of the root lexical specification; *n-* appears in all progressive aspect forms regardless of the conjugation class specified by the root (ch. 6 sec. 3.5.2).

The conditioning factors for some functions are still unkonwn so we cannot yet generalize about their sources, but my impression is that there is a basic split between lexical (root-based) and grammatical (structure-based) determination of function. In one or two unusual cases there may be a 'phonological' determination of function due to allomorph selection; this is still poorly understood but would arise from phonological constraints on allomorphy (e.g. *s-* → *l-* with coronal affricates and fricatives in the stem) that are also interpretable as syntactic or semantic differences.

The multifunctionality of functional heads described here suggests that functional heads elsewhere could also be multifunctional. There are scattered hints in the documentation which imply that this is actually the case. For example, clause type is regularly indicated by a suffix *-í* in C for adjunct clauses and some kinds of complement clauses. A phonologically identical suffix can be found in some denominal main clause verb forms where it seems to be associated with possession, e.g. *lijín-i* [ɬì.ˈtʃí.nì] 'it has a hand, arm, sleeve'. Another phonologically identical suffix appears in DPs where it indicates possession of an alienable noun like in *téel* 'shoe' vs. *ax̲ téel-i* 'my shoe', or possession of an alienated inalienable noun such as *ax̲ jín* 'my hand' vs. *ax̲ jín-i* 'my (severed) hand, paw (of animal)'. Similarly, the *-ín* in T indicates past tense (cf. Cable 2017c), but there is also a suffix *-ín* in some temporal adverbs like *gwátk* [kʷátk] 'when (past)' vs. *gwátg-een* [ˈkʷát.kìːn] 'when (future)' and *seig̲án-ín* [sèː.ˈqá.nín] 'tomorrow' where it seems to be associated with futurity.

2.3. Morphemes saturate or restrict events or arguments

There are two kinds of syntactic and semantic phenomena which recur throughout my analysis of Tlingit verbal structure that I summarize by the labels 'saturation' and 'restriction' following Chung & Ladusaw (2004). **Saturation** is the assignment of a value to a variable during computation which thus "removes an incompleteness, yielding a complete thought (a proposition)" (Chung & Ladusaw 2004: 3). **Restriction** is the introduction of a property that must be true (or 'hold') for some variable without the assignment of a value to that variable. Saturation introduces a total constraint on the identity of a variable whereas restriction introduces only a partial constraint on the identity of a variable.

All morphemes in Tlingit verbs either saturate or restrict. Saturation and restriction can operate on two kinds of variables, namely entity variables and eventuality variables.[12] Thus a given morpheme can do any of four things: (i) saturate an entity variable, (ii) restrict an entity variable, (iii) saturate an eventuality variable, and (iv) restrict an eventuality variable. Entity variables are structurally represented in the syntax by arguments, but eventuality variables have no corresponding structural representation. This means that any given morpheme may have an overt syntactic effect by manipulating argument structure or it may lack an overt syntactic effect because it applies to the purely semantic eventuality. A primary task for the analysis of each morpheme then is identifying whether it can have an effect on argument structure or not. If it does, then the next question is whether the morpheme saturates or restricts the entity variable qua argument. If it does not, then the next question is whether the morpheme saturates or restricts the eventuality. For every verbal morpheme investigated in this dissertation, I at least determine whether it saturates or restricts entities. Most questions about eventualities are still unasked and hence unanswered.

We can view the multifunctionality of functional heads discussed in section 2.2 through the lens of saturation and restriction. One example is the function of *d-* in Voice. As listed in (17), this head

12. Eventualities are the set theoretic union of states and events, which are conventionally held to not overlap.

can indicate an antipassive, a passive, or a middle voice structure. Middle voice reflects argument coreference where two arguments have the same referent; the canonical example is a reflexive where the subject and object refer to the same entity (ch. 5 sec. 5). Both antipassive and passive operations involve the suppression of an argument: the object is suppressed in antipassives and the subject is suppressed in passives. These can be analyzed as kinds of saturation where the (anti)passive operation saturates the argument position, preventing any further introduction of syntactic elements for that argument. In contrast the middle operation can be analyzed as a kind of restriction on the argument, introducing a constraint that the argument is coreferential with some other argument. Unlike the *d-* in Voice of antipassives and passives, the argument position is not saturated by the *d-* in Voice of middles because there is an overt morpheme like reflexive *sh=* or reciprocal *woosh=* that appears in the expected argument position.

The analysis of *v* introduces a novel concept alongside saturation and restriction, namely addition. The appearance of an overt *s-*, *l-*, or *sh-* in *v* can signal the addition of an argument in the derivation. This gives rise to causatives and applicatives among other structures (ch. 4 sec. 3). Argument addition seems to be the logical opposite of saturation: where argument addition introduces incompleteness, argument saturation removes incompleteness. From a semantic perspective the argument addition operation introduces a new entity variable and relates it to the eventuality with some thematic role (causer, instrument, etc.). This can be thought of as a kind of restriction, specifically restriction of the eventuality by intersective modification. The conceptual problem then is how to reconcile the addition of structural possibility in the syntax with the restriction of interpretation in the semantics. I only identify this problem here and do not offer a solution; naively it seems that further formalization of the syntax and semantics will lead to an explanation.

3. Methodology

In this section I discuss some of the methodological issues in the collection and presentation of Tlingit language data in this dissertation. I have a methodological approach to the language that I label 'holistic' which I explain in section 3.1. Data in this dissertation come from a wide variety of sources which are detailed in section 3.2. Finally, all the data are presented in a standardized manner using morpheme segmentation and glossing that are outlined in section 3.3.

3.1. Holistic approach

The descriptions and analyses of phenomena in this dissertation are all based on rich, detailed data sets that taken together cover the vast majority of verbal phenomena in Tlingit. This depth and breadth is not an accident; it instead reflects what I call a 'holistic' approach to grammatical description and formalization. Rather than focus on a few conceptual problems, I have tried to exhaustively account for all of the known phemomena in the Tlingit verb including many patterns that are known only from a few lexical entries. I include relatively complete descriptions of phenomena even when they do not (yet?) fit into the theoretical model developed in this dissertation. My motivation for the holistic approach is fivefold: (i) many grammatical phenomena in Tlingit are underdescribed, (ii) interactions and interrelations between grammatical phenomena are not well detailed, (iii) the documentation is difficult for non-specialists to assess and interpret, (iv) clear explication is necessary for successful language learning and revitalization, and (v) I am trying to become fully fluent in the language. The latter is probably the most significant factor in my approach.

This holistic approach to the morphosyntax necessarily complicates the grammatical analysis because it greatly enlarges the problem space. But this particularism also has many practical benefits for research. For example, the theoretical drive for conceptual simplicity of models demands that the formalization account for apparent exceptions through general mechanisms: every special-case mechanism complicates the formal model. The result of this is that with sufficient scrutiny many supposedly irregular phenomena turn out to be extensions of regular phenomena. This then leads to the prediction and discovery of undocumented or underdocumented grammatical patterns, so directly benefiting the documentation and description of the language as well as posing novel questions for theoretical investigation. Throughout this dissertation I repeatedly note areas where the documentary record has gaps in coverage and it is precisely the combination of a holistic approach and a theoretical formalism that has fed the discovery of these documentary gaps, thus leading to better documentation. My work in this dissertation thus stands as an exemplar for how research situated in a theoretical program can drive the improved documentation and description of an endangered language.

3.2. Sources of data

The Tlingit language data in this dissertation all come from roughly the same time period: unless otherwise indicated by citations, all data come from the 20th century. Furthermore, the vast majority of the data are from the 1970s onward, thus reflecting the speech of the last two generations of L1 speakers. The data also come from a variety of sources and geographical areas. Tlingit has a basic division between Northern, Southern, and Tongass dialects (apx. A sec. 3); nearly all of the data are from the Northern dialect with only a few explicitly noted exceptions where dialect differences are grammatically significant. Within the Northern dialect, most of the data represent the coastal Northern varieties but some reflect inland Northern varieties depending on the source or consultant. My own dialect is the Transitional variety of coastal Northern Tlingit in Wrangell, Alaska. Although there is some synchronic structural variation among the dialects, there are no signficant structural differences between dialects in the data presented here that would have consequences for the analysis except where specifically indicated.

Much of the data in this dissertation is drawn from the extensive but mostly unpublished lexicographic documentation of Tlingit. This material consists primarily of Leer's manuscript stem collection (circa 8000 pp. in Leer 1973a), his manuscript verb inventory (circa 900 pp. in Leer 1976a), and his other various descriptive collections (Leer 1972, 1974a,b,c, 1975a,d, 1978b,c,d, 1979c). An example of this lexical documentation is shown in figure 1.5 which is page 151 from Leer 1976a; the annotations in a different hand are by L1 speaker *K'óox* Johnny Marks who added explanatory commentary and notes on cultural background to a large fraction of the document. Leer's materials notably include all the data from the *Tlingit verb dictionary* (Story & Naish 1973) but for easier reference I have directly cited forms from this source. Other major lexicographic sources of data are the *Online Tlingit verb dictionary* (Eggleston 2017) and the *Dictionary of Tlingit* (Edwards 2009).

Textual documentation of narrative, oratory, and songs provides a minor amount of supporting data in this dissertation. The textual documentation of Tlingit is vast; see appendix A section 5 for discussion and details. Other than a few examples of rare or archaic phenomena, the textual documentation used to support the analysis in this dissertation is limited to materials recorded from the 1960s to the 2000s and thus represents the lived experience of the current native speaker popula-

nâa yéi shewdi.oo got dressed dressed properly.
ayaawa.oo put it aside, laid it away — put in (for safekeeping) safe place for future use — clan hat, shirt, blanket.
yat aawa.oo } had a child — just had baby recently
a tóox akiwli.oo fit it into it — didn't normally
a tóox sh kuwdli.oo fit into it, changed into it
gux kóot sh kuwdli.óo made self a slave
needlessly, over work ones self, as a slave.
To lower ones self from a high position.
.uw* ~ .u'
a.ôow is buying them/it (pl.) — is continually buying
aawa.oo bought it — purchase. (n-inv.)
yaa ana ~úw (prog.) continually buy
aawa.úw bought them (completive) purchase a
yax ayawsi.úw bought them all — like all the
wudi.oo bought thing(s) buy from a grocery
ách awsi.oo gave it (ách) to him
to take away, traded
for it with it (ách) long ago,
they use to trade for songs
.u'w·ch'an
(ya)dudli.ówch'án is easily sold — bread
is easily sold — bacon, eggs, and things you
would normally think would take a long time
to sell.

Figure 1.5: Example of lexicographic documentation from Leer 1976a (p. 151)

tion. In addition to the textual documentation, a few forms are sourced from language learning and teaching materials (e.g. Naish & Story 1963b,c,d; Dauenhauer 1972; Dauenhauer & Dauenhauer 1999, 2000, 2002; Leer 2007).

The remainder of the data in the dissertation can be characterized as either elicited language, learned language, or unverified hypothetical forms. Elicited language forms were collected using a variety of formal and informal linguistic elicitation techniques. Formal linguistic elicitation involves a structured interaction between a researcher and a consultant where a planned set of linguistic forms are tested for grammaticality and felicity in context. Informal linguistic elicitation is a spontaneous, unstructured activity where the language is used productively with consultants who are occasionally asked questions about language forms. These questions may be translation tasks, explanations of contextual dependency, testing of alternative forms, and requests for comment on forms that the consultants have produced. Formal linguistic elicitation is the typical fieldwork activity of linguists whereas informal linguistic elicitation is the typical practice of language learners. As a linguist I have engaged in formal linguistic elicitation with specific native speakers, and where possible I have cited these individuals. As a language learner I have also engaged extensively in informal elicitation as well as practical use of the language in conversation, narrative, and public oratory. Be-

cause this kind of elicitation is spontaneous and uncoordinated, it is often difficult or impossible to cite particular consultants. Nonetheless my confidence in learned language from this environment is perhaps even higher than my confidence in formally elicited material simply because informal elicitation is a more realistic approximation of actual use: successfully using a given form in different environments with different speakers is in many ways a stronger form observational evidence than a single person's grammaticality judgement in an artificial environment.

All of these sources of data are necessarily insufficient to completely document the language simply because every language's grammar generates an infinite variety of possible forms. In analyzing the grammar and writing this dissertation I have occasionally come across possible forms which have not been previously documented but which are nonetheless predicted by the accumulated descriptions of the language. These hypothetical forms are explicitly marked off by a symbol '※' (contrast ungrammatical '*'). Crucially all such forms are expected to be grammatical; some may simply be underdocumented despite occuring in everyday speech, but others may require subtle or elaborate contextualization for felicity. I include discussion of the specific problems associated with these hypothetical forms in each case.

3.3. Segmentation and glossing

Tlingit data in this dissertation are segmented and glossed with a consistent system that reflects current understanding of the underlying morphological patterns. Phonological representations of segmented morphemes mostly follow the models of Leer 1991 and Cable 2006. A major difference is the avoidance of predictable *a* [à] vowels in verb prefixes; this predicts a system of epenthesis rather than the syncope described by Cable 2006. The stem variation morphology is also formulated differently from Leer 1991; see appendix B for details.

Segmented and glossed material is usually presented in a four-line format as shown by the example in (18). The first line in (18) is given in the orthography, usually without any segmentation. The second line in (18) gives the underlying morpheme representations with complete segmentation for verbs, focus particles, and most nominal morphology. Noun stems can be analyzed with stem variation similar to verb stems, but for simplicity this level of detail is usually omitted. The third line in (18) provides glosses for each element in the second line. Nouns and verb roots are given with English equivalents, but other elements are represented with an abbreviated standardized gloss that is identical for every occurrence of the morpheme. See page xxii for a list of abbreviations used for glosses. The fourth line in (18) is an English translation that is closely approximates the meaning in Tlingit. English translations may occasionally be awkward because they track Tlingit structure, but this should not be taken to imply anything about the felicity of the Tlingit form.

(18) Deenáa k̲u.aa áwé yéi x̲waajée yá dleey awus.eeyí.

Deenáa k̲u.aa á -wé yéi= u- x̲- i- $^{2}\sqrt{}$ji^{h} -μH yá dleey a- wu-s- $^{1}\sqrt{}$.i -μ -í

[$_{DP}$ NAME] CONTR FOC-MDST thus=IRR-1SG·S-STV-$^{2}\sqrt{}$think-VAR [$_{CP}$ [$_{DP}$ PROX meat] ARG-PFV-CSV-STV-$^{1}\sqrt{}$cook-VAR-SUB]

'It was Deenáa however who cooked it, this meat.'

Segmentation of individual morphemes is done with the conventional '-' for an affix and '=' for a clitic. Roots are explicitly marked with a preceding root symbol '√'; the superscript number pre-

cedingv this symbol indicates valency as discussed in chapter 2. If an element formed from morphemes α and β is left unsegmented (usually for space reasons) then it is glossed as 'α.β', thus e.g. *ásíwé* 'FOC.DUB' for the combination of a focus particle and a dubitative marker. Some elements may have lexical properties that are not obvious from the surface or underlying forms, and when it is necessary to explicitly indicate these they are set off with a colon like *jín* 'hand:INAL' for the noun 'hand' which is inalienable. Elements whose gloss must be given with multiple gloss units have these separated by a middle dot as in *jánwu* 'mtn·goat' for the noun representing a mountain goat (*Oreamnos americanus* Blainville 1816).

Some Tlingit data are presented in a phonetic transcription form as well as (or occasionally instead of) the orthographic representation. All such phonetic transcription is done using the International Phonetic Alphabet (International Phonetic Association 1999; Ball 2001), occasionally supplemented by a few diacritics from standard extensions (Duckworth et al. 1990; Ball, Esling, & Dickson 2018; Ball, Howard, & Miller 2018). When a phonetic transcription is given in addition to the orthography the phonetic transcription appears on the second line of an example as seen earlier in e.g. (15). Following customary practice, forward slashes /…/ are used for abstract phonological representations and square brackets […] for phonetic transcriptions, but most phonological representations are given using italic forms in the orthography.

Ungrammatical forms are marked with an asterisk '*'.[13] Forms with a questionable or uncertain grammaticality are marked with a question mark '?'. These may be combined to indicate various shades of grammaticality status, but I do not adopt any principled approach to gradient judgements of grammaticality. Forms that are unexpected or remarkable in the context of the discussion are indicated with a '!'. As noted in section 3.2, forms which are hypothetical and unverified are indicated with '※'. Finally, forms that are grammatical but semantically infelicitous in a given context or which are otherwise nonsensical (and so are infelicitous in any context) are indicated with '#'.

3.4. Errors

It is impossible to ensure that there are no errors in the data, presentation, or discussion. I have tried hard to ensure that the Tlingit data are accurate, but there may still be typos, mistranscriptions, or misinterpretations lurking somewhere for which I take complete responsibility. It is impossible to amend the official copy of the dissertation filed with UBC, but I will continue to accept corrections and will compile them into a separate errata list.

Data cited from previous materials may include errors in their original transcriptions. Notably, the materials from Story and Naish feature some regular errors in orthographic representation (Leer p.c. 2011). One prevalent example of this is their consistent (and ungrammatical) representation of long vowels for some verb prefixes such as ⟨woodoowahíxw⟩ for *wuduwahíxw* 'people bewitched him/her' (Story & Naish 1973: 29.199) and ⟨agooxlas'óow⟩ for *aguxlas'óow* (Story & Naish 1973: 47.496). These errors in earlier data have been silently corrected. Most translations of verbs from earlier materials take extensive liberty with English equivalence, giving e.g. *wuduwahíxw* as "she's bewitched" (Story & Naish 1973: 29.199) where it is more literally 'someone/people/they bewitched him/her/it'. I have usually given more literal translations without comment, but where the original translation is significant to the analysis I have given it as an addendum to the data.

13. Like the vast majority of syntacticians I take the concept of ungrammaticality as given, though see Schütze 2016 for a philosophical and methodological exploration of the concept.

4. Outline

Chapter 2 describes the foundation of verbal syntax, and thus the foundation of the rest of the dissertation. The root √ is the basic lexical entry in Tlingit as explained earlier in section 2.1. I assume that roots lack a syntactic category: the same root may occur in a noun or in a verb, with the interpretive difference being an entity versus an eventuality. Because roots have no intrinsic category they must be combined in the syntax with a head that determines their syntactic category. For verbs this head is V which is phonologically realized as stem variation. The first merge of a verb is thus the merge of √ and V which gives rise to a structure $[_{VP}$ √ V]. Chapter 2 is consequently divided into a section on √ (ch. 2 sec. 1) and a section on V (ch. 2 sec. 2).

The lexical specification of √ has many observable effects on the syntactic structure so that only some roots are compatible with particular structures. I identify four major classes of syntactic features that are used to compute structures matching the requirements of the root. One class is the θ-features that represent valency (ch. 2 sec. 1.1.1). Valency is not predictable from any other syntactic or semantic properties and there are a number of asymmetries between argument structure and semantic interpretation that must be represented by the syntax. I propose two θ-features $[\theta_1]$ and $[\theta_2]$ that correspond to the object and subject arguments and which usually map to semantic proto-role functions (cf. Dowty 1991). A root that is unspecified for θ-features is nullivalent and so cannot form a verb without an argument added by overt *v*. A monovalent root is specified for one of $[\theta_1]$ or $[\theta_2]$ and thus forms intransitive verbs that are either unaccusative (only an object) or unergative (only a subject). A bivalent root is specified for both $[\theta_1]$ and $[\theta_2]$ and so by default forms transitive verbs.

The three other classes of syntactic features in √ are the κ-features, the ε-features, and the ι-features. The κ-features are syntactic representations of the qualificational behaviour of roots (ch. 2 sec. 1.2). I explore the consequences of representing qualia and entity qualification in the syntax, suggesting a connection to φ-features but concluding that syntactic representation of qualia might not be necessary. The ε-features are syntactic representations of the eventuality behaviour of roots (ch. 2 sec. 1.3). There are four subclasses of ε-features that reflect durativity, stativity, stem variation, and conjugation class. These are all syntactically and semantically independent of valency and the presence or absence of each kind of ε-feature has predictable effects on the syntax that are not wholly explainable by semantics. Some ε-features also show signs of being grammaticalized where their semantic interpretations have been bleached, resulting in apparently meaningless syntactic contrasts. The ι-feature is the syntactic representation of the irrealis behaviour of roots (ch. 2 sec. 1.4). Some roots are lexically specified as requiring irrealis marking. Although lexical irrealis is correlated with certain domains of meaning (mental states, resemblance, pejoration, etc.), the requirement for irrealis marking cannot be regularly predicted from any other semantic properties. Arguably the ι-feature could be reduced to a kind of ε-feature given that irreality is associated with event structure, but I leave this possibility unexplored.

Stem variation is the grammatically predictable variation in vowel length, tone, and sometimes vowel quality of verb stems (ch. 2 sec. 2). Roots specify the basic vowel quality of verb stems, but it is stem variation that determines the actually spoken phonological form. A root √*xa*^{h} /xa/ can have any of the stems *–xáa* [xáː], *–xaa* [xàː], *–xá* [xá], *–xéi* [xéː], or *–xei* [xèː] depending on the particular stem variation value in a given verb form. I analyze stem variation as the realization of the V head that categorizes the root, justified by categorial differences between the stem variation of verbs and the heretofore unanalyzed stem variation of nouns.

Verb stem variation has a remarkable property that has long been noted but not clearly stated: the form of a verb stem regularly depends on functional elements elsewhere in the sentence. I model this as V-agreement: the value of V is determined by the functional heads within its clause (CP) that c-command V. In general the highest overt functional head determines the value of V. V-agreement does not occur with arguments (ch. 2 sec. 2.4) and the only two functional heads that do not trigger V-agreement are *v* and Voice (ch. 2 sec. 2.5). Also, the higher the functional head the more limited the inventory of possible values for V. The greatest diversity of stem variation is found in the imperfective aspect where the lexical entry √ determines the stem form (ch. 2 sec. 2.1). The least diversity of stem variation is found in clause typing where C determines the stem form (ch. 2 sec. 2.10). There are three exceptional contexts where V-agreement is irregular: invariable stems, derived stems, and stems with Adv suffixes. Invariable stems are lexically specified $[_{VP}$ √ V] subtrees where the value of V is already determined in the lexical entry and so cannot be modified. Derived stems and stems with Adv suffixes both have material within VP that blocks agreement with higher functional heads (ch. 2 sec. 2.3). This blocking may be due to early spellout triggered of a fully specified V and thus would have an explanation similar to the lexically specified invariable stems (cf. apx. B sec. 3).

Chapter 3 investigates the *i-* /i/ prefix of the 'classifier', analyzing it as a functional head Ɛ (for the semantic eventuality variable *ε*) whose semantic interpretation involves stativity. The *i-* prefix has a number of unique phonological behaviours that justify its inclusion in the phonological Classifier domain (ch. 3 sec. 2.1). But syntactically it is entirely independent of the *v* and Voice heads, so its status as part of a single 'classifier' morpheme is problematic (ch. 3 sec. 2.2). The *i-* prefix in Ɛ has two basic functions: indicating lexical states and indicating grammatical states (ch. 3 sec. 3). Lexical states are basic imperfective forms with *i-* that denote a simple state such as 'heavy' or 'visible' and which are lexically specified by the root (ch. 3 sec. 3.1). Grammatical states are other aspectual forms including *i-* which are independent of the lexical specification such as the result state of perfective aspect (ch. 3 sec. 3.2).

The analysis of Ɛ would be relatively simple if *i-* were present in every form that denotes a state. But *i-* can be either absent or suppressed depending on the structural context (ch. 3 sec. 4). For example, a perfective aspect form is expected to have *i-*, but when such a form is negated the *i-* is suppressed (ch. 3 sec. 4.1). I argue that Ɛ must be present to host stative semantics when *i-* has been suppressed, but that Ɛ can be absent in cases where the eventuality is not a state such as with a durative activity (ch. 3 sec. 4.3). This absence of Ɛ is semantically and syntactically the elsewhere case, having no special structure or interpretation. Some exceptional issues arise with forms that appear to denote states but which always lack *i-*; these require further investigation (ch. 3 sec. 4.2).

At the end of chapter 3 I offer a tentative syntactic reconstruction of ƐP in Proto-Na-Dene (ch. 3 sec. 5). I argue that, as in Eyak, the ƐP was originally in a higher position immediately below AspP, but due to phonological change it was structurally reinterpreted as below *v*P in Tlingit. The Ɛ head retains its association with grammatical aspect as a stativity operator, but it now appears in an unexpectedly low position more appropriate to its association with lexical aspect. Given its use in both lexical and grammatical states in Eyak, I suggest that the multifunctionality of Ɛ must have existed in Proto-Na-Dene, and that this contributed to its new position in Tlingit. The disappearance of Ɛ in the Dene family is due to phonological changes which obscured its realization, but it persists as the irregular stem onset of certain forms where its grammatical state function would previously have required its appearance.

Chapter 4 is devoted to the *s-* /s/, *l-* /ɬ/, and *sh-* /ʃ/ prefixes of the 'classifier', analyzing them as forms of the functional head *v*. This head has two major functions: adding arguments (ch. 4 sec. 3) and restricting meanings (ch. 4 sec. 4). The argument adding function appears in three contexts: intransitives with nullivalent roots, causatives with monovalent roots, and applicatives with bivalent roots. The meaning restriction function also has three contexts: qualification of objects, spatial extension of eventualities, and pejorative evaluation of eventualities. Unlike the argument addition function, the meaning restriction function operates on both entity and eventuality variables.

The *s-* and *l-* prefixes in *v* are partly conditioned by phonology (ch. 4 sec. 2.1): *l-* is required when the stem (not just the root) contains a coronal fricative or affricate which is any of /s, s', ʃ, ɬ, ɬ', ts, tsʰ, ts', tʃ, tʃʰ, tʃ', tɬ, tɬʰ, tɬ'/. But there are roots lacking a coronal fricative or affricate that occur with *l-*, and even some which occur with both *s-* and *l-*. I adopt the representation l^{s}- for an instance of *l-* that could be phonologically required (i.e. l^{s}- = *s-* → *l-*) and *l-* for other contexts. In cases where *s-* and *l-* alternate without phonological conditioning there seems to be a meaning difference but this has yet to be investigated. I conclude that the *s-* and *l-* were originally phonologically conditioned allomorphs but that *l-* has been grammaticalized as a distinct prefix and has consequently acquired distinct semantics in certain contexts. The interpretation of *l-* is probably still somewhat idiomatic, but further investigation could uncover regular generalizations about its meaning.

The *sh-* prefix in *v* typically marks pejorative evaluation of the eventuality (ch. 4 sec. 4.3). Some roots like $\sqrt[1]{k'e}$ 'good' exhibit a regular alternation between the absence and presence of *sh-* with corresponding pejorativity (Cable 2017b). Other roots are attested only with *sh-* which implies that pejorativity is a lexically specified feature. But beyond these cases, there are a variety of roots documented with *sh-* where no pejorative interpretation is apparent (ch. 4 sec. 6), and a very few of these suggest that *sh-* has an argument adding function. This implies that *sh-* was also originally a phonologically conditioned allomorph of *s-* and *l-*, but that its phonological conditioning has been lost and that it has developed pejorativity as a consequence of syntactic and semantic reanalysis. The *sh-* prefix can be thought of as further along the path towards complete grammaticalization than *l-*, but some lexical irregularities still push back against its complete reanalysis.

The *s-*, *l-*, and *sh-* prefixes are mutually exclusive and a given verb form can contain only one of any of them (ch. 4 sec. 2.2). Thus forms with overt *s-l-* sequences are ungrammatical for example, as are forms with overt *s-s-*. But it is logically possible for a structure to contain more than one *v* head, a phenomenon I refer to as *v*P stacking (ch. 4 sec. 5). In this context only one of several *v* elements can be pronounced and any others must be deleted. This phonological deletion has a precedent in the regular deletion of *d-* in Voice due to the severe phonological constraints on the Classifier domain, and since *v* is also in this domain similar constraints could support deletion of multiple *v*. With this possibility of *v*P stacking in place, I review the logical permutations of pairs of overt and covert *v* and suggest that many argument structure alternations in the lexical documentation can be explained by this phenomenon. I do not provide a detailed account of these phenomena yet because we need further elictation to clarify many documentary ambiguities.

There are a number of apparent exceptions to the analysis of *v* which are attested in the lexical documentation for particular roots or small groups of roots (ch. 4 sec. 6). Most of these exceptions involve multiple different verbs based on the same root with different values of *v* including some with all four of covert *v*, *s-*, *l-*, and *sh-*. I present three case studies, looking at the roots $\sqrt[2]{tin}$ 'see', $\sqrt[2]{x'an}$ 'angry' and $\sqrt[2]{k'an}$ 'hate', and $\sqrt[1]{t'ix'}$ 'hard' (ch. 4 sec. 6.1). Two other exceptional areas are the presence

of *sh-* where it is neither pejorative nor argument adding (ch. 4 sec. 6.2), and the *d-*/*l-* alternation discussed further below (ch. 4 sec. 6.3).

Chapter 5 explores the *d-* /t/ prefix of the 'classifier', analyzing it as a realization of the functional head Voice. There are three functions of *d-* in Voice: antipassive, passive, and middle. The antipassive and passive functions are argument suppressing and thus saturating whereas the middle function does not suppress arguments and so is restricting. Antipassive formation with *d-* suppresses the appearance of an object in a transitive structure. Passive formation with *d-* suppresses the appearance of a subject in a transitive structure. In both cases the transitive structure can be based on a bivalent root (a basic transitive) or it can be based on a monovalent root (a derived transitive). This implies that Voice is insensitive to *v* and cares only about the presence or absence of an appropriate argument. Passive structures have not been previously reported in Tlingit; they are fairly well attested in the lexical documentation but have been so far been treated as irregular. It is still unclear if a single root can support an antipassive and a passive with the same *v* value, or if instead the choice of antipassive versus passive is lexically specified.

The middle function of *d-* occurs when two arguments are coreferential. This is well documented with reflexive and reciprocal objects but it is also found with reflexive and reciprocal obliques (including possessive pronouns in obliques), self-benefactives with the *g-* prefix, and revertive motion (return to origin). The last case is syntactically and semantically interesting because it involves a restriction on argument PPs and their location variables rather than on argument DPs and their entity variables.

The fourth person (indefinite, nonspecific, or non-referential) human subject *du-* has a complex interaction with *d-* in Voice. There are two cases: required presence of and required absence of *d-* in Voice. First, when *du-* occurs with an overt *v* then *d-* in Voice is required even if it would otherwise be absent. Second, when *du-* occurs without an overt *v* then *d-* in Voice is prohibited even if it would otherwise be present. There is no evidence for this interaction in unergative intransitives, but there is no evidence against its occurrence either so this possibility needs to be elicited. An explanation for the *du-* and *d-* interaction is still wanting; it can be easily represented in my syntactic model but there is no obvious reason why it should occur. There is also an alternation between *du-* in plural forms and *d-* in singular forms that is represented in the lexical documentation (best known with $\sqrt[1]{k'e'n}$ 'jump') but which has not been previously described. I suggest that this alternation is connected to other expletive instances of *du-*, and thus that the interaction between *du-* and *d-* may have an explanation in argument suppression syntax.

I identify and review a possibly exhaustive set of cases where *d-* has previously been taken to be lexically specified without an antipassive, passive, or middle function. A number of these reflect what I call 'self-affecting predicates' where *d-* indicates that the agent is affected or modified by an event on some patient. This is probably another instance of the middle function with a covert reflexive experiencer or recipient but the analysis still needs to be worked out. Another major locus of unexpected *d-* is what I call the '*d-*/*l-* alternation'. This consists of roots that appear to form passives with *d-* but also causatives with *l-* (sometimes *s-*), implying that the root is at the same time both bivalent and monovalent. I propose four potential approaches to this alternation but remain uncommitted to any of them for now. There are a few more cases of exceptional *d-*: in plural forms of dimension state verbs (long, heavy, etc.), in a few poorly understood derivations including pretending to do something and being deprived of something, and in a handful of intransitives.

I end chapter 5 with a short review of *d-* in the Na-Dene family where it is reconstructed as **d-* in Proto-Na-Dene. I find basically the same set of contexts for *d-* in Eyak and the Dene languages, including all of the middle functions and some of the supposedly irregular lexical cases. I take this to imply that the entire family maintains more or less the same syntactic structure, and hence that **d-* should be analyzed as Voice – distinct from **ł-* in *v* – across the whole family. Finally I review the Tlingit data presented in Thompson 1996, revising some of his specific analyses.

Chapter 6 details the Asp head and its associated phenomena: grammatical aspect, conjugation class, and irrealis. This is the largest and most complex chapter in the dissertation which reflects the complexity of Asp structure and interpretation. There are four distinct classes of prefixes that appear between the subject prefixes and the object-associated prefixes (objects, incorporates, etc.). One class of prefixes is the perfective which consists of two syntactically distinct allomorphs *wu-* and *u-* along with a few phonological variations. The second class is the conjugation prefixes *n-*, *g̲-*, and *g-* along with a notional *∅*. The third class is the irrealis prefixes *u-* and *w-*. The fourth class is the modal prefix *g̲-*. I model all of these prefixes together as a complex subtree labelled Asp^0 which has its own internal grammar and phonology (ch. 6 sec. 1). Earlier templatic analyses combine the perfective prefixes with the conjugation prefixes because they do not cooccur, but I argue that they must be syntactically distinct and explore some possible structures for them.

The perfective and imperfective aspects are represented by several different morphological patterns (ch. 6 sec. 2). I establish a basic four-way division of forms based on the aspectual interpretation (imperfective vs. perfective) and the aspectual prefix (conjugation prefix vs. other prefix). The imperfective aspect then has two basic patterns: *∅*-imperfective (with no overt prefix) versus *CNJ*-imperfective, and the perfective aspect has three basic patterns: *wu*-perfective, *u*-perfective, and *CNJ*-perfective. Each of these patterns is further subdivided by the absence or presence of iterativity indicated by a suffix. The selection of different aspectual forms is determined partly by meaning because e.g. *∅*-imperfectives and *CNJ*-imperfectives have different interpretations. But selection is also partly determined by lexical specification since e.g. conjugation class membership decides which of *wu-* or *u-* is used in a perfective and the particular *CNJ-* ∈ {*n-*, *g̲-*, *g-*, *∅*} prefix is also determined by conjugation class membership. This organization of imperfective and perfective aspect morphology in Tlingit is novel, but it is not coincidentally similar to a split between *CNJ-* forms and dedicated aspect prefix forms in Dene languages.

The conjugation prefixes and their associated conjugation classes are usually considered to be meaningless, but I argue that they are actually representatives of a metaphoric mapping from space to time (ch. 6 sec. 3). All of the conjugation prefixes in some grammatical contexts are indicators of lexically or derivationally specified conjugation class membership. The *n-* and *g-* prefixes have a second function of indicating progressive and prospective aspects, respectively. The conjugation classes indicated by the conjugation prefixes are associated with spatial orientations most clearly seen in motion verbs. Uniquely, motion roots are not lexically specified for conjugation class; instead they are combined with a motion derivation that supplies conjugation class and a path argument (PP or Adv). Across all the motion derivations there is a robust correlation between the conjugation classes and the spatial orientations of the path arguments. The same spatial orientations can also be detected in many lexically specified conjugation classes of non-motion roots. For example the *g*-conjugation class motion derivations all describe movement upward and the roots $\overset{1}{\sqrt{}}$*wa't* 'mature, grow up', $\overset{1}{\sqrt{}}$*han* 'sg. stand', $\overset{2}{\sqrt{}}$*ÿik̲* 'pick up by mouth', and $\overset{0}{\sqrt{}}$*k̲u* 'vomit; flood' are all lexically specified for

the *g*-conjugation class. Lexically specified conjugation classes are not always clear cut reflections of spatial semantics, so that other *g*-conjugation roots include $\sqrt[2]{shi^h}$ 'sing', $\sqrt[1]{jux}$ 'roll, spin', $\sqrt[2]{ts'ik'w}$ 'pinch', and $\sqrt[2]{t'i^h}$ 'find, discover'. Nonetheless, the relationship between *g*-conjugation class and upward orientation is well represented. The grammatical aspect function of the *g*- prefix may then be connected to spatial semantics via a space → time metaphor: the future is upward.

The last section of chapter 6 is devoted to the irrealis prefix *u*- ~ *w*- (ch. 6 sec. 4).[14] Leer (1991) proposed three irrealis-like prefixes "*u*-", "*ŭ*-", and "*u*·-", but the last is only reliably distinguished in the Tongass Tlingit dialect so I identify two prefixes *u*- and *w*-. I review a few problems with the phonology of these prefixes, particularly contexts where they fail to appear in surface forms for still unclear reasons (ch. 6 sec. 4.1). Although there are different syntactic contexts for the *u*- and *w*- forms, they do not seem to be semantically distinct so I unify them as allomorphs of a single abstract irrealis element. Irrealis triggers are syntactic structures where irrealis must be indicated with *u*- or *w*- in Asp^0. I identify four irrealis triggers in lexical specification, derivational specification, aspectual conditioning, and structural conditioning. Lexically specified irrealis must be encoded in the root and I identify five semantic domains where this occurs: mental states, conative activities, resemblance, pejoration, and inherent negativity (ch. 6 sec. 4.2). Derivationally specified irrealis is introduced by derivational operations and I identify four patterns where this occurs: comparatives of dimension states, indirect motions, pretend activities, and extraordinary states (ch. 6 sec. 4.3). Aspectually conditioned irrealis is required by aspect and mood and I identify three cases: prospective aspect, potential modality, and admonitive mood (ch. 6 sec. 4.4). Structurally conditioned irrealis arises with higher functional heads and I identify four syntactic structures: negatives, dubitatives, optatives, and prohibitives (ch. 6 sec. 4.5). Each of the four irrealis triggers involves a different realm of the grammar but the interpretive consequences seem to be more or less the same across all of the various structures.

Chapter 7 reviews two major portions of the remaining verbal material within AspP, namely the objects and their associated prefixes and the plurality modifiers.[15] The object prefixes at first glance look similar to the subject prefixes, but unlike the subjects they can be accompanied by several other prefixes which I describe as incorporates and qualifiers. I propose a D^0 subtree similar to the Asp^0 subtree which encompasses all of the object prefixes, the incorporates, and the qualifiers (ch. 7 sec. 1). This D^0 subtree is initially merged in VP as the usual complement of a verb, but it is ejected from VP due to phonological and possibly structural constraints and lands in AspP (ch. 7 sec. 1.1). The object prefixes in this subtree are D nodes and are mostly argument saturating (ch. 7 sec. 1.2). I describe each prefix and its relationship with other forms in the language (ch. 7 sec. 1.2.1), then discuss the unusual behaviour of the sometimes non-saturating argument marking prefix *a*- (ch. 7 sec. 1.2.2) and the other non-saturating object prefixes (ch. 7 sec. 1.2.3).

The incorporates and qualifiers are analyzed as N nodes in the D^0 subtree (ch. 7 sec. 1.3). These elements are phonologically heterogeneous, ranging from one consonant to a disyllable, but there are phonological patterns that correlate with their syntactic properties (ch. 7 sec. 1.3.1). Some of the incorporates and qualifiers are argument saturating (ch. 7 sec. 1.3.2) and others are argument restricting (ch. 7 sec. 1.3.3), and this distinction captures the traditional contrast between 'alienable' and 'inalienable'. The qualifiers are a subset of the argument restricting Ns that are interpreted as

14. A section on the modal *g*- prefix was cut due to time and space constraints.
15. A section on the preverbs – PP and adverb proclitics – was cut due to time and space constraints.

intersectional modifiers of entities, but there does not seem to be any reliable syntactic difference between them and the incorporates (ch. 7 sec. 1.3.3.1). The *k*- and *ÿ*- qualifier prefixes are addressed in particular because of their semantic complexity and unique positional constraints (ch. 7 sec. 1.3.4); for example I show that the semantics must distinguish at least four kinds of *k*- but the syntax permits only two in any given form.

The plurality modifiers *has*= 'plural human' and *da*x̲= 'distributive plural' are proclitics which appear between the preverbs and the D^0 subtree (ch. 7 sec. 2). They restrict the interpretation of arguments and so might naively be placed in the D^0 subtree. But uniquely both plurality modifiers can modify either the subject or the object and so are not just object pluralizers. I review their limitations in argument pluralization (ch. 7 sec. 2.1), showing that they can only be used with third person, that *has*= can only be used with human referents and that *da*x̲= prefers but does not require nonhumans, and that both are strictly limited to modifying subjects and objects and cannot pluralize argument PPs or adjuncts. Both *has*= and *da*x̲= have related forms elsewhere in the language but cannot be syntactically or lexically unified with them (ch. 7 sec. 2.2).

Appendix A provides some background on the Tlingit language. Tlingit is relatively well documented with a large body of narrative and oratory texts and a remarkable body of digital audio recordings in various archives. Despite this, there is only a limited body of descriptive materials, most of which are unpublished. There is no comprehensive reference grammar to which researchers could be referred for a detailed description of the language. In light of this, appendix A reviews the social situation of Tlingit (apx. A sec. 1), some basic segmental phonology (apx. A sec. 2), the documented dialects and varieties of the language (apx. A sec. 3), the major orthographies used in publication (apx. A sec. 4), the documentary and descriptive materials available to the public (apx. A sec. 5), and the historical situation including its internal reconstruction (apx. A sec. 6).

Appendix B lays out a novel morphophonological analysis of verb stem variation in Northern Tlingit where a root is combined with a suffix that provides the suprasegmental material necessary for spellout. This analysis is assumed throughout the rest of the dissertation. The phonological Stem domain is the formal counterpart of the traditional 'verb stem', spelling out √ and V along with any suffixes in VP. The phonotactics of the Stem domain reveals some size and structure constraints that inform the analysis (apx. B sec. 1). The morphophonological patterns of stem variation reflect a set of phonological root classes and constraints on the combination of these root classes with particular stem variation suffixes (apx. B sec. 2). Previous descriptions of 'invariable roots' that do not participate in stem variation are replaced by invariable stems which are lexicalized instances of √ and V (apx. B sec. 3). Finally some phonotactics of roots are summarized (apx. B sec. 4).

Part I

The first phase

2 *First Merge: Root and V*

In principio erat verbum.
In the beginning was the verb.

Jerome, *Vulgate* (ca. 384, Iohannes 1:1)

1 The root and its features . . . 42
1.1 θ-features: Valency and argument structure . . . 43
1.2 ϰ-features: Qualia and qualification . . . 51
1.3 ε-features: Aspect and eventuality structure . . . 64
1.4 ι-features: Lexically specified irrealis . . . 86
2 V and stem variation . . . 89
2.1 V-agreement and √ . . . 96
2.2 V-agreement and Ɛ . . . 99
2.3 V-agreement and Adv suffixes . . . 101
2.4 V-agreement is absent with arguments . . . 135
2.5 V-agreement is absent with *v* and Voice . . . 137
2.6 V-agreement and Asp . . . 139
2.7 V-agreement and Neg . . . 164
2.8 V-agreement and Mod . . . 168
2.9 V-agreement and T . . . 170
2.10 V-agreement and C . . . 171

Although verbs in Tlingit can be quite large, a minimal verb word in Tlingit is a monosyllable like the examples in (1). These minimal verb words can be analyzed as two morphological elements: a root and stem variation. As I detail in section 1, the root is the lexical entry that contains the phonological, syntactic, and semantic information necessary to construct a paradigm of verb words with related interpretations. Roots do not provide enough phonological material to pronounce them; in particular they lack specification of tone and length. Stem variation provides the necessary suprasegmental material that allows roots to be pronounced as minimal words. I describe stem variation in detail in section 2 and document various phonological issues in appendix B.

(1) a. X̱á! *imperative*
√x̱a-H
√eat-VAR
'Eat it!'

b. Tá. *activity imperfective*
√ta^{h} -H
√sleep·SG-VAR
'S/he is sleeping.'

c. Áx̱ goot. *repetitive imperfective*
á -x̱ √gut -μ
3N-PERT √go·SG-VAR
'S/he repeatedly goes there.'

The data in (1) present three minimal verbs divided into a root and stem variation. The root in (1a) is √*x̱a* 'eat' which denotes an activity of eating. The root in (1b) is √*ta^{h}* 'sg. sleep' which denotes an activity of a single entity sleeping. The root in (1c) is √*gut* 'sg. go' which denotes an event where a single entity changes location, i.e. a motion. The stem variation in (1a) and (1b) is the same suffix *-H* that represents a short (monomoraic) vowel with high tone. The stem variation in (1c) is *-μ* which represents a long (bimoraic) vowel with low tone (i.e. without high tone).

The reason for analyzing stem variation as an element apart from the root is that Tlingit verb stems regularly change length, tone, and sometimes vowel quality. For example, the forms in (2) illustrate a few different verb words based on the root √*x̱a* 'eat' with different stem variation. The activity imperfective in (2a) has a short high tone vowel with *-H*, the perfective in (2b) has a long high tone vowel with *-μH*, the conditional mood in (2c) has an ablauted high tone vowel with *-eH*, and the adjunct clause perfective in (2d) has a long low tone vowel with *-μ*.

(2) a. Ix̱ax̱á. *activity imperfective*
i- x̱- √x̱a-H
2SG·O-1SG·S-√eat-VAR
'I eat you.', 'I am eating you.'

b. Ix̱waax̱áa. *perfective*
i- wu-x̱- i- √x̱a-μH
2SG·S-PFV-1SG·S-STV-√eat-VAR
'I ate you.', 'I have eaten you.'

c. Ix̱ax̱éini x̱at guganéekw. *conditional*
i- x̱- √x̱a-eH-n -í x̱at= w- g- g̱- √nikw-μH
2SG·S-1SG·S-√eat-VAR-NSFX-SUB 1SG·O=IRR-GCNJ-MOD-√sick -VAR
'If I eat you I will get sick.'

d. Ix̱wax̱aayí dáx̱ x̱at woonéekw. *adjunct clause perfective*
i- wu-x̱- √x̱a-μ -í =dáx̱ x̱at= wu-i- √nikw-μH
2SG·S-PFV-1SG·S-√eat-VAR-SUB=ABL 1SG·O=PFV-STV-√sick -VAR
'After I ate you I got sick.'

Figure 2.1: Simple VP with √ and V

Roots cannot occur alone as shown in (3), nor can stem variation as shown in (4). The root and stem variation are thus interdependent, and consequently there are syntactic and phonological constraints on which roots can occur with which stem variation suffixes and vice versa. These constraints are discussed throughout this chapter.

(3) a. *[χa] *lone roots*
√x̲a
√eat
intended: 'eat'

b. *[kʷut]
√gut
√go·SG
intended: 'go'

(4) a. *[ə́] *lone stem variations*
-H
-VAR
intended: ??

b. *[ə̀ː]
-μ
-VAR
intended: ??

In generative theories of syntax a verb is analyzed as an instantiation of the category V. The V head projects a phrase VP in which there may be a complement (object) or adverbs or other adjoined material. Monosyllabic verb words like in (1) could be straightforwardly analyzed as instantiations of V, but doing the same for complex sequences like in (2) would leave all of the rich morphological patterns entirely unaccounted for. I argue instead that all verb words are actually complex syntactic structures, and that the rich morphological patterns are due to regular syntactic operations.

The foundation of a verbal sentence is the VP. The foundation of a Tlingit verb word is the root and stem variation. Putting these together, I identify the combination of root and stem variation in Tlingit as the VP. More specifically, I identify the stem variation as the realization of V which categorizes the root and turns it into a verbal structure. The resulting VP can then be further derived with the addition of objects, adjuncts, and other heads that take VP as a complement. The verb *tá* 's/he is sleeping' in (1b) is built upon the VP shown in figure 2.1.

Nouns can also be built from roots, with an N element providing the stem variation instead of V. The significant differences between the VP and NP structures are that the interpretation of the resulting NP is an entity rather than an eventuality, and that the paradigm of stem variation is far simpler for nouns than for verbs. This root approach for both nouns and verbs accounts for the pervasive noun-verb parallelism in the Tlingit lexicon such as the examples in (5)–(7). I touch on this subject again in section 2, but I leave the exploration of noun-verb parallelism aside for the rest of this dissertation.

(5) a. Teel áwé. *noun*
√til -μ á -wé
√scar-VAR$_N$ CPL-MDST
'It is a scar.'

b. Wutulitíl. *verb*
wu-tu- l- i- √til -H
PFV-1PL·S-CSV-STV-√scar-VAR$_V$
'We scarred him/her.'

(6) a. Lóox' áwé. *noun*
√lux' -μH á -wé
√urine-VAR$_N$ CPL-MDST
'It is urine.'

b. Eex̲ aawalúx'. *verb*
√.ix̲-μ a- wu-i- √lux' -H
√oil -VAR$_N$ ARG-PFV-STV-√urine-VAR$_V$
'It pissed oil.' (i.e. leaked a lot)

(7) a. X̲eel áwé. *noun*
√x̲il -μ á -wé
√foam-VAR$_N$ CPL-MDST
'It is foam.'

b. Ix̲'atawshix̲íl. *verb*
i- x̲'e- ta- wu-sh- i- √x̲il -H
2SG·O-mouth-corner-PFV-PEJ-STV-√foam-VAR$_V$
'You're talking crazy.' (lit. 'The corners of your mouth have foamed.')

I explore the syntax and semantics of verb roots further in section 1. I analyze the verb root as the basic lexical entry for all verbs. A root can specify at least four distinct areas of syntactic phenomena in the form of features: valency (sec. 1.1), object qualia (sec. 1.2), eventuality-related behaviour (sec. 1.3), and irrealis behaviour (sec. 1.4). Each of these four parameter spaces is theoretically independent of the others, and empirical evidence seems to bear this out although there is still much to be explored both in the lexical documentation and in the realm theoretical possibilities. Minimally a root must be specified for valency, but there are one or two roots that suggest that even this may not be necessary.

Alongside the syntactic specification of roots in section 1, I propose a semantic model where a root denotes a set of possible eventualities with a variety of restrictions on the eventualities and their associated participants. Each type of semantic restriction is associated with one of the four feature domains in the syntax, thus establishing a one-to-one correspondence between the syntax and the semantics. This correspondence should lead naturally to the development of a fully compositional semantics that mirrors the syntactic structure, but that is a topic for a future dissertation.

I explore the syntax of V and stem variation in section 2. I develop a model where stem variation is agreement between V and functional heads that c-command it in the syntax. There can be many functional heads in a single clause, but there is only one V for agreement. I show that V agrees with the highest overt functional head and that covert or absent functional heads have no impact on V-agreement. The greatest complexity and unpredictability in the stem variation system is associated with the lowest heads in the clause, and the simplest and most predictable parts of the system are associated with the highest heads in the clause. The only functional heads which never participate in V-agreement are v and Voice, probably because they are not associated with the specification or modification of eventuality semantics.

To show the details of stem variation and its expression of V-agreement I walk up through each functional head in the clause. I start with √ (sec. 2.1) which while technically not a functional head can be the lexical source of V-agreement in the absence of any other overt functional heads in the syntax. I then work upward through Ɛ (sec. 2.2), the Adv suffixes (2.3), the core arguments (2.4), v and Voice (2.5), Asp (2.6), Neg (2.7), Mod (2.8), T (2.9), and C (2.10). For each head I show how V can contrast in its realization when the functional head is absent or covert versus when it is overt. The paradigm of stem variation produced by this system is fairly large, but because of the gradually reducing complexity at higher levels in the clause it is nowhere near as complex as an unconstrained logic would predict. This reduction of complexity, combined with the fact that higher heads supersede lower ones, is what makes the system learnable. The only completely unpredictable part of the system is in √ and is thus lexical.

1. The root and its features

Tlingit roots are lexical elements which specify phonological, syntactic, and semantic material. Phonologically roots encode some consonants and vowel segments. Syntactically roots encode certain morphosyntactic features that influence the derivation of the clause; crucially roots are not specified for syntactic category. Semantically roots encode a basic lexical meaning along with information about eventuality classes, constraints on the referent of the first argument (internal argument, object), and other less well understood properties (propositional attitude, speaker's evaluation, inherent irrealis, etc.).

The phonological material in a root is at least an initial consonant and a vowel quality /i, e, a, u/, and so roots are minimally /CV/ sequences. There are no phonotactic constraints on which consonants or vowels can be specified in a root, although there are more general phonotactic constraints on onsets and codas that apply to roots. There are no roots that consist of only consonants *√*C* and also no roots that consist of only vowels *√*V*, so roots must be minimally √*CV*. Complex onsets are not attested in the root lexicon and so probably roots like *√*CCV* or *√*CCVC* are prohibited. Roots can have coda consonants so that √*CVC* is possible, but the requirement for an onset means *√*VC* is not allowed.

A few roots with complex codas are attested, but only two consonants appear in the coda so $\sqrt{CVCC}$ is possible but $^*\sqrt{CVCCC}$ is probably not allowed (cf. apx. A sec. 2.3). Most roots with two consonants in the coda can be derived from a $\sqrt{CVC}$ root with a consonantal suffix, and it seems likely that all roots with complex codas are phonologically treated like they have a notional consonant suffix. See section 2.3 for more on the analysis of complex codas as suffixes.

The vast majority of roots are monosyllabic as described above, but disyllabic roots are attested. Just as with complex codas, most disyllabic roots can be analyzed as a monosyllabic root plus a syllabic suffix. The handful of disyllabic roots which cannot be analyzed this way seem to behave like they have a meaningless syllabic suffix, suggesting that at least the phonology treats the second syllable as a suffix. See appendix B for more details on the phonological structure of roots in the context of verb stem phonology and the spellout of $\sqrt{}$ + V.

The lexical entry of the root includes morphosyntactic features that affect the syntactic derivation. There are at least four classes of features involved in my model, but more may be discovered in the future and some of these classes could potentially be unified (e.g. ε-features and ι-features). Although these features are associated with semantic phenomena, they cannot be explained entirely by semantic properties and occasionally they can conflict with the semantic interpretation. I have identified the following four kinds of morphosyntactic features, each identified by a Greek letter:

- θ-features ('theta') that specify valency and affect argument structure
- κ-features ('kappa') that specify qualia about the object
- ε-features ('epsilon') that specify eventuality classes
- ι-features ('iota') that specify irrealis morphology

I exemplify each of these feature classes in the following subsections, showing how they can be lexically specified and thus part of the root. I review θ-features for valency in section 1.1, κ-features for qualia specification in section 1.2, ε-features for eventuality class in section 1.3, and ι-features for irrealis in section 1.4. Each section first presents the syntactic phenomena that diagnose the presence of the feature in the root, and then gives the formalization of the feature along with implementation details and links to further discussion in the rest of the dissertation.

1.1. θ-features: Valency and argument structure

Tlingit and other Na-Dene languages lexically specify the number of arguments that must occur in the simplest syntactic structures based on a particular root (cf. Kibrik 1993, 1996). I describe this root-based lexical specification of argument structure as **valency**. A given root can be bivalent $\overset{2}{\sqrt{}}\alpha$, monovalent $\overset{1}{\sqrt{}}\alpha$, or nullivalent $\overset{0}{\sqrt{}}\alpha$, with the superscript numeral indicating the valency number of the root. This valency is diagnosed by the argument structure of clauses when neither *v* (ch. 4) nor Voice (ch. 5) are overt. Note the distinct terminology: valency is a property of the lexical specification of roots whereas argument structure is a property of the syntax of the clause. This distinction is necessary because clauses may have arguments added or suppressed by the *v* and Voice heads respectively, so that the root's valency need not match the clause's argument structure.

1.1.1. Patterns of root valency

I begin the illustration of root valency with a nullivalent root $\overset{0}{\sqrt{}}$*chan* 'stink, stench'. The forms in (8) illustrate this root with the perfective aspect, showing an overt D pronoun argument *x̱at*= 'me' in (8a), an overt DP argument *wé gwéil* 'the bag' in (8b), and a covert argument – i.e. *pro* – in (8c).

(8) a. X̱at wulichán. *intransitive with overt D pronoun*
x̱at= wu-l- i- $^{0}\sqrt{}$chan-H
1SG·O=PFV-INTR-STV-$^{0}\sqrt{}$stink -VAR
'I have become stinky.'

b. Wé gwéil wulichán. *intransitive with overt DP*
wé gwéil wu-l- i- $^{0}\sqrt{}$chan-H
[DP MDST bag] PFV-INTR-STV-$^{0}\sqrt{}$stink -VAR
'That bag has become stinky.'

c. Wulichán. *intransitive with covert argument*
wu-l- i- $^{0}\sqrt{}$chan-H
PFV-INTR-STV-$^{0}\sqrt{}$stink -VAR
'S/he/it has become stinky.'

All of the forms in (8) include a prefix *l-* that is glossed here as INTR i.e. 'intransitive'. As detailed in chapter 4, this is a realization of the *v* head which adds an argument to the syntactic structure. It is this *v* which licenses the lone argument in all of the forms in (8). This is demonstrated in (9) by the corresponding forms without *v*; in each case the lack of *l-* in *v* is ungrammatical.

(9) a. *X̱at woochán. **intransitive with overt D pronoun*
x̱at= wu- i- $^{0}\sqrt{}$chan-H
1SG·O=PFV- STV-$^{0}\sqrt{}$stink -VAR
intended: 'I have become stinky.'

b. * Wé gwéil woochán. **intransitive with overt DP*
wé gwéil wu- i- $^{0}\sqrt{}$chan-H
[DP MDST bag] PFV- STV-$^{0}\sqrt{}$stink -VAR
intended: 'That bag has become stinky.'

c. *Woochán. **intransitive with covert argument*
wu- i- $^{0}\sqrt{}$chan-H
PFV- STV-$^{0}\sqrt{}$stink -VAR
intended: 'S/he/it has become stinky.'

Monovalent roots are distinct from nullivalent roots in that they support a single argument in exactly the contexts where nullivalent roots reject a single argument. This is shown in (10) with the monovalent root $^{1}\sqrt{}$*dal* 'heavy'. Unlike the nullivalent root in (9), this monovalent root has no problem forming intransitives without a *v* head.

(10) a. X̱at woodál. *intransitive with overt D pronoun*
x̱at= wu- i- $^{1}\sqrt{}$dál -H
1SG·O=PFV- STV-$^{1}\sqrt{}$heavy-VAR
'I have become heavy.'

b. Wé gwéil woodál. *intransitive with overt DP*
wé gwéil wu- i- $^{1}\sqrt{}$dal -H
[DP MDST bag] PFV- STV-$^{1}\sqrt{}$heavy-VAR
'That bag has become heavy.'

c. Woodál. *intransitive with covert argument*
wu- i- $^{1}\sqrt{}$dal -H
PFV- STV-$^{1}\sqrt{}$heavy-VAR
'S/he/it has become heavy.'

The addition of overt *v* to a monovalent root gives rise to a causative structure, creating a derived transitive that corresponds to the basic intransitive. This is shown in (11) with the same monovalent root $^{1}\sqrt{}$*dal* 'heavy'. The *l-* is now glossed as CSV for 'causative' though in fact it has essentially the same function as in (8): adding an argument.

(11) a. Xat yeeylidál. *causative with overt D pronoun*
xat= wu-ÿi- l- i- $^{1}\sqrt{}$dál -H
1SG·O=PFV-2PL·S-CSV-STV-$^{1}\sqrt{}$heavy-VAR
'You guys made me become heavy.'

b. Wé gwéil yeeylidál. *causative with overt DP*
wé gwéil wu-ÿi- l- i- $^{1}\sqrt{}$dal -H
[DP MDST bag] PFV-2PL·S-CSV-STV-$^{1}\sqrt{}$heavy-VAR
'You guys made that bag become heavy.'

c. Yeeylidál. *causative with covert argument*
wu-ÿi- l- i- $^{1}\sqrt{}$dal -H
PFV-2PL·S-CSV-STV-$^{1}\sqrt{}$heavy-VAR
'You guys made him/her/it become heavy.'

The overt *v* is mandatory with a monovalent root if it is to be used with two arguments. The sentences in (12) are exactly the same as those in (11) except for the absence of *l-*. Lacking overt *v*, the forms in (12) are all ungrammatical.

(12) a. *Xat yeeydál. **transitive with overt D pronoun*
xat= wu-ÿi- i- $^{1}\sqrt{}$dál -H
1SG·O=PFV-2PL·S- STV-$^{1}\sqrt{}$heavy-VAR
intended: 'You guys made me become heavy.'

b. * Wé gwéil yeeydál. **transitive with overt DP*
wé gwéil wu-ÿi- i- $^{1}\sqrt{}$dal -H
[DP MDST bag] PFV-2PL·S- STV-$^{1}\sqrt{}$heavy-VAR
intended: 'You guys made that bag become heavy.'

c. *Yeeydál. **transitive with covert argument*
wu-ÿi- i- $^{1}\sqrt{}$dal -H
PFV-2PL·S- STV-$^{1}\sqrt{}$heavy-VAR
intended: 'You guys made him/her/it become heavy.'

Bivalent roots are distinct in that they support two arguments precisely where monovalent roots support only one argument and where nullivalent roots do not support any arguments. The forms in (13) illustrate this with the bivalent root $^{2}\sqrt{}$*jak* 'kill'.

	nullivalent	monovalent	bivalent
v	$^{0}\sqrt{}$*chan* 'stink'	$^{1}\sqrt{}$*dal* 'heavy'	$^{2}\sqrt{}$*jak̲* 'kill'
	0 *ungrammatical	1 intransitive	2 transitive
l-	0+1 intransitive	1+1 transitive	2+1 applicative

Table 2.1: Patterns of valency and argument structure alternations

(13) a. Xat̲ yeeyják̲. *transitive with overt D pronoun*
x̲at= wu-ÿi- i- $^{2}\sqrt{}$jak̲-H
1SG·O=PFV-2PL·S- STV-$^{2}\sqrt{}$kill -VAR
'You guys killed me.'

b. Wé táax̲' yeeyják̲. *transitive with overt DP*
wé táax̲' wu-ÿi- i- $^{2}\sqrt{}$jak̲-H
[DP MDST slug] PFV-2PL·S- STV-$^{2}\sqrt{}$kill -VAR
'You guys killed the slug.'

c. Yeeyják̲. *transitive with covert argument*
wu-ÿi- i- $^{2}\sqrt{}$jak̲-H
PFV-2PL·S- STV-$^{2}\sqrt{}$kill -VAR
'You guys killed him/her/it.'

The addition of overt *v* to a bivalent root gives rise to an applicative structure. The added argument in applicatives is always a PP, though the exact type varies (see ch. 4 sec. 3.3). The data in (14) have an applicative PP *héench* 'with water' using the ergative/instrumental postposition *-ch*. Although *-ch* is used for both ergative DPs (subjects of transitive structures) and for instrumental PPs, in this particular context the phrase with *-ch* cannot be ergative because the subject is the overt D pronoun *ÿi-* 'you guys'.

(14) a. Héench x̲at yeeyliják̲. *transitive with overt D pronoun*
héen-ch x̲at= wu-ÿi- l- i- $^{2}\sqrt{}$jak̲-H
[PP water-INSTR] 1SG·O=PFV-2PL·S-APPL-STV-$^{2}\sqrt{}$kill -VAR
'You guys drowned me (killed me with water).'

b. Wé táax̲' héench yeeyliják̲. *transitive with overt DP*
wé táax̲' héen-ch wu-ÿi- l- i- $^{2}\sqrt{}$jak̲-H
[DP MDST slug] [PP water-INSTR] PFV-2PL·S-APPL-STV-$^{2}\sqrt{}$kill -VAR
'You guys drowned that slug (killed it with water).'

c. Héench yeeyliják̲. *transitive with covert argument*
héen-ch wu-ÿi- l- i- $^{2}\sqrt{}$jak̲-H
[PP water-INSTR] PFV-2PL·S-APPL-STV-$^{2}\sqrt{}$kill -VAR
'You guys drowned him/her/it (killed it with water).'

The grammatical patterns of valency and argument structure alternations in (8)–(14) are summarized in table 2.1. Nullivalent roots are ungrammatical on their own and form intransitives with

Figure 2.2: Tree for intransitive with nullivalent root

the additional argument supplied by *l-* in *v*. Monovalent roots form intransitives on their own and (causative) transitives with the additional argument of *l-* in *v*. Finally, bivalent roots form transitives on their own and applicatives with the additional argument of *l-* in *v*.

It could be argued that there are other sources of transitivity change in (8)–(14), so to eliminate potential objections I look at the other elements. The perfective aspect *wu-* in Asp (ch. 6), the result state indicator *i-* (ch. 3), and the stem variation value *-H* (sec. 2) are all identical in all of (8)–(14), so none of these can reasonably be the basis for any argument structure modifications. The only other elements that differ between the absent and overt *v* forms are the arguments themselves. These arguments reflect argument structure but they cannot be considered to modify it since their addition is ungrammatical where there is no argument structure to support them. We could instead propose an abstract element that would somehow determine the specific function of each *l-* in *v*, but this element would never contrast with any surface morphology so it would always be invisible. I conclude then that it is the root in every case that determines the basic number of arguments and how these arguments are realized. Higher heads like *v* and Voice can modify the argument structure that is lexically specified by the valency of the root, but those higher heads are not themselves the basis of argument structure.

1.1.2. Syntactic model and θ-features

I have established that the root specifies valency and thus determines the limits of argument structure variation, but I have not formalized how it might do so in a Minimalist syntactic model. I propose two **θ-feature**s $[\theta_1]$ and $[\theta_2]$ that are probed for by arguments in the derivation. A nullivalent root provides no θ-features, a monovalent root provides $[\theta_1]$,[1] and a bivalent root provides both $[\theta_1]$ and $[\theta_2]$. These situations are illustrated by figures 2.2–2.4; the structures reflect the initial stages of syntactic derivation with only the minimum amount of material necessary to demonstrate the initial merge of each argument. The intransitive of a nullivalent root is represented in figure 2.2, with the $[\theta_1]$ feature for the lone argument introduced by the *v* head with *l-*. The intransitive of a monovalent root is represented in figure 2.3, with the $[\theta_1]$ feature of the lone argument introduced by the root. The transitive of a bivalent root is represented in figure 2.4, with the root introducing the $[\theta_1]$ and $[\theta_2]$ features for both arguments; the empty *v* provides no θ-features.

1. Some monovalent roots that give rise to unergatives might provide $[\theta_2]$ instead of $[\theta_1]$; see ch. 4 sec. 2.2.2 for details.

Figure 2.3: Tree for intransitive with monovalent root

Figure 2.4: Tree for transitive with bivalent root

The θ-features I have proposed are similar in spirit to the numbered theta-grids of Government and Binding (Rothstein 1991; Haegeman 1994: 44–54, 156). The idea of numbering arguments in GB comes originally from Relational Grammar (Perlmutter 1982; Blake 1990). Head-Driven Phrase Structure Grammar (HPSG) uses a similar notation in its ARG-STR features that specify the argument structure of a constituent (Pollard & Sag 1994), also derived via GPSG from Relational Grammar. But unlike all of these models, my indices are reversed so that my index '1' refers to a proto-patient (Dowty 1989, 1991) realized as an object, and my '2' refers to a proto-agent realized as a subject. This order of indices reflects the hierarchical order of Merge rather than the linear order of an SVO sentence.

The $[\theta_1]$ and $[\theta_2]$ features are the only θ-features lexically specified as part of the root, but these are not the only θ-features in Tlingit. There is at least a $[\theta_3]$ in applicatives like (14) where the structure has three arguments. But because applicatives require derivational modification of *v* I conclude that the θ-feature corresponding to the applicative argument is supplied by *v* and not by the root; see chapter 4 section 3.3 for more detail. There may be semantic restrictions on which roots can be applicativized, but there are no clear syntactic factors that suggest a syntactic specification of

applicativizability for the root.

The system so far accounts for nullivalent roots, monovalent roots, and bivalent roots. A negative valency like $\sqrt[-1]{\alpha}$ is arithmetically possible but nonsensical for human languages, and certainly Tlingit shows no evidence for this; valency in general is probably restricted to positive integers. We can however imagine the possibility of trivalent roots where the lexical entry licences the appearance of three arguments. Trivalent roots would correspond to the ditransitive pattern of argument structure such as English *I gave you a book*. Tlingit does not have ditransitive structures because they are entirely unattested and attempts to construct them like in (15) are uniformly ungrammatical.

(15) a. * X'úx' ixwaatée. **ditransitive 'give'*
x'úx' i- wu-x̲- i- $\sqrt[3]{\text{ti}}$ -μH
[DP book] 2SG·O-PFV-1SG·S-STV-$\sqrt[3]{\text{handle}}$-VAR
intended: 'I gave you a book.'

b. * Deenáa yá x'úx' x̲waatéew. **ditransitive 'read'*
Deenáa yá x'úx' wu-x̲- i- $\sqrt[3]{\text{ti'w}}$-μH
[DP NAME] [DP PROX book] PFV-1SG·S-STV-$\sqrt[3]{\text{read}}$-VAR
intended: 'I read Deenáa this book.'

c. * La.oos wé shkalnéek kax̲waanéek. **ditransitive 'tell'*
La.oos wé shkalnéek k- wu-x̲- i- $\sqrt[3]{\text{nik}}$-μH
[DP NAME] [DP MDST story] QUAL-PFV-1SG·S-STV-$\sqrt[3]{\text{tell}}$ -VAR
'I told La.oos that story.'

Applicatives like those in (14) on page 46 show arguments that are PPs rather than DPs. Logically then a verb that takes two DPs and one PP could be based on a trivalent root. Such verbs do exist in Tlingit, namely the handling verbs. Tlingit has a special class of verbs that describe the motion of an entity which can be divided by their argument structure and their semantics of control (Leer 1991: 293–295). Handling verbs are motion verbs that are specifically transitive, occurring with a subject and an object. The two examples of handling verbs in (16) show that they can occur with two core arguments and a PP, closely resembling an applicative except for the lack of an overt *v*.

(16) a. X'úx' i jeet x̲waatée. *handling verb with PP* (cf. 15a)
x'úx' i jee -t wu-x̲- i- $\sqrt[2]{\text{ti}}$ -μH
[DP book] [PP 2SG·PSS poss'n-PNCT] PFV-1SG·S-STV-$\sqrt[2]{\text{handle}}$-VAR
'I gave you a book.'

b. Té yóot x̲waag̲íx'. *handling verb with PP*
té yú -t wu-x̲- i- $\sqrt[2]{\text{g̲ix'}}$ -H
[DP rock] [PP DIST-PNCT] PFV-1SG·S-STV-$\sqrt[2]{\text{throw}}$-VAR
'I threw a rock over there.' (Story & Naish 1973: 227)

If handling roots were actually trivalent then they would be expected to have a PP in every context because as an argument the PP would be obligatory. This is not the case: all motion verbs including handling verbs can occur without a location PP (pace Eggleston 2013: 31). This means that the PP is somehow 'optional'; I suggest in chapter 4 section 5 that this may be an alternation between a transitive and an applicative with a covert *v*, and so that these three-argument structures

are actually derived from two-argument structures. Applicativization-like derivational operation that introduces these arguments is conventionally known as a 'motion derivation'; I discuss the details of motion derivations and their argument PPs in chapter 6 section 3.3. I conclude for now that Tlingit does not have trivalent roots although they should be possible in other languages.

1.1.3. Semantic model and the Θ functions

The semantics of Tlingit verbs is still very much understudied and roots have yet to be semantically formalized. As an initial proposal, I suggest that a root denotes a set of eventualities which are constrained by the conjunction of various functions along the line of Parsons 1990. Higher heads like V are expected to establish a particular eventuality and bind it to an element within the set denoted by the root. The encyclopedic meaning of a root is a function of an eventuality ε like $\mathsf{kill}(\varepsilon)$ or $\mathsf{heavy}(\varepsilon)$; despite their representation with English words, these functions need not be crosslinguistically identical and can be unique to a particular language. The θ-features of the syntax correspond with Θ functions in the semantics. These Θ functions determine the semantic proto-roles (Dowty 1989, 1991) that hold for each argument. A Θ function like $\Theta_1(\varepsilon, y)$ says that for the eventuality ε there is some entity y which participates in the eventuality as a proto-patient (patient, theme, experienced entity, proposition, etc.). Both the entity and eventuality variables are unbound at the root level and must be bound by higher functions in the semantic derivation or else by the discourse and pragmatic logic. I expect that the eventuality ε is bound by the function corresponding to V, and that the entity y is bound by the application of the function corresponding to VP with the denotation of the first DP in the syntax.[2]

With this sketchy idea of a semantics in place, we can look at some preliminary lexical entries in (17)–(19) for the three roots of section 1.1.1. The nullivalent root $\sqrt[0]{chan}$ 'stink' in (17) denotes a set of eventualities where in every eventuality there is stinking. No Θ functions are supplied so the root does not supply enough information to determine what stinks, only that there is stinking. The actual source of stench must be supplied by higher structure.

(17) $\sqrt[0]{chan}$ 'stink' $\equiv \{\varepsilon \mid \mathsf{stink}(\varepsilon)\}$ *semantic lexical entry of a nullivalent root*

The monovalent root $\sqrt[1]{dal}$ 'heavy' in (18) denotes a set of eventualities where in every eventuality there is heaviness, and the entity which exhibits that heaviness is the referent of the variable y. The Θ_1 function relates the theme to the eventuality, thus connecting heaviness with an entity referent. The symbol y for this entity variable is of course arbitrary, but y is meant to evoke the convention of 'x verb y' and thus the association between the Θ_1 function, the $[\theta_1]$ feature, and the first (internal) argument which is the object.

(18) $\sqrt[1]{dal}$ 'heavy' $\equiv \{\varepsilon \mid \mathsf{heavy}(\varepsilon) \wedge \Theta_1(\varepsilon, y)\}$ *semantic lexical entry of a monovalent root*

The bivalent root $\sqrt[2]{ja\underline{k}}$ in (19) denotes a set of eventualities where in every eventuality there is killing, and in each eventuality there is an entity y that undergoes the killing (i.e. dies) and an entity x who is the agent of the killing. The Θ_1 function is more or less the same as for the monovalent root above. The Θ_2 function relates the agent to the eventuality, establishing the referent of x as the killer.

2. Entity variables like y can be suppressed in the syntax; see ch. 5. Presumably in such cases their reference is determined from discourse and pragmatics. There is no parallel syntactic operation for eventuality variables.

(19) $\sqrt[2]{ja\underline{k}}$ 'kill' $\equiv \{\varepsilon \mid \mathsf{kill}(\varepsilon) \wedge \Theta_1(\varepsilon, y) \wedge \Theta_2(\varepsilon, x)\}$ *semantic lexical entry of a bivalent root*

I do not explore the semantic formalism of verbs in much detail because this topic deserves its own dissertation. In the following subsections I elaborate on the lexical entries of roots by adding functions that correspond to the other morphosyntactic features in the lexical entry. I hope that this very preliminary sketch shows that a compositional semantics can be relatively straightforwardly developed off of the syntactic structure, and look forward to a fully predictable system in the future.

1.2. ϰ-FEATURES: QUALIA AND QUALIFICATION

A **classificatory verb** in Na-Dene languages is a verb that restricts the denotation of its object, specifically one or more perceptual properties – i.e. qualia (see below) – of the object. The classificatory verb system is centred on a set of roots used to describe handling and motion, meaning the internally or externally controlled change of location of an entity. Krauss (2015: 227) describes the classificatory verbs as "a highly restricted class, also of extremely high frequency and productivity", and says that across the family "there is no doubt these structures are related historically by something more than coincidental similarity" (Krauss 1968: 194). Despite being a small closed class, the classificatory verbs have very high frequency of use because they express the basic notions of possession transfer ('give', 'take', 'receive', etc.), change of location ('put', 'set', 'carry', etc.), and positional configuration ('lie', 'hang', 'sit', etc.). Although the label 'classificatory' implies that they reflect noun classes, it is actually the semantic referent and not the noun which is grammatically significant (sec. 1.2.1).

Qualia (['kʷɑˌli.ə]) are perceptual properties of entities that are considered apart from the entities themselves (Tye 2016; Huemer 2011; Pustejovsky 1995). The term *qualia* is from the Latin plural noun *qualia* 'what kinds; such'; the English singular *quale* (['kʷɑˌleɪ] ~ ['kʷɑˌli]) is from the corresponding Latin singular *quāle*. The canonical example of a quale is 'redness', such as the colour of a ripe tomato (reflected colour) or a stop light (emitted colour). There is a long running debate in the philosophy of metaphysics about whether qualia exist 'in the world', 'in the mind', or not at all (Tye 2016). This debate is largely irrelevant for linguistics: human languages certainly encode what metaphysicians refer to as qualia regardless of whether they are somehow 'real' or a purely cognitive phenomenon. This is trivially true given the existence of words like 'red' across languages.

Qualia are stereotypically encoded in the lexicon as nouns, adjectives, or stative verbs. Particular qualia may be language-specific (e.g. *velvety*, *tinny*, *friable*) or they may be more or less universal reflections of human perception (e.g. *hard*, *heavy*, *dark*). Some qualia are grammatically active where grammatical processes have recruited the semantic categories as part of syntactic relationships like agreement. Common grammatically active qualia include quantity (e.g. plurality), gender, and atomicity, but the particular set of grammatically active qualia is specific to each language.

With the concept of qualia in mind, I propose the term **qualificational verb** to replace 'classificatory verb'. I refer to the qualia restriction of entities as **qualification**, and a root which introduces these restrictions can be said to **qualify** the argument. Kari resurrected the term **qualifier** for the equivalents of the "Navajo position 6 prefixes" (Kari 1989: 430) from Jules Jetté's early 20th century description of Koyukon (Jetté & Jones 2000: 753–759). In the Dene languages it seems that the qualifiers have mostly an eventuality restricting function, so they may be thought of as introducing restrictions on the qualia of eventualities. In Tlingit the qualifier prefixes are involved in the semantic restriction of entities as well as eventualities and so the label 'qualifier' fits well with the process of qualification. See chapter 7 section 1.3 for more discussion of the qualifiers in Tlingit.

There is a long tradition of descriptive literature on qualificational verbs in Dene languages (e.g. Hoijer 1945a; Henry & Henry 1965; Landar 1967; Basso 1968; Golla 1970; Witherspoon 1971; Carter 1976; Cook 1986; Rushforth 1991; de Reuse 2001; Meek & Jules 2001; Poser 2005). There are also some more or less detailed sketches of qualificational verbs in Eyak (Krauss 1968, 2015: 227) and Tlingit (Dauenhauer & Dauenhauer 1971; Story & Naish 1973: 36–37, 42–43, 122–123, 151, 162–163; Leer, Hitch, & Ritter 2001: CV·1–13; Dauenhauer & Dauenhauer 2002: 59–62; Crippen 2009a), but none of these have been compiled into a single study or reference guide and there is no systematic documentation of dialectal or other variation. There have been a few attempts to formalize the semantics of qualificational verbs in Dene languages, focusing mostly on Navajo (Willie 2000; Axelrod 2000; Fernald 2002), but there has been no attempt to formalize the qualificational verbs in Tlingit or Eyak. As far as I am aware, there is no formal syntactic account of qualificational verbs for any Na-Dene language. I propose a model for Tlingit, introducing ϰ-features that account for the syntactic alternations associated with qualificational verbs and which are associated with the semantic qualia functions that restrict the denotation of the first argument.

1.2.1. Patterns of qualification: Handling and motion

Motion verbs in the Na-Dene languages are a distinct class of verbs that describe the change of location of an entity along with its path through space and sometimes the manner of its movement. Leer categorizes the motion verbs in Tlingit by transitivity and by semantic control (Leer 1991: 293–295). Intransitive motion verbs are based on roots like $\overset{1}{\sqrt{}}$*gut* 'sg. go' and $\overset{1}{\sqrt{}}$*k̲ux̲* 'go by boat or other vehicle' whereas transitive motion verbs are based on roots like $\overset{2}{\sqrt{}}$*ti* 'handle' and $\overset{2}{\sqrt{}}$*g̲ix'* 'throw, pitch'. Controlled motion verbs are based on roots like $\overset{1}{\sqrt{}}$*k̲in* 'sg. fly' and $\overset{2}{\sqrt{}}$*jel* 'lug, handle bunch' whereas uncontrolled motion verbs are based on roots like $\overset{1}{\sqrt{}}$*xix* 'sg. fall, move through space' and $\overset{2}{\sqrt{}}$*lit* 'scatter'. Most transitive motion verbs are called **handling verb**s because they involve an agent manipulating the moved entity. Tlingit learners and teachers (including myself) often contrast the transitive motion verbs as 'handling verbs' with the intransitive motion verbs as 'motion verbs' so depending on context the term 'motion verb' may mean either [±transitive] or only [–transitive] whereas 'handling verb' is always [+transitive]. Motion verbs have a variety of morphosyntactic properties, chief among them being the lack of a lexically specified conjugation class and the interaction between location PPs and grammatical aspect; see chapter 6 section 3.3 for more discussion.

Qualificational verbs in Na-Dene languages are intimately connected with the motion verb system. The locus classicus of qualificational verbs are the handling verbs, but qualification also occurs with intransitive verbs of motion (Leer 1991: 295 fn. 13) which will be shown later. The data in (20) illustrate two handling verbs with the roots $\overset{2}{\sqrt{}}$*tan* 'handle wooden object or empty container' and $\overset{2}{\sqrt{}}$*.in* 'handle filled container; gather'. Both sentences in (20) have the same DP *wé gúx'aa*[3] 'the cup' but its interpretation is different. In (20a) the root restricts the meaning of *wé gúx'aa* to be an empty vessel, and in (20b) the root restricts the meaning to be a vessel filled with unspecified contents.[4]

(20) a. *handle empty container*

Wé	gúx'aa	a<u>x</u>	jeet		tán!			
wé	gúx'aa	a<u>x</u>	jee	-t		$\overset{2}{\sqrt{}}$tan	-H	
[DP MDST	cup]	[PP 1SG·PSS	poss'n-PNCT	]	2SG·S-$\overset{2}{\sqrt{}}$hdl·w/e-VAR			

'Give me that (empty) cup!'

3. From $\overset{2}{\sqrt{}}$*gux'* 'dip' + *-H* + *-aa* 'instrument', originally meaning '(water) dipper' but now also 'cup, mug, glass, can'.
4. See chapter 4 section 4 for discussion of *s-* in *v* and its role in qualification.

b. Wé gúx'aa a<u>x</u> jeet sa.ín! *handle filled container*
wé gúx'aa a<u>x</u> jee -t s- $\sqrt[2]{}$.in -H
[DP MDST cup] [PP 1SG·PSS poss'n-PNCT] 2SG·S-XTN-$\sqrt[2]{}$hdl·filled-VAR
'Give me that (filled) cup!'

It is also possible to refer to the contents and not the container with the same root $\sqrt[2]{}$*.in* as shown in (21) with the DP *wé kanat'á*[5] 'the blueberry(ies)'. This can only be interpreted as an unspecified container filled with blueberries because of the root. It cannot describe the blueberries themselves apart from the container whether there is a single berry, a mushy mass, or a handful, nor can it describe some configuration of blueberries like a twig pendant with berries, a prong with berries speared on it, or a knife with berries balanced along the blade. The quantity of blueberries is also not expressed, being dependent on the kind of container, how big the blueberries are, and many other factors. Speakers may disagree about the quantity necessary for the container to be filled and about the appropriateness of a particular container, so all these factors must be pragmatic rather than lexically encoded. All that is really necessary for $\sqrt[2]{}$*.in* is containment.

(21) Wé kanat'á a<u>x</u> jeet sa.ín!
wé kanat'á a<u>x</u> jee -t s- $\sqrt[2]{}$.in -H
[DP MDST blueberry] [PP 1SG·PSS poss'n-PNCT] 2SG·S-XTN-$\sqrt[2]{}$hdl·filled-VAR
'Give me the (container of) blueberries!'

Some Dene languages are described as having a qualificational verb system based solely on roots (e.g. Landar 1967; Carter 1976; Rushforth 1991; de Reuse 2001). This is not the case for Tlingit where there are combinatoric possibilities using roots, values of *v*, and qualifier prefixes. The paradigm in (22)–(29) illustrates an incomplete but extensive set of qualificational handling verbs with the same motion derivation *DP-{t,x,dé}* (*Ø*; *-μ* repetitive) 'arriving at DP'. The complement of the punctual postposition *-t* in each case is the inalienable noun *jee* 'possession', so each sentence translates literally to an imperative '(you sg.) handle *x* so that it arrives in my possession' and more loosely as 'give me *x*'. The first set in (22) use the root $\sqrt[2]{}$*ti* 'handle generic' that is not itself qualificational so only the *v* and qualifiers restrict the object.

(22) a. Wé x'úx' a<u>x</u> jeet tí! *generic object* (cf. 16a)
wé x'úx' a<u>x</u> jee -t $\sqrt[2]{}$ti -H
[DP MDST book] [PP 1SG·PSS poss'n-PNCT] $\sqrt[2]{}$hdl·gen-VAR
'Give me that book!'

b. Wé k'wát' a<u>x</u> jeet katí! *small round object*
wé k'wát' a<u>x</u> jee -t k- $\sqrt[2]{}$ti -H
[DP MDST egg] [PP 1SG·PSS poss'n-PNCT] SRO-$\sqrt[2]{}$hdl·gen-VAR
'Give me that egg!'

c. Wé sháal a<u>x</u> jeet satí! *extended object*
wé sháal a<u>x</u> jee -t s- $\sqrt[2]{}$ti -H
[DP MDST fishtrap] [PP 1SG·PSS poss'n-PNCT] XTN-$\sqrt[2]{}$hdl·gen-VAR
'Give me that fishtrap!'

5. From *k-* 'small round' + *n-* conjugation prefix + $\sqrt[1]{}$*t'a*^{h} 'ripen' + *-H*.

d. Wé kées a<u>x</u> jeet kasatí! *small round extended object*
wé kées a<u>x</u> jee -t k- s- $\sqrt[2]{}$ti -H
[DP MDST bracelet] [PP 1SG·PSS poss'n-PNCT] SRO-XTN-$\sqrt[2]{}$hdl·gen-VAR
'Give me that (beaded) bracelet!'

e. Wé tíx' a<u>x</u> jeet jisatí! *tangled ropelike object*
wé tíx' a<u>x</u> jee -t ji- s- $\sqrt[2]{}$ti -H
[DP MDST rope] [PP 1SG·PSS poss'n-PNCT] hand-XTN-$\sqrt[2]{}$hdl·gen-VAR
'Give me that (wad of) rope!'

f. Wé tíx' a<u>x</u> jeet jikatí! *coiled ropelike object*
wé tíx' a<u>x</u> jee -t ji- k- $\sqrt[2]{}$ti -H
[DP MDST rope] [PP 1SG·PSS poss'n-PNCT] hand-SRO-$\sqrt[2]{}$hdl·gen-VAR
'Give me that (coil of) rope!'

g. Wé tíx' a<u>x</u> jeet jiksatí! *uncoiled ropelike object*
wé tíx' a<u>x</u> jee -t ji- k- s- $\sqrt[2]{}$ti -H
[DP MDST rope] [PP 1SG·PSS poss'n-PNCT] hand-SRO-XTN-$\sqrt[2]{}$hdl·gen-VAR
'Give me that (length of) rope!'

(23) a. Wé <u>k</u>óok a<u>x</u> jeet tán! *wooden/empty object*
wé <u>k</u>óok a<u>x</u> jee -t $\sqrt[2]{}$tan -H
[DP MDST box] [PP 1SG·PSS poss'n-PNCT] $\sqrt[2]{}$hdl·w/e-VAR
'Give me that (wooden/empty) box!'

b. Wé cháash a<u>x</u> jeet satán! *extended wooden object*
wé cháash a<u>x</u> jee -t s- $\sqrt[2]{}$tan -H
[DP MDST bough] [PP 1SG·PSS poss'n-PNCT] XTN-$\sqrt[2]{}$hdl·w/e-VAR
'Give me that bough!'

c. Wé <u>k</u>áas' a<u>x</u> jeet kasatán! *short sticklike object*
wé <u>k</u>áas' a<u>x</u> jee -t k- s- $\sqrt[2]{}$tan -H
[DP MDST stick] [PP 1SG·PSS poss'n-PNCT] SRO-XTN-$\sqrt[2]{}$hdl·w/e-VAR
'Give me that stick!'

(24) Wé k'oodás' a<u>x</u> jeet .á<u>x</u>! *fabriclike object*
wé k'oodás' a<u>x</u> jee -t $\sqrt[2]{}$.a<u>x</u> -H
[DP MDST shirt] [PP 1SG·PSS poss'n-PNCT] $\sqrt[2]{}$hdl·fabric-VAR
'Give me that shirt!'

(25) Wé káaxwei a<u>x</u> jeet sa.ín! *filled object*
wé káaxwei a<u>x</u> jee -t s- $\sqrt[2]{}$.in -H
[DP MDST coffee] [PP 1SG·PSS poss'n-PNCT] XTN-$\sqrt[2]{}$hdl·filled-VAR
'Give me that (cup of) coffee!'

(26) Wé dóosh a<u>x</u> jeet sanú! *animate object*
wé dóosh a<u>x</u> jee -t s- $\sqrt[1]{}$nuk -⊗
[DP MDST cat] [PP 1SG·PSS poss'n-PNCT] CSV-$\sqrt[1]{}$sit·SG-VAR
'Give me that (alive, awake) cat!'

(27) Wé dóosh a<u>x</u> jeet satá! *dead/unconscious object*
wé dóosh a<u>x</u> jee -t s- $\sqrt[1]{}$ta^{h} -H
[DP MDST cat] [PP 1SG·PSS poss'n-PNCT] CSV-$\sqrt[1]{}$sleep·SG-VAR
'Give me that (dead, asleep) cat!'

(28) Wé x'úx' a<u>x</u> jeet la.á! *plural objects*
wé x'úx' a<u>x</u> jee -t l- $\sqrt[1]{}$.at -⊗
[DP MDST book] [PP 1SG·PSS poss'n-PNCT] CSV-$\sqrt[1]{}$go·PL-VAR
'Give me those books!'

(29) Wé x'óow a<u>x</u> jeet laná! *bundled objects*
wé x'óow a<u>x</u> jee -t l- $\sqrt[2]{}$na -H
[DP MDST blanket] [PP 1SG·PSS poss'n-PNCT] XTN-$\sqrt[2]{}$hdl·bundle-VAR
'Give me those (bundled) blankets!'

There is the clear suggestion of compositional machinery in the various combinations of root, *v*, and qualifiers among the handling verbs, but the semantics of qualificational verbs has yet to be explored. There are several other qualifiers not shown above including *wa<u>k</u>-* 'eye' for hoop-like objects, *<u>x</u>'e-* 'mouth' for objects with openings or for objects that flow, *sha-* 'head' for objects with prominent tops, and *lu-* 'nose' for objects with protrusions (cf. Leer, Hitch, & Ritter 2001: CV·i–ii). The documentary record has many gaps for possible combinations of the various qualificational elements and it is unclear whether these gaps are accidental or if they represent ungrammaticality.

The **intransitive motion verbs** also exhibit qualification. Most intransitive motion verbs are unergative, taking only a subject, but some are unaccusative and take an object instead. Regardless of their unergativity or unaccusativity, it is the lone argument of an intransitive motion verb which is qualified by the root. Not all intransitive motion verbs are qualificational; many instead refer to the kind of motion – flying, running, travelling by boat – rather than the kind of object. The data in (30)–(31) show qualification of the subject with the two roots $\sqrt[1]{}$*gut* 'sg. go' and $\sqrt[1]{}$*.at* 'pl. go'.

(30) a. <u>X</u>waagoot. *singular subject*
wu-<u>x</u>- i- $\sqrt[1]{}$gut -μ
PFV-1SG·S-STV-$\sqrt[1]{}$go·SG-VAR
'I went.'

b. *Wutuwagoot. **plural subject*
wu-tu- i- $\sqrt[1]{}$gut -μ
PFV-1PL·S-STV-$\sqrt[1]{}$go·SG-VAR
intended: 'We went.'

(31) a. *Xwaa.aat. *singular subject*
wu-x- i- $\sqrt[1]{}$.at -μ
PFV-1SG·S-STV-$\sqrt[1]{}$go·PL-VAR
intended: 'I went.'

b. Wutuwa.aat. *plural subject*
wu-tu- i- $\sqrt[1]{}$.at -μ
PFV-1PL·S-STV-$\sqrt[1]{}$go·PL-VAR
'We went.'

The roots $\sqrt[1]{}$*gut* 'sg. go' and $\sqrt[1]{}$*.at* 'pl. go' constrain the qualia of their arguments in much the same way as the roots of handling verbs like $\sqrt[2]{}$*tan* 'handle wooden/empty' above. When these monovalent roots are causativized they form structures parallel to the handling verbs, qualifying only the object and not the subject. In (32) the root $\sqrt[1]{}$*gut* 'sg. go' can occur in a causative with a singular object and either a singular or plural subject, but in (33) the plural object is prohibited regardless of the plurality of the subject. The exact opposite pattern is shown in (34) and (35) with the root $\sqrt[1]{}$*.at* 'pl. go'.

(32) a. Ixwsigoot. *singular subject, singular object*
i- wu-x- s- i- $\sqrt[1]{}$gut -μ
2SG·O-PFV-1SG·S-CSV-STV-$\sqrt[1]{}$go·SG-VAR
'I made you (sg.) go.'

b. Iwtusigoot. *plural subject, singular object*
i- wu-tu- s- i- $\sqrt[1]{}$gut -μ
2SG·O-PFV-1PL·S-CSV-STV-$\sqrt[1]{}$go·SG-VAR
'We made you (sg.) go.'

(33) a. *Yeexwsigoot. *singular subject, plural object*
yee= wu-x- s- i- $\sqrt[1]{}$gut -μ
2PL·O=PFV-1SG·S-CSV-STV-$\sqrt[1]{}$go·SG-VAR
intended: 'I made you guys go.'

b. *Yeewtusigoot. *plural subject, plural object*
yee= wu-tu- s- i- $\sqrt[1]{}$gut -μ
2PL·O=PFV-1PL·S-CSV-STV-$\sqrt[1]{}$go·SG-VAR
intended: 'We made you guys go.'

(34) a. *Ixwsi.aat. *singular subject, singular object*
i- wu-x- s- i- $\sqrt[1]{}$.at -μ
2SG·O-PFV-1SG·S-CSV-STV-$\sqrt[1]{}$go·PL-VAR
intended: 'I made you (sg.) go.'

b. *Iwtusi.aat. *plural subject, singular object*
i- wu-tu- s- i- $\sqrt[1]{}$.at -μ
2SG·O-PFV-1PL·S-CSV-STV-$\sqrt[1]{}$go·PL-VAR
intended: 'We made you (sg.) go.'

(35) a. Yeexwsi.aat. *singular subject, plural object*
yee= wu-x- s- i- $\sqrt[1]{}$.at -μ
2PL·O=PFV-1SG·S-CSV-STV-$\sqrt[1]{}$go·PL-VAR
'I made you guys go.'

b. Yeewtusi.aat. *plural subject, plural object*
yee= wu-tu- s- i- $\sqrt[1]{}$.at -μ
2PL·O=PFV-1PL·S-CSV-STV-$\sqrt[1]{}$go·PL-VAR
'We made you guys go.'

There is some overlap between intransitive motion verbs and handling verbs because some handling verbs are actually constructed by causativization of roots that derive intransitive motion verbs. For example, the root $\sqrt[1]{}$*.at* 'pl. go' is combined with *l-* in *v* to give 'handle plural objects' seen above in (28). This shows that the distinction between motion and handling is somewhat artificial, and a more natural distinction is between basic causation – '*x* make *y* move under *y*'s own power' – and locomotive causation – '*x* act on *y* so that *y* changes location'. This needs further exploration as part of the study of motion semantics.

There are two roots $\sqrt[1]{}$*ta^h* 'sg. sleep' and $\sqrt[1]{}$*xex'w* 'pl. sleep' which form unergative intransitive verbs and which qualify their sole argument. They are not usually considered to be motion verbs because unlike motion verbs they have imperfective forms that describe activities (see sec. 1.3). The data in (36) shows that $\sqrt[1]{}$*ta^h* 'sg. sleep' can only be used with a singular subject, and (37) shows that $\sqrt[1]{}$*xex'w* 'pl. sleep' only allows a plural subject.

(36) a. Xatá. *singular subject*
x- $\sqrt[1]{}$ta^h -H
1SG·S-$\sqrt[1]{}$sleep·SG-VAR
'I am sleeping.'

b. *Tootá. **plural subject*
tu- $\sqrt[1]{}$ta^h -H
1PL·S-$\sqrt[1]{}$sleep·SG-VAR
intended: 'We are sleeping.'

(37) a. *Xaxéx'w. **singular subject*
x- $\sqrt[1]{}$xex'w -H
1SG·S-$\sqrt[1]{}$sleep·PL-VAR
intended: 'I am sleeping.'

b. Tooxéx'w. *plural subject*
tu- $\sqrt[1]{}$xex'w -H
1PL·S-$\sqrt[1]{}$sleep·PL-VAR
'We are sleeping.'

Just like the intransitive motion verbs, the roots $\sqrt[1]{}$*ta^h* 'sg. sleep' and $\sqrt[1]{}$*xex'w* 'pl. sleep' can be causativized, and the resulting transitive structure qualifies the object and not the subject. The data in (38)–(41) shows the grammaticality patterns of singular and plural subjects and objects with both roots. Ungrammaticality arises only from mismatch between the root and the object; the subject is now irrelevant.

(38) a. Ixwsitaa. *singular subject, singular object*
i- wu-x- s- i- $\sqrt[1]{ta^h}$ -μ
2SG·O-PFV-1SG·S-STV-STV-$\sqrt[1]{}$sleep·SG-VAR
'I made you (sg.) fall asleep.'

b. Iwtusitaa. *plural subject, singular object*
i- wu-tu- s- i- $\sqrt[1]{ta^h}$ -μ
2SG·O-PFV-1PL·S-CSV-STV-$\sqrt[1]{}$sleep·SG-VAR
'We made you (sg.) fall asleep.'

(39) a. *Yeexwsitaa. **singular subject, plural object*
yee= wu-x- s- i- $\sqrt[1]{ta^h}$ -μ
2PL·O=PFV-1SG·S-STV-STV-$\sqrt[1]{}$sleep·SG-VAR
'I made you guys fall asleep.'

b. *Yeewtusitaa. **plural subject, plural object*
yee= wu-tu- s- i- $\sqrt[1]{ta^h}$ -μ
2PL·O=PFV-1PL·S-CSV-STV-$\sqrt[1]{}$sleep·SG-VAR
'We made you guys fall asleep.'

(40) a. *Ixwsixéix'w. **singular subject, singular object*
i- wu-x- s- i- $\sqrt[1]{}$xex'w -μH
2SG·O-PFV-1SG·S-STV-STV-$\sqrt[1]{}$sleep·PL-VAR
'I made you (sg.) fall asleep.'

b. *Iwtusixéix'w. **plural subject, singular object*
i- wu-tu- s- i- $\sqrt[1]{}$xex'w -μH
2SG·O-PFV-1PL·S-CSV-STV-$\sqrt[1]{}$sleep·PL-VAR
'We made you (sg.) fall asleep.'

(41) a. Yeexwsixéix'w. *singular subject, plural object*
yee= wu-x- s- i- $\sqrt[1]{}$xex'w -μH
2PL·O=PFV-1SG·S-STV-STV-$\sqrt[1]{}$sleep·PL-VAR
'I made you guys fall asleep.'

b. Yeewtusixéix'w. *plural subject, plural object*
yee= wu-tu- s- i- $\sqrt[1]{}$xex'w -μH
2PL·O=PFV-1PL·S-CSV-STV-$\sqrt[1]{}$sleep·PL-VAR
'We made you guys fall asleep.'

Just like the overlap between motion verbs and handling verbs, there is also overlap between these 'sleep' verbs and the handling verbs. This can be seen in the use of causativized $\sqrt[1]{ta^h}$ 'sg. sleep' as a handling verb in (27) for a dead or unconscious animate entity. The causative of $\sqrt[1]{ta^h}$ 'sg. sleep' is thus ambiguous between the basic causation and locomotive causation interpretations, where with $\sqrt[1]{}$*.at* 'pl. go' these are distinguished by the choice of *s-* or *l-* in *v*.

There is a small class of **positional imperfective verb**s which are based on motion verbs and which similarly qualify their argument (Leer 1991: 324–329). They are discussed in more detail in

chapter 3 section 4.2; here I illustrate only their qualificational behaviour. Positional imperfectives describe the physical location and configuration of an entity in space: being positioned, lying, being draped, etc. As their name implies, positional imperfectives only occur in the imperfective aspect although they are compatible with past tense *-ín* (Cable 2017c). They usually require a location argument of the form *DP-t* with the punctual postposition *-t*. Most are based on monovalent or bivalent motion roots that denote controlled motion (Leer 1991: 325), but $\sqrt[1]{.a}$ 'animate, building sit' in (42) is unique in that it is not the expected $\sqrt[1]{nuk}$ 'sg. animate sit'.[6]

(42) a. Nadáakw kát x̲a.áa. *singular animate*
nadáakw ká -t x̲- $\sqrt[1]{.a}$ -μH
[PP table HSFC-PNCT] 1SG·S-$\sqrt[1]{}$sit·SG-VAR
'I am seated on top of the table.'

b. Wé hít át la.áa. *singular building*
wé hít á -t l- $\sqrt[1]{.a}$ -μH
[DP MDST house] [PP 3N-PNCT] XTN-$\sqrt[1]{}$sit·SG-VAR
'The house sits there.'

(43) a. Wé x'úx' át téen. *generic object*
wé book á -t $\sqrt[1]{}$ti -μH-n
[DP MDST book] [PP 3N-PNCT] $\sqrt[1]{}$hdl·gen-VAR-NSFX
'The book sits there.'

b. Wé k'wát' át katéen. *small round object*
wé k'wát' á -t k- $\sqrt[1]{}$ti -μH-n
[DP MDST egg] [PP 3N-PNCT] SRO-$\sqrt[1]{}$hdl·gen-VAR-NSFX
'The egg sits there.'

c. Wé tíx' át jisatéen. *tangled ropelike object*
wé tíx' á -t ji- s- $\sqrt[1]{}$ti -μH-n
[DP MDST rope] [PP 3N-PNCT] hand-XTN-$\sqrt[1]{}$hdl·gen-VAR-NSFX
'The (wad of) rope sits there.'

d. Wé dáas'aa át wak̲katéen. *hooplike object*
wé dáas'aa á -t wak̲-k- $\sqrt[1]{}$ti -μH-n
[DP MDST snare] [PP 3N-PNCT] eye- SRO-$\sqrt[1]{}$hdl·gen-VAR-NSFX
'The snare sits there.'

(44) a. Wé áa át déin. *body of fluid*
wé áa á -t $\sqrt[1]{}$da -eH-n
[DP MDST lake] [PP 3N-PNCT] $\sqrt[1]{}$flow-VAR-NSFX
'The lake sits there.'

b. Wé eex̲ át x̲'adéin. *congealed fluid*
wé eex̲ á -t x̲'e- $\sqrt[1]{}$da -eH-n
[DP MDST oil] [PP 3N-PNCT] mouth-$\sqrt[1]{}$flow-VAR-NSFX
'The (glob of) oil sits there.'

6. Leer presents $\sqrt[1]{.a}$ as a suppletion of $\sqrt[1]{nuk}$ (Leer 1991: 326), but buildings are not animate. There is a root $\sqrt[1]{.a}$ 'end of object extend, move forward' (Leer 1976a: 72–78) that may be identical with the positional $\sqrt[1]{.a}$, but it is not clear why this should be used for the positional imperfective with animate objects. At worst $\sqrt[1]{.a}$ in (42) is just irregular.

(45) Wé k'oodás' át .áx̱. *fabriclike object*
wé k'oodás' á -t $^{1}\sqrt{}$.ax̱ -H
[DP MDST shirt] [PP 3N-PNCT] $^{1}\sqrt{}$hdl·fabric-VAR
'The shirt sits there.'

The relationship between positional imperfectives and motion verbs is still unclear, but their qualificational behaviour firmly places them in the class of qualificational verbs in Tlingit. Considering the whole class, there is a clear association between qualification and location semantics (handling, locomotion, position), aside from the oddity of the 'sleep' roots. What remains puzzling is why location semantics should specifically be associateed with qualification in the root lexicon, and furthermore why only some roots that encode location semantics also encode qualification. It may not be possible to develop an explanation for this from Tlingit alone, and since qualificational verbs are found throughout the family I suggest that further research on Tlingit qualification should include comparison with Eyak and the Dene languages.

The qualification paradigms in Tlingit involve number – the singular/plural distinction – as well as other qualia like animacy, structure (long, hollow, round), and substance (wooden, mushy). This seems odd from a European language perspective, but it has a coherent metaphysical basis: singularity versus plurality is not inherently different from other physical properties like structure or solidity. The data in (46)–(48) shows this with the roots $^{2}\sqrt{}$*x̱ich* 'throw singular animate or wooden' and $^{2}\sqrt{}$*g̱ich* 'throw plural'. The root $^{2}\sqrt{}$*x̱ich* can be used with either animate or wooden singular objects as shown in (46). The root $^{2}\sqrt{}$*g̱ich* is used with plural objects as shown in (47). The forms in (47) show that a plural animate object must occur with the plural $^{2}\sqrt{}$*g̱ich* and not the singular $^{2}\sqrt{}$*x̱ich*.

(46) a. Keitl gáant aawax̱ích. *throw animate*
keitl gáan -t a- wu-i- $^{2}\sqrt{}$x̱ich -H
[DP dog] [PP outside-PNCT] ARG-PFV-STV-$^{2}\sqrt{}$throw·a/w-VAR
'He threw the dog outside.' (Story & Naish 1973: 227)

b. X̱'aan kát x̱eech, wé k̲áas'! *throw wooden*
x̱'aan ká -t $^{2}\sqrt{}$x̱ich -μ wé k̲áas'
[PP fire HSFC-PNCT] $^{2}\sqrt{}$throw·a/w-VAR [DP MDST stick]
'Throw it on the fire, that stick!' (Leer 1973a: f02/59)

(47) a. X̱'aan ganaltáade yee gax̱dug̱éech. *throw plural*
x̱'aan ganaltáa^{k}-dé yee= w- g̱- g̱- du- $^{2}\sqrt{}$g̱ich -μH
[PP fire fire·amid -ALL] 2PL·O=IRR-GCNJ-MOD-4H·S-$^{2}\sqrt{}$throw·PL-VAR
'They will throw you (pl.) into the furnace.' (Story & Naish 1973: 227)

b. X̱áat dug̱éech. *throw plural*
x̱áat du- $^{2}\sqrt{}$g̱ich -μH
[DP fish] 4H·S-$^{2}\sqrt{}$throw·PL-VAR
'They pitch fish.' (Story & Naish 1973: 151.2046)

(48) a. * Du dóoshx'i gáant aawaxích. **throw animate*
du dóosh-x' -í gáan -t a- wu-i- $\sqrt[2]{}$xich -H
[DP 3H·PSS cat -PL-PSS] [PP outside-PNCT] ARG-PFV-STV-$\sqrt[2]{}$throw·a/w-VAR
intended: 'S/he threw his/her cats outside.'

b. Du dóoshx'i gáant aawagích. *throw plural*
du dóosh-x' -í gáan -t a- wu-i- $\sqrt[2]{}$gich -H
[DP 3H·PSS cat -PL-PSS] [PP outside-PNCT] ARG-PFV-STV-$\sqrt[2]{}$throw·PL-VAR
'S/he threw his/her cats outside.'

Plurality is thus part and parcel of the qualification system. It has a separate existence in the morphosyntax, contrasting between singular and plural pronouns as well as contrasting between number-neutral and marked plural nouns. Number in European languages is taken to be a special kind of ϕ-feature, but Tlingit suggests that it is part of a more complex system of qualia restriction.

1.2.2. Syntactic model and ϰ-features

To account for qualification in the syntax I propose a set of **ϰ-features**[7] that can be part of the lexical specification of a root and which implement the syntactic phenomena associated with qualification. Most of the mechanics of qualification is semantic: nouns for qualified arguments do not change form and the same noun can be interpreted with different qualia given the appropriate contexts, so neither lexical selection nor agreement are apparent. But given a Y-model where syntax feeds semantics, the syntax must arrange for the appropriate qualificational information to be associated with the right argument. In an intransitive structure this seems to be relatively straightforward, but causativity complicates the situation because of the added argument. Furthermore, although the root is the primary source of qualification, the data in section 1.2.1 clearly show that other elements like *v* and the qualifier prefixes can introduce qualification; these must somehow be associated with the right arguments in the syntax so the semantics can interpret them properly. A well designed compositional semantics might obviate the need for ϰ-features in the syntax, but this has yet to be developed.

Given a DP that has an unvalued feature [uϰ], this DP will probe the root to find a feature [ϰ]. This feature is then associated with the DP by agreement and later passed to the semantics at LF for interpretation. The sketch in (49) illustrates a structure with the root $\sqrt[2]{}$*.ax* 'handle fabriclike object'.

(49)

7. The Greek symbol ⟨K⟩ ~ ⟨ϰ⟩ κάππα *káppa* is from Greek κλάση *klásē* 'class, collection of sets definable by a shared propery', or alternatively from Greek κατηγορία *katēgoría* 'category, set sharing characteristics or attributes'. Latin ⟨Q⟩ ~ ⟨q⟩ is already used for questions or quantification. I considered archaic Greek ⟨Ϙ⟩ ~ ⟨ϙ⟩ ϙόππα *qóppa* from Phoenician ⟨𐤒⟩ *qof* (Heb. ⟨ק⟩) and the origin of Latin ⟨Q⟩ ~ ⟨q⟩ and Cyrillic ⟨Ҁ⟩ ~ ⟨ҁ⟩, but this is excessively obscure.

There are a few problems with this approach. One problem is how to account for roots like $\sqrt[2]{tan}$ 'handle wooden object, empty container' that appear to have multiple qualia. The root $\sqrt[2]{tan}$ probably originally qualified wooden objects and was extended to empty containers (boxes, dippers, buckets) back when they were made of wood. But empty containers no longer are made of wood and certainly wooden objects need not be containers. This is illustrated in (50) with two DPs *wé gán* 'the firewood' and *wé x'eesháa*[8] 'the bucket'. A piece of firewood cannot be construed as an empty container and an empty bucket is usually made of plastic or steel.

(50) a. Wé gán a<u>x</u> jeet tán! *handle wooden object*
wé gán a<u>x</u> jee -t $\sqrt[2]{tan}$ -H
[DP MDST firewood] [PP 1SG·PSS poss'n-PNCT] 2SG·S-$\sqrt[2]{}$hdl·w/e-VAR
'Give me that (chunk of) firewood!'

b. Wé x'eesháa a<u>x</u> jeet tán! *handle empty container*
wé x'eesháa a<u>x</u> jee -t $\sqrt[2]{tan}$ -H
[DP MDST bucket] [PP 1SG·PSS poss'n-PNCT] 2SG·S-$\sqrt[2]{}$hdl·w/e-VAR
'Give me that (empty) bucket!'

One solution to this would be to propose two homophonous roots: $\sqrt[2]{tan_1}$ 'handle wooden object' and $\sqrt[2]{tan_2}$ 'handle empty container'. Then we would have the two distinct structures shown in (51) and (52) which differ in the ϰ-feature specified by each root.

(51)

(52)

This solution will not work for DPs that can support both interpretations such as *gúx'aa* 'cup, can, dipper'. The original denotation of this noun was a wooden dipper used to drink water out of a large water storage box, and so being made of wood was associated with $\sqrt[2]{tan}$ 'handle wooden object'. Today however a *gúx'aa* is usually made of ceramic ☕, metal 🛢, or glass 🥃, but wooden dippers are still around so that *gúx'aa* can still plausibly denote a wooden object which is also an empty container. The homophonous root approach would not account for a *gúx'aa* that is both [WOOD$_ϰ$] and [EMPTY$_ϰ$]. Instead we might propose a single root $\sqrt[2]{tan}$ 'handle wooden object, empty container' that is specified for both both [WOOD$_ϰ$] and [EMPTY$_ϰ$], but this brings us back to the original problem of DPs that only satisfy one of the two qualifications.

A related problem is how to account for DPs that can support multiple qualia with roots that specify only one quale. If the noun *gúx'aa* is taken to have two ϰ-features, why is it grammatical with a root like $\sqrt[2]{.in}$ 'handle filled container; gather' that specifies only one ϰ-feature? The resulting

8. From an unknown root √*x'ish* + -*μ* + -*aa* 'instrument'. The homophonous root $\sqrt[1]{x'ish}$ 'skin, flay' in *x'íshaa* 'skinning knife' and *<u>x</u>alax'éesh* 'I skin it' is unrelated, as is the rare noun *x'éeshaa* 'great grandmother' (Leer 1973a: f04/53).

structure would look something like (53) where one unvalued ϰ-feature would be left on the DP and the derivation would then crash.

(53)

Another problem is how to ensure that structures without qualification are possible with DPs that include unvalued ϰ-features. Suppose the noun *gán* 'firewood' has an unvalued ϰ-feature as in (50a) and (51). If this were combined with non-qualificational root like $\sqrt[2]{}$*tsix̲* 'kick' then we would expect the derivation to crash because the [uϰ] feature would not be checked against something in the root. But the form in (54) is actually grammatical. This means that somehow the syntax must choose a *gán* with an unvalued ϰ-feature only in the case when it occurs with a root that has a ϰ-feature, and otherwise the identical *gán* without a ϰ-feature must be used. This is certainly possible but theoretically complicated.

(54) Wé gán x̲waatsíx̲. *non-qualificational root*
wé gan wu-x̲- i- $\sqrt[2]{}$tsix̲-H
[DP MDST firewood] PFV-1SG·S-STV-$\sqrt[2]{}$kick-VAR
'I kicked the firewood.'

Yet another problem is how to unify root qualification with other qualification mechanisms. The data in (22) on page 53 and in (43) on page 59 show structures where the qualification comes not from the root but from either *v* or a qualifier or both. If these are merged above the DP then the DP would have to probe upward to find them and certainly the DP would not c-command *v*.

All of these problems suggest that the straightforward implementation of ϰ-features as in (49) may not be the right model for Tlingit's qualificational system. As I suggested at the beginning of this section, it might be that qualification is best analyzed as a semantic system rather than a syntactic one. But the syntax still needs to know about the relationship between the various qualificational elements and the qualified object. Furthermore, plurality agreement is generally thought of as a syntactic phenomenon and the qualification system involves plurality. I do not have any solutions at present and look forward to further investigation into the syntax and semantics of qualification both in Tlingit and more widely in the Na-Dene family.

1.2.3. Semantic model and the *Q* function

In this section I offer an initial proposal for encoding root-based qualification in the semantic lexical entry of roots. This is an extension of the system sketched in section 1.1.3 where the root denotes a set of eventualities with the conjunction of various functions that restrict the interpretation of the eventualities. Qualification is implemented as a function $\mathcal{Q}(q, y)$ where the q stands for some quale and the variable y is the same as the entity argument of the Θ function $\Theta_1(\varepsilon, y)$. Thus something like

$\Theta_1(\varepsilon, y) \wedge \mathcal{Q}(\mathsf{wood}, y)$ asserts that there is an entity y involved in the eventuality ε as a proto-patient and that the entity y must be made of wood or something like it.

The lexical entry for the generic handling root $\sqrt[2]{ti}$ 'handle generic' seen earlier in (22) and (43) is represented in (55). This root does not actually qualify any entities so it lacks a $\mathcal{Q}$ function. Because of this it can be used with any referent that is compatible with the encylopedic function handle, i.e. anything that can be involved in an eventuality of handling.

(55) $\sqrt[2]{ti}$ 'handle generic' ≡ *non-qualificational root*
$\{\varepsilon \mid \mathsf{handle}(\varepsilon) \wedge \Theta_1(\varepsilon, y) \wedge \Theta_2(\varepsilon, x)\}$

The lexical entry for the root $\sqrt[2]{.a\underline{x}}$ 'handle fabric' in (56) shows the addition of the $\mathcal{Q}$ function $\mathcal{Q}(\mathsf{fabric}, y)$. This asserts that the referent of y must be interpretable as made of fabric (or something like it). The eventuality that it represents is otherwise identical to $\sqrt[2]{ti}$ 'handle generic' above because its encyclopedic function is $\mathsf{handle}(\varepsilon)$, i.e. an eventuality of handling.

(56) $\sqrt[2]{.a\underline{x}}$ 'handle fabric' ≡ *qualificational root*
$\{\varepsilon \mid \mathsf{handle}(\varepsilon) \wedge \Theta_1(\varepsilon, y) \wedge \Theta_2(\varepsilon, x) \wedge \mathcal{Q}(\mathsf{fabric}, y)\}$

The root $\sqrt[2]{tan}$ 'handle wooden/empty' has a more complex lexical entry in (57). This root can qualify either wooden things or empty containers, and this ambiguity is represented by the disjunction of $\mathcal{Q}(\mathsf{wood}, y) \vee \mathcal{Q}(\mathsf{empty}, y)$. The referent of y must satisfy either one of the two $\mathcal{Q}$ functions, and if it satisfies both this is still grammatical.

(57) $\sqrt[2]{tan}$ 'handle wooden/empty' ≡ *bi-qualificational root*
$\{\varepsilon \mid \mathsf{handle}(\varepsilon) \wedge \Theta_1(\varepsilon, y) \wedge \Theta_2(\varepsilon, x) \wedge [\mathcal{Q}(\mathsf{wood}, y) \vee \mathcal{Q}(\mathsf{empty}, y)]\}$

The other qualificational elements in Tlingit presumably use the same semantic mechanism as roots. Thus the lexical entry of the qualifier *k-* probably includes a function like $\mathcal{Q}(\mathsf{round}, y)$, and the extensional *s-* in *v* probably includes something like $\mathcal{Q}(\mathsf{long}, y)$. Since *v* and the qualifiers are in higher positions we need to work out the intervening semantic functionality before we can unify these with root qualification.

The y variable of the Θ function $\Theta_1(\varepsilon, y)$ is usually an entity, either concrete or abstract, but it can sometimes be an eventuality such as with propositional attitude verbs. Both Θ functions and $\mathcal{Q}$ functions operate on the same entity variable, so the possibility arises that a $\mathcal{Q}$ function might be combined with an abstract entity or with an eventuality. I have not explored these possibilities, but I note that some incorporates can refer to abstract entities like *x̲'e-* 'mouth' for speech. The actual detalis of $\mathcal{Q}$ remain to be implemented.

1.3. ε-features: Aspect and eventuality structure

Tlingit roots specify restrictions on the eventuality that is denoted by the verb. The root itself does not explicitly show what these restrictions are, and instead the differences can only be told by paradigmatic patterns in other parts of the verb. There are four basic phenomena involved in the eventuality specification of the root: (i) durativity and the availability of imperfective aspect, (ii) lexical stativity with the imperfective aspect, (iii) stem variation in imperfective aspect forms, and (iv) conjugation class and associated aspect marking. The first three of these phenomena are related to the expression of imperfective aspect. The last is unrelated to imperfective aspect but

is instead related to the expression of all other grammatical aspects in Tlingit. These phenomena thus tie together the lexical aspect (eventuality) specification of roots with the grammatical aspect specification of verbs.

1.3.1. Patterns of eventuality: Imperfective aspect and more

The morphologically unmarked aspect in Tlingit is called imperfective aspect because it generally denotes a durative eventuality that contains the reference time (i.e. $R \subseteq E$; cf. Toews 2015: 207ff.). The unmarked aspect also seems to be compatible with denotations that are not conventionally thought of as imperfective (Burge & Déchaine p.c. 2017), but I continue to use the conventional label pending further work on its semantics. The imperfective aspect is explored in detail in chapter 6 section 2.1. It is significant here because the imperfective aspect is diagnostic for three of the four eventuality-related properties encoded by the root. Two typical imperfective aspect forms are shown in (58), one for an activity and one for a state. Both forms lack an aspectual prefix: there is no perfective prefix *wu-* or *u-* nor is there any conjugation prefix *n-*, *g̲-*, or *g-*.

(58) a. K'wát' x̲ax̲á. *imperfective aspect activity*
k'wát' x̲- $\sqrt[2]{}$x̲a-H
egg 1SG·S-$\sqrt[2]{}$eat-VAR
'I eat eggs.', 'I am eating eggs.'

b. Hít x̲aya.óo. *imperfective aspect state*
hít x̲- i- $\sqrt[2]{}$.u -μH
house 1SG·S-STV-$\sqrt[2]{}$own-VAR
'I own a house.'

Some roots cannot occur in the imperfective aspect, such as $\sqrt[2]{}$*jak̲* 'kill' shown in (59) below.[9] This lack of imperfective aspect is diagnostic for the lack of lexical durativity of the root which is discussed in section 1.3.1.1.

(59) a. Táax'aa x̲waaják̲. *perfective aspect*
táax'aa wu-x̲- i- $\sqrt[2]{}$jak̲-H
mosquito PFV-1SG·S-STV-$\sqrt[2]{}$kill -VAR
'I killed a mosquito.'

b. *Táax'aa x̲aják̲. **imperfective aspect*
táax'aa x̲- $\sqrt[2]{}$jak̲-H
mosquito 1SG·S-$\sqrt[2]{}$kill -VAR
intended: 'I kill mosquitoes.', 'I am killing a mosquito.'

The forms in (58) above are distinguished by the absence of the *i-* prefix in (58a) versus the presence of *i-* in (58b). The presence or absence of *i-* in the imperfective aspect is unpredictable and must be lexically specified by the root. The *i-* prefix is thus diagnostic for lexical stativity in the imperfective aspect as discussed in section 1.3.1.2.

Two roots of nearly the same form and eventuality specification (durativity, stativity) may nonetheless have different stems in the imperfective aspect. This is shown in (60) where one root

9. The noun *táax'aa* 'mosquito' is from $\sqrt[2]{}$*tax'* 'bite' + *-μH* + *-aa* 'instrument'. See Dauenhauer & Dauenhauer 1987: 72–81 for a version of the mosquito's origin story by *Shaadaax'* Robert Zuboff.

has an imperfective form with a long low tone stem *-μ* and another with a long high tone stem *-μH*. This difference of stems in the imperfective aspect is unpredictable and is thus diagnostic for the lexical specification of stem variation in roots which is discussed in section 1.3.1.3.

(60) a. Xax'aal. *-μ stem imperfective aspect*
x- $\sqrt[2]{}$x'al -μ
1SG·S-$\sqrt[2]{}$crunch-VAR
'I crunch it.', 'I am crunching it.'

b. Xahóon. *-μH stem imperfective*
x- $\sqrt[2]{}$hun-μH
1SG·S-$\sqrt[2]{}$sell -VAR
'I sell it.', 'I am selling it.'

Conjugation class is a property exhibited by a number of different morphosyntactic contexts of verbs in Tlingit. One context is the imperative mood where conjugation class is seen in the selection of a conjugation prefix. The data in (61) show how each root specifies a particular conjugation class and thus a particular conjugation prefix in the imperative. This is discussed further in section 1.3.1.4.

(61) a. Yiják! *Ø-conjugation imperative*
Ø yi- $\sqrt[2]{}$jak-H
ZCNJ 2PL·S-$\sqrt[2]{}$kill -VAR
'You guys kill him/her/it!'

b. Nayhoon! *n-conjugation imperative*
n- yi- $\sqrt[2]{}$hun-μ
NCNJ-2PL·S-$\sqrt[2]{}$sell -VAR
'You guys sell it!'

c. Gayxoox! *g-conjugation imperative*
g- yi- $\sqrt[2]{}$xux -μ
GCNJ-2PL·S-$\sqrt[2]{}$summon-VAR
'You guys summon him/her/it!'

d. Gayshí! *g-conjugation imperative*
g- yi- $\sqrt[2]{}$shi^{h}-H
GCNJ-2PL·S-$\sqrt[2]{}$sing -VAR
'You guys sing it!'

1.3.1.1. Lexical durativity and roots

Roots in Tlingit can be lexically specified for durativity. This is diagnosed by the presence or absence of a grammatical form in the imperfective aspect. Roots that denote durative eventualities can be used in the imperfective aspect whereas roots for non-durative (i.e. instananeous) eventualities cannot be used in the imperfective aspect. Compare the root $\sqrt[2]{}$*his'* 'borrow' in (62) with the root $\sqrt[2]{}$*s'el'* 'tear, rip' in (63). Both roots can be used in the perfective aspect, but only $\sqrt[2]{}$*his'* 'borrow' can be used in the imperfective aspect in (62b) since $\sqrt[2]{}$*s'el'* 'tear, rip' in (63b) is ungrammatical.

(62) a. S'ísaa x̲waahées'. *perfective aspect*
s'ísaa wu-x̲- i- $\sqrt[2]{}$his' -μH
cloth PFV-1SG·S-STV-$\sqrt[2]{}$borrow-VAR
'I borrowed cloth.', 'I have borrowed cloth.'

b. S'ísaa x̲ahées'. *imperfective aspect*
s'ísaa x̲- $\sqrt[2]{}$his' -μH
cloth 1SG·S-$\sqrt[2]{}$borrow-VAR
'I borrow cloth.', 'I am borrowing cloth.'

(63) a. S'ísaa x̲waas'éil'. *perfective aspect*
s'ísaa wu-x̲- i- $\sqrt[2]{}$s'el'-μH
cloth PFV-1SG·S-STV-$\sqrt[2]{}$tear -VAR
'I tore cloth.', 'I have torn cloth.'

b. *S'ísaa x̲as'éil'. **imperfective aspect*
s'ísaa x̲- $\sqrt[2]{}$s'el'-μH
cloth 1SG·S-$\sqrt[2]{}$tear -VAR
intended: 'I tear cloth.', 'I am tearing cloth.'

Leer analyses the imperfective aspect as being inherently durative, saying that "it refers to an ongoing continuous situation" or to "a characteristically valid situation" (Leer 1991: 357). The imperfective aspect thus has two interpretations, one specific and one generic, but both involve an eventuality that is spread over some interval of time. If imperfective aspect were the source of durativity in structures like (62b) then we would expect it to be possible to have (63b) as well. But this is not the case since (63b) is ungrammatical. Instead I argue that the imperfective aspect presupposes durativity, and that individual roots must be lexically specified for durativity. If a root like $\sqrt[2]{}$*s'el'* 'tear, rip' lacks the lexical specification of durativity then the resulting verbal structure fails the imperfective aspect's presupposition of durativity. There are thus roots like $\sqrt[2]{}$*his'* 'borrow' that denote activities (durative events) and roots like $\sqrt[2]{}$*s'el'* 'tear, rip' that denote achievements (non-durative or instantaneous events).

This division between (durative) activity roots and (instantaneous) achievement roots is pervasive throughout the Tlingit root lexicon. Table 2.2 on page 68 lists a handful of activity roots and table 2.3 on page 69 a similar number of achievement roots; they are selected to have minimal morphology, in particular lacking material in *v* and Voice. The activity roots in table 2.2 are given with a third person (subject and/or object) imperfective aspect form. The achievement roots in table 2.3 are ungrammatical in the imperfective aspect so a similar perfective aspect form is listed instead. The 'O' and 'S' columns indicate the argument structure of each verb, and the 'Conj.' column indicates the lexically specified conjugation class(es) which are discussed further in section 1.3.1.4. Table 2.2 for the activities contains a 'Stem' column that gives the lexically specified stem variation of the imperfective aspect which is discussed in section 1.3.1.3; the stem variation of perfective aspect is predictable (ch. 6 sec. 2.2) and so is omitted in table 2.3.

It is tempting to look for some sort of other property that could determine the difference between activity roots and achievement roots, but there are no other correlated properties. Reviewing

Imperfective	*Translation*	*O*	*S*	*Root*	*Gloss*	*Stem*	*Conj.*
a.áak	‘s/he weaves it’	+	+	$\sqrt[2]{.ak}$	‘weave’	*-μH*	*∅*
akoo.aak̲w	‘s/he tries it’	+	+	$\sqrt[2]{.ak̲w}$	‘try’	*-μ*	*n*
a.aax̲w	‘s/he ties it’	+	+	$\sqrt[2]{.ax̲w}$	‘tie, bind’	*-μ*	*∅*
oochoox̲	‘s/he mooches it’	+	+	$\sqrt[2]{chux̲}$	‘mooch’	*-μ*	*g̲*
akadóox’	‘s/he knots it’	+	+	$\sqrt[2]{dux’}$	‘knot’	*-μH*	*∅*
akagóok	‘it pecks it’	+	+	$\sqrt[2]{gu’k}$	‘peck’	*-μH*	*n/g*
agwáal	‘s/he beats it’	+	+	$\sqrt[2]{gwal}$	‘beat’	*-μH*	*∅/g*
g̲áax̲	‘s/he cries’	–	+	$\sqrt[2]{gax̲}$	‘cry’	*-μH*	*n/g*
ahées’	‘s/he borrows it’	+	+	$\sqrt[2]{his’}$	‘borrow’	*-μH*	*n/g*
aheich	‘s/he accuses him/her’	+	+	$\sqrt[2]{hech}$	‘accuse’	*-μ*	*g*
ahóon	‘s/he sells it’	+	+	$\sqrt[2]{hun}$	‘sell’	*-μH*	*n*
a.éex’	‘s/he calls/invites him/her’	+	+	$\sqrt[2]{.ix’}$	‘call’	*-μH*	*n/g̲*
ajáak̲w	‘s/he beats him/her up’	+	+	$\sqrt[2]{jak̲w}$	‘beat up’	*-μH*	*n*
akwdakaa	‘s/he is copying him/her’	+	+	$\sqrt[2]{ka}$	‘copy’	*-μ*	*n*
yéi x̲’ayak̲á	‘s/he says so’	–	+	$\sqrt[1]{k̲a}$	‘say’	*-H*	*n*
alóok	‘s/he sips it’	+	+	$\sqrt[2]{luk}$	‘sip’	*-μH*	*∅*
al’áa	‘s/he sucks it’	+	+	$\sqrt[2]{l’a^h}$	‘suck’	*-μH*	*∅*
al’óon	‘s/he hunts it’	+	+	$\sqrt[2]{l’u’n}$	‘hunt’	*-μH*	*∅/n*
as’óow	‘s/he chops it’	+	+	$\sqrt[2]{s’u’w}$	‘chop’	*-μH*	*∅/n/g̲*
asháa	‘it barks at him/her’	+	+	$\sqrt[2]{sha^h}$	‘bark’	*-μH*	*g*
ashí	‘s/he sings it’	+	+	$\sqrt[2]{shi^h}$	‘sing’	*-H*	*g*
tá	‘s/he sleeps’	–	+	$\sqrt[1]{ta^h}$	‘sg. sleep’	*-H*	*n*
táan	‘it (fish) jumps’	–	+	$\sqrt[1]{ta’n}$	‘fish jump’	*-μH*	*n*
atáaw	‘s/he steals it’	+	+	$\sqrt[1]{taw}$	‘steal’	*-μH*	*∅*
atéew	‘s/he reads/counts it’	+	+	$\sqrt[2]{ti’w}$	‘count’	*-μH*	*n*
atóol	‘s/he drills it’	+	+	$\sqrt[2]{tul}$	‘spin’	*-μH*	*∅/n*
atlaakw	‘s/he tells it (legend)’	+	+	$\sqrt[2]{tlakw}$	‘legend’	*-μ*	*n*
atléit’	‘s/he licks it’	+	+	$\sqrt[2]{tlet’}$	‘lick’	*-μH*	*∅*
ats’éit’	‘s/he skins it’	+	+	$\sqrt[2]{ts’et’}$	‘skin, flay’	*-μH*	*n*
axáas’	‘s/he scrapes it’	+	+	$\sqrt[2]{xas’}$	‘scrape’	*-μH*	*∅*
ax̲á	‘s/he eats it’	+	+	$\sqrt[2]{x̲a}$	‘eat’	*-H*	*∅*
has x̲éx’w	‘they sleep’	–	+	$\sqrt[1]{x̲ex’w}$	‘pl. sleep’	*-H*	*n*
ax̲oox̲	‘s/he summons him/her’	+	+	$\sqrt[2]{x̲ux̲}$	‘summon’	*-μ*	*g̲*
ax̲’aal	‘s/he crunches it’	+	+	$\sqrt[2]{x̲’al}$	‘crunch’	*-μ*	*∅*
ayáa	‘s/he (back)packs it’	+	+	$\sqrt[2]{ya}$	‘pack’	*-μH*	*n*

Table 2.2: Some morphologically simple activity verbs

Perfective	*Translation*	*O*	*S*	*Root*	*Gloss*	*Conj.*
aawa.áx̲	‘s/he heard it’	+	+	$\overset{2}{\sqrt{}}$*.ax̲*	‘hear’	*∅*
kaawa.aa	‘it grew’	+	–	$\overset{1}{\sqrt{}}$*.a*	‘end move’	*n*
uwa.áx’w	‘it got cracked’	+	–	$\overset{1}{\sqrt{}}$*.ax’w*	‘crack’	*∅*
aawach’éx̲’	‘s/he pointed at it’	+	+	$\overset{2}{\sqrt{}}$*ch’ex̲’*	‘point’	*∅*
uwadút’	‘s/he hiccuped’	+	–	$\overset{1}{\sqrt{}}$*dut’*	‘hiccup’	*∅*
ayaawadlaak̲	‘s/he won it’	+	+	$\overset{2}{\sqrt{}}$*dlak̲*	‘win’	*n*
uwa.ée	‘it got cooked’	+	–	$\overset{1}{\sqrt{}}$*.i*	‘cooked’	*∅*
aawagaak̲	‘s/he visited him/her’	+	+	$\overset{2}{\sqrt{}}$*gak̲*	‘visit’	*g̲*
wudihaan	‘s/he stood up’	–	+	$\overset{1}{\sqrt{}}$*han*	‘sg. stand’	*g*
aawaják̲	‘s/he killed him/her/it’	+	+	$\overset{2}{\sqrt{}}$*jak̲*	‘kill’	*∅*
yaawajeich	‘s/he got surprised’	+	–	$\overset{1}{\sqrt{}}$*jech*	‘surprise’	*g̲*
kaawajoox	‘it rolled, spun’	+	–	$\overset{1}{\sqrt{}}$*jux*	‘roll’	*g*
aawakél’	‘s/he undid it’	+	+	$\overset{2}{\sqrt{}}$*kel’*	‘undo’	*∅*
has wook̲ee	‘they sat down’	–	+	$\overset{1}{\sqrt{}}$*k̲i*	‘pl. sit’	*g̲*
aawal’éex’	‘s/he broke it’	+	+	$\overset{2}{\sqrt{}}$*l’ix’*	‘break’	*n*
woonaa	‘s/he died’	+	–	$\overset{1}{\sqrt{}}$*na*	‘die’	*n*
has wudinaak̲	‘they stood up’	–	+	$\overset{1}{\sqrt{}}$*nak̲*	‘pl. stand’	*g*
wooneex̲	‘s/he got healed/safe’	+	–	$\overset{1}{\sqrt{}}$*nix̲*	‘safe’	*g̲*
woonook	‘s/he sat down’	–	+	$\overset{1}{\sqrt{}}$*nuk*	‘sg. sit’	*g̲*
aawa.óos’	‘s/he washed it’	+	+	$\overset{2}{\sqrt{}}$*.us’*	‘wash’	*n*
aawa.oo	‘s/he bought it’	+	+	$\overset{2}{\sqrt{}}$*u*	‘buy’	*∅/n*
kaawasóos	‘they scattered’	+	–	$\overset{1}{\sqrt{}}$*su’s*	‘pl. scatter’	*g*
woos’éex̲’	‘s/he got diarrhea’	+	–	$\overset{1}{\sqrt{}}$*s’ix’*	‘diarrhea’	*g̲*
aawas’éil’	‘s/he tore it’	+	+	$\overset{2}{\sqrt{}}$*s’el’*	‘tear, rip’	*n/g̲*
wooshaash	‘it wore out’	+	–	$\overset{1}{\sqrt{}}$*shash*	‘wear out’	*g̲*
aawasháat	‘s/he grabbed it’	+	+	$\overset{2}{\sqrt{}}$*sha’t*	‘grab’	*g̲/g*
wootáax̲’w	‘it sank’	+	–	$\overset{1}{\sqrt{}}$*tax̲’w*	‘sink’	*n*
ayawditee	‘it got stormy’	–	+	$\overset{1}{\sqrt{}}$*tiʰ*	‘storm’	*g̲*
aawat’ee	‘s/he found it’	+	+	$\overset{2}{\sqrt{}}$*t’iʰ*	‘find’	*g*
aawat’úk	‘s/he (bow) shot it’	+	+	$\overset{2}{\sqrt{}}$*t’u’k*	‘bow shoot’	*∅*
woowáat	‘s/he grew up’	+	–	$\overset{1}{\sqrt{}}$*wa’t*	‘mature’	*g*
akaawaxaash	‘s/he cut it apart’	+	+	$\overset{2}{\sqrt{}}$*xash*	‘cut’	*∅/n*
aawaxéet’	‘s/he swept it’	+	+	$\overset{2}{\sqrt{}}$*xit’*	‘sweep’	*g̲*
aawayeek̲	‘it mouthed it up’	+	+	$\overset{2}{\sqrt{}}$*ÿik̲*	‘mouth, pull’	*g*

Table 2.3: Some morphologically simple achievement verbs

the data in tables 2.2 and 2.3, I can find no patterns among roots in one table that unequivocally distinguish them from roots in the other table. Root phonology is diverse in both tables, covering all the known syllable structures. Valency is similarly diverse, although there is a bias toward bivalent roots among the activities. The activity roots in table 2.2 do not form unaccusatives and the achievement roots in table 2.3 do not form unergatives, but I have the feeling that there are counterexamples to be found in the lexical documentation so that this argument structure difference is not diagnostic.[10] Lexically specified conjugation class has no obvious patterns to be seen in these tables, and roots that occur with more than one conjugation class are attested in both categories.

Instantaneous roots can occur in the imperfective aspect, but they must be modified by the addition of a repetitive suffix which I analyze as a kind of Adv adjoined above VP (sec. 2.3). The repetitive suffix adds iteration (repetition) of the basic eventuality so that the output eventuality consists of a sequence of subeventualities. This sequence takes up time and so is itself a durative eventuality. Hence the addition of the repetitive suffix satisfies the durativity presupposition of imperfective aspect. This is illustrated in (64) with the achievement root $\sqrt[2]{t'i^h}$ 'find'.

(64) a. Dáanaa xwaat'ee. *perfective aspect*
dáanaa wu-x- i- $\sqrt[2]{t'i^h}$-μ
money PFV-1SG·S-STV-$\sqrt[2]{\text{find}}$-VAR
'I found money.'

b. *Dáanaa xat'ee. **imperfective aspect*
dáanaa x- $\sqrt[2]{t'i^h}$-μ
money 1SG·S-$\sqrt[2]{\text{find}}$-VAR
'I find money.', 'I am finding money.'

c. Dáanaa kei xat'eech. *repetitive imperfective aspect*
dáanaa kei=x- $\sqrt[2]{t'i^h}$-μ -ch
money up= 1SG·S-$\sqrt[2]{\text{find}}$-VAR-REP
'I repeatedly find money.', 'I keep finding money.'

The perfective aspect form of $\sqrt[2]{t'i^h}$ 'find' in (64a) is grammatical as expected. The imperfective aspect form in (64b) is ungrammatical which confirms that this is an achievement root and not an activity root. The addition of iterative semantics with the repetitive suffix *-ch* in (64c) creates a sequence of finding achievements where the whole sequence takes up some time and thus satisfies the presupposition for durativity. The appearance of *kei=* is due to conjugation class, for which see section 1.3.1.4. Repetitive imperfectives are further detailed in chapter 6 section 2.1.

I have argued in this section that roots can be specified for durativity or not. The inverse is also reasonable, where roots could be specified for instantaneity or not. Then non-instantaneous (durative) roots would admit the imperfective aspect and instantaneous (non-durative) roots would prohibit it. It is unclear to me at present if either of these approaches has any advantages over the other; for now I maintain durativity as the distinguishing property.

10. Also many states are unaccusative (sec. 1.3.1.2) and motion roots support unergatives but not imperfective activity forms (ch. 3 sec. 3.2.2.6; ch. 6 sec. 3.3).

1.3.1.2. Lexical stativity and roots

Roots in Tlingit can be lexically specified for stativity. This is diagnosed by the presence or absence of the *i-* prefix in the imperfective aspect. Roots that denote states have *i-* in the imperfective aspect whereas roots that denote activities lack *i-* in the imperfective aspect. Compare the state root $\sqrt[2]{.u}$ 'own' in (65) with the activity root $\sqrt[2]{l'a^h}$ 'suck' in (66). The imperfective aspect for the state root is grammatical only with *i-* in (65a) whereas the imperfective aspect for the activity root is grammatical only without *i-* in (66b).

(65) a. Hít xaya.óo. *imperfective state with i-*
hít x- i- $\sqrt[2]{.u}$ -μH
house 1PL·S-STV-$\sqrt[2]{\text{own}}$-VAR
'I own a house.'

b. *Hít xa.óo. **imperfective state without i-*
hít x- $\sqrt[2]{.u}$ -μH
house 1PL·S- $\sqrt[2]{\text{own}}$-VAR
intended: 'I am owning a house.'

(66) a. *Shé xayal'áa. **imperfective activity with i-*
shé x- i- $\sqrt[2]{l'a^h}$ -μH
blood 1PL·S-STV-$\sqrt[2]{\text{suck}}$-VAR
intended: 'I suck blood.', 'I am sucking blood.'

b. Shé xal'áa. *imperfective activity without i-*
shé x- $\sqrt[2]{l'a^h}$ -μH
blood 1PL·S- $\sqrt[2]{\text{suck}}$-VAR
'I suck blood.', 'I am sucking blood.' (e.g. *táax'aa* 'mosquito')

The roots in (65) and (66) are carefully chosen: they have no significant phonological differences and their imperfective aspect forms are essentially identical. This means that there is no morphological difference between the four forms other than the presence or absence of *i-*. Semantically they differ in precisely one way as well, namely that the form with *i-* in (65a) denotes a state and the form without *i-* in (66b) denotes an activity. I analyze the *i-* prefix as the realization of the Ɛ ('epsilon' or 'e') head in chapter 3, and there I discuss the stativity interpretations associated with its presence. For now all that matters is that the distribution of the *i-* prefix in the imperfective aspect is unpredictable from any other syntactic material except for the root, and that *i-* occurs only in verb forms that denote states. I conclude then that roots can specify stativity.

There are other grammatical contexts where verbs appear with *i-* but this is not determined by the root. For example, the potential modality denotes an eventuality where something is circumstantially or deontically possible (Burge 2017: 50; Leer 1991: 388). This kind of eventuality is inherently stative in Tlingit and so the *i-* prefix appears regardless of the lexical specification of the root. Thus both the state root $\sqrt[2]{.u}$ 'own' in (67) and the activity root $\sqrt[2]{l'a^h}$ 'suck' in (68) occur with the *i-* prefix even though $\sqrt[2]{l'a^h}$ 'suck' with *i-* is ungrammatical in (66a).

(67) a. Hít nakwaa.oo. *potential modality with i-*
hít u- n- g̱- x̱- i- $\overset{2}{\surd}$.u -μ
house IRR-NCNJ-MOD-1SG·S-STV-$\overset{2}{\surd}$own-VAR
'I can own a house.', 'I may own a house.'

b. *Hít nakwa.oo. **potential modality without i-*
hít u- n- g̱- x̱- $\overset{2}{\surd}$.u -μ
house IRR-NCNJ-MOD-1SG·S- $\overset{2}{\surd}$own-VAR
intended: 'I can own a house.', 'I may own a house.'

(68) a. Shé nakwaal'aa. *potential modality with i-*
shé u- n- g̱- x̱- i- $\overset{2}{\surd}$l'a^{h} -μ
blood IRR-NCNJ-MOD-1SG·S-STV-$\overset{2}{\surd}$suck-VAR
'I can suck blood.', 'I may suck blood.'

b. *Shé nakwal'aa. **potential modality without i-*
shé u- n- g̱- x̱- $\overset{2}{\surd}$l'a^{h} -μ
blood IRR-NCNJ-MOD-1SG·S- $\overset{2}{\surd}$suck-VAR
intended: 'I can suck blood.', 'I may suck blood.'

The key difference between the imperfective aspect forms in (65) and (66) and other contexts where the *i-* prefix appears is that all other cases have some other element in addition to the *i-* prefix that is involved in aspectual contrasts. In (67) and (68) above there are the *u-* irrealis prefix, the *n*-conjugation prefix, and the *g̱-* modal prefix in addition to *i-*. In the perfective aspect like in (64a) there is the perfective *wu-* in addition to *i-*. As discussed later in chapter 3, these contexts are driven by the grammatical aspect specifying the presence of *i-*. In the imperfective aspect there is no element specifying *i-* aside from the root itself, and so it is the lexical aspect that specifies the presence of *i-*.

1.3.1.3. Lexical stem variation and roots

The V head is obligatory with verbs and must contain some overt phonological value in every verb word. Most temporal inflection categories (aspect, tense, mood, etc.) have a predictable value for V depending on a handful of factors like conjugation class membership, root phonology, polarity, clause type, etc. For example, in main clause affirmative perfectives the V value is *-H* for the *∅*-conjugation class and *-μ* for the other three (*n-*, *g̱-*, *g-*) conjugation classes, except that *-μ* is replaced by *-μH* if the root has the shape *√CVC'* or *√CV'C* (see sec. 2 and appendix B). But in the imperfective aspect the value of V is impossible to predict aside from the phonological constraints which hold for all stems (e.g. *-μH* for *-μ*). Each root must lexically specify the value of V which occurs in the imperfective aspect form, and only one value is attested for any given root. Roots that do not occur in the imperfective aspect – i.e. roots that denote instantaneous rather than durative eventualities – need not have any lexical specification for V.

The possible combinations of √ and V for imperfectives are laid out in table 2.4. Attested values of V are indicated by '+' and unattested values of V are indicated by '–'. The ablauting stems *-e* and *-eH* can only occur with open syllable roots (*√CV*, *√CV^{h}*), the truncating stem -⊗ can only occur with *√CVC* roots, and the long low tone stem *-μ* is prohibited with laryngealized roots (*√CVC'*, *√CV'C*). These phonologically impossible are indicated by '∗'.

Eventuality class	*Root syllable*	*Root shape*	-H	-μ	-μH	-eH	-e	-⊗
activity	*open*	√CV	✓	–	✓	–	–	*
		√CV^{h}	✓	✓	✓	–	–	*
	closed	√CVC	✓	✓	✓	*	*	–
		√CVC'	–	*	✓	*	*	*
		√CV'C	–	*	✓	*	*	*
state	*open*	√CV	–	–	✓	✓	–	*
		√CV^{h}	–	✓	✓	–	✓	*
	closed	√CVC	✓	✓	✓	*	*	–
		√CVC'	✓	*	–	*	*	*
		√CV'C	✓	*	✓	*	*	*

Table 2.4: Root-specified stem variation for unmarked imperfective aspect. '✓' is attested, '–' is unattested, and '*' is phonologically ungrammatical

Although there are six phonologically possible V values for the imperfective aspect, only four are attested. The truncating stem -⊗ only occurs with three √*CVC* roots in the imperative mood so its absence in the imperfective aspect is unremarkable. The low tone ablauting stem -*e* is also very uncommon so its absence in the imperfective aspect is not particularly surprising. The high tone ablauting stem -*eH* is normally triggered by suffixation and only occurs in a couple of imperfective states. The lack of the long low tone stem -*μ* with √*CV* roots for both activities and states is interesting, but it has no obvious explanation. Other gaps may be accidental or due to missing data in the lexical documentation, but they could also reflect deeper patterns that should be investigated.

Leer describes the imperfective stem variation as reflecting semantic classes of vocabulary, so for example -*μ* (essentially his "-'") for activities is associated with "action viewed as a process, especially involving physical manipulation" and -*μ* for states "may denote perception and cognition" (Leer 1991: 244). Unfortunately Leer does not explicitly list the particular verbs of each class, instead giving only rough English translations, so it is not clear which verbs he actually intends for each of his classifications. It could be the case that the lexically specified stem variation values of V for imperfective aspect are correlated with semantic properties, but this has yet to be demonstrated. From what I have seen so far of the lexicon, the association of particular V values for imperfective aspect with particular roots is essentially arbitrary.

The data in (69)–(78) illustrate individual verb roots in the imperfective aspect with their lexically specified stem variation, attesting to the patterns in table 2.4. The data is organized first by eventuality class with activities in (69)–(73) and states in (74)–(78). Each numbered example then gives a particular stem variation value with each of the five root shapes. This organization follows the structure of table 2.4, starting with the upper left column with -*H* activities of open syllable roots √*CV* and working downward and then rightward through each column. The unattested truncating stem -⊗ is omitted: it is only known with √*CVC* roots in imperatives (sec. 2.6.5).

(69) a. Xaxá. *activity imperfective with √CV-H*
x- ^{2}√xa-H
1SG·S-^{2}√eat-VAR
'I eat it.', 'I'm eating it.'

b. Xatá. *activity imperfective with √CV^{h}-H*
x- ^{1}√ta^{h} -H
1SG·S-^{1}√sleep·SG-VAR
'I sleep.', 'I'm sleeping.'

c. Xalatín. *activity imperfective with √CVC-H*
x- l- ^{2}√tin-H
1SG·S-XTN-^{2}√see -VAR
'I watch it.', 'I'm watching it.'

d. – (unattested) *–activity imperfective with √CVC'-H*

e. – (unattested) *–activity imperfective with √CV'C-H*

(70) a. – (unattested) *–activity imperfective with √CV-μ*

b. Yaxajee. *activity imperfective with √CV^{h}-μ*
ÿ- x- ^{2}√ji^{h} -μ
QUAL-1SG·S-^{2}√punish-VAR
'I punish him/her.', 'I'm punishing him/her.'

c. Xax'aal. *activity imperfective with √CVC-μ*
x- ^{2}√x'al -μ
1SG·S-^{2}√crunch-VAR
'I crunch it.', 'I'm crunching it.'

d. * (ungrammatical) **activity imperfective with √CVC'-μ*

e. * (ungrammatical) **activity imperfective with √CV'C-μ*

(71) a. Xayáa. *activity imperfective with √CV-μH*
x- ^{2}√ya -μH
1SG·S-^{2}√pack-VAR
'I pack it.', 'I'm packing it.'

b. Xal'áa. *activity imperfective with √CV^{h}-μH*
x- ^{2}√l'a^{h} -μH
1SG·S-^{2}√suck-VAR
'I suck it.', 'I'm sucking it.'

c. Xahóon. *activity imperfective with √CVC-μH*
x- ^{2}√hun-μH
1SG·S-^{2}√sell -VAR
'I sell it.', 'I'm selling it.'

d. X̱atáax'. *activity imperfective with √CVC'-μH*
x̱- ^{2}√tax' -μH
1SG·S-^{2}√chew-VAR
'I chew it.', 'I'm chewing it.'

e. Táan. *activity imperfective with √CV'C-μH*
^{1}√ta'n -μH
^{1}√fish·jump-VAR
'It (fish) jumps.', 'It (fish) is jumping.'

(72) a. – (unattested) *–activity imperfective with √CV-eH*
b. – (unattested) *–activity imperfective with √CV^{h}-eH*
c. * (ungrammatical) **activity imperfective with √CVC-eH*
d. * (ungrammatical) **activity imperfective with √CVC'-eH*
e. * (ungrammatical) **activity imperfective with √CV'C-eH*

(73) a. – (unattested) *–activity imperfective with √CV-e*
b. – (unattested) *–activity imperfective with √CV^{h}-e*
c. * (ungrammatical) *–activity imperfective with √CVC-e*
d. * (ungrammatical) **activity imperfective with √CVC'-e*
e. * (ungrammatical) **activity imperfective with √CV'C-e*

(74) a. – (unattested) *–state imperfective with √CV-H*
b. – (unattested) *–state imperfective with √CV^{h}-H*
c. X̱at yadál. *state imperfective with √CVC-H*
x̱at= i- ^{1}√dal -H
1SG·O=STV-^{1}√heavy-VAR
'I am heavy.'

d. X̱at yayát'. *state imperfective with √CVC'-H*
x̱at= i- ^{1}√ÿat'-H
1SG·O=STV-^{1}√long-VAR
'I am long.'

e. X̱at yaxát. *state imperfective with √CV'C-H*
x̱at= i- ^{1}√xa't -H
1SG·O=STV-^{1}√hang-VAR
'I stick out.'

(75) a. – (unattested) *–state imperfective with √CV-μ*

b. Yéi x̲at yatee *state imperfective with √CV^h-μ*
yéi= x̲at= i- ^{1}√ti^h-μ
thus=1SG·O=STV-^{1}√be -VAR
'I am so.'

c. X̲at yatseen *state imperfective with √CVC-μ*
x̲at= i- ^{1}√tsin-μ
1SG·O=STV-^{1}√alive-VAR
'I am alive.'

d. * (ungrammatical) **state imperfective with √CVC'-μ*

e. * (ungrammatical) **state imperfective with √CV'C-μ*

(76) a. X̲at sitóo. *state imperfective with √CV-μH*
x̲at= s- i- ^{0}√tu -μH
1SG·O=INTR-STV-^{0}√clever-VAR
'I am clever.'

b. X̲at yagéi. *state imperfective with √CV^h-μH*
x̲at= i- ^{1}√ge^h-μH
1SG·O=STV-^{1}√big -VAR
'I am big.'

c. X̲at yatéen. *state imperfective with √CVC-μH*
x̲at= i- ^{2}√tin-μH
1SG·O=3·S-STV- ^{2}√see
'He/she can see me.'

d. – (unattested) *–state imperfective with √CVC'-μH*

e. X̲at six'áan. *state imperfective with √CV'C-μH*
x̲at= s- i- ^{2}√x'a'n-μH
1SG·O=INTR-STV-^{0}√angry-VAR
'I am grouchy.'

(77) a. Yéi saxaahéi. *state imperfective with √CV-eH*
yéi= se- x̲- i- ^{1}√ha -eH
thus=voice-1SG·S-STV-^{1}√want-VAR
'I want it thus.'

b. – (unattested) *–state imperfective with √CV^h-eH*

c. * (ungrammatical) **state imperfective with √CVC-eH*

d. * (ungrammatical) **state imperfective with √CVC'-eH*

e. * (ungrammatical) **state imperfective with √CV'C-eH*

(78) a. – (unattested) *–state imperfective with √CV-e*

b. Yatlei. *state imperfective with √CV^h-e*
i- ^{1}√tla^h -e
STV-^{1}√stout-VAR
'S/he/it is stout, girthy.'

c. * (ungrammatical) **state imperfective with √CVC-e*

d. * (ungrammatical) **state imperfective with √CVC'-e*

e. * (ungrammatical) **state imperfective with √CV'C-e*

1.3.1.4. Lexical conjugation class and roots

Conjugation class is an abstract property of each verb that is realized in various ways depending on the morphosyntactic context. The conjugation classes are closely associated with the conjugation prefixes *n-*, *g̲-*, *g-* or the absence of a prefix as *∅*, and are so identified: *∅*-conjugation class, *n*-conjugation class, etc. The conjugation prefixes are used for indicating the conjugation classes in some contexts but in other contexts they are used for indicating certain grammatical aspects, so the prefixes and classes are not necessarily the same in every verb form. Both are detailed in chapter 6 section 3.

The significant issue here is that conjugation class can be lexically specified as part of the root. This is easiest to identify in the imperative mood where the conjugation prefix always reflects the verb's conjugation class. The data in (79) illustrate a set of four roots, each of which specifies one of the four conjugation classes and hence appears in the imperative with one of the four conjugation prefixes. Any other combinations of prefix and root would be ungrammatical.

(79) a. Yilúk! *∅-conjugation imperative*
∅ yi- ^{2}√luk-H
ZCNJ 2PL·S-^{2}√sip -VAR
'You guys sip it!'

b. Naytéew! *n-conjugation imperative*
n- yi- ^{2}√ti'w-μ
NCNJ-2PL·S-^{2}√read-VAR
'You guys read it!'

c. G̲ayxéet'! *g̲-conjugation imperative*
g̲- yi- ^{2}√xit' -μ
GCNJ-2PL·S-^{2}√sweep-VAR
'You guys sweep it!'

d. Gayhées'! *g̲-conjugation imperative*
g- yi- ^{2}√his' -H
GCNJ-2PL·S-^{2}√borrow-VAR
'You guys borrow it!'

Another context where the conjugation class is realized by the conjugation prefix is the hortative modality. This is expressed by the combination of the conjugation prefix and the *g̲-* modality prefix

along with -μ in V and it expresses circumstantial possibility (Burge 2017: 50). As with the imperative above, the hortatives in (80) would be ungrammatical with any other combination of conjugation prefix and root.

(80) a. Ḵajaak̲. *Ø-conjugation hortative*
g̲- x̲- ²√jak̲-μ
ZCNJ MOD-1SG·S-²√kill -VAR
'Let me kill him/her/it.'

b. Nak̲ahoon. *n-conjugation hortative*
n- g̲- x̲- ²√hun-μ
NCNJ-MOD-1SG·S-²√sell -VAR
'Let me sell it.'

c. Ḵaak̲ax̲oox̲. *g̲-conjugation hortative*
g̲- g̲- x̲- ²√x̲ux̲ -μ
G̲CNJ-MOD-1SG·S-²√summon-VAR
'Let me summon him/her/it.'

d. Gak̲ashee. *g̲-conjugation hortative*
g- g̲- x̲- ²√shiʰ-μ
GCNJ-MOD-1SG·S-²√sing -VAR
'Let me sing it.'

Not all roots specify a conjugation class. All of the roots that describe eventualities of motion (change of location) are unspecified for conjugation class which must instead be supplied by a motion derivation. The motion derivation supplies a PP or adverb along with some other morphological material and describes the path of the motion with respect to some location (source, destination, anchor, etc.). Motion derivations also specify a conjugation class, and each motion derivation belongs to one of the four classes. Thus a motion root can realize any one of the four conjugation classes depending on which motion derivation it is combined with. The data in (81) illustrates four different motion derivations with the monovalent motion root ¹√*k̲ux̲* 'go by boat or other vehicle', using the imperative mood to trigger the appearance of the conjugation prefix.

(81) a. Át yik̲úx̲! *Ø-conjugation motion imperative*
á -t yi- ¹√k̲ux̲
3N-PNCT ZCNJ 2PL·S-¹√go·boat
'You guys boat there!'

b. Át nayk̲úx̲! *n-conjugation motion imperative*
á -t n- yi- ¹√k̲ux̲
3N-PNCT NCNJ-2PL·S-¹√go·boat
'You guys boat around there!'

c. Áx̲ g̲ayk̲úx̲! *g̲-conjugation motion imperative*
á -x̲ g̲- yi- ¹√k̲ux̲
3N-PERT G̲CNJ-2PL·S-¹√go·boat
'You guys boat down along there!'

d. Aax̲ gayk̲úx̲! *g-conjugation motion imperative*
á -dáx̲ g̲- yi- $^{1}\sqrt{}$k̲ux̲
3N-ABL G̲CNJ-2PL·S-$^{1}\sqrt{}$go·boat
'You guys boat up from there!'

The data in (81) shows that the same root $^{1}\sqrt{}$*k̲ux̲* 'go by boat, other vehicle' can support all four conjugation classes. This is one of the primary diagnostics for motion roots, distinguishing them from all other roots in the language. I analyze motion roots as being uniquely unspecified for conjugation class.

A few non-motion roots are apparently specified for more than one conjugation class. The variation in conjugation class cannot be accounted for by motion derivation because these roots are not motion roots and they show no other morphological characteristics of having a motion derivation applied to them. The lexical documentation is not clear on whether this variation is idiolectal or dialectal, or if instead a single speaker can use the same root with more than one conjugation class. I have however encountered a few instances of the same root with different conjugation classes from the same speaker, so I know that it is possible for a root to be specified for more than one conjugation class in a single lexicon. The data in (82) show the achievement root $^{0}\sqrt{}$*xun* 'thin' with two different conjugation classes.

(82) a. Yei x̲at nalxún. *g̲-conjugation progressive*
yei= x̲at= n- l- $^{0}\sqrt{}$xun-H
down=1SG·O=NCNJ-INTR-$^{0}\sqrt{}$thin -VAR
'I'm getting thin.' (orig. tr. 'I'm losing weight.') (Story & Naish 1973: 245)

b. Kei x̲at nalxún. *g-conjugation progressive*
kei= x̲at= n- l- $^{0}\sqrt{}$xun-H
up= 1SG·O=NCNJ-INTR-$^{0}\sqrt{}$thin -VAR
'I'm getting thin.' (orig. tr. 'I'm losing weight/getting thinner.') (Story & Naish 1973: 226)

Unlike the previous data in this section, the forms in (82) do not show the conjugation class directly by the conjugation class prefix. Instead the progressive aspect always has the *n-* conjugation prefix regardless of the verb's conjugation class; see chapter 6 section 3.5 for details. In such cases where the conjugation prefix is used for a grammatical aspect, there is usually a directional preverb that distinguishes some or all of the conjugation classes. Here the *yei=* 'down' preverb in (82a) indicates the *g̲*-conjugation class and the *kei=* 'up' preverb in (82b) indicates the *g*-conjugation class. The listings of activity and achievement roots in tables 2.2 (p. 68) and 2.3 (p. 69) include several other roots attested with more than one conjugation class. Non-motion roots with more than one conjugation class are by no means common, but neither are they exceedingly rare.

Lexically specified conjugation class often has no obvious semantic interpretation, but sometimes it is associated with the spatial semantics found most prominently among the motion derivations as discussed in chapter 6 section 3. Conjugation class is associated with both lexical and grammatical aspect, and so I take it to be part of the complex of eventuality properties that can be lexically specified for a root. Non-motion roots must be lexically specified for at least one conjugation class, and motion roots are not specified for any conjugation class.

1.3.2. Syntactic model and ε-features

I have argued in sections 1.3.1.1–1.3.1.4 that the root encodes four different eventuality-related properties: (i) durativity, (ii) stativity, (iii) stem variation, and (iv) conjugation class. I propose a set of **ε-features**[11] to model these four properties in the syntax. The durativity feature is [DURATIVE$_\varepsilon$] and the stativity feature is [STATE$_\varepsilon$]. Stem variation is represented by features that are labelled the same as the stem variation morphemes, thus [μ_ε], [H$_\varepsilon$], [μH$_\varepsilon$], etc. The conjugation class features are labelled with the gloss abbreviations of the corresponding conjugation prefixes: [ZCNJ$_\varepsilon$] for *∅*-conjugation, [NCNJ$_\varepsilon$] for *n*-conjugation, [G̲CNJ$_\varepsilon$] for *g̲*-conjugation, and [GCNJ$_\varepsilon$] for *g*-conjugation.

Roots that support imperfective aspect forms must be lexically specified for the [DURATIVE$_\varepsilon$] feature, and roots that support stative imperfectives with *i-* must also be lexically specified for the [STATE$_\varepsilon$] feature. Any root specified for [DURATIVE$_\varepsilon$] must also be specified for stem variation; with further research it may be possible to identify one stem variation class as the default, but for now every class must be specified with a feature.

The data in (83) illustrates two imperfective aspect forms, one activity and one state, which exhibit the three ε-features for durativity, stativity, and stem variation. The roots are $\sqrt[2]{}$*.ak* 'weave, twine (mat, basket, etc.)' and $\sqrt[2]{}$*hen* 'claim, assert ownership of'. The syntactic structures are shown in figures 2.5 on page 81 for the activity and figure 2.6 on page 81 for the state, respectively.

(83) a. K̲ákw x̲a.áak. *activity imperfective*
k̲ákw x̲- $\sqrt[2]{}$.ak -μH
basket 1SG·S-$\sqrt[2]{}$weave-VAR
'I weave baskets.', 'I am weaving a basket.'

b. Tl'átk x̲ayahéin. *state imperfective*
tl'átk x̲- i- $\sqrt[2]{}$hen -μH
land 1SG·S-STV-$\sqrt[2]{}$claim-VAR
'I claim land.', 'I have a claim on (some) land.'

Both the activity imperfective and the state imperfective in (83) must have roots specified for the [DURATIVE$_\varepsilon$] feature. Both exhibit the same long high stem with *-μH* so both roots must also be specified for [μH$_\varepsilon$]. The state imperfective in (83b) means that the root $\sqrt[2]{}$*hen* 'claim; have ownership' must also be specified for [STATE$_\varepsilon$]. As shown in figures 2.5 and 2.6, the V head probes √ for the [μH$_\varepsilon$] feature. The Ɛ head probes √ for [STATE$_\varepsilon$] to realize *i-* in figure 2.6, a process discussed further in chapter 3. The Asp head probes √ for [DURATIVE$_\varepsilon$] and this allows Asp to arise without phonological content. The Asp head must exist for structural reasons which are explained further in chapter 6.

As mentioned earlier in section 1.3.1.1, a possible alternative to account for the absence or presence of imperfective aspect is to propose that roots encode instantaneity rather than durativity. Then achievement roots like $\sqrt[2]{}$*jak̲* 'kill' and $\sqrt[1]{}$*dut'* 'hiccup' which prohibit a basic imperfective form would be lexically specified for an ε-feature like [INSTANT$_\varepsilon$], and state and activity roots would be unspecified. In this system an empty Asp would have to probe for the absence of [INSTANT$_\varepsilon$]. This predicts that state roots, activity roots, and motion roots should cluster together in opposition

11. The ε 'epsilon' is taken from Greek ενδεχόμενο *endekhómeno* 'possibility, eventuality, contingency', which is also conveniently mnemonic for English 'event' and 'eventuality'. The symbol *e* is usually used to represent the semantic type of an entity, so I use *ε* to represent an eventuality.

Figure 2.5: Activity imperfective 'weave' in (83a)

Figure 2.6: State imperfective 'claim' in (83b)

with achievement roots because only the latter would be instantaneous. In contrast, the durative-specification approach predicts that state roots and activity roots should cluster together in opposition with achievement and motion roots because the latter two are not specified for durativity. I am uncertain whether either of these predictions hold because we need further investigation of the lexical and grammatical aspect properties of motion roots.

Another alternative is to leave the distinction between roots that support imperfective aspect and roots that do not entirely up to the semantics. This would certainly simplify the syntactic model but it would not explain how the syntax would know to merge an empty Asp versus a non-empty Asp depending on the root. I would actually prefer a purely semantic approach to the expression of imperfective aspect, but we need more formal semantic analysis of both lexical and grammatical aspect to determine whether this approach is possible. I leave this problem to future research on the aspectual system.

In contrast with durativity, the conjugation class selection is syntactic in that it has little or no semantic function with many roots and frequently seems to be arbitrary. In addition, the selection of the conjugation prefix in Asp based on the lexical entry of √ is a long distance dependency that looks very much like agreement in other languages. Since conjugation class is related to eventuality properties (ch. 6 sec. 3) and is apparently unrelated to valency (θ-features), qualia (ϰ-features), or realis (ι-features), I model it as another kind of ε-feature.

(84) Nayhoon! *n-conjugation imperative*
n- yi- $\sqrt[2]{}$hun-μ
NCNJ-2PL·S-$\sqrt[2]{}$sell -VAR
'You guys sell it!'

The *n*-conjugation imperative in (84) has the structure in figure 2.7. The √ has a feature [NCNJ$_\varepsilon$] which is probed for by the Asp head. Finding this feature, the Asp head realizes the *n*- conjugation prefix. The structures for the other conjugation classes follow the same pattern. Essentially, in any case where the Asp head is not otherwise specified (perfective, progressive, prospective, imperfective), it will probe the root for the ε-feature encoding conjugation class. But motion derivations are a distinct mechanism apart from the root lexical entry for introducing conjugation class and these require a slightly different implementation that is explored further in chapter 6 section 3.3.

1.3.3. Semantic model and the $\mathscr{E}$ function

In this section I elaborate on the model of root lexical semantics developed in sections 1.1.3 and 1.2.3 to include the semantic correspondences of the ε-features. I claimed in section 1.3.1.3 that stem variation in the imperfective aspect is lexically specified but has no semantic consequences (*pace* Leer 1991: 244), so pending any evidence to the contrary I ignore it in the root semantic model. Similarly, I am uncertain how conjugation class should be reflected in the semantics and so leave it aside for now; see chapter 6 section 3 for a lengthy but inconclusive discussion of how conjugation class relates to the interpretation of eventualities.

I model the restriction on the eventuality with an $\mathscr{E}$ function. This takes an eventuality as one argument and an eventuality subtype as another argument. For example, the function $\mathscr{E}(\varepsilon, \textsf{durative})$ asserts that the eventuality ε is restricted to be of the subtype durative. This is intentionally similar to – and similarly vague as – the Θ functions and $\mathscr{Q}$ functions. I leave the implementation details for future work on the lexical semantics.

Figure 2.7: Imperative with *n-* conjugation prefix in (84)

I maintain the lexical markedness of durativity rather than instantaneity discussed in section 1.3.1.1. The lack of both a state imperfective in (85b) and an activity imperfective in (85c) shows that the monovalent root $\sqrt[1]{dut}$' 'hiccup' is not specified for durativity. This root therefore has a lexical entry like that in (86) where only the root function hiccup and the Θ function are specified. This asserts that there is an eventuality of hiccupping ε and that y is involved in this eventuality as a proto-patient.

(85) a. Xat uwadút'. *perfective*
xat= u- i- $\sqrt[1]{}$dut' -H
1SG·S=ZPFV-STV-$\sqrt[1]{}$hiccup-VAR
'I hiccuped.', 'I have hiccuped.'

b. *Xat yadút'. **state imperfective with i-*
xat= i- $\sqrt[1]{}$dut' -H
1SG·S=STV-$\sqrt[1]{}$hiccup-VAR
intended: 'I have hiccups.', 'I am hiccupping.'

c. *Xat dút'. **activity imperfective without i-*
xat= $\sqrt[1]{}$dut' -H
1SG·S= $\sqrt[1]{}$hiccup-VAR
intended: 'I hiccup.', 'I am hiccupping.'

(86) $\sqrt[1]{dut}$' 'hiccup' $\equiv \{\varepsilon \mid \mathsf{hiccup}(\varepsilon) \wedge \Theta_1(\varepsilon, y)\}$ *monovalent achievement root*

The bivalent achievement root $\overset{2}{\sqrt{}}$*.un* 'shoot with gun' is illustrated in (87).[12] As with the monovalent root above, this root is ungrammatical as a state imperfective in (87b) and an activity imperfective in (87c). The lexical entry for this root is then something like (88) with a root function gun-shoot and two Θ functions that correspond to the two arguments.[13]

(87) a. Kanals'áak xwaa.ún. *perfective*
kanals'áak wu-x- i- $\overset{2}{\sqrt{}}$.un -H
squirrel PFV-1SG·S-STV-$\overset{2}{\sqrt{}}$shoot·gun-VAR
'I shot a squirrel.', 'I have shot a squirrel.'

b. *Kanals'áak xaya.ún. **state imperfective with i-*
kanals'áak x- i- $\overset{2}{\sqrt{}}$.un -H
squirrel 1SG·S-STV-$\overset{2}{\sqrt{}}$shoot·gun-VAR
intended: 'I am squirrel shooting.', 'I am shooting a squirrel.'

c. *Kanals'áak xa.ún. **activity imperfective without i-*
kanals'áak x- $\overset{2}{\sqrt{}}$.un -H
squirrel 1SG·S- $\overset{2}{\sqrt{}}$shoot·gun-VAR
intended: 'I shoot squirrels.', 'I am shooting a squirrel.'

(88) $\overset{2}{\sqrt{}}$*.un* 'shoot with gun' $\equiv \{\varepsilon \mid \text{gun-shoot}(\varepsilon) \wedge \Theta_1(\varepsilon, y) \wedge \Theta_2(\varepsilon, x)\}$ *bivalent achievement root*

Moving on to the activities, I demonstrate a monovalent root $\overset{1}{\sqrt{}}$*gax* 'sg. cry' forming an activity in (89) and a bivalent root $\overset{2}{\sqrt{}}$*xa* 'eat' forming an activity in (91). The activity imperfective forms in (89c) and (91c) confirm that these roots are durative, and so they are specified with the $\mathscr{E}(\varepsilon, \text{durative})$ function as shown by the lexical entries in (90) and (92). Note that $\overset{1}{\sqrt{}}$*gax* 'sg. cry' is qualified to apply only to singular referents and so the lexical entry includes $\mathscr{Q}(\text{sg}, y)$.

(89) a. Xwaagaax. *perfective*
wu-x- i- $\overset{1}{\sqrt{}}$gax -μ
PFV-1SG·S-STV-$\overset{1}{\sqrt{}}$cry·SG-VAR
'I cried.', 'I have cried.'

b. *Xayagáax. **state imperfective with i-*
x- i- $\overset{1}{\sqrt{}}$gax -μH
1SG·S-STV-$\overset{1}{\sqrt{}}$cry·SG-VAR
intended: 'I am crying.'

c. Xagáax. *activity imperfective without i-*
x- $\overset{1}{\sqrt{}}$gax -μH
1SG·S- $\overset{1}{\sqrt{}}$cry·SG-VAR
'I cry.', 'I am crying.'

12. The noun *kanals'áak* 'squirrel' looks like a verb *k-n-l-√s'ak-μH* but the root √*s'ak* or √*s'a'k* is otherwise unknown.
13. The gun- is because there is another root $\overset{2}{\sqrt{}}$*t'u'k* 'shoot with bow & arrow' (see table 2.3); cf. *t'úgwaa* 'bow and arrow' (Leer 1973a: 07/161). Both roots could be broken into a shoot(e) function with an instrument like INSTR(ε, gun) but this predicts a competition with adjunct instrumental PPs that I believe does not occur.

(90) $\sqrt[1]{\underline{g}a\underline{x}}$ 'sg. cry' $\equiv \{\varepsilon \mid \mathsf{cry}(\varepsilon) \wedge \Theta_2(\varepsilon, y) \wedge \mathscr{Q}(\mathsf{sg}, y) \wedge \mathscr{E}(\varepsilon, \mathsf{durative})\}$ *monovalent activity root*

(91) a. Áanjís x̲waax̲áa. *perfective*
áanjís wu-x̲- i- $\sqrt[1]{\underline{x}}$a-μH
orange PFV-1SG·S-STV-$\sqrt[1]{}$eat-VAR
'I ate an orange.', 'I have eaten an orange.'

b. *Áanjís x̲ayax̲á. **state imperfective with i-*
áanjís x̲- i- $\sqrt[1]{\underline{x}}$a-H
orange 1SG·S-STV-$\sqrt[1]{}$eat-VAR
intended: 'I am eating an orange.'

c. Áanjís x̲ax̲á. *activity imperfective without i-*
áanjís x̲- $\sqrt[1]{\underline{x}}$a-H
orange 1SG·S- $\sqrt[1]{}$eat-VAR
'I eat oranges.', 'I am eating an orange.'

(92) $\sqrt[2]{\underline{x}a}$ 'eat' $\equiv \{\varepsilon \mid \mathsf{eat}(\varepsilon) \wedge \Theta_1(\varepsilon, y) \wedge \Theta_2(\varepsilon, x) \wedge \mathscr{E}(\varepsilon, \mathsf{durative})\}$ *bivalent activity root*

Finally I look at states which are both durative and static. The monovalent root $\sqrt[1]{dal}$ 'heavy' is demonstrated in (93) and the bivalent root $\sqrt[2]{.u}$ 'own' in (95).[14] Both of these form state imperfectives as shown by (93b) and (95b), so their lexical entries in (94) and (96) include $\mathscr{E}(\varepsilon, \mathsf{durative})$ which supports the imperfective aspect and $\mathscr{E}(\varepsilon, \mathsf{static})$ which supports the stative marking with *i-*.

(93) a. X̲at woodál. *perfective*
x̲at= wu-i- $\sqrt[1]{}$dal -H
1SG·O=PFV-STV-$\sqrt[1]{}$heavy-VAR
'I became heavy.'

b. X̲at yadál. *state imperfective with i-*
x̲at= i- $\sqrt[1]{}$dal -H
1SG·O=STV-$\sqrt[1]{}$heavy-VAR
'I am heavy.'

c. *X̲at dál. **activity imperfective without i-*
x̲at= $\sqrt[1]{}$dal -H
1SG·O= $\sqrt[1]{}$heavy-VAR
intended: 'I am becoming heavy.'

14. There is a root $\sqrt[2]{.u'w}$ 'buy' that is closely related to $\sqrt[2]{.u}$ 'own'. Crucially only the latter supports a state imperfective, where $\sqrt[2]{.u'w}$ 'buy' instead has an activity imperfective *a.óow* 's/he is buying it'. Another difference is that $\sqrt[2]{.u}$ 'own' is *n*-conjugation where $\sqrt[2]{.u'w}$ 'buy' is *∅*-conjugation. Leer (1978c: 14) describes *aya.óo* with $\sqrt[2]{.u}$ as the state perfective of $\sqrt[2]{.u'w}$, but the data in Leer 1973a: 02/299–304 and Leer 1976a: 142–147, 149–151 suggest they are separate roots. There also is a probably related homophonous root $\sqrt[2]{.u}$ 'put; dress' in Leer 1973a: 02/294–298 Leer 1976a: 144–148 that is absent in Leer 1978c. This $\sqrt[2]{.u}$ 'put; dress' is a controlled transitive motion (handling) root that is supposed to occur in the imperative set phrase *ch'a aadé x̲at na.oo* 'forgive me somehow; excuse me', but I suspect this is actually $\sqrt[2]{.u}$ 'own' and thus comes from the practice of paying opposites to absolve an error.

(94) $\sqrt[1]{dal}$ 'heavy' $\equiv \{\varepsilon \mid \mathsf{heavy}(\varepsilon) \wedge \Theta_1(\varepsilon, y) \wedge \mathscr{E}(\varepsilon, \mathsf{durative}) \wedge \mathscr{E}(\varepsilon, \mathsf{static})\}$ *monovalent state root*

(95) a. Yaakw xwaa.oo. *perfective*
yaakw wu-x- i- $\sqrt[2]{}$.u -μ
boat PFV-1SG·S-STV-$\sqrt[2]{}$own-VAR
'I came to own a boat.'

b. Yaakw xaya.óo. *state imperfective with i-*
yaakw x- i- $\sqrt[2]{}$.u -μH
boat 1SG·S-STV-$\sqrt[2]{}$own-VAR
'I own a boat.'

c. *Yaakw xa.óo. **activity imperfective without i-*
yaakw x- $\sqrt[2]{}$.u -μH
boat 1SG·S- $\sqrt[2]{}$own-VAR
intended: 'I am owning, coming to own a boat.'

(96) $\sqrt[2]{}.u$ 'own' $\equiv \{\varepsilon \mid \mathsf{own}(\varepsilon) \wedge \Theta_1(\varepsilon, y) \wedge \Theta_2(\varepsilon, x) \wedge \mathscr{E}(\varepsilon, \mathsf{durative}) \wedge \mathscr{E}(\varepsilon, \mathsf{static})\}$ *bivalent state root*

1.4. ι-FEATURES: LEXICALLY SPECIFIED IRREALIS

Some roots are lexically specified as irrealis. Irrealis marking with the *u-* or *w-* prefix is normally conditioned by other grammatical phenomena like modality, negation, and dubitativity as discussed in detail in chapter 6 section 4. But a few roots require an irrealis prefix in grammatical contexts where irrealis marking is not required. I catalogue these lexically irrealis verbs in chapter 6 section 4.2, dividing them into the following categories:

- irrealis mental state verbs (ch. 6 sec. 4.2.1)
- irrealis conative activity verbs (ch. 6 sec. 4.2.2)
- irrealis resemblance verbs (ch. 6 sec. 4.2.3)
- irrealis pejorative verbs (ch. 6 sec. 4.2.4)
- inherently negative verbs (ch. 6 sec. 4.2.5)

The irrealis mental state verbs describe mental states that are unreal, generally because they are inherently dubitative in some way. The irrealis conative activity verbs describe attempting to do something without necessarily achieving it. The irrealis resemblance verbs describe activities of imitation or states of resemblance that are not actual identity. The irrealis pejorative verbs describe phenomena that are insufficient or undesirable. And the inherently negative verbs are those found only with negation, where an affirmative form is ungrammatical. All of these are grammatically unpredictable and so must have their irrealis property encoded in the lexical entry of the root.

1.4.1. PATTERNS OF IRREALIS: UNREAL EVENTUALITIES

To illustrate lexical irrealis I compare two bivalent state roots $\sqrt[2]{hen}$ 'claim, assert ownership of' and $\sqrt[2]{ya^h}$ 'resemble, seem/look/act like'. The data in (97) illustrates the root $\sqrt[2]{hen}$ 'claim' showing that it does not occur in the affirmative imperfective with irrealis *u-*. The data in (98) shows the same root in the negative imperfective, where negation triggers grammatical irrealis (ch. 6 sec. 4.5.1) and suppression of *i-* (ch. 3 sec. 4.1.1).

(97) a. Tl'átk ayahéin. *affirmative state without u-*
tl'átk a- i- $\sqrt[2]{}$hen -μH
land ARG-STV-$\sqrt[2]{}$claim-VAR
'S/he claims land.'

b. *Tl'átk oowahéin. **affirmative state with u-*
tl'átk a- u- i- $\sqrt[2]{}$hen -μH
land ARG-IRR-STV-$\sqrt[2]{}$claim-VAR
intended: 'S/he claims land.'

(98) a. *Tléil tl'átk ahéin. **negative state without u-*
tléil tl'átk a- $\sqrt[2]{}$hen -μH
NEG land ARG-$\sqrt[2]{}$claim-VAR
intended: 'S/he doesn't claim land.'

b. Tléil tl'átk oohéin. *negative state with u-*
tléil tl'átk a- u- $\sqrt[2]{}$hen -μH
NEG land ARG-IRR-$\sqrt[2]{}$claim-VAR
'S/he doesn't claim land.'

The data in (99) shows the affirmative imperfective of $\sqrt[2]{}$*ÿa*^{h} 'resemble' and thed data in (100) the negative imperfective. Here both the affirmative and negative forms have irrealis *u-*. The presence of *u-* in (99b) is not predictable from any regular grammatical operations, so it must be lexically specified and hence encoded in the lexical entry of the root.

(99) a. *S'áaw ayayáa. **affirmative irrealis state without u-*
s'áaw a- i- $\sqrt[2]{}$ÿa^h -μH
crab ARG-STV-$\sqrt[2]{}$resemble-VAR
intended: 'S/he resembles a crab.'

b. S'áaw oowayáa. *affirmative irrealis state with u-*
s'áaw a- u- i- $\sqrt[2]{}$ÿa^h -μH
crab ARG-IRR-STV-$\sqrt[2]{}$resemble-VAR
'S/he resembles a crab.'

(100) a. *Tléil s'áaw ayaa. **negative irrealis state without u-*
tléil s'áaw a- $\sqrt[2]{}$ÿa^h -μ
NEG crab ARG-$\sqrt[2]{}$resemble-VAR
intended: 'S/he doesn't resemble a crab.'

b. Tléil s'áaw oowaa. *negative irrealis state with u-*
tléil s'áaw a- u- $\sqrt[2]{}$ÿa^h -μ
NEG crab ARG-IRR-$\sqrt[2]{}$resemble-VAR
'S/he doesn't resemble a crab.'

The table in (101) summarize the patterns in (97)–(100). Where $\sqrt[2]{}$*hen* 'claim' has the irrealis *u-* only under negation, the root $\sqrt[2]{}$*ÿa*^{h} 'resemble' has *u-* in both affirmative and negative contexts.

Figure 2.8: Lexically specified irrealis in (102)

(101) *patterns in (97)–(100)*

	²√*hen* 'claim'		²√*ÿa*ʰ 'resemble'	
	affirmative	negative	affirmative	negative
without *u-* IRR	✓	*	*	*
with *u-* IRR	*	✓	✓	✓

The ²√*ÿa*ʰ 'resemble' root is specifically an irrealis resemblance root. The same facts hold for other lexically specified irrealis roots: mental irrealis, conative irrealis, and pejorative irrealis. See chapter 6 section 4.2 for supporting data. For all these roots the irrealis is entirely unpredictable from the grammar and must be lexically specified.

1.4.2. Syntactic model and ι-features

In chapter 6 section 4 I analyze the trigger for the appearance of irrealis *u-* in Asp as due to a feature [IRRι]. This is a morphosyntactic ι-feature which is like the θ-features, ϰ-features, and ε-features in that it can be encoded as part of the lexical entry of a root. The Asp head probes downward for [IRRι] and if it finds this feature in √ then *u-* is realized in Asp. The unaccusative imperfective with lexical irrealis in (102) thus has the structure in figure 2.8.

(102) *lexical irrealis*

Xat uyéx.
xat= u- ¹√yex-H
1SG·O=IRR-¹√lack-H
'I am missing, absent, lacking.'

As discussed in chapter 6 section 4, irrealis marking with *u-* is triggered by various grammatical operations as well as the lexical specification of the root. This raises a problem where the lexical specification of the ι-feature [IRRι] must be probed for by the irrealis *u-* in Asp, but the grammatical requirement for irrealis marking has the ι-feature hosted by the irrealis *u-* prefix in Asp and probed for by higher heads like Neg. This asymmetry between lexical and grammatical structures with the same feature is shared by the ε-features (specifically those for stativity, imperfective stem variation,

and conjugation class) and is furthermore similar to the asymmetry between $\varkappa$-features specified by the root and $\varkappa$-features specified by qualifiers. This points to a general problem with the modelling of lexical specification versus grammatical specification. I have no particular solutions to this at present but expect further investigation to at at least clarify the problem.

The ι-feature [IRR$_\iota$] for irrealis might be just as well modelled as a kind of ε-feature given that irrealis is associated with the syntax and semantics of eventualities in Tlingit. Both the V-agreement (sec. 2) and $\mathcal{E}$-suppression phenomena (ch. 3 sec. 4) involve ε-features and characteristically show interactions with high heads like T and C, and irrealis in many contexts is similarly associated with high heads. I suspect that for syntactic purposes there is no practical difference between the ι-feature and the ε-features, but there is not enough evidence yet to either support or oppose their unification.

1.4.3. Semantic model and the $\mathscr{I}$ function

I extend the model of root lexical semantics to account for lexically specified irrealis with a function that I label $\mathscr{I}$ (compare $\mathscr{Q}$ and $\mathscr{E}$). This takes the eventuality variable ε as its argument $\mathscr{I}(\varepsilon)$ and asserts that this eventuality is somehow unreal in the same way that dubitatives and negatives are unreal, and also in the same way that potential modality and prospective aspect are unreal. Perhaps this assertion says that the eventuality ε exists in a possible world (or worlds) that is somehow not identical with the actual world, i.e. something like $[\varepsilon \in w'] \wedge [w' \neq w]$ where w is the actual world. The reachability of the denoted possible world from the actual world is probably not an inherent property of irrealis since both prospective aspect and lexical irrealis forms can describe eventualities that may or may not be realizable. If irrealis is indeed a property of worlds rather than just eventualities then the root lexical semantics might need to close over a possible world variable w as well as ε, but I do not know how this would be modelled. I leave the details of $\mathscr{I}$ for future investigation of the semantics of irrealis in Tlingit.

The semantic lexical entries in (103) and (104) illustrate a monovalent root $\sqrt[1]{yex}$ 'lack' and a bivalent root $\sqrt[2]{ji^h}$ 'think'. In both the irrealis property is expressed by $\mathscr{I}(\varepsilon)$. As far as I can tell this is entirely independent of the $\mathscr{E}$ function even though both operate on ε because the verbs listed in chapter 6 section 4.2 cover the gamut of states, activities, and achievements. Among verbs with lexical irrealis the only unattested eventuality class is that of motion, but we have so little formal understanding of motion semantics that it is not clear if this category should be specifed by $\mathscr{E}$ or derived from other phenomena. If motion is specified by $\mathscr{E}$ and lexical irrealis is impossible in motion verbs then this would warrant the analysis of an interaction between the $\mathscr{E}$ and $\mathscr{I}$ functions.

(103) $\sqrt[1]{yex}$ 'lack' ≡ *irrealis monovalent root*

$$\{\varepsilon \mid \mathsf{own}(\varepsilon) \wedge \Theta_1(\varepsilon, y) \wedge \mathscr{E}(\varepsilon, \mathsf{durative}) \wedge \mathscr{E}(\varepsilon, \mathsf{static}) \wedge \mathscr{I}(\varepsilon)\}$$

(104) $\sqrt[2]{ji^h}$ 'think' ≡ *irrealis bivalent root*

$$\{\varepsilon \mid \mathsf{own}(\varepsilon) \wedge \Theta_1(\varepsilon, y) \wedge \Theta_2(\varepsilon, x) \wedge \mathscr{E}(\varepsilon, \mathsf{durative}) \wedge \mathscr{E}(\varepsilon, \mathsf{static}) \wedge \mathscr{I}(\varepsilon)\}$$

2. V and stem variation

Like all Na-Dene languages, Tlingit verbs exhibit **stem variation** which is a complex but regular system of alternations in the stem vowel of the verb word. The stem vowel may vary in length between long and short, in tone between high and low,[15] and occasionally in vowel quality (apophony or

15. And falling in Southern Tlingit (apx. A sec. 3.2). Tongass Tlingit has laryngealization instead of tone (apx. A sec. 3.1).

ablaut: /a, u/ → [e]). There are some phonological constraints on the combinatorial possibilities of stem variation, a few of which are unique to the stem.

I analyze stem variation morphologically as a suffix that consists of the phonological material of the stem apart from the consonants and vowels specified by the lexical entry of the root and any segmental suffixes. This suprasegmental material may consist of a mora *μ*, a high tone *H*, or an ablaut *e*; the ablaut *e* is moraic and so is effectively *μ* with additional place features. A simple illustration of stem variation is given in (105) with the root $\overset{2}{\sqrt{}}$*x̲a* 'eat'. The imperfective aspect form in (105a) has a short high tone stem –*x̲á* [χá], the perfective aspect form in (105b) has a long high tone stem –*x̲áa* [χáː], the hortative modality form in (105c) has a long low tone stem –*x̲aa* [χàː], and the repetitive imperfective aspect form in (105d) has an ablauted long high tone stem –*x̲éi* [χéː].

(105) a. X̲ax̲á. *imperfective with -H*
x̲- $\overset{1}{\sqrt{}}$x̲aʰ-H
1SG·S-$\overset{1}{\sqrt{}}$eat -VAR
'I eat it.', I am eating it.'

b. X̲waax̲áa. *perfective with -μH*
wu-x̲- i- $\overset{1}{\sqrt{}}$x̲aʰ-μH
PFV-1SG·S-STV-$\overset{1}{\sqrt{}}$eat -VAR
'I ate it.', 'I have eaten it.'

c. K̲aax̲aa. *hortative with -μ*
g̲- x̲- $\overset{1}{\sqrt{}}$x̲aʰ-μ
MOD-1SG·S-$\overset{1}{\sqrt{}}$eat -VAR
'Let me eat it.'

d. X̲ax̲éix̲. *repetitive imperfective with -eH*
x̲- $\overset{1}{\sqrt{}}$x̲aʰ-eH-x̲
1SG·S-$\overset{1}{\sqrt{}}$eat -VAR-REP
'I repeatedly eat it.', 'I keep eating it.'

Every verb form in Tlingit must have one and only one stem variation suffix. The possible suffixes are short high tone *-H* [V́], long low tone *-μ* [V̀ː], long high tone *-μH* [V́ː], long low tone ablaut *-e* [èː], long high tone ablaut *-eH* [éː], and the special case of coda deletion -⊗. This last one only occurs with three √*CVC* roots – $\overset{1}{\sqrt{}}$*gut* 'sg. go', $\overset{1}{\sqrt{}}$*.at* 'pl. go', $\overset{1}{\sqrt{}}$*nuk* 'sg. sit' – and as a rule is /CVC/ + -⊗ → [CV́]. It is impossible for stems to occur with a short vowel and low tone which I believe is due to the interaction between tone and stress: the stem vowel is always the primary stress in a word and vowels with primary stress cannot be short with low tone.

Not all stem variation suffixes are possible with all roots because of phonological constraints that are still not fully understood. Leer discovered of these gaps which led him to analyse all monosyllabic roots into five phonological classes (Leer 1974c, 1976b, 1979c, 1991: 164–166) that are represented in table 2.5. The √*CVC'* roots have a coda ejective consonant which makes them immediately distinguishable from √*CVC* roots. The √*CVʰ* and √*CV'C* roots can only be told apart by the ungrammaticality of certain stem forms. See appendix B for a detailed morphophonological description of roots and the stem variation system.

I analyze the stem variation suffixes as realizations of the V head. This head is the categorizing element that creates verbs from roots, and there is a similar N head that creates nouns from roots.

var.	*length*	*tone*	*other*	√CV	√CV^{h}	√CVC	√CVC'	√CV'C
(L)	short	low		*	*	*	*	*
-H	short	high		CV́	CV́	CV́C	CV́C'	CV́C
-μ	long	low		CV̀V̀	CV̀V̀	CV̀V̀C	* ↴	* ↴
-μH	long	high		CV́V́	CV́V́	CV́V́C	CV́V́C'	CV́V́C
-e	long	low	ablaut	* ↴	Cèè	*	*	*
-eH	long	high	ablaut	Céé	Céé	*	*	*
-⊗	short	high	truncation	*	*	CV́	*	*

Table 2.5: Verb stem variation suffixes versus root shapes

The phonological constraints on N stems and V stems are different and this contributes to the differentiation of the two syntactic categories. For example, the data in (106) show that the root $\sqrt[1]{}$*t'uch'* 'char' supports a noun *t'ooch'* 'charcoal' with a long vowel and low tone, and that this cannot be a short or long vowel with high tone.

(106) a. T'ooch'x̲ x̲wasinee. *noun with -μ*
$\sqrt[1]{}$t'uch'-μ -x̲ wu-x̲- s- i- $\sqrt[1]{}$ni^{h} -μ
[$_{PP}$ $\sqrt[1]{}$char -VAR$_{N}$-PERT$_{P}$] PFV-1SG·S-CSV-STV-$\sqrt[1]{}$happen-VAR
'I made it into charcoal.'

b. * T'óoch'x̲ x̲wasinee. **noun with -μH*
$\sqrt[1]{}$t'uch'-μH -x̲ wu-x̲- s- i- $\sqrt[1]{}$ni^{h} -μ
[$_{PP}$ $\sqrt[1]{}$char -VAR$_{N}$-PERT$_{P}$] PFV-1SG·S-CSV-STV-$\sqrt[1]{}$happen-VAR
intended: 'I made it into charcoal.'

c. * T'úch'x̲ x̲wasinee. **noun with -H*
$\sqrt[1]{}$t'uch'-H -x̲ wu-x̲- s- i- $\sqrt[1]{}$ni^{h} -μ
[$_{PP}$ $\sqrt[1]{}$char -VAR$_{N}$-PERT$_{P}$] PFV-1SG·S-CSV-STV-$\sqrt[1]{}$happen-VAR
intended: 'I made it into charcoal.'

The same root $\sqrt[1]{}$*t'uch'* 'char' also supports a verb with the causative *l-* that describes exposing something to heat so that it blackens and chars. The data in (107) show that the verb can have a stem *–t'úch'* with a short vowel and high tone or a stem *–t'óoch'* with a long vowel and high tone but not **–t'ooch'* with a long vowel and low tone.

(107) a. Wé sakwnéin x̲walit'úch'. *verb with -H*
wé sakwnéin wu-x̲- l- i- $\sqrt[1]{}$t'uch'-H
[$_{DP}$ MDST bread] PFV-1SG·S-CSV-STV-$\sqrt[1]{}$char -VAR
'I charred the bread.'

b. Wé sakwnéin x̲alat'óoch'. *verb with -μH*
wé sakwnéin x̲- l- $\sqrt[1]{}$t'uch'-μH
[$_{DP}$ MDST bread] 1SG·S-CSV-$\sqrt[1]{}$char -VAR
'I am charring the bread.'

c. * Wé sakwnéin tléil x̱walat'ooch'. **verb with -μ*
wé sakwnéin tléil u- wu-x̱- l- ^{1}√t'uch'-μ
[$_{DP}$ MDST bread] NEG IRR-PFV-1SG·S-CSV-^{1}√char -VAR
'I charred the bread.'

d. Wé sakwnéin tléil x̱walat'óoch'. *verb with -μH instead*
wé sakwnéin tléil u- wu-x̱- l- ^{1}√t'uch'-μH
[$_{DP}$ MDST bread] NEG IRR-PFV-1SG·S-CSV-^{1}√char -VAR
'I charred the bread.'

The V head must be part of the first merge of every verbal clause in Tlingit because it forms the intial pair of [$_{VP}$ √ V] on which the rest of the clause is built. The value of V as a stem variation suffix can be determined by the lexical entry of √ as discussed earlier in section 1.3.1.3. This valuation of V by √ only regularly occurs in the main clause, non-past, non-dubitative, affirmative, non-repetitive imperfective aspect form. In other contexts the value of V is determined by other morphosyntactic properties apart from the root such as repetitive suffixes, aspect, negation, dubitativity, tense, and clause type. All these other properties are established by higher functional heads in the syntax: Adv, Asp, Neg, Mod, T, and C. The highest of these functional heads that contains overt material is the basis for the value of V, with specific exceptions discussed later. I analyze this phenomenon as **V-agreement**: V agrees with higher functional heads as shown by the different suprasegmental features of the verb stem. When there are multiple higher functional heads, V agrees with the highest head that contains overt material.

The V-agreement phenomenon is illustrated by the partial paradigm in (108). The form in (108a) is an activity imperfective with a lexically specified *-H* stem; note the absence of any overt functional heads other than V. The prospective aspect in (108b) has a predictable *-μH* stem that occurs for all prospective aspect forms unless otherwise blocked, superseding the lexically specified *-H* of the imperfective. The prospective also introduces Asp material with irrealis *w-* and modal *g̱-*, and the *g*-conjugation prefix, so the higher Asp head supersedes √. The negated prospective in (108c) has *-μ* which replaces the *-μH* of the prospective. Finally the form in (108d) shows the imperfective aspect of (108a) in an embedded clause with overt *-í* as the C head, and the *-μ* here replaces the *-H* of the imperfective.

(108) a. X̱ashí. *lexical activity imperfective with -H*
x̱- ^{2}√shi^{h}-H
1SG·S-^{2}√sing -VAR
D √ V
'I am singing it.'

b. Kei kx̱washée. *prospective aspect with -μH*
kei= w- g- g̱- x̱- ^{2}√shi^{h}-μH
up= IRR- GCNJ-MOD-1SG·S-^{2}√sing -VAR
Adv Asp Asp Asp D √ V
'I will sing it.'

Figure 2.9: V-agreement with √

Figure 2.10: V-agreement with C

c. Tléil kei kkwashee. *negative prospective aspect with -μ*
tléil kei= w- g- g- x- ²√shiʰ-μ
NEG up= IRR- GCNJ-MOD-1SG·S-²√sing -VAR
Neg Adv Asp Asp Asp D √ V
'I won't sing it.'

d. Xasheeyí at xashook. *adjunct activity imperfective with -μ*
x- ²√shiʰ-μ -í at= x- ²√shuk-μ
1SG·S-²√sing -VAR-SUB 4N·O=1SG·S-²√laugh -VAR
[CP D √ V C] D D √ V
'I'm laughing [while I'm singing it].'

As sketched earlier in section 1.3, I model V-agreement with a set of ε-features that correspond to the morphological suffixes of stem variation. This is illustrated side-by-side in figure 2.9 for the main clause form in (108a) and in figure 2.10 for the adjunct clause form in (108d). The V head in figure 2.9 gets its value *-H* from √ whereas in figure 2.10 the V head gets its value *-μ* from C. This is only one of many possible examples where the V-agreement value specified by a higher functional head supersedes that specified by a lower functional head; a complete catalogue of examples is enormous.[16]

16. Given a single $\sqrt{CV^h}$ root the number of possible structures is something like $5_V \times 2_\varepsilon \times 2_{Adv} \times 10_{Asp} \times 2_{Neg} \times 2_{Mod} \times 2_T \times 4_C = 6{,}400$ where the aspectual distinctions and clause types are the greatest source of variation along with the stem variation values themselves. Then all five regular root shapes would need up to 32,000 examples.

The most studied trigger for V-agreement in Tlingit is the aspect, mood, and modality system (Leer 1991: 206–209), but forms like (108c) and (108d) show that V-agreement occurs with heads above Asp. Across sections 2.1–2.10 I walk up the syntactic tree and address V-agreement as it occurs – or fails to occur – with each of the functional heads in the verbal clause. I find that of all the potential triggers for V-agreement, the only unattested cases are DP and PP arguments, *v*, and Voice. The status of Ɛ as a V-agreement trigger is debatable as discussed in section 2.2, but for now I assume that it does participate in V-agreement.

The tree (or 'napa cabbage diagram') in figure 2.11 on page 95 represents all of the possible V-agreement relationships; V-agreement never extends beyond the clause. The DP and PP arguments and various modifiers (preverbs, temporal adverbs, discourse particles, adjuncts, etc.) are omitted for brevity. As noted above, only the functional heads Voice and *v* fail to participate in V-agreement, which involves all of the other functional heads in the clausal spine. The same facts are sketched in (109) with a more compact linearized format, showing how V-agreement results in long distance dependencies.

(109)

V-agreement heads

Generally it is the case that the V-agreement of a higher head supersedes the V-agreement of a lower head, but there are two major exceptions. One exception is the case of frozen stems where a pair of √ + V is stored in the lexicon, in which case the value of V cannot be further modified by V-agreement. Frozen stems are addressed in in section 2.1 along with V-agreement and the root. The other exception is the case of Adv suffixation with any of the repetitive suffixes {*-x̲*, *-ch*, *-k*, *-t*, *-t'*, *-s'*, *-l'*} as well as the semantically enigmatic *-n* and *-ÿ*. This latter case could potentially be explained by phonology and early spellout, for which see section 2.3.

An intriguing property of V-agreement is that the diversity of values for V decreases with increasing height of the functional head trigger for V-agreement. Thus the greatest diversity of V values is found in the imperfective aspect where almost all the possible V values can be lexically specified by √, including paradigmatically unusual cases as *-e* or *-eH* without an overt suffix (sec. 2.1).[17] The least diversity is seen with T (sec. 2.9) and C (sec. 2.10) where the majority of structures with either head have *-μ* in V. This could potentially be analyzed as a kind of default value for V, but the paradigms of V-agreement beyond Asp need more study to confirm the existence of any default values. The inverse relationship between functional head height and complexity of V-agreement paradigms suggests that there are structural phenomena conditioning the V-agreement system.

Stem variation is apparently found in all languages of the Na-Dene family for which we have adequate documentation of the verbal morphology; some languages have very minimal systems probably because of phonological evolution, but all have at least some stem variation patterns akin to those in Tlingit. Aside from lexical documentation and phonological research (e.g. Li 1930a; Pike & Becker 1964; Howren 1968; Leer 1979a, 2005b; Rice 1989, 2005), stem variation has received very little attention and is generally taken as a partly lexical and partly aspectual phenomenon that is syntactically inscrutable (e.g. Hardy 1979, 1985; Collins 1985; Axelrod 1993; Young 2000; Hale 2001; Krauss 2012). I suspect this lack of study is partly because the system in Dene languages is more opaque, but

17. The exception is -⊗ which only occurs in the imperative of three roots.

Figure 2.11: V-agreement relationships across the clause

also partly because it has been assumed since the 1930s to be essentially irregular and unpredictable. If Tlingit's stem variation is cognate with that of Dene languages then the syntactic machinery may also be shared, suggesting that V-agreement patterns can be identified in other languages.

Why does V-agreement occur? I believe that it involves the syntax and semantics of eventualities, but I do not yet have an answer to this question. All of the functional elements that trigger V-agreeement are involved in the syntactic expression of eventualities: the root, repetitive suffixes, Ɛ, Asp, Mod, T, and C. Elements like quantifiers, D, P, *v*, and Voice that do not trigger V-agreement are mostly associated with the syntactic expression of entities and locations rather than eventualities. The exceptiona non-triggers are preverbs and temporal adjuncts that restrict the interpretation of eventualities. Leer's claim that specific V values are associated with kinds of events (see sec. 1.3.1.3) also points to a connection between eventualities and V-agreement. It may be that V-agreement was more semantically motivated in Proto-Na-Dene, but that it has become grammaticized and has lost much of its meaning in the daughter languages. But its persistence across many languages and across thousands of years suggests that there is more to V-agreement than just fossilized morphology.

	activity		state	
	√CV$^{(h)}$	√CV$^{(')}$C$^{(')}$	√CV$^{(h)}$	√CV$^{(')}$C$^{(')}$
-H	oral?	?	?	default?
-μ	—	process?	?	perception/cognition?
-μH	product/oral?	process?	default?	perception/cognition?
-eH	—	*	irregular	*

Table 2.6: Possible semantic correlates of imperfective stem variation per Leer 1991: 244

2.1. V-agreement and √

The first merge of any verbal clause is the pair of √ and V as a VP: [$_{VP}$ √ V]. There are two cases where the value of V can be determined by V-agreement at this earliest stage of the derivation: (i) lexically specified imperfective aspect and (ii) frozen stems. I first address the imperfective aspect case and then outline the phenomenon of frozen stems which I model as lexically stored and thus fixed instances of the first merge of √ + V.

I showed in section 1.3.1.3 that in lexically specified imperfective aspect (activities and states) the value of V is unpredictable from any other grammatical information and so must be specified by the root. The only values of V that never occur in this context are the long low tone ablauting stem *-e* (√*CV*^{h} + *-e* → *Cèè*) and the truncating stem -⊗ (√*CVC* + -⊗ → *CV́*). The *-eH* value occurs for only a few roots like √*ha*^{h} 'many', √*ha*^{h} 'will, intend', and √*tla*^{h} 'stout', and all are states and never activities. The remaining *-μ*, *-H*, and *-μH* values are found among both states and activities. There may be a couple of gaps like the apparent lack of √*CV* roots with *-μ*, but we need a more detailed review of the lexical documentation before deciding whether such gaps are accidental or significant.

Leer suggests that the stem variation of lexically specified imperfectives is semantically significant although not actually predictable:

> Insofar as the choice of [lexically specified stem variation] is predictable at all, it has mainly to do with the internal kinetic configuration of the situation: whether the action is cyclic, i.e. composed of a chain of repeated actions that are cognitively identical; and if so, the kinetic shape of these actions, e.g. whether instantaneous or prolonged. (Leer 1991: 242)

Leer's "chain of repeated actions" presumably refers to the repetitive imperfectives which I consider to be distinct from the lexically specified imperfectives because the V-agreement in a repetitive imperfective is conditioned by a repetitive suffix {*-x̲*, *-k*, *-ch*, *-t*, *-t'*, *-x'*, *-s'*, *-l'*} as Adv above VP and not by √ (sec. 2.3). Setting aside these repetitive suffixes, we are left with *-H*, *-μ*, *-μH*, and *-eH* across states and activities and basically two root shapes √*CV*$^{(h)}$ (either √*CV* or √*CV*^{h}) and √*CV*$^{(')}$*C*$^{(')}$ (√*CVC*, √*CVC'*, or √*CV'C*). Adapting Leer's stem variation representation into my own (see appendix B), the sketch in table 2.6 reflects his semantic classifications (Leer 1991: 244).

For *-H* activities Leer mentions "eating, drinking, saying, weeping, working" (Leer 1991: 242). These are at least the roots $\overset{2}{\sqrt{}}$*x̲a* 'eat', $\overset{2}{\sqrt{}}$*na* 'dampen; drink', $\overset{1}{\sqrt{}}$*k̲a* 'say', and $\overset{2}{\sqrt{}}$*ni*^{h} ~ $\overset{2}{\sqrt{}}$*ne*^{h} 'work, use hands'; the root $\overset{1}{\sqrt{}}$*g̲ax̲* 'sg. cry' has *-μH* in the imperfective so I am unsure of what his "weeping" refers to. I note in addition there are $\overset{2}{\sqrt{}}$*shi*^{h} 'sing' and $\overset{1}{\sqrt{}}$*ta*^{h} 'sg. sleep'. Of all these roots, neither 'work' nor 'sg. sleep' is associated with oral phenomena. For *-μH* activities Leer says they denote an "action leading

to product or oral activity", listing "making, cutting (creating product), roasting, inflating, chewing, spitting, licking, telling, whistling, weeping, selling" (Leer 1991: 242). These are probably $\sqrt[2]{}$*yex̲* 'build; make', $\sqrt[2]{}$*xash* 'cut, saw', $\sqrt[2]{}$*tsik* 'roast on stick', $\sqrt[2]{}$*.u'x* 'blow', $\sqrt[2]{}$*tax'* 'chew', $\sqrt[2]{}$*tux̲* 'spit', $\sqrt[2]{}$*tlet'* 'lick', $\sqrt[2]{}$*nik* 'tell', $\sqrt[1]{}$*.ekw* 'whistle', $\sqrt[1]{}$*g̲ax̲* 'sg. cry', and $\sqrt[2]{}$*hun* 'sell'. Of these the roots like $\sqrt[2]{}$*tax'* 'chew', $\sqrt[2]{}$*tlet'* 'lick', and $\sqrt[2]{}$*.u'x* 'blow' are problematic because their phonology prevents them from occurring with -*μ* and so they cannot be uniquely identified as -*μH* rather than -*μ*.

Because Leer's presentation is of English translations rather than actual Tlingit forms, it is very difficult to confirm his classifications. Once we have a list of all documented lexically specified imperfective forms we should compare them with his listings. My impression is that some parts of the root lexicon might actually fit with his perceived patterns, but that his groupings may on the one hand be overly narrow and may on the other be biased by English lexical concepts. For now I treat the root-based specification of V-agreement values in the imperfective aspect to be arbitrary with no particular semantic correlates.

The other case of root-based V-agreement involves what I describe as frozen stems and which I analyze as √ + V pairs that are stored together in the lexicon as a simple VP. Frozen stems are traditionally known as 'invariable roots' or 'invariable stems' (Leer 1991: 160, 164–165; Eggleston 2013: 27). The latter term is more appropriate in my analysis because the spellout of VP is the Stem domain of the verbal phonology and in frozen stems this domain is more or less unmodified by syntactic and phonological processes.

One example of a frozen stem involves the root $\sqrt[2]{}$*t'i* ~ $\sqrt[2]{}$*t'e* 'find, discover'. This root occurs in a frozen stem –*t'ee* ~ –*t'ei* with -*μ* in V even in forms where other values like would be expected. This is illustrated by the data in (110)–(114). The verb based on $\sqrt[2]{}$*t'i* ~ $\sqrt[2]{}$*t'e* 'find' is *g*-conjugation and so in the perfective a -*μ* stem is predicted as seen in (110).

(110) X̲waat'ee. *perfective with -μ*
wu-x̲- i- $\sqrt[2]{}$t'i -μ
PFV-1SG·S-STV-$\sqrt[2]{}$find-VAR
'I found it.'

In the progressive aspect there will be a -*n* suffix because the root is an open syllable, and with this -*n* suffix the -*μH* value for V is predicted. But as shown in (111), the -*μH* value is ungrammatical and instead -*μ* occurs.

(111) a. *Kei nx̲at'éen. **progressive with -μH*
kei=n- x̲- $\sqrt[2]{}$t'i -μH-n
up= NCNJ-1SG·S-$\sqrt[2]{}$find-VAR-NSFX
'I am in the process of finding it.'

b. Kei nx̲at'een. *progressive with -μ*
kei=n- x̲- $\sqrt[2]{}$t'i -μ -n
up= NCNJ-1SG·S-$\sqrt[2]{}$find-VAR-NSFX
'I am in the process of finding it.'

The repetitive imperfective of $\sqrt[2]{}$*t'i* ~ $\sqrt[2]{}$*t'e* 'find' should have the -*ch* suffix because this verb is a member of the *g*-conjugation class. With -*ch* and a √*CV* root the -*μH* value is predicted for V, but as shown in (112) the -*μ* occurs instead.

(112) a. *Kei x̲at'éech. **repetitive imperfective with -μH*
kei=x̲- ²√t'i -μH-ch
up= 1SG·S-²√find-VAR-REP
'I repeatedly find it.'

b. Kei x̲at'eech. *repetitive imperfective with -μ*
kei=x̲- ²√t'i -μ -ch
up= 1SG·S-²√find-VAR-REP
'I repeatedly find it.'

All habitual aspect forms have the *-ch* suffix and so the *-μH* value is predicted for V. But (113) shows once again that *-μH* is ungrammatical and *-μ* is used instead.

(113) a. *Gax̲at'éech. **habitual with -μH*
g- x̲- ²√t'i -μH-ch
GCNJ-XX1SG·S-²√find-VAR-REP
'I have regularly found it.', 'I always find it.'

b. Gax̲at'eech. *habitual with -μ*
g- x̲- ²√t'i -μ -ch
GCNJ-XX1SG·S-²√find-VAR-REP
'I have regularly found it.', 'I always find it.'

Finally, all prospective aspect forms are predicted to have *-μH* for V. Unlike the preceding aspects, the progressive does not require the presence of a suffix. Nonetheless, the facts in (114) show that this root still requires *-μ* instead of *-μH*.

(114) a. *Kei kkwat'ée. *prospective with -μH*
kei=w- g- g̲- x̲- ²√t'i -μH
up= IRR-GCNJ-MOD-1SG·S-²√find-VAR
'I am going to find it.'

b. Kei kkwat'ee. *prospective with -μ*
kei=w- g- g̲- x̲- ²√t'i -μ
up= IRR-GCNJ-MOD-1SG·S-²√find-VAR
'I am going to find it.'

The 'invariable roots' are described as having the same form in all contexts, but there are many cases of supposedly invariable roots where a different value of V can be found in some obscure contexts. For *²√t'i* ~ *²√t'e* 'find, discover' we can identify a purportedly distinct root *√t'it* 'beachcomb' (Story & Naish 1973: 128) which is based on *²√t'i* 'find' and the repetitive suffix *-t* (Leer 1973a: 07/131). This combination of *²√t'i* + *-t* appears with *-μH* rather than the morphophonologically predicted *-μ* as shown by the couple of attested examples in (115).

(115) a. Nóox'gaa át kuxwdlit'éet. *perfective with -μH + -t*
nóox'-gáa á -t ku- wu-x- d- l- i- $^{2}\sqrt{}$t'i -μH
shell -ADES 3N-PNCT AREAL-PFV-1SG·S-APSV-XTN-STV-$^{2}\sqrt{}$find-VAR
'I beachcombed there for shells.' (Story & Naish 1973: 128.1711)

b. At'éetx'. *repetitive imperfective with -μH + -t*
a- $^{2}\sqrt{}$t'i -μH-t -x'
ARG-$^{2}\sqrt{}$find-VAR-REP-PL
'S/he is finding them.' (Leer 1973a: 07/131)

The same is true for many other 'invariable roots': most stems based on the root have a single value instead of regular stem variation, but there are a few contexts where the value of V is distinct from its supposedly fixed form. I take this to mean that these are not just roots, but instead are fixed pairs of √ and V that are stored together in the lexicon as a unit. In some cases the same root can be used apart from its paired V, giving rise to what are often analyzed in the lexical documentation as either separate roots or irregular forms of already irregular verbs.

2.2. V-AGREEMENT AND Ɛ

V-agreement is associated with heads that denote eventuality and proposition semantics. Since Ɛ indicates stativity (ch. 3), it is reasonable to expect that Ɛ should also be a trigger for V-agreement. But Ɛ is itself conditioned by higher functional heads (ch. 3 sec. 3.2) so in many contexts it can be impossible to distinguish V-agreement with Ɛ from V-agreement with other heads. The only situation where overt Ɛ is found without any other overt functional heads is in the imperfective aspect of lexical states (see sec. 1.3.1.2 and ch. 3 sec. 3.1).

The data in (116) and (117) illustrate the variety of stem variation possibilities in lexical state imperfectives for closed syllable roots and open syllable roots, respectively. In each case the presented form is chosen to have as little overt morphology as possible.

(116) a. Yak'áts'. *state imperfective with -H*
i- $^{1}\sqrt{}$k'ats' -H
STV-$^{1}\sqrt{}$pointy-VAR
'It is pointy, sharp.'

b. Yatseen. *state imperfective with -μ*
i- $^{1}\sqrt{}$tsin-μ
STV-$^{1}\sqrt{}$alive-VAR
'S/he/it is alive, showing signs of life.'

c. Yat'éex'. *state imperfective with -μH*
i- $^{1}\sqrt{}$t'ix'-μH
STV-$^{1}\sqrt{}$hard-VAR
'It is hard.'

(117) a. Yat'aa. *state imperfective with -μ*
i- $\sqrt[1]{}$t'a^{h}-μ
STV-$\sqrt[1]{}$hot -VAR
'It is hot.'

b. Yagéi. *state imperfective with -μH*
i- $\sqrt[1]{}$ge^{h}-μH
STV-$\sqrt[1]{}$big -VAR
'It is big.', 'There is lots.'

c. Yatlei. *state imperfective with -e*
i- $\sqrt[1]{}$tla^{h} -e
STV-$\sqrt[1]{}$stout-VAR
'S/he/it is stout, big around.'

d. Yéi asayahéi. *state imperfective with -eH*
yéi= a- se- i- $\sqrt[1]{}$ha^{h}-eH
thus=ARG-voice-STV-$\sqrt[1]{}$will -VAR
'S/he is willing to do it.'

Since Ɛ c-commands V it is plausible that in lexical state imperfective like those in (116) and (117) the Ɛ head is the source of the V values. If Ɛ is indeed a V-agreement trigger in lexical state imperfectives then this predicts a possible contrast between an activity imperfective and a state imperfective with the same root that have different stem variation suffixes in V. This situation is sketched in (118). For the activity imperfective in (118a) the root has the [α_{ε}] feature and so V realizes as *-α*. Then for the state imperfective in (118b) the [α_{ε}] feature of the root is ignored because Ɛ has the [β_{ε}] feature realized in V as *-β*.

(118) a. *activity imperfective: √ values V*

	√	V
	[α_{ε}]	*-α*

b. *state imperfective: Ɛ values V*

Ɛ	√	V
[β_{ε}]	[α_{ε}]	*-β*

The problem is that roots specified for [STATE$_{\varepsilon}$] form only a state imperfective with overt Ɛ and not an activity imperfective without Ɛ (sec. 1.3.1.2). This means that it is generally impossible to see what value of V would occur when Ɛ is absent. But there are potentially a few roots that run counter to this generalization such as the motion root $\sqrt[1]{}$*gut* 'sg. go'. As discussed further in chapter 3 section 3.2.2.6, this and a some other motion roots are attested with imperfective aspect forms that lack a repetitive suffix and which may or may not include an overt Ɛ. This is shown in (119) where the form in (119a) lacks *i-* in Ɛ and has *-μ* in V whereas the form in (119b) has *i-* in Ɛ and has *-μH* in V.

(119) a. Áx̲ goot. *imperfective with -μ*
á -x̲ $\sqrt[1]{}$gut -μ
3N-PERT $\sqrt[1]{}$go·SG-VAR
'S/he repeatedly goes there.'

b. Yagóot. *imperfective with i- + -μH*
i- $\overset{1}{\sqrt{}}$gut -μH
STV-$\overset{1}{\sqrt{}}$go·SG-VAR
'S/he goes fast.'

The data in (119) appears to support the argument that Ɛ can specify stem variation and thus be a trigger for V-agreement. But the devil here is in the interpretational details of the form in (119a). According to Leer (1991: 298–301) the denotation of these imperfective forms is not a single durative activity but instead is a set of iterated events of motion. Because of this, I suggest in chapter 3 section 3.2.2.6 that structures like (119a) have a covert Adv that provides the iterative semantics just like the overt repetitive suffixes. If this is the case then the contrast between (119a) and (119b) is not a contrast between √ and Ɛ but rather between Adv and Ɛ. Consequently the data in (119) neither supports nor opposes the argument that Ɛ can be a V-agreement trigger, and so we must look elsewhere for supporting or confounding data.[18] I have the hunch that Ɛ is actually a V-agreement trigger because of the differences in stem variation patterns across the lexicon of activity imperfectives and state imperfectives, but this is still only a hunch at present.

2.3. V-agreement and Adv suffixes

The **repetitive suffixes** are a set of consonantal suffixes *-k* /k/, *-ch* /tʃ/, *-x̲* /χ/, *-t* /t/, *-t'* /t'/, *-x'* /x'/, *-s'* /s'/, and *-l'* /ɬ'/ that appear immediately after the spellout of √ + V and which denote various kinds of iterativity (repetition) within the eventuality described by the verb. They are semantically comparable to the similarly extensive array of pluractional suffixes described for Kaqchikel (Henderson 2013), but their syntax is distinct. The repetitive suffixes are intimately connected to stem variation because their presence usually causes changes to the stem phonology, particularly introducing ablaut of /a, u/ → [e] when they immediately follow the Stem vowel (i.e. are in the coda of the Stem syllable). I sketch the phonology of the stem and repetitive suffixes in section 2.3.1. I analyze the repetitive suffixes as Adv nodes merged in VP which thus c-command V and are therefore in a position to trigger V-agreement. I develop this argument in section 2.3.2. In section 2.3.3 I review the various aspects, moods, and modalities that regularly occur with the repetitive suffixes. Then I show how certain V + Adv combinations have been lexicalized with particular roots in section 2.3.4, and finally review the small handful of irregular V-agreement cases with Adv in section 2.3.5.

Although there is ample documentation of the repetitive suffixes, we still know very little about their semantics either generally or specifically for each suffix. It is clear from the extant data that the repetitive suffixes scope over the eventuality introduced by V and that they must be within the scope of the tense variables (*E* event time, *R* reference time, *S* speech time) manipulated by Asp and T. This is because the repetitive suffixes denote iteration of subevents within a single overall eventuality denoted by the verb, so they must be interpreted within the temporal frame of this eventuality. The repetitive suffixes do not seem to specify any particular ordering of the tense variables. I discuss this further in subsection 2.3.2, using the semantics to argue for the position of Adv in VP.

In addition to the repetitive suffixes listed above there are two sonorant suffixes *-n* and *-ÿ* which seem to be in the same syntactic position (complementary distribution) and which show similar morphophonology (triggering V-agreement) but which do not have any obvious semantic contributions. They are analyzed syntactically as being realizations of Adv and thus triggers of V-agreement,

18. Further investigation should start with the roots $\overset{1}{\sqrt{}}$*tiʰ* 'be, exist', $\overset{2}{\sqrt{}}$*tiʰ* 'resemble', and $\overset{2}{\sqrt{}}$*ti* 'handle'.

but their functions are still unknown. The *-n* suffix occurs in the progressive aspect, conditional mood, contingent modality, and some positional imperfectives. The *-ÿ* suffix occurs in the habitual aspect of Ø-conjugation verbs and irregularly in a few state imperfectives and perfectives.[19] I usually lump the two sonorant suffixes together with the repetitive suffixes because they are in complementary distribution, have the same linearization, and have similar effects on the stem. I explicitly indicate their difference from the repetitive suffixes only when their distinct phonology or semantics are significant.

2.3.1. Phonology of Adv and V

There are two basic phonological classes of suffixes that appear immediately after √ + V: obstruents and sonorants. The obstruent suffixes are the repetitive suffixes listed above; they contribute plural eventuality quantification, indicating different kinds of repeated subevents within the eventuality denoted by the verb. The suffixes *-k*, *-t*, *-ch*, *-x̲*, and are plain stops, fricatives, and affricates; the suffixes *-t'*, *-x'*, *-s'*, and *-x'* are ejective stops or fricatives. There are no ejective affricates among the repetitive suffixes, but this gap is probably accidental.

The sonorant suffixes are (i) the nasal stop *-n* /n/ and (ii) the 'gamma' approximant *-ÿ* /j ~ w/ (earlier *ÿ* /ɥ/, see apx. A sec. 6.1.3). The realization of *-ÿ* depends on labial features in the surrounding context; if there is no labialization then the form is *y* [j] otherwise it is *w* [w]. Because the *-ÿ* suffix comes from **-ŋ* some speakers have retained more or less non-phonemic nasalization with *-ÿ* which spreads to the preceding vowel. There are some signs of a historical **-m* and **-y* based on semantically similar doublets in the root lexicon, but today they are syntactically and morphophonologically inactive consonants and all doublets with them are purely lexical.

There are three stem variation patterns associated with the repetitive and sonorant suffixes which depend on root shape: closed syllables $\sqrt{CV^{(\prime)}C^{(\prime)}}$, open syllable $\sqrt{CV}$, and open syllable $\sqrt{CV^{h}}$. The simplest pattern is with the closed syllable roots sketched in (120): all closed syllable roots form $-C\acute{V}C^{(\prime)}$ stems and thus occur with *-H* in V. The symbol *-X* stands for any of the obstruent suffixes in the set {*-x̲*, *-ch*, *-k*, *-t*, *-t'*, *-x'*, *-s'*, *-l'*}. The sonorant suffix *-ÿ* does not occur with closed syllable $\sqrt{CV^{(\prime)}C^{(\prime)}}$ roots. The 'final' column gives the pattern of realization when the suffix is word-final and so is not followed by any vowels. The *-n* suffix does not surface in this context because of constraints on sonorant position in the coda. The 'add'l vowel' column gives the pattern of realization when the suffix is followed by a vowel, either epenthetic or part of a following suffix.[20]

(120) *suffix with closed* $\sqrt{CV^{(\prime)}C^{(\prime)}}$ *roots*

√CV⁽'⁾C⁽'⁾	V	Adv	*final*	*add'l vowel*
√CVC	-H	-X	[CV́CX]	[CV́C.XV]
√CVC'	-H	-X	[CV́C'X]	[CV́C'.XV]
√CV'C	-H	-X	[CV́CX]	[CV́C.XV]
√CVC	-H	-n	[CV́C]	[CV́C.nV]
√CVC'	-H	-n	[CV́C']	[CV́C'.nV]
√CV'C	-H	-n	[CV́C]	[CV́C.nV]
√CVC	-H	-ÿ	*	*
√CVC'	-H	-ÿ	*	*
√CV'C	-H	-ÿ	*	*

19. The *-ÿ* < **ŋ* is probably cognate with the nasal suffix in Proto-Dene (Krauss & Leer 1981).
20. Tone is not shown on this additional vowel because it depends on the source of the vowel, but it is usually low.

The data in (121) and (122) illustrate two closed syllable roots in activity imperfectives and in the corresponding repetitive imperfectives with an overt obstruent suffix. Even though different suffixes are used in each example, the same stem variation *-H* occurs.

(121) a. Xaxáas'. *activity imperfective with -μH*
x- $\sqrt[2]{}$xas' -μH
1SG·S-$\sqrt[2]{}$scrape-VAR
'I scrape it.', 'I am scraping it.'

b. Xaxás'x. *repetitive imperfective with -H-x*
x- $\sqrt[2]{}$xas' -H -x
1SG·S-$\sqrt[2]{}$scrape-VAR-REP
'I repeatedly scrape it.', 'I keep scraping it.'

(122) a. Xas'óow. *activity imperfective with -μH*
x- $\sqrt[2]{}$s'u'w-μH
1SG·S-$\sqrt[2]{}$chop -VAR
'I chop it.', 'I am chopping it.'

b. Xas'úwt. *repetitive imperfective with -H-t*
x- $\sqrt[2]{}$s'u'w-H -t
1SG·S-$\sqrt[2]{}$chop -VAR-REP
'I repeatedly chop at it.', 'I keep chopping at it.'

The *-n* suffix does not occur on the surface with closed syllable roots when it is word-final. This is shown in (123) with a progressive aspect form where *-n* is invisible and with a conditional mood form where the subordinate clause suffix *-í* forms a syllable with *-n* as its onset.

(123) a. Yaa nxa.ús'. *progressive aspect with -H(-n)*
ÿaa= n- x- $\sqrt[2]{}$.us' -H -n
along= NCNJ-1SG·S-$\sqrt[2]{}$wash-VAR-NSFX
'I wash him/her/it.', 'I am washing him/her/it.'

b. Naxa.ús'ni... *conditional mood with -H-n*
n- x- $\sqrt[2]{}$.us' -H -n -í
NCNJ-1SG·S-$\sqrt[2]{}$wash-VAR-NSFX-SUB
'If I wash him/her/it...'

When the obstruent suffixes arise in codas that are too complex there is an epenthetic vowel inserted between them and the rest of the stem. It is not clear what the precise conditions are for 'too complex', and there is sometimes variation in the speech of a single person. Probably phrasal phonology plays a role in this epenthesis. The *-n* suffix is never epenthesized.

The open syllable √*CV* pattern is sketched in (124). Both sonorant suffixes *-n* and *-ÿ* occur, and both are detectable in all surface forms. As before, the *-X* symbol stands for any of the obstruent suffixes, the 'final' column gives the result when the suffix is word-final, and the 'add'l vowel' column gives the result when the suffix is followed by another vowel. Both *-X* and *-n* trigger ablaut in √*Ca* and √*Cu* roots where *-ÿ* does not trigger ablaut. Ablaut of √*Cu* leaves behind the implicit labialization of

the onset consonant so that /Cʷu/ + /-n/ → [Cʷéːn] and not [Céːn]. The shift of *-ÿ* from [j] to [w] is similarly predictable from labialization spreading.

(124) *suffix with open √CV roots*

√CV	V	Adv	*final*	*add'l vowel*
√Ci	-μH	-X	[Cíː.X]	[Cíː.XV]
√Ce	-μH	-X	[Céː.X]	[Céː.XV]
√Ca	-eH	-X	[Céː.X]	[Céː.XV]
√Cu	-eH	-X	[Cʷéː.X]	[Cʷé.XV]
√Ci	-μH	-n	[Cíːn]	[Cíː.nV]
√Ce	-μH	-n	[Céːn]	[Céː.nV]
√Ca	-eH	-n	[Céːn]	[Céː.nV]
√Cu	-eH	-n	[Cʷéːn]	[Cʷé.nV]
√Ci	-μH	-ÿ	[Cíːj]	[Cíː.jV]
√Ce	-μH	-ÿ	[Céːj]	[Céː.jV]
√Ca	-μH	-ÿ	[Cáːj]	[Cáː.jV]
√Cu	-μH	-ÿ	[Cʷúːw]	[Cʷú.wV]

The open syllable *√CVʰ* pattern is sketched in (125). This is almost the same as the *√CV* pattern except that the obstruent suffixes *-X* trigger *-μ* or *-e* with low tone instead of *-μH* or *-eH* with high tone as in (124). The difference is historically explained by *√CVʰ* roots forming stems in this context with an aspirated ('fading') [Vʰ] vowel rather than a long [Vː] vowel, hence the representation with the superscript ⟨ʰ⟩. This [CVʰX] stem form is documented in Tongass Tlingit and predicted to underly the low tone of all other dialects (apx. A sec. 6.1.3). Synchronically there are various lexical representations possible such as encoding *√CVʰ* roots with an L tone, or *√CV* roots with an H tone, but this contrast yet to be phonologically formalized.

(125) *suffix with open √CVʰ roots*

√CVʰ	V	Adv	*final*	*add'l vowel*
√Ciʰ	-μ	-X	[Cìː.X]	[Cìː.XV]
√Ceʰ	-μ	-X	[Cèː.X]	[Cèː.XV]
√Caʰ	-e	-X	[Cèː.X]	[Cèː.XV]
√Cuʰ	-e	-X	[Cʷèː.X]	[Cʷè.XV]
√Ciʰ	-μH	-n	[Cíːn]	[Cíː.nV]
√Ceʰ	-μH	-n	[Céːn]	[Céː.nV]
√Caʰ	-eH	-n	[Céːn]	[Céː.nV]
√Cuʰ	-eH	-n	[Cʷéːn]	[Cʷé.nV]
√Ciʰ	-μH	-ÿ	[Cíːj]	[Cíː.jV]
√Ceʰ	-μH	-ÿ	[Céːj]	[Céː.jV]
√Caʰ	-μH	-ÿ	[Cáːj]	[Cáː.jV]
√Cuʰ	-μH	-ÿ	[Cʷúːw]	[Cʷú.wV]

Exemplifying the forms in (124) and (125) would require at least 48 minimal pairs. In lieu of this I give a few contrasting examples of *√Ca* and *√Cu* roots along with *√Caʰ* and *√Cuʰ* roots with *-X* and *-n* suffixes. These illustrate ablaut and the tone contrast between the two root shapes which I consider to be the most significant phenomena in open syllable stem variation. The forms in (126) and (127)

give the roots $\overset{2}{\sqrt{}}$*x̱a* 'eat' and $\overset{1}{\sqrt{}}$*xu* 'steam' and show *-eH* for both *-x̱* and *-n*. The forms in (128) and (129) give the roots $\overset{1}{\sqrt{}}$*t'a*^{h} 'hot' and $\overset{2}{\sqrt{}}$*ku*^{h} 'know' and show *-e* for *-x̱* versus *-eH* for *-n*. All four roots derive verbs that are members of the *∅*-conjugation class and so have repetitive imperfectives with *-x̱*.

(126) *open syllable root √Ca*

a. X̱waax̱áa. *perfective with -μH*
wu-x̱- i- $\overset{2}{\sqrt{}}$x̱a-μH
PFV-1SG·S-STV-$\overset{2}{\sqrt{}}$eat-VAR
'I came to know it.'

b. X̱ax̱éix̱. *repetitive imperfective with -e-x̱*
x̱- $\overset{1}{\sqrt{}}$x̱a-eH-x̱
1SG·S-$\overset{2}{\sqrt{}}$eat-VAR-REP
'I repeatedly eat it.', 'I keep eating it.'

c. Yaa nx̱ax̱éin. *progressive with -eH-n*
ÿaa= n- x̱- $\overset{2}{\sqrt{}}$x̱a-eH-n
along=NCNJ-1SG·S-$\overset{2}{\sqrt{}}$eat-VAR-NSFX
'I am in the process of eating it.'

(127) *open syllable root √Cu*

a. X̱wasixóo. *perfective with -μH*
wu-x̱- s- i- $\overset{1}{\sqrt{}}$xu -μH
PFV-1SG·S-CSV-STV-$\overset{1}{\sqrt{}}$steam-VAR
'I steamed it.'

b. X̱asaxwéix̱. *repetitive imperfective with -e-x̱*
x̱- s- $\overset{1}{\sqrt{}}$xu -eH-x̱
1SG·S-CSV-$\overset{1}{\sqrt{}}$steam-VAR-REP
'I repeatedly steam it.', 'I keep steaming it.'

c. Yaa nx̱asaxwéin. *progressive with -eH-n*
ÿaa= n- x̱- s- $\overset{1}{\sqrt{}}$xu -eH-n
along=NCNJ-1SG·S-CSV-$\overset{1}{\sqrt{}}$steam-VAR-NSFX
'I am in the process of steaming it.'

(128) *open syllable root √Ca*^{h}

a. X̱wasit'áa. *perfective with -μH*
wu-x̱- s- i- $\overset{1}{\sqrt{}}$t'a^h-μH
PFV-1SG·S-CSV-STV-$\overset{1}{\sqrt{}}$hot -VAR
'I heated it.'

b. X̱asat'eix̱. *repetitive imperfective with -e-x̱*
x̱- s- $\overset{1}{\sqrt{}}$t'a^h-e -x̱
1SG·S-CSV-$\overset{1}{\sqrt{}}$hot -VAR-REP
'I repeatedly heat it.', 'I keep heating it.'

c. Yaa nx̱asat'éin. *progressive with -e-n*
ÿaa= n- x̱- s- $^{1}\sqrt{}$t'a^{h}-eH-n
along=NCNJ-1SG·S-CSV-$^{1}\sqrt{}$hot -VAR-NSFX
'I am in the process of heating it.'

(129) *open syllable root √Cu^{h}*

a. X̱wasikóo. *perfective with -μH*
wu-x̱- s- i- $^{2}\sqrt{}$ku^{h} -μH
PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$know-VAR
'I came to know it.'

b. X̱asakweix̱. *repetitive imperfective with -e-x̱*
x̱- s- $^{2}\sqrt{}$ku^{h} -e -x̱
1SG·S-XTN-$^{2}\sqrt{}$know-VAR-REP
'I repeatedly get to know it.', 'I keep knowing it.'

c. Yaa nx̱asakwéin. *progressive with -eH-n*
ÿaa= n- x̱- s- $^{2}\sqrt{}$ku^{h} -eH-n
along=NCNJ-1SG·S-XTN-$^{2}\sqrt{}$know-VAR-NSFX
'I am getting to know it.'

2.3.2. Position of Adv in VP

The repetitive suffixes are indicators of iteration of eventualities, and thus are a kind of eventuality quantifier. They similar to – and often translated as – English pluractional adverbs like *repeatedly*. This suggests that they are Adv nodes, and so I analyze them as such. It is not crosslinguistically necessary that indicators of event iteration are adverbs; for example, Henderson (2013) analyzes Mayan pluractional suffixes as *v* heads because they also involve the modification of argument structure, and Iordăchoia & Soare (2007) argue that similar elements in Romanian nominalizations are Asp heads. But Tlingit already has elements in *v* and Asp which are syntactically, semantically, and phonologically independent of the repetitive suffixes so assigning the latter to Adv is more plausible. The Adv category is crosslinguistically something of a wastebasket category however, and the repetitive suffixes do not look anything like other adverbs. Plausible alternatives include a quantifier or a category identical to the plural suffix *-x'* of nouns since this same form is a repetitive suffix.

The repetitive suffixes qua Adv nodes do not appear to have any phrasal syntax of their own so I do not believe they project AdvP phrases. As modifiers they are presumably adjoined to some other phrase in the verbal spine. I suggest two positions: a 'high' position in AspP as in figure 2.12 and a 'low' position in VP as in figure 2.13. Both phrases are associated with eventuality semantics: Asp expresses aspect and thus the relationships between tense variables (E, R, S), and VP expresses event structure and thus the durativity and telicity of the eventuality. I have employed both high and low Adv positions in earlier work but I have not offered any arguments for either; here I argue that the correct position for Adv is in VP.

The high position in AspP is plausible but I believe it is incorrect. It appears to be supported by the fact that Adv blocks V-agreement from Asp, thus implying that Adv is above Asp. For example, a repetitive suffix can be combined with the prospective aspect (and irrealis and modality) to give a

Figure 2.12: High position of Adv in AspP

Figure 2.13: Low position of Adv in VP

repetitive prospective form that means something like '*x* will repeatedly occur in the future'. In this structure the expected stem variation of the prospective aspect (V-agreement with Asp) is replaced by the stem variation of the repetitive suffix (V-agreement with Adv). To see this, first consider the repetitive imperfective in (130) where Adv selects *-eH* for V and the prospective in (131) where Asp selects *-μH* for V.

(130) a. Xaxéix. *repetitive imperfective with -eH*
x- $\sqrt[2]{}$xa-eH-x
1SG·S-$\sqrt[2]{}$eat-VAR-REP
'I repeatedly eat it.', 'I keep eating it.'

b. *Xaxáax. **repetitive imperfective with -μH*
x- $\sqrt[2]{}$xa-μH-x
1SG·S-$\sqrt[2]{}$eat-VAR-REP
intended: 'I repeatedly eat it.', 'I keep eating it.'

(131) a. *Kukaxéi. **prospective with -eH*
w- g- g- x- $\sqrt[2]{}$xa-eH
IRR-GCNJ-MOD-1SG·S-$\sqrt[2]{}$eat-VAR
'I repeatedly eat it.', 'I keep eating it.'

b. Kukaxáa. *prospective with -μH*
w- g- g- x-
IRR-GCNJ-MOD-1SG·S-
intended: 'I repeatedly eat it.', 'I keep eating it.'

The repetitive suffix can be added to the prospective aspect in which case both Asp and Adv will be overt, thus setting up a competition between V-agreement with Asp and V-agreement with Adv. As shown by the data in (132), it is Adv that wins this competition since *-eH* is the grammatical form rather than *-μH*.

(132) a. Kukaxéix. *repetitive prospective with -eH*
w- g- g- x- $\sqrt[2]{}$xa-eH-x
IRR-GCNJ-MOD-1SG·S-$\sqrt[2]{}$eat-VAR-REP
'I will repeatedly eat it.', 'I will keep eating it.'

b. * Kukaxáax. **repetitive prospective with -μH*
w- g- g- x-
IRR-GCNJ-MOD-1SG·S-
intended: 'I will repeatedly eat it.', 'I will keep eating it.'

If Adv is above Asp in (132) then this is not unexpected: as the higher of the two overt heads, Adv would be the expected source of V-agreement. Thus apparently Adv is above Asp and hence Adv is in the high position merged in AspP. But this conclusion is damaged by the fact that the same phenomenon occurs with both Neg and C as shown below, where Asp is the trigger for V-agreement instead of these other heads. If we follow the reasoning that Adv must be the higher head in each case then this would imply Adv is above C and hence that Adv would be merged in CP. This not only conflicts with what we expect from the semantics of repetitives, but also conflicts with the linearization where Adv always precedes C.

First I show that V-agreement with Neg is superseded by V-agreement with Adv. The activity imperfective in (133) has lexically specified *-μH* by V-agreement with √. The negation of this in (134) has *-μ* by V-agreement with Neg.

(133) a. Xa.áak. *affirmative activity imperfective with -μH*
x- ^{2}√.ak -μH
1SG·S-^{2}√weave-VAR
'I weave it.', 'I'm weaving it.'

b. * Xa.aak. **affirmative activity imperfective with -μ*
x- ^{2}√.ak -μ
1SG·S-^{2}√weave-VAR
intended: 'I weave it.', 'I'm weaving it.'

(134) a. * Tléil xwa.áak. **negative activity imperfective with -μH*
tléil u- x- ^{2}√.ak -μH
NEG IRR-1SG·S-^{2}√weave-VAR
'I don't weave it.', 'I'm not weaving it.'

b. Tléil xwa.aak. *negative activity imperfective with -μ*
tléil u- x- ^{2}√.ak -μ
NEG IRR-1SG·S-^{2}√weave-VAR
intended: 'I don't weave it.', 'I'm not weaving it.'

When a repetitive suffix is introduced in (135) the form has *-H* by V-agreement with Adv. Note that the ungrammaticality of (135b) is not due to a phonotactic constraint: Tlingit allows long low tone vowels together with complex codas like [CV̀:CC] both in lexical entries and in forms derived by suffixation. Instead (135b) must be ungrammatical because of syntax. The negation of the repetitive imperfective in (136) features the same *-H* by V-agreement with Adv rather than the expected *-μ* by V-agreement with Neg, showing that Adv supersedes Neg for V-agreement.

(135) a. Xa.ákx. *affirmative repetitive imperfective with -H-x*
x- $\sqrt[2]{}$.ak -H -x
1SG·S-$\sqrt[2]{}$weave-VAR-REP
'I repeatedly weave it.', 'I keep weaving it.'

b. *Xa.aakx. **affirmative repetitive imperfective with -μ-x*
x- $\sqrt[2]{}$.ak -μ -REP
1SG·S-$\sqrt[2]{}$weave-VAR
intended: 'I repeatedly weave it.', 'I keep weaving it.'

(136) a. Tléil xwa.ákx. *negative repetitive imperfective with -H-x*
tléil u- x- $\sqrt[2]{}$.ak -H -x
NEG IRR-1SG·S-$\sqrt[2]{}$weave-VAR-REP
'I don't repeatedly weave it.', 'I don't keep weaving it.'

b. *Tléil xwa.aakx. **negative repetitive imperfective with -μ-x*
tléil u- x- $\sqrt[2]{}$.ak -μ -x
NEG IRR-1SG·S-$\sqrt[2]{}$weave-VAR-REP
intended: 'I don't repeatedly weave it.', 'I don't keep weaving it.'

Similar facts hold for C. Compare the activity imperfective in (133) above with the adjunct clause form in (137) below where the subordinate clause suffix *-í* is the overt realization of C. As expected, the V shows *-μ* by V-agreement with overt C rather than the *-μH* of √. But when the repetitive suffix is added in (138) the V shows *-H* by V-agreement with Adv rather than *-μ* with C.

(137) a. *Xa.áagi... **adjunct activity imperfective with -μH*
x- $\sqrt[2]{}$.ak -μH-í
1SG·S-$\sqrt[2]{}$weave-VAR-SUB
intended: 'While I weave it...'

b. Xa.aagí... *adjunct activity imperfective with -μ*
x- $\sqrt[2]{}$.ak -μ -í
1SG·S-$\sqrt[2]{}$weave-VAR-SUB
'While I weave it...'

(138) a. Xa.ákxi... *adjunct repetitive imperfective with -H-x*
x- $\sqrt[2]{}$.ak -μH-x -í
1SG·S-$\sqrt[2]{}$weave-VAR-REP-SUB
'While I repeatedly weave it...'

b. *Xa.aakxí... **adjunct repetitive imperfective with -μ-x*
x- $\sqrt[2]{}$.ak -μ -x -í
1SG·S-$\sqrt[2]{}$weave-VAR-REP-SUB
intended: 'While I repeatedly weave it...'

The rule is then that when Adv is not present it is the highest overt functional head that V agrees with, but when Adv is present V exclusively agrees with Adv. If we followed the argumentation for

Figure 2.14: High position of Adv in NegP

Figure 2.15: High position of Adv in CP

the high position of Adv in AspP then here we would be forced to accept structures like those in figures 2.14 and 2.15. Perhaps we might accept Adv above Neg like in figure 2.14, but the linearization of *-x̲*$_{\text{Adv}}$ < *-í*$_{\text{C}}$ conflicts with the predicted order of C < Adv in figure 2.15. Without some elaborate rearrangement of elements, the position of Adv in CP is impossible.

The low position of Adv in VP is supported by the semantic interpretation of iterativity. The addition of iterativity to an eventuality has two logically possible interpretations depending on scope which I sketch in (139) and (140). The timeline in (139) represents a repetitive imperfective form as a sequence of nearly identical eventualities *e*, occurring across some interval of time that is centred on the time labelled 'now' (i.e. imperfective $R \subseteq E$ where $E \equiv e\ e\ e \ldots$ and $R \equiv$ 'now'). Each individual eventuality *e* is separate and unique, so effectively this is a plurality of eventualities.

(139) *multiple eventualities*

The timeline in (140) represents a similar sequence of largely identical eventualties *e*, but these are enclosed by a single durative eventuality *e′*. Rather than a plurality of eventualities, there is a single collective eventuality with an internal structure of subeventualities. I argue below that Tlingit's repetitive imperfective corresponds only to (140) and not to (139).

(140) *event with subeventualities*

As discussed earlier in section 1.3.1.1, activity imperfectives arise from roots that are lexically specified for durativity. If the root is not specified for durativity then an activity imperfective form is ungrammatical, and this difference in grammaticality distinguishes activities from achievements. This is illustrated by the non-durative root $\sqrt[2]{}$*jak̲* 'kill' which permits a perfective aspect form in (141a) but not any of the morphologically plausible imperfective aspect forms in (141b)–(141d).

(141) a. Táax'aa xwaajáḵ. *perfective aspect with -H*
táax'aa wu-x- i- $\sqrt[2]{}$jaḵ-H
mosquito PFV-1SG·S-STV-$\sqrt[2]{}$kill -VAR
'I killed a mosquito.'

b. *Táax'aa xajáḵ. **imperfective aspect with -H*
táax'aa x- $\sqrt[2]{}$jaḵ-H
mosquito 1SG·S-$\sqrt[2]{}$kill -VAR
intended: 'I kill mosquitoes.', 'I am killing a mosquito.'

c. *Táax'aa xajaaḵ. **imperfective aspect with -μ*
táax'aa x- $\sqrt[2]{}$jaḵ-μ
mosquito 1SG·S-$\sqrt[2]{}$kill -VAR
intended: 'I kill mosquitoes.', 'I am killing a mosquito.'

d. *Táax'aa xajáaḵ. **imperfective aspect with -μH*
táax'aa x- $\sqrt[2]{}$jaḵ-μH
mosquito 1SG·S-$\sqrt[2]{}$kill -VAR
intended: 'I kill mosquitoes.', 'I am killing a mosquito.'

When iterative semantics is introduced to a non-durative root with a repetitive suffix, the imperfective aspect becomes grammatical. Thus the non-durative root $\sqrt[2]{}$*jaḵ* 'kill' can form a repetitive imperfective with -*x* as shown in (142).

(142) Táax'aa xajákx. *repetitive imperfective aspect with -H-x*
táax'aa x- $\sqrt[2]{}$jaḵ-H -x
mosquito 1SG·S-$\sqrt[2]{}$kill -VAR-REP
'I repeatedly kill mosquitoes.', 'I keep trying to kill a mosquito.'

If the imperfective aspect is dependent on the durativity of its input eventuality then the ungrammaticality of the imperfectives in (141b)–(141d) is because $\sqrt[2]{}$*jaḵ* 'kill' is not specified for durativity. The repetitive imperfective aspect in (142) is presumably the same aspect as in imperfective forms without a repetitive since it has the same (lack of) morphology in Asp and seems to have the same temporal interpretation of $R \subseteq E$. Durativity must be introduced somehow so that the imperfective aspect is possible, and the only plausible source of this durativity in (142) is the repetitive suffix -*x*. The interpretation of (142) is then something like the timeline in (143). Each instantaneous killing (or attempted killing) event is represented by a point and all of these are enclosed by the durative activity e'.

(143) *instantaneous subevents*

I suggest that the introduction of a repetitive suffix entails durativity of the eventuality because the multiplicity of subeventualities occur over a period of time. This predicts that repetitive imperfectives do not denote instantaneous supereventualities, so that an eventuality like e' in (143) must

take up time. My personal experience with Tlingit leads me to believe that this is true, but like many aspectual issues this remains to be empirically investigated. If the repetitive suffix does introduce durative semantics then it must do so before the interpretation of imperfective aspect, and thus Adv must be below Asp.

Although the interpretation of the *-n* suffix is still unknown, it may also contribute durativity like the repetitive suffixes. The progressive aspect is similar to the imperfective in that it denotes a durative eventuality, but unlike the (non-repetitive) imperfective aspect the progressive can be applied to roots that are not lexically specified as durative. This is shown for $\sqrt[2]{ja\underline{k}}$ 'kill' in (144) and for another achievement root $\sqrt[2]{t'i^h} \sim \sqrt[2]{t'e^h}$ 'find' in (145). Two different roots are given because $\sqrt[2]{ja\underline{k}}$ 'kill' is a $\sqrt{CVC}$ root so the *-n* does not surface in (144), but $\sqrt[2]{t'i^h} \sim \sqrt[2]{t'e^h}$ 'find' is an open syllable $\sqrt{CV^h}$ root so *-n* does appear in the surface form in (145b).[21]

(144) Yaa nxajáḵ. *progressive aspect with -H-n*
ÿaa= n- x- $\sqrt[2]{}$jaḵ-H -n
along=NCNJ-1SG·S-$\sqrt[2]{}$kill -VAR-NSFX
i. 'I am in the process of killing it.'
ii. 'I am starting to kill it.'
iii. 'I'm getting toward killing it.'

(145) a. Xwaat'ee. *perfective aspect with -μ*
wu-x- i- $\sqrt[2]{}$t'i^h-μ
PFV-1SG·S-STV-$\sqrt[2]{}$find-VAR
'I found it.'

b. ✓Kei nxat'éen. *progressive aspect with -H-n*
kei=n- x- $\sqrt[2]{}$t'i^h-μH-n
up= NCNJ-1SG·S-$\sqrt[2]{}$find-VAR-NSFX
i. 'I am in the process of finding it.'
ii. 'I am starting to find it.'
iii. 'I'm getting toward finding it.'

c. *Xat'í. **imperfective aspect with -H*
x- $\sqrt[2]{}$t'i^h-H
1SG·S-$\sqrt[2]{}$find-VAR
intended: 'I find it.', 'I am finding it.'

d. *Xat'ee. **imperfective aspect with -μ*
x- $\sqrt[2]{}$t'i^h-μ
1SG·S-$\sqrt[2]{}$find-VAR
intended: 'I find it.', 'I am finding it.'

e. *Xat'ée. **imperfective aspect with -μH*
x- $\sqrt[2]{}$t'i^h-μH
1SG·S-$\sqrt[2]{}$find-VAR
intended: 'I find it.', 'I am finding it.'

21. The switch from *ÿaa=* 'along' in (144) to *kei=* 'up' in (145b) reflects *∅* versus *g*-conjugation class.

Arguably the durativity of progressive aspect could be provided by whatever semantics is hosted by the *n-* prefix in Asp. But it is equally reasonable to suppose that the *-n* suffix, being in the same Adv position as the repetitive suffixes, also supplies the same durativity semantics. To determine which affix is the source of durativity in progressives we first need a detailed analysis of the semantics of the *n-* prefix in its various grammatical contexts.

If Adv is below Asp then there are four phrases where Adv could be merged: VoiceP, *v*P, ƐP, and VP. VoiceP and *v*P generally do not participate in eventuality structure (see chs. 4 and 5), so I exclude them from consideration. The ƐP is a reasonable hypothesis since Ɛ is involved in the expression of stativity, but I argue in chapter 3 that Ɛ and hence ƐP is absent in activity imperfectives so there is no reason to expect it to exist covertly in repetitive imperfectives. ƐP is similarly absent in progressives. This leaves only VP for the introduction of durativity before the interpretation of aspect.

An additional piece of evidence supporting the low position of Adv in VP is that some combinations of √ + V + Adv have become lexicalized as detailed in section 2.3.4. If the Adv is within VP then it is reasonable for the VP containing all three to be encoded as a lexical entry, similar to how pairs of √ + V can be lexicalized as a frozen stem (sec. 2.1). The lexical entries of lexicalized √ + V + Adv would be small subtrees like $[_{\text{VP}}\ [_{\text{VP}}\ \sqrt{}\ \text{V}]\ \text{Adv}]$ which could be selected as a single syntactic unit. This would be similar to total blocking in a stem paradigm such as the English irregular paradigm of present *put* : past *put* : past participle *put* versus regular *put* : **put-ted* : **put-ten*.

The irregular cases of √ + V + Adv detailed in section 2.3.5 could also support the low position of Adv in VP. Summarizing the details there, the roots $\overset{2}{\sqrt{}}ya^{w}$ 'pack' and $\overset{1}{\sqrt{}}na^{w}$ 'die' lack ablaut with both obstruent and sonorant suffixes, the roots $\overset{2}{\sqrt{}}\underline{x}a$ 'paddle' and $\overset{2}{\sqrt{}}sha^{w}$ 'marry' lack ablaut with the obstruent suffixes, and the roots $\overset{1}{\sqrt{}}ni^{h}$ 'occur, happen' and $\overset{2}{\sqrt{}}\ddot{y}a^{h}$ 'resemble' lack high tone with *-n*. These six roots are the only reliably documented exceptions to stem variation with Adv suffixes, so it is reasonable to suppose that their unusual behaviour is lexically specified. If Adv is in VP then small subtree structures like $[_{\text{VP}}\ [_{\text{VP}}\ \sqrt{}\ \text{V}]\ \text{Adv}]$ could be stored for these irregular forms and selected as a kind of suppletion for the regular derivational structures. This would be equivalent to partial blocking in a stem paradigm such as English irregular past *went* suppleting regular past **go-ed* but not the more or less regular past participle *go-ne*.

The low position of Adv in VP can also help account for the unusual V-agreement behaviour of Adv versus other heads. It could be the case that Adv supersedes all other V-agreement because the appearance of Adv in VP forces VP to spell out early. Normally the spellout of V may have to wait until CP because the value of V depends on the highest functional head in the clause and this highest head may be C. But perhaps when Adv is merged in VP this triggers early spellout. Given that spellout freezes the phonological form, any later V-agreement operations would be unable to affect the value of V. This early spellout could have a phonological justification. If both √ and V are phonologically underspecified and all overt arguments are always ejected from VP, then the usual VP will be lacking complete phonological material until V-agreement calculation is complete at CP. If Adv is phonologically fully specified then the presence of this concrete material could force spellout of the remainder of VP. The problem with this approach is that spellout is expected to happen only at phase boundaries and VP is otherwise not expected to be a phase. The nearest syntactically detectable phases are *v*P and VoiceP where short distance subject raising occurs, so it could be that early spellout of VP does not occur until *v*P or VoiceP are merged.

2.3.3. Aspects, moods, and modalities with V+Adv

Several aspects, moods, and modalities in Tlingit are regularly formed with an Adv suffix. The most well known are the repetitive imperfectives (sec. 2.3.3.1). These are not the only imperfective aspect forms to include an Adv suffix however: several kinds of state imperfectives include an Adv suffix and thus represent 'pluristates' (sec. 2.3.3.2), and a few positional imperfectives include a suffix *-n* with unknown meaning (sec. 2.3.3.3). As noted earlier, progressive aspect also includes *-n* when it is formed with open syllable roots (sec. 2.3.3.4).

Beyond imperfective aspect and its relatives, there are a few other contexts where Adv regularly occurs. Habitual aspect is always formed with *-ch*, probably forming a pluractional counterpart to perfective aspect (sec. 2.3.3.5); in some cases the habitual also features *-ÿ*. The conditional mood appears only in adjunct clause forms where it includes *-n* as well as the subordinate clause suffix *-í* (sec. 2.3.3.6). Finally, the contingent modality appears only in adjunct clauses where it has *-n* after open syllable roots along with a still unexplained suffix *-ín* (sec. 2.3.3.7).

If we divide these various temporal expression structures on the basis of the Adv suffix we can establish two categories, one with the repetitive suffixes and the other with *-n*. This division matches the phonological split between obstruent suffixes and sonorant suffixes. A semantic generalization about the structures with repetitive suffixes is readily apparent: all involve iterativity introduced by the repetitive suffix. The meaning of the *-n* suffix is far less clear, and the class of forms with *-n* does not reveal any obvious generalizations.

2.3.3.1. Repetitive imperfectives with V+Adv

The repetitive imperfectives are combinations of imperfective aspect with a repetitive suffix *-X* ∈ {*-x̲*, *-ch*, *-k*, *-t*, *-t'*, *-x'*, *-s'*, *-l'*}. Most repetitive imperfectives are *∅*-imperfectives (ch. 6 sec. 2.1) which means that they do not have any of the overt conjugation prefixes {*n-*, *g̲-*, *g-*} or perfective prefixes {*wu-*, *u-*} in Asp. There are some *CNJ*-imperfectives with repetitive suffixes which have one of the three overt conjugation prefixes, but all of these are states with *i-* in Ɛ and are discussed later in section 2.3.3.2. Because there are so many repetitive suffixes there are many different repetitive imperfectives, so I do not detail each type. Instead I document the overall inventory and point out some problems for further analysis.

Conjugation class membership determines four repetitive imperfective forms, so that every verb has at least one repetitive imperfective available because of its conjugation class specification (either lexically or via derivation). Table 2.7 shows all the morphological patterns for these depending on conjugation class ('Conj.') and root shape ('√'); the 'Pvb.' column lists a preverb (adverbial proclitic in AspP) that is required for each form. The root shape $\sqrt{CV^{(\prime)}C^{(\prime)}}$ stands for any of the three closed syllable roots √*CVC*, √*CVC'* or √*CV'C* which all behave identically in these contexts. The √*Ci/e* represents √*Ci* or √*Ce* roots separately from √*Ca/u* for the √*Ca* and √*Cu* roots because only these latter two undergo ablaut. The $\sqrt{CV^h}$ roots – listed as $\sqrt{Ci/e^h}$ and $\sqrt{Ca/u^h}$ – lack high tone in V as discussed in section 2.3.1.

The data in (146) and (147) give examples of each of the four repetitive imperfectives associated with each conjugation class. The forms in (146) are based on closed syllable roots and the forms in (147) on open syllable roots, illustrating the differences in stems along with otherwise identical morphology.

Conj.	*Pvb.*	Asp	Ɛ	√	V	Adv	*Stem*
				√CV⁽ʾ⁾C⁽ʾ⁾	-H	-x̲	[CV́C⁽ʾ⁾χ]
				√Ci/e	-μH	-x̲	[CV́V́χ]
Ø				√Ca/u	-eH	-x̲	[Cééχ⁽ʷ⁾]
				√Ci/eʰ	-μ	-x̲	[CV̀V̀χ]
				√Ca/uʰ	-e	-x̲	[Cèèχ⁽ʷ⁾]
	yoo=		i-	√CV⁽ʾ⁾C⁽ʾ⁾	-H	-k	[CV́C⁽ʾ⁾k]
	yoo=		i-	√Ci/e	-μH	-k	[CV́V́k]
n	yoo=		i-	√Ca/u	-eH	-k	[Céék⁽ʷ⁾]
	yoo=		i-	√Ci/eʰ	-μ	-k	[CV̀V̀k]
	yoo=		i-	√Ca/uʰ	-e	-k	[Cèèk⁽ʷ⁾]
	yei=			√CV⁽ʾ⁾C⁽ʾ⁾	-H	-ch	[CV́C⁽ʾ⁾tʃ]
	yei=			√Ci/e	-μH	-ch	[CV́V́tʃ]
g̲	yei=			√Ca/u	-eH	-ch	[Céétʃ]
	yei=			√Ci/eʰ	-μ	-ch	[CV̀V̀tʃ]
	yei=			√Ca/uʰ	-e	-ch	[Cèètʃ]
	kei=			√CV⁽ʾ⁾C⁽ʾ⁾	-H	-ch	[CV́C⁽ʾ⁾tʃ]
	kei=			√Ci/e	-μH	-ch	[CV́V́tʃ]
g	kei=			√Ca/u	-eH	-ch	[Céétʃ]
	kei=			√Ci/eʰ	-μ	-ch	[CV̀V̀tʃ]
	kei=			√Ca/uʰ	-e	-ch	[Cèètʃ]

Table 2.7: Patterns of repetitive imperfectives based on conjugation class and root shape

(146) a. X̲ajákx̲. *Ø-conjugation repetitive imperfective with -H-x̲*
x̲- ²√jak̲-H
1SG·S-²√kill -VAR
'I repeatedly kill it.'

b. Yoo x̲aahúnk. *n-conjugation repetitive imperfective with -H-k*
yoo=x̲- i- ²√hun-H -k
ALT= 1SG·S-STV-²√sell -VAR
'I repeatedly sell it.'

c. Yei x̲ag̲ákch *g̲-conjugation repetitive imperfective with -H-ch*
yei= x̲- ²√g̲ak̲-H -ch
down=1SG·S-²√visit-VAR-REP
'I repeatedly visit him/her.'

d. Kei x̲ashátch. *g-conjugation repetitive imperfective with -H-ch*
kei=x̲- ²√sha't-H -ch
up= 1SG·S-²√grab -VAR-REP
'I repeatedly grab it.'

(147) a. Xaxéix *Ø-conjugation repetitive imperfective with -eH-x*
x- $^{2}\sqrt{}$xa-eH-x
1SG·S-$^{2}\sqrt{}$eat-VAR-REP
'I repeatedly eat it.'

b. Yoo xaa.eik. *n-conjugation repetitive imperfective with -e-x*
yoo=x- i- $^{2}\sqrt{}$.u -e -k
ALT= 1SG·S-STV-$^{2}\sqrt{}$buy-VAR-REP
'I repeatedly buy it.'

c. Yei tookéech. *g-conjugation repetitive imperfective with -μH-ch*
yei= tu- $^{1}\sqrt{}$ki -μH-ch
down=1PL·S-$^{1}\sqrt{}$sit·PL-VAR-REP
'We repeatedly sit down.'

d. Kei xasheech. *g-conjugation repetitive imperfective with -μ-ch*
kei=x- $^{2}\sqrt{}$shi^{h}-μ -ch
up= 1SG·S-$^{2}\sqrt{}$sing -VAR-REP
'I repeatedly sing it.'

The vast majority of verbs have a repetitive imperfective form predicted by their conjugation class, but there are scattered exceptions to this. The exceptions come in two flavours: (i) the 'wrong' repetitive imperfective for the conjugation class and (ii) a repetitive imperfective other than those in table 2.7.

The 'wrong' forms are where the conjugation class predicts one repetitive imperfective but the verb instead occurs with a different one that would be associated with some other conjugation class. This occurs mostly with *n*-conjugation class verbs (Leer 1991: 246; Eggleston 2013: 136–137). The data in (148) show that $^{1}\sqrt{}$*ta^{h}* 'sg. sleep' belongs to the *n*-conjugation class, but that the expected repetitive imperfective with *yoo=i-…-k* in (148b) is odd and instead there is a form with *-x* in (148c) that would be expected for a *Ø*-conjugation verb. Leer (1991: 247) notes that some speakers allow both forms and this is corroborated by Eggleston (2013: 137) with doublets like those for $^{1}\sqrt{}$*ti^{h}* 'be, exist' in (149).

(148) a. Natá! *n-conjugation imperative with -H*
n- $^{1}\sqrt{}$ta^{h} -H
NCNJ-$^{1}\sqrt{}$sleep·SG-VAR
'Sleep!'

b. ?Yoo xaateik. *repetitive imperfective with -e-k*
x- i- $^{1}\sqrt{}$ta^{h} -e -k
1SG·S-STV-$^{1}\sqrt{}$sleep·SG-VAR-REP
'I repeatedly sleep.'

c. Xateix. *repetitive imperfective with -e-x*
x- $^{1}\sqrt{}$ta^{h} -e -x
1SG·S-$^{1}\sqrt{}$sleep·SG-VAR-REP
'I repeatedly sleep.'

(149) a. Yéi inatí! *n-conjugation imperative with -H*
yéi= i- n- $^{1}\sqrt{}$ti^{h}-H
thus=2SG·O-NCNJ-$^{1}\sqrt{}$be -VAR
'Be that way!'

b. Yéi yoo yateek. *repetitive imperfective with -μ-k*
yéi= yoo=i- $^{1}\sqrt{}$ti^{h}-μ -k
thus=ALT= STV-$^{1}\sqrt{}$be -VAR-REP
'S/he is repeatedly that way.'

c. Yéi teex̲. *repetitive imperfective with -μ-x̲*
yéi= $^{1}\sqrt{}$ti^{h}-μ -x̲
thus=$^{1}\sqrt{}$be -VAR-REP
'S/he is repeatedly that way.'

Some verbs have a repetitive imperfective that is unlike any form predicted by the conjugation class. These must be lexically specified as a selectional restriction on Adv. Some of these irregular repetitive imperfectives use the same Adv suffixes as in the regular forms, but with different material in other heads. One typical example is with the root $^{2}\sqrt{}$*g̲u* 'wipe' in (150) which has a repetitive imperfective including *-k* like the *n*-conjugation form but lacking the preverb *yoo=* and *i-* in Ɛ.

(150) a. G̲alag̲ú! *g̲-conjugation imperative with -H*
g̲- l̲- $^{2}\sqrt{}$g̲u -H
G̲CNJ-XTN-$^{2}\sqrt{}$wipe-VAR
'Wipe it!'

b. X̲alag̲éikw. *repetitive imperfective with -eH-k*
x̲- l̲- $^{2}\sqrt{}$g̲u -eH-k
1SG·S-XTN-$^{2}\sqrt{}$wipe-VAR-REP
'I repeatedly wipe it.'

c. ?Yei x̲alag̲éich. *repetitive imperfective with -eH-ch*
yei= x̲- l̲- $^{2}\sqrt{}$g̲u -eH-ch
down=1SG·S-XTN-$^{2}\sqrt{}$wipe-VAR-REP
'I repeatedly wipe it.'

Another kind of unusual repetitive imperfective is formed with one of the *-t*, *-t'*, *-x'*, *-s'*, or *-l'* suffixes. These forms are apparently lexically specified, but the distribution of them across various roots suggests that these suffixes have an inherent meaning as listed in (151).

(151) a. *-t* repetitive: 'ictive', repeatedly aiming at a target
b. *-t'* repetitive: 'destructive', repeated events resulting in destruction
c. *-x'* repetitive: 'plural', multiple events distributed over multiple entities
d. *-s'* repetitive: 'serial' repeated sequence of events often linear in space
e. *-l'* repetitive: rare, possibly phonological variant of *-s* (cf. ch. 4 sec. 2.1.1)

These lexically specified repetitive imperfectives are like the *∅*-conjugation repetitive imperfective in that they lack a preverb. They do not supersede the repetitive imperfective supplied by the

conjugation class so that verbs can have more than one repetitive imperfective form as shown in (152). The data in (153) show that these two suffixes cannot be combined in either order.

(152) a. S'íḵ! *∅-conjugation imperative with -H*
$\sqrt[2]{}$s'iḵ -H
ZCNJ-2SG·S-$\sqrt[2]{}$suck·on-VAR
'Suck on it!'

b. X̱as'íḵx̱. *repetitive imperfectivee with -H-x̱*
x̱- $\sqrt[2]{}$s'iḵ -H -x̱
1SG·S-$\sqrt[2]{}$suck·on-VAR-REP
'I suck on it over and over.'

c. X̱as'íḵs'. *repetitive imperfectivee with -H-s'*
x̱- $\sqrt[2]{}$s'iḵ -H -s'
1SG·S-$\sqrt[2]{}$suck·on-VAR-REP
'I suck on it over and over.'

(153) a. *X̱as'íḵs'x̱. *repetitive imperfectivee with -H-s'-x̱*
x̱- $\sqrt[2]{}$s'iḵ -H -s'
1SG·S-$\sqrt[2]{}$suck·on-VAR-REP
'I suck on it over and over.'

b. *X̱as'íḵx̱s'. *repetitive imperfectivee with -H-x̱-s'*
x̱- $\sqrt[2]{}$s'iḵ -H -x̱
1SG·S-$\sqrt[2]{}$suck·on-VAR-REP
'I suck on it over and over.'

One fairly common lexically specified repetitive imperfective uses the ictive[22] suffix *-t*. This suffix has a relatively clear meaning based on its occurrence with verbs that denote aiming at and striking a target, and the same roots are also found with the derivational *-x̱aa* 'miss target' suffix.

(154) a. X̱waagwál. *perfective aspect with -H*
wu-x̱- i- $\sqrt[2]{}$gwal-H
PFV-1SG·S-STV-$\sqrt[2]{}$hit -VAR
'I hit him/her/it.'

b. X̱agwált. *repetitive imperfective with -H-t*
x̱- $\sqrt[2]{}$gwal-H -t
PFV-1SG·S- STV-$\sqrt[2]{}$hit
'I repeatedly hit him/her/it.'

22. The term 'ictive' [ˈɪkˌtɪv] is derived from Latin *ictus* (n.) 'blow, stroke, thrust' < *icĕre* (v.) 'strike, hit'. Cf. other English *ictus* (*OED2*): 'downbeat (music)', 'maximal line stress (poetry)' 'onset of seizure or stroke (medicine)'.

(155) a. Xwaa.ún. *perfective aspect with -H*
wu-x- i- $\sqrt[2]{}$.un -H
PFV-1SG·S-STV-$\sqrt[2]{}$shoot-VAR
'I shot him/her/it.'

b. Xa.únt. *repetitive imperfective with -H-t*
x- $\sqrt[2]{}$.un-H -t
PFV-1SG·S-STV-$\sqrt[2]{}$shoot
'I repeatedly shoot him/her/it.'

(156) a. Xwaadzóo. *perfective aspect with -H*
wu-x- i- $\sqrt[2]{}$dzu^{h}-μH
PFV-1SG·S-STV-$\sqrt[2]{}$throw-VAR
'I throw at him/her/it.'

b. Xadzeit. *repetitive imperfective with -H-t*
x- $\sqrt[2]{}$dzu^{h}-e -t
PFV-1SG·S- STV-$\sqrt[2]{}$throw
'I repeatedly throw at him/her/it.'

The documentation of Tlingit conflates repetitive imperfectives as defined here with activity imperfectives as defined in section 1.3.1.1. Thus Leer describes some verbs as having a "primary imperfective" that contains a repetitive suffix like *-x* or *-k* because he claims these can have a "single-situation" interpretation as well as a "multiple-situation" interpretation (e.g. Leer 1991: 358). Eggleston (née Edwards) follows suit, listing achievement verbs like *aawatsé*x̲ 's/he kicked it' as activities and giving a repetitive imperfective like *xatsíxt* 'I repeatedly kick it' as an activity imperfective with the translation 'I am kicking it' (Edwards 2009: 266; Eggleston 2017). In my analysis the verb root $\sqrt[2]{}$*tsix* ~ $\sqrt[2]{}$*tsex* 'kick' must be non-durative since the imperfective forms without a repetitive suffix in (157c)–(157e) are ungrammatical.

(157) a. Xwaatsíx. *perfective aspect with -H*
wu-x- i- $\sqrt[2]{}$tsix-H
PFV-1SG·S-STV-$\sqrt[2]{}$kick-VAR
'I kicked him/her/it.'

b. Xatsíxt. *repetitive imperfective with -H-t*
x- $\sqrt[2]{}$tsix-H -t
1SG·S-$\sqrt[2]{}$kick-VAR
'I repeatedly kick it.'

c. *Xatsíx. **activity imperfective with -H*
x- $\sqrt[2]{}$tsix-H
1SG·S-$\sqrt[2]{}$kick-VAR
'I kick it.', 'I am kicking it.'

d. *Xatseex. **activity imperfective with -μ*
x- $\sqrt[2]{}$tsix-μ
1SG·S-$\sqrt[2]{}$kick-VAR
'I kick it.', 'I am kicking it.'

e. *Xatséex. *activity imperfective with -μH
x- $\sqrt[2]{}$tsix-μH
1SG·S-$\sqrt[2]{}$kick-VAR
'I kick it.', 'I am kicking it.'

I suspect the classification of some but not all repetitive imperfectives as activity imperfectives arose from interpreting English translations as representative of Tlingit semantics. Tlingit speakers today are all speakers of English and so accomodate and exploit the lexical aspect of English verbs when they translate from Tlingit. Such translations are natural-sounding in English but they do not necessarily match the lexical aspect of the Tlingit forms. It is entirely reasonable in English to use a progressive aspect form *I am kicking it* for either an eventuality composed of a sequence of non-durative kicking events or a single durative kick (e.g. slow motion). But I believe that in Tlingit $\sqrt[2]{}$*tsix* ~ $\sqrt[2]{}$*tsex* 'kick' is not durative and so the unmarked imperfective aspect forms like (157c)–(157e) are impossible. The addition of the repetitive suffix *-t* in (157b) creates a multiplicity of kicking events which then can be packaged up as a single durative activity of multi-kicking.

2.3.3.2. State imperfectives with V+Adv

2.3.3.3. Positional imperfectives with V+Adv

I mentioned the positional imperfectives earlier in section 1.2.1, and I discuss them more in chapter 6 section 2.1. They are *∅*-imperfective forms derived from motion roots that denote being in a physical configuration at a location. They are of interest here because a few of them occur with the *-n* suffix and its associated stem variation. The semantic contribution of *-n* in these forms is unknown.

The positional imperfectives that regularly occur with *-n* are open syllable roots since *-n* does not appear after closed syllable roots without an additional vowel (sec. 2.3.1). The data in (158) shows one based on the root $\sqrt[2]{}$*ti* 'handle (generic)' and the data in (159) another based on $\sqrt[1]{}$*da* 'flow'.

(158) a. Xwaatee. *perfective aspect with -μ*
wu-x- i- $\sqrt[2]{}$ti -μ
PFV-1SG·S-$\sqrt[2]{}$handle-VAR
'I handled it.'

b. Át téen. *positional imperfective with -μH-n*
á -t $\sqrt[2]{}$ti -μH-n
3N-PNCT $\sqrt[2]{}$handle-VAR-NSFX
'It is sitting there.'

(159) a. Woodaa. *perfective aspect with -μ*
wu-i- $\sqrt[1]{}$da-μ
PFV-$\sqrt[1]{}$flow-VAR
'It flowed.'

b. Át déin. *positional imperfective with -eH-n*
á -t $\sqrt[1]{}$da -μH-n
3N-PNCT $\sqrt[1]{}$flow-VAR-NSFX
'It (body of liquid) lies there.'

The positional imperfective based on $\sqrt[1]{ta^h}$ 'sg. sleep' irregularly does not undergo ablaut and instead occurs with the *-μH* stem as shown in (160b). Other instances of the same root with *-n* have the expected *-eH* as in (160c), so the positional is purely irregular.

(160) a. Xwasitaa. *perfective aspect with -μ*
wu-x- s- i- $\sqrt[1]{ta^h}$ -μ
PFV-1SG·S-CSV-STV-$\sqrt[1]{}$sleep·SG-VAR
'I put him/her to sleep.'

b. Át sh xastáan. *positional imperfective with -μH-n*
á -t sh= x- s- $\sqrt[1]{ta^h}$ -μH-n
3N-PNCT RFLX=1SG·S-CSV-$\sqrt[1]{}$sleep·SG-VAR-NSFX
'I am lying there.'

c. Yaa nxasatéin. *progressive with -eH-n*
ÿaa= n- x- s- $\sqrt[1]{ta^h}$ -eH-n
along=NCNJ-1SG·S-CSV-$\sqrt[1]{}$sleep·SG-VAR-NSFX
'I am carrying him/her/it (unconscious, dead).'

Not all positional imperfectives with open roots occur with *-n*. For example, the root $\sqrt[1]{.a}$ 'sg. sit' shown in (161) appears with *-μH* stem variation and no *-n*.

(161) a. Át áa. *positional imperfective with -μH*
á -t $\sqrt[1]{.a}$ -μH
3N-PNCT $\sqrt[1]{}$sit·SG-VAR
'S/he/it is sitting there.'

b. * Át éin. **positional imperfective with -eH-n*
á -t $\sqrt[1]{.a}$ -eH-n
3N-PNCT $\sqrt[1]{}$sit·SG-VAR-NSFX
intended: 'S/he/it is sitting there.'

Positional imperfectives of closed syllable roots have *-H* stem variation without an Adv suffix like in (162a). But given that *-n* does not occur without a following vowel, it is reasonable to suppose that *-n* does occur in the underlying form as shown in (162b). The problem with this is that it predicts the wrong form with the addition of past tense *-ín*. As shown in (163), the predicted form with *-H-n-ín* is ungrammatical. I conclude from this that the analysis in (162b) with a covert *-n* is incorrect.

(162) a. Át hán. *positional imperfective with -H*
á -t $\sqrt[1]{}$han -H
3N-PNCT $\sqrt[1]{}$sit·SG-VAR
'S/he/it is standing there.'

b. Át hán. *positional imperfective with -H-n*
á -t $\sqrt[1]{}$han -H -n
3N-PNCT $\sqrt[1]{}$sit·SG-VAR-NSFX
'S/he/it is standing there.'

Conj.	*Pvb.*	Asp	Ɛ	√	V	Adv	*Stem*
	ÿaa=	n-		√CV(ˈ)C(ˈ)	-H		[CV́C(ˈ)]
	ÿaa=	n-		√Ci/e	-μH	-n	[CV́V́n]
Ø	ÿaa=	n-		√Ca/u	-eH	-n	[Céén]
	ÿaa=	n-		√Ci/e^{h}	-μ	-n	[CV́V́n]
	ÿaa=	n-		√Ca/u^{h}	-e	-n	[Céén]
	ÿaa=	n-		√CV(ˈ)C(ˈ)	-H		[CV́C(ˈ)]
	ÿaa=	n-		√Ci/e	-μH	-n	[CV́V́n]
n	ÿaa=	n-		√Ca/u	-eH	-n	[Céén]
	ÿaa=	n-		√Ci/e^{h}	-μ	-n	[CV́V́n]
	ÿaa=	n-		√Ca/u^{h}	-e	-n	[Céén]
	yei=	n-		√CV(ˈ)C(ˈ)	-H		[CV́C(ˈ)]
	yei=	n-		√Ci/e	-μH	-n	[CV́V́n]
g̲	yei=	n-		√Ca/u	-eH	-n	[Céén]
	yei=	n-		√Ci/e^{h}	-μ	-n	[CV́V́n]
	yei=	n-		√Ca/u^{h}	-e	-n	[Céén]
	kei=	n-		√CV(ˈ)C(ˈ)	-H		[CV́C(ˈ)]
	kei=	n-		√Ci/e	-μH	-n	[CV́V́n]
g	kei=	n-		√Ca/u	-eH	-n	[Céén]
	kei=	n-		√Ci/e^{h}	-μ	-n	[CV́V́n]
	kei=	n-		√Ca/u^{h}	-e	-n	[Céén]

Table 2.8: Patterns of progressives based on conjugation class and root shape

(163) a. Át hánín. *past positional imperfective with -H-ín*
á -t ^{1}√han -H -ín
3N-PNCT ^{1}√sit·SG-VAR-PAST
'S/he/it was standing there.'

b. *Át hánnín. **past positional imperfective with -H-n-ín*
á -t ^{1}√han -H -n -ín
3N-PNCT ^{1}√sit·SG-VAR-NSFX-PAST
'S/he/it was standing there.'

2.3.3.4. Progressive aspect with V+Adv

Progressive aspect is formed by the combination of a preverb *ÿaa=* 'along', *yei=* 'down', or *kei=* 'up' together with *n-* in Asp and *-H* stem variation with closed syllable roots. With open syllable roots there is an *-n* suffix in Adv along with either *-μH* or *-eH* in V depending on the root vowel. These patterns are shown in table 2.8. The stem variation associated with *-n* in progressives is the canonical exemplar for *-n* stems as presented earlier in section 2.3.1, so I do not provide any paradigms in this section. More details about the progressive are given in chapter 6 section 3.5.

Conj.	*Pvb.*	Asp	Ɛ	√	V	Adv	*Stem*
		u-		√CVC	-H	-ch	[CV́Ctʃ]
		u-		√CVC	-μ	-ch	[CV̀V̀Ctʃ]
		u-		√CVC'	-H	-ch	[CV́C'tʃ]
Ø		u-		√CVC'	-μH	-ch	[CV́V́C'tʃ]
		u-		√CV'C	-H	-ch	[CV́Ctʃ]
		u-		√CV'C	-μH	-ch	[CV́V́Ctʃ]
		u-		√CV$^{(h)}$	-μH	-ÿ-ch	[CV́V́uɥtʃ]
		CNJ-		√CV$^{(')}$C$^{(')}$	-H	-ch	[CV́C$^{(')}$tʃ]
		CNJ-		√Ci/e	-μH	-ch	[CV́V́tʃ]
n, g̲, g		CNJ-		√Ca/u	-eH	-ch	[Céétʃ]
		CNJ-		√Ci/e^{h}	-μ	-ch	[CV̀V̀tʃ]
		CNJ-		√Ca/u^{h}	-e	-ch	[Cèètʃ]

Table 2.9: Patterns of habituals based on conjugation class and root shape

One particularly interesting thing about the progressive is that it features a combination of *n-* in Asp and *-n* in Adv. This looks suspiciously like a circumfix, and Leer (p.c. 2009) has suggested that it reflects an ancient system of circumfixes similar to the combination of perfective *ÿu-* and *-ÿ*. It is unclear if there is any synchronic importance to this cooccurrence of *n-* and *-n*, or if it is only significant for historical research.

2.3.3.5. Habitual aspect with V+Adv

All habitual aspect forms include the *-ch* suffix in Adv, probably because habitual aspect is a kind of pluractional counterpart to the perfective aspect (ch. 6 sec. 2.2). The *-ch* in habituals may or may not be the same as the repetitive suffix *-ch*. Leer assumes without explanation that there are two distinct suffixes: his *-ǯ* "inner durative" in position –2a (Leer 1991: 152) vs. *-ǯ* "occasional" in –4 (Leer 1991: 155). I believe that they are the same morpheme and so the *-ch* in habituals is another instantiation of Adv. If they are distinct suffixes then it should logically be possible to have both in a single form by first deriving a repetitive aspectual paradigm with *-ch*[23] and then forming the habitual aspect in this paradigm; I have never seen any evidence of this but I have not attempted to elicit any examples.

The morphology of the habitual aspect is relatively complex with dependencies on conjugation class and root shape as well as a still unclear distinction between two kinds of closed syllable roots. Table 2.9 shows the various morphological realizations of the habitual aspect. The forms of non-Ø-conjugation class verbs are relatively straightforward. They feature the conjugation class's conjugation prefix and the *-ch* suffix along with the expected stem variation in V that happens in repetitive imperfectives with *-ch*. Thus non-Ø-conjugation class closed syllable roots have *-H* in V and non-Ø-conjugation open syllable roots have any of *-μH*, *-eH*, *-μ*, or *-e*.

The habitual aspect forms of Ø-conjugation class verbs are remarkably different. They all feature

23. By 'repetitive aspectual paradigm' I refer to what Leer calls "epiaspect" and what Dene scholars term "superaspect"; this is a derivational paradigm built on top of a repetitive imperfective form. See section 2.3.4 for discussion.

the *u-* perfective prefix in Asp. The *∅*-conjugation class prefix might also be analyzed in Asp, but it is impossible to say whether a null element exists in the surface form. But generally conjugation prefixes are in complementary distribution with perfective prefixes and it is strange to interpret *u-* in the habitual aspect as irrealis, so Asp probably only contains the *u-* perfective prefix in *∅*-conjugation habituals.

The open syllable roots all behave the same with *-μH* in V. This is unexpected from the combination of an open syllable with *-ch*, but there is uniquely a sonorant *ÿ* /j ~ w/ that appears in between the stem vowel and the *-ch* suffix. The usual ablaut effect of *-ch* on V is blocked or superseded by the effect of *-ÿ* which only occurs with *-μH* in verbs. I analyze this *ÿ* as an instance of the sonorant suffix *-ÿ* and thus the *∅*-conjugation habitual uniquely has two Adv suffixes rather than one. The data in (164) shows the apperance of a *∅*-conjugation habitual where *-μH-ÿ-ch* occurs instead of the usual *-eH-ch* expected from a normal obstruent suffix.

(164) a. Ooxáaych. *∅-conjugation habitual with -μH-ÿ-ch*
a- u- ²√xa-μH-ÿ -ch
ARG-ZPFV-²√eat-VAR-ŸSFX-REP
'S/he has habitually eaten it.'

b. * Ooxéich. **∅-conjugation habitual with -eH-ch*
a- u- ²√xa-eH-ch
ARG-ZPFV-²√eat-VAR-REP
intended: 'S/he has habitually eaten it.'

The habitual of *∅*-conjugation class verbs with closed syllable roots is partly what is expected of *√CVC* + *-ch*, but partly not. The expected stem variation with this combination should be *-H*. This is shown by (169) below with the root *²√.in* 'gather into container; handle filled container', where *-H* is grammatical and *-μ* is not.

(165) a. Oo.ínch. *∅-conjugation habitual with -H-ch*
a- u- ²√.in -H -ch
ARG-ZPFV-²√pick-VAR-REP
'S/he has regularly picked it (berries).'

b. * Oo.eench. **∅-conjugation habitual with -μ-ch*
a- u- ²√.ín -μ -ch
ARG-ZPFV-²√pick-VAR-REP
intended: 'S/he has regularly picked it (berries).'

But some roots instead appear with *-μ* instead as shown by the root *²√shuk* 'laugh' in (166). Here the *-H* is ungrammatical and *-μ* appears instead.

(166) a. * Ooshúkch. **∅-conjugation habitual with -H-ch*
a- u- ²√shuk-H -ch
ARG-ZPFV-²√laugh-VAR-REP
intended: 'S/he has regularly laughed at him/her/it.'

b. Ooshookch. *Ø-conjugation habitual with -μ-ch*
a- u- $\sqrt[2]{}$shuk-μH-ch
ARG-ZPFV-$\sqrt[2]{}$laugh-VAR-REP
'S/he has regularly laughed at him/her/it.'

With √*CVC'* and √*CV'C* roots this unusual *-μ* is instead *-μH* as expected by the phonological constraint against [CV̀:C'] and [CV̀:C] realizations of these root types (sec. 2). The *-H* stem remains inexplicably ungrammatical. The data in (167) shows this for the √*CVC'* root $\sqrt[2]{}$*ch'ex'* 'point at' and the data in (168) shows this for the √*CV'C* root $\sqrt[2]{}$*ta'w* 'steal'.

(167) a. *Ooch'éx'ch. **Ø-conjugation habitual with -H-ch*
a- u- $\sqrt[2]{}$ch'ex'-H -ch
ARG-ZPFV-$\sqrt[2]{}$point -VAR-REP
intended: 'S/he has regularly pointed at it.'

b. Ooch'éix'ch. *Ø-conjugation habitual with -μH-ch*
a- u- $\sqrt[2]{}$ch'ex'-μH-ch
ARG-ZPFV-$\sqrt[2]{}$point -VAR-REP
'S/he has regularly pointed at it.'

(168) a. *Ootáwch. **Ø-conjugation habitual with -H-ch*
a- u- $\sqrt[2]{}$ta'w-H -ch
ARG-ZPFV-$\sqrt[2]{}$steal-VAR-REP
intended: 'S/he has regularly stolen it.'

b. Ootáawch. *Ø-conjugation habitual with -μH-ch*
a- u- $\sqrt[2]{}$ta'w-μH-ch
ARG-ZPFV-$\sqrt[2]{}$steal-VAR-REP
'S/he has regularly stolen it.'

This appeearance of *-μ* or *-μH* instead of *-H* in the *Ø*-conjugation class habitual has no obvious connections to root phonological types. Laryngealization for example is apparently irrelevant. The data in (169) shows this with a *Ø*-conjugation class √*CVC'* root with an ejective coda that occurs with *-H* and not *-μH*.

(169) a. Ooxás'ch. *Ø-conjugation habitual with -H-ch*
a- u- $\sqrt[2]{}$xás' -H -ch
ARG-ZPFV-$\sqrt[2]{}$scrape-VAR-REP
'S/he has regularly scraped it.'

b. *Ooxáas'ch. **Ø-conjugation habitual with -μH-ch*
a- u- $\sqrt[2]{}$xas' -μH-ch
ARG-ZPFV-$\sqrt[2]{}$scrape-VAR-REP
intended: 'S/he has regularly scraped it.'

Eggleston reports dialect variation involving the selection of *-H* versus *-μ*/*-μH* in V for *Ø*-conjugation habituals of closed syllable roots (Eggleston 2013: 99–100). Some of her consultants accepted forms with the stem other than what they used, but some consultants rejected them. Leer

Conj.	Asp	Ɛ	√	V	Adv	C	*Stem*
			√CV⁽ʹ⁾C⁽ʹ⁾	-H	-n	-í	[CV́C⁽ʹ⁾nì]
∅			√Ci/e⁽ʰ⁾	-μH	-n	-í	[CV́V́nì]
			√Ca/u⁽ʰ⁾	-eH	-n	-í	[Céénì]
	n-		√CV⁽ʹ⁾C⁽ʹ⁾	-H	-n	-í	[CV́C⁽ʹ⁾nì]
n	n-		√Ci/e⁽ʰ⁾	-μH	-n	-í	[CV́V́nì]
	n-		√Ca/u⁽ʰ⁾	-eH	-n	-í	[Céénì]
	g̱-		√CV⁽ʹ⁾C⁽ʹ⁾	-H	-n	-í	[CV́C⁽ʹ⁾nì]
g̱	g̱-		√Ci/e⁽ʰ⁾	-μH	-n	-í	[CV́V́nì]
	g̱-		√Ca/u⁽ʰ⁾	-eH	-n	-í	[Céénì]
	g-		√CV⁽ʹ⁾C⁽ʹ⁾	-H	-n	-í	[CV́C⁽ʹ⁾nì]
g	g-		√Ci/e⁽ʰ⁾	-μH	-n	-í	[CV́V́nì]
	g-		√Ca/u⁽ʰ⁾	-eH	-n	-í	[Céénì]

Table 2.10: Patterns of conditionals based on conjugation class and root shape

attributes *-H* versus *-μ*/*-μH* to "free variation", claiming in passing that *-μ*/*-μH* is "usual" and that *-H* does not occur when the verb includes a directional preverb (Leer 1991: 204). Story – who calls the habitual "frequentative" – suggests that *∅*-conjugation motion verbs take *-μ* exclusively, but Eggleston (2017) has examples like *k̲ux̲ udagútch* 's/he has regularly gone back' with revertive *k̲úx̲*= + *d-* 'turning back, returning' that assigns *∅*-conjugation. Eggleston also notes that some of her consultants had different forms in the affirmative and negative (Eggleston 2013: 99), contrary to the description by Leer (1991: 208) where polarity is irrelevant for V-agreement in the habitual aspect. At present there is no explanation for the variation between *-H* and *-μ*/*-μH* in the habitual aspect of *∅*-conjugation class verbs, and there does not seem to be any connection to the similar *∅*⁺-conjugation class discussed in section 2.6.5.

2.3.3.6. Conditional mood with V+Adv

The conditional mood is formed with the lexically or derivationally specified conjugation class prefix in Asp and the *-n* suffix in Adv along with the subordinate clause suffix *-í* in C. Conditional mood only occurs in adjunct clauses, hence the presence of *-í* in C. This suffix provides a vowel that allows *-n* to be realized in every form, not just after open syllable roots. The morphological patterns of the conditional mood are summarized in table 2.10.

Semantically the conditional seems to denote an imperfective antecedent eventuality for the eventuality expressed by the matrix clause. It is usually translated in English with 'if' and a present or progressive verb. The conditional is only one of several ways to express conditional semantics; other structures include an ordinary perfective in an adjunct clause together with a PP *ká-t* 'atop', a bare perfective adjunct clause expressing 'when', and the contingent (sec. 2.3.3.7) expressing 'whenever', the hypothetical *óosh* expressing 'if only', and dubitatives with *gwál* 'maybe' and *shákdé* 'perhaps'.

The data in (170) illustrate the forms of the conditional mood with closed syllable *√CVC* roots. The patterns are the same for *√CVC'* and *√CV'C* roots.

(170) a. Xajágni… *Ø-conjugation conditional of closed root with -H-n*
x- $\sqrt[2]{}$jak-H -n -í
ZCNJ-1SG·S-$\sqrt[2]{}$kill -VAR-NSFX-SUB
'If I kill it…'

b. Naxahúnni… *n-conjugation conditional of closed root with -H-n*
n- x- $\sqrt[2]{}$hun-H -n -í
NCNJ-1SG·S-$\sqrt[2]{}$sell -VAR-NSFX-SUB
'If I sell it…'

c. Kaxúxni… *g-conjugation conditional of closed root with -H-n*
g- x- $\sqrt[2]{}$xux-H -n -í
GCNJ-1SG·S-$\sqrt[2]{}$sell -VAR-NSFX-SUB
'If I summon him/her/it…'

d. Gaxagwálni… *g-conjugation conditional of closed root with -H-n*
g- x- $\sqrt[2]{}$gwal-H -n -í
GCNJ-1SG·S-$\sqrt[2]{}$beat -VAR-NSFX-SUB
'If I beat it…'

As with other *-n* stems, the conditional mood with an open syllable root will show ablaut *-eH* if the root has either of the vowels *a* or *u*. Otherwise the stem will have *-μH* in V.

(171) a. Xaxéini… *Ø-conjugation conditional of open root with -eH-n*
x- $\sqrt[2]{}$xa-eH-n -í
ZCNJ-1SG·S-$\sqrt[2]{}$eat-VAR-NSFX-SUB
'If I eat it…'

b. Naxatéini… *n-conjugation conditional of open root with -eH-n*
n- x- $\sqrt[2]{}$ta^{h} -eH-n -í
NCNJ-1SG·S-$\sqrt[1]{}$sleep·SG-VAR-NSFX-SUB
'If I sleep…'

c. Kalagwéini… *g-conjugation conditional of open root with -eH-n*
g- x- l- $\sqrt[2]{}$gu -eH-n -í
GCNJ-1SG·S-XTN-$\sqrt[2]{}$wipe-VAR-NSFX-SUB
'If I wipe it…'

d. Gaxashéeni… *g-conjugation conditional of open root with -eH-n*
g- x- $\sqrt[2]{}$shi^{h}-eH-n -í
GCNJ-1SG·S-$\sqrt[2]{}$sing -VAR-NSFX-SUB
'If I sing it…'

The combination of *CNJ-* + *-n* + *-í* uniquely identifies the conditional. It is not clear what semantic contribution *-n* has in the conditional, but if it has an imperfective aspect interpretation like what is implied by the usual English translations, then it may be that *-n* has the same contribution as in progressives (sec. 2.3.3.4). Note that the form in (170a) is based on the non-durative root $\sqrt[2]{}$*jak* 'kill' which cannot be used to form an ordinary imperfective aspect form (sec. 1.3.1.1).

Conj.	Asp	Ɛ	√	V	Adv	C	*Stem*
	g̱-		√CV$^{(')}$C$^{(')}$	-H		-ín	[CV́C$^{(')}$ín]
Ø	g̱-		√Ci/e$^{(h)}$	-μH	-n	-ín	[CV́V́nín]
	g̱-		√Ca/u$^{(h)}$	-eH	-n	-ín	[Céénín]
	n-g̱-		√CV$^{(')}$C$^{(')}$	-H		-ín	[CV́C$^{(')}$ín]
n	n-g̱-		√Ci/e$^{(h)}$	-μH	-n	-ín	[CV́V́nín]
	n-g̱-		√Ca/u$^{(h)}$	-eH	-n	-ín	[Céénín]
	g̱-g̱-		√CV$^{(')}$C$^{(')}$	-H		-ín	[CV́C$^{(')}$ín]
g̱	g̱-g̱-		√Ci/e$^{(h)}$	-μH	-n	-ín	[CV́V́nín]
	g̱-g̱-		√Ca/u$^{(h)}$	-eH	-n	-ín	[Céénín]
	g-g̱-		√CV$^{(')}$C$^{(')}$	-H		-ín	[CV́C$^{(')}$ín]
g	g-g̱-		√Ci/e$^{(h)}$	-μH	-n	-ín	[CV́V́nín]
	g-g̱-		√Ca/u$^{(h)}$	-eH	-n	-ín	[Céénín]

Table 2.11: Patterns of contingents based on conjugation class and root shape

2.3.3.7. Contingent modality with V+Adv

The contingent modality is formed with the lexically or derivationally specified conjugation class prefix and the modality prefix *g̱-* in Asp along with the *-n* suffix and a unique *-ín* suffix. It shows the stem variation patterns expected from *-n* that are also found with progressives (sec. 2.3.3.4) and conditionals (sec. 2.3.3.6). But even though the *-ín* suffix provides a vowel after *-n*, for unknown reasons the *-n* suffix is typically not realized after closed syllable roots. This gives it a stem pattern more akin to the progressive than to the conditional. The morphological patterns for the contingent are shown in table 2.11.

The *-ín* suffix of the contingent is not identified in other verb forms; I have tentatively assigned it to C as shown in table 2.11 because the contingent occurs only as an adjunct clause. The suffix *-ín* is homophonous with the past tense *-ín* but whether it could be identified with this suffix is still unclear. Another possible identification is that *-ín* is composed of the subordinate clause *-í* in C and the instrumental postposition *-n*, but the semantic contribution of the instrumental in this structure is not immediately clear. Compare Leer 1991's identification of Story's 'purposive' *-ít* as *-í* and the punctual postposition *-t* (Story 1966: 106, 186; Leer 1991: 158 fn. 65). More research on the semantics of contingent modality should help clarify its meaning and thus its syntax.

As suggested by Leer (1991: 451), the contingent seems to be the conditional counterpart of habitual aspect (sec. 2.3.3.6). The usual translations of contingents into English are along the lines of 'whenever ... then' or 'when ... then'. The pairing of contingent : habitual suggests a parallel conditional : progressive (or imperfective); in both cases the mood forms are adjunct clauses that serve as antecedents to thier matrix but otherwise seem to share the temporal properties of their counterpart aspects. This is all speculation however because contextualized semantic elicitation has yet to be done on any of these structures.

I have never collected any paradigmatic examples of the contingent for which I feel confident

enough to present as examples in this section. They are relatively uncommon in ordinary speech, but are fairly well represented in transcriptions of narrative and oratory. The examples that I present here are taken from published materials. The form in (172) is a *Ø*-conjugation verb with the closed syllable root $\sqrt[2]{jel}$ 'grope, move hands; lug, carry load' and lacks overt *-n*. In contrast, the form in (173) is another *Ø*-conjugation verb with the open syllable root $\sqrt[2]{\underline{x}a}$ 'eat' which shows overt *-n* with its expected *-eH* stem.

(172) Wé neilt has ayakg̲ajélín, tle yéi áwé
wé neil -t has=a- ÿ- k- g̲- $\sqrt[2]{}$jel-H -ín tle yéi á -wé
MDST inside-PNCT PLH= ARG-QUAL-SRO-ZCNJ-MOD-$\sqrt[2]{}$lug-VAR-CTNG just thus FOC-MDST
has aklax̲út'di neech.
has=a- k- l- $\sqrt[2]{}$x̲ut'-H -t =neech
PLH= ARG-SRO-XTN-$\sqrt[2]{}$adze-VAR-REP=HAB·AUX
'[whenever they brought them inside] they would split them' (Nyman & Leer 1993: 210.921)

(173) Yan at k̲atoox̲éinín áwé sh katoolník neech.
ÿán= at= g̲- tu- $\sqrt[2]{}$x̲a-eH-n -ín á -wé sh= k- tu- l- $\sqrt[2]{}$nik-H =neech
TERM=4·N=ZCNJ-MOD-1PL·S-$\sqrt[2]{}$eat-VAR-NSFX-CTNG FOC-MDST RFLX·O=QUAL-1PL·S-XTN-$\sqrt[2]{}$tell -VAR=HAB·AUX
'It's [whenever we've finished eating things] that we tell stories.' (Leer 1991: 452)

The sentence in (174) has the only example of a contingent that I have encountered which does not follow Leer's and Story's descriptions of the contingent modality. It is taken from a public speech by *Tóok'* Charlie Jim in Sitka in 1980, and has a fairly complex adjunct clause based on the contingent form of the root $\sqrt[2]{.ix'}$ 'call, invite'. This root is usually documented as *n*-conjugation but occasionally shows *g̲*-conjugation forms as is seen here. We would normally expect a closed syllable *√CVC'* root to have a *-H* stem for the contingent modality, but here it has *-μH* instead as transcribed by native speaker *K̲eixwnéi* Nora Marks Dauenhauer.

(174) Yá atx̲á, wáa yá gaaw sáwé Lingít wooch g̲aax̲da.éex'ín,
yá atx̲á wáa yá gaaw s-á -wé Lingít wooch=g̲- g̲- d- $\sqrt[2]{}$.ix' -μH-ín
PROX food how PROX time Q-FOC-MDST Tlingit RECIP·O= G̲CNJ-MOD-MID-$\sqrt[2]{}$invite-VAR-CTNG
a daat yoo x̲'atánk yóox̲ xeex.
a daa -t yoo=x̲'e- $\sqrt[2]{}$tan -H -k yú -x̲ $\sqrt[1]{}$xix-μ
3N·PSS around-PNCT ALT= mouth-$\sqrt[2]{}$hdl·w/e-VAR-REP DIST-PERT $\sqrt[1]{}$fall -VAR
'This food, [whenever Tlingits invite one another at a time like this], speech comes out about it.' (Dauenhauer & Dauenhauer 1990: 172–173)

2.3.4. V+Adv can be lexicalized

The repetitive suffixes are apparently lexicalized in some verbs where they appear in all forms of the verb regardless of aspect, mood, or modality. The *-n* suffix has a few signs of being similarly lexicalized. The behaviour of stems with these lexicalized Adv suffixes depends partly on whether they are maintained as a separate element apart from the verb root or whether they have instead been reanalyzed as an integral part of the root. If the Adv suffix is still structurally independent of the root then it may block the presence of other Adv suffixes. If instead the Adv suffix is incorporated into

the root then it should permit other Adv suffixes. This discriminatory test has yet to be systematically applied to the root lexicon.

Lexicalized Adv suffixes can be identified in the lexical documentation by their appearance in supposed roots where there is a nearly identical root with a similar meaning but lacking the phonological material of the Adv suffix. The difference in meaning between the basic root and the root with the Adv suffix may be compositional, but it is more often idiomatic though still conceptually similar. One example of a lexicalized Adv suffix is the *-kw* of the pair $\sqrt[1]{}$*tl'u'n* 'squint' and $\sqrt[1]{}$*tl'un-H-kw* 'mutter, grumble'. The data in (175) shows that the basic root $\sqrt[1]{}$*tl'u'n* 'squint' shows normal stem variation with *-H* in the perfective (thus *Ø*-conjugation), *-H* in the habitual with *-ch* (*u-* thus *Ø*-conjugation), and past perfective *-μH* with the past tense *-ín* that supersedes the *-H* specified by the *Ø*-conjugation perfective.

(175) a. Áa kawditl'ún. *perfective aspect with -H*
á -μ k- wu-d- i- $\sqrt[1]{}$tl'u'n-H
3N-LOC QUAL-PFV-MID-STV-$\sqrt[1]{}$squint-VAR
'He has squinted.' (Leer 1973a: 08/260)

b. Áa koodatl'únch. *habitual aspect with -H-ch*
á -μ k- u- d- $\sqrt[1]{}$tl'u'n-H -ch
3N-LOC QUAL-ZPFV-MID-$\sqrt[1]{}$squint-VAR-REP
'He's got his eyes closed all the time.' (Leer 1973a: 08/260)

c. Áa kawdatl'óonín. *past perfective with -μH-ín*
á -μ k- u- d- i- $\sqrt[1]{}$tl'u'n-μH-ín
3N-LOC QUAL-ZPFV-MID-STV-$\sqrt[1]{}$squint-VAR-PAST
'He had squinted.' (Leer 1973a: 08/260)

The data in (176) show the $\sqrt[1]{}$*tl'u'n-H-kw* 'mutter, grumble' structure. The state imperfective in (176a) has an *-H* which would expected for a repetitive state imperfective. But the prospective aspect in (176b) has the same *-H* and *-kw* where a regular prospective form should have *-μH* and no suffix (sec. 2.6.2).

(176) a. Ax̲ yat'éidáx̲ x̲'ayatl'únkw. *state imperfective with -H-kw*
ax̲ ÿá- t'éi^{k} -dáx̲ x̲'e- i- $\sqrt[1]{}$tl'u'n-H -kw
1SG·PSS face-behind-ABL mouth-STV-$\sqrt[1]{}$squint-VAR-REP
'He mutters from behind my back.' (Story & Naish 1973: 138)

b. Kei x̲'akg̲watl'únkw. *prospective aspect with -H-kw*
kei=x̲'e- w- g- g̲- $\sqrt[1]{}$tl'u'n-H -kw
up= mouth-IRR-GCNJ-MOD-$\sqrt[1]{}$squint-VAR-REP
'He will be muttering.' (Leer 1973a: 08/262)

A lexicalized Adv suffix can be modelled in two ways. If it is still independent of the root then it can be included in a lexical entry that consists of a small VP subtree like [$_{VP}$ [$_{VP}$ √ V] Adv]. If instead the Adv suffix is fully incorporated into the root then it must be encoded as part of the phonological material of the root. If the resulting root supports only one invariable stem form then the lexical entry is a subtree [$_{VP}$ √ V] including the lexically specified value for V.

An alternative possible analysis for these apparently lexicalized cases of V+Adv is that they actually reflect a repetitive aspectual paradigm. Leer describes a system he calls "epiaspect"[24] where a repetitive imperfective can be used as the basis for a new verbal paradigm (Leer 1991: 80–82, 215–218, 228–231, 497–505). The resulting structures should maintain the presence of the repetitive suffix across the whole paradigm of the derived verb. I have never successfully elicited this, and Leer's description is too minimal to unambiguously identify examples in the documentation. But if this is a productive phenomenon then it may be the basis of apparently lexicalized Adv suffixes. Even if the repetitive aspectual paradigm mechanism is no longer productive, it probably is the source of the lexicalized Adv suffixes.

2.3.5. Irregular V+Adv

Stem variation with Adv is in general very regular, but there are some highly irregular exceptions with particular roots. These exceptions have implications for the position of Adv as discussed earlier in section 2.3.2. There are six roots documented with irregular stem variation together with an Adv suffix. The two roots $\overset{2}{\sqrt{}}ya^{w}$ 'pack (on back)' and $\overset{1}{\sqrt{}}na^{w}$ 'die' fail to show ablaut with any Adv suffixes (Leer 1991: 165). Two similar roots $\overset{2}{\sqrt{}}\underline{x}a$ 'paddle' and $\overset{2}{\sqrt{}}sha^{w}$ 'marry' show the same failure to undergo ablaut, but only with the *-x'* suffix (Leer 1991: 165). Two other roots $\overset{1}{\sqrt{}}ni^{h} \sim \overset{1}{\sqrt{}}ne^{h}$ 'occur, happen' and $\overset{2}{\sqrt{}}\ddot{y}a^{h}$ 'resemble' have unexpected lack of high tone with *-n*, appearing with *-μ* instead of expected *-μH* (Leer 1991: 168 fn. 6). One final root $\overset{2}{\sqrt{}}ji^{h}$ 'think' can be irregular for some speakers with *-μ* instead of expected *-μH* when followed by *-n*, but this is fairly rare.

All of these irregularities are specific to each root and found nowhere else. The fact that they mostly come in pairs is interesting but probably accidental. There are no obvious explanations for their behaviour from synchronic phonological processes, so they must be distinguished from other roots by their lexical entries. As I said in section 2.3.2, I believe that these irregularities can be modelled by partial suppletion of V-agreement in the stem paradigm with lexical entries of VP subtrees $[_{VP}\ [_{VP}\ \sqrt{}\quad V]\ Adv]$. Where V-agreement would normally be calculated when Adv is merged, with these roots a precomposed VP is instead selected from the lexicon that contains the root, stem variation, and Adv suffix. Given time I expect these irregularities to disappear from the language by analogy with regular stems, and I have occasionally heard fluent speakers produce the predicted regular forms both with and without self-correction. L2 learners (including myself) also frequently produce the predicted regular forms and have to be explicitly taught to use the irregular stems.

The roots $\overset{1}{\sqrt{}}na^{w}$ 'die' and $\overset{2}{\sqrt{}}ya^{w}$ 'pack (on back)' never undergo ablaut with any Adv suffix. First consider the regular data in (177) and (178) which show a progressive with *-n* and in a repetitive imperfective with *-x*.

(177) Yaa nxaxéin. *progressive with regular ablaut -eH-n*
ÿaa= n- x- $\overset{2}{\sqrt{}}$xa-eH-n
along=NCNJ-1SG·S-$\overset{2}{\sqrt{}}$eat-VAR-NSFX
'I'm in the process of eating it.'

(178) Xaxéix. *repetitive with regular ablaut -eH-x*
x- $\overset{2}{\sqrt{}}$xa-eH-x
1SG·S-$\overset{2}{\sqrt{}}$eat-VAR-REP
'I repeatedly eat it.', 'I keep trying to eat it.'

24. A similar phenomenon in Dene languages is called "superaspect" (Kari 1992; Axelrod 1993).

The forms in (179) and (180) show that the root $\overset{1}{\sqrt{}}$*na*^{w} 'die' has *-μH* instead of *-eH* in V for both *-n* and *-t'*. The selection of *-t'* is presumably due to its association with destruction (sec. 2.3).

(179) a. *Yaa x̲at nanéin. **progressive with regular -μH-n*
ÿaa= x̲at= n- $\overset{1}{\sqrt{}}$na^{w}-eH-n
along=1SG·O=NCNJ-$\overset{1}{\sqrt{}}$die -VAR-NSFX
intended: 'I am dying.'

b. Yaa x̲at nanáan. *progressive with irregular -μH-n*
ÿaa= x̲at= n- $\overset{2}{\sqrt{}}$na^{w}-μH-n
along=1SG·O=NCNJ-$\overset{1}{\sqrt{}}$die -VAR-NSFX
'I am dying.'

(180) a. *Has néit'. **repetitive with regular -eH-t'*
haa=$\overset{1}{\sqrt{}}$na^{w}-eH-t'
PLH= $\overset{1}{\sqrt{}}$die -VAR-REP
intended: 'They repeatedly die off.'

b. Has náat'. *repetitive with irregular -μH-t'*
haa=$\overset{1}{\sqrt{}}$na^{w}-μH-t'
PLH= $\overset{1}{\sqrt{}}$die -VAR-REP
intended: 'They repeatedly die off.'

The forms in (181) and (182) show that the root $\overset{2}{\sqrt{}}$*ya*^{w} 'pack (on back)' also has *-μH* instead of *-eH* for both *-n* and *-x'*.

(181) a. *Yaa nx̲ayéin. **progressive with regular -eH-n*
ÿaa= n- x̲- $\overset{2}{\sqrt{}}$ya^{w} -eH-n
along=NCNJ-1SG·S-$\overset{2}{\sqrt{}}$pack-VAR-NSFX
intended: 'I am packing it.'

b. Yaa nx̲ayáan. *progressive with irregular -μH-n*
ÿaa= n- x̲- $\overset{2}{\sqrt{}}$ya^{w} -μH-n
along=NCNJ-1SG·S-$\overset{2}{\sqrt{}}$pack-VAR-NSFX
'I am packing it.'

(182) a. *X̲ayéix'w. **repetitive with regular -eH-x'*
x̲- $\overset{2}{\sqrt{}}$ya^{w} -eH-x'
1SG·S-$\overset{2}{\sqrt{}}$pack-VAR-REP
intended: 'I repeatedly pack them.'

b. X̲ayáax'w. *repetitive with irregular -μH-x'*
x̲- $\overset{2}{\sqrt{}}$ya^{w} -μH-x'
1SG·S-$\overset{2}{\sqrt{}}$pack-VAR-REP
'I repeatedly pack them.'

Both $\overset{1}{\sqrt{}}$*na*^{w} 'die' and $\overset{2}{\sqrt{}}$*ya*^{w} 'pack (on back)' also show the appearance of unexpected ('occult') labialization of the following segment as seen by the stem *yáax'w* [já:x'^{w}] instead of *yáax'* [já:x'] in

(180b). This occult labialization is indicated in the lexical representation of a root by a superscript ⟨ʷ⟩. Leer (1991: 165 fn. 4) claims that occult labialization is due to a **w* which is now lost, but which would have blocked the appearance of ablaut. But this would imply a *√*CVC* root rather than *√*CV* and so the stem would be short rather than long. I suspect that there instead may have been a **-m* or **-w* suffix similar to *-ÿ* which would have blocked ablaut just like in current *∅*-conjugation habituals (sec. 2.3.3.5). Regardless of the historical explanation, the synchronic behaviour of these roots must be lexical.

The roots $\sqrt[2]{\underline{x}a}$ 'paddle' and $\sqrt[2]{sha^{w}}$ 'marry' show the same failure to undergo ablaut, but this time only with the *-x'* suffix. The data in (183) and (184) illustrate the regularity of $\sqrt[2]{\underline{x}a}$ 'paddle' with *-n* and the irregularity with *-x*. The data in (185) and (186) show the same for $\sqrt[2]{sha^{w}}$ 'marry'.

(183) a. Yaa anxaxéin. *progressive with regular -eH-n*
yaa= a- n- x- $\sqrt[2]{\underline{x}a}$ -eH-n
along=XPL-NCNJ-1SG·S-$\sqrt[2]{}$paddle-VAR-NSFX
'I am paddling along.'

b. *Yaa anxaxáan. **progressive with irregular -μH-n*
yaa= a- n- x- $\sqrt[2]{\underline{x}a}$ -μH-n
along=XPL-NCNJ-1SG·S-$\sqrt[2]{}$paddle-VAR-NSFX
intended: 'I am paddling along.'

(184) a. *Axaxéix. **repetitive with regular -eH-x*
a- x- $\sqrt[2]{\underline{x}a}$ -eH-x
XPL-1SG·S-$\sqrt[2]{}$paddle-VAR-REP
intended: 'I repeatedly paddle.'

b. Axaxáax. *repetitive with irregular -μH-x*
a- x- $\sqrt[2]{\underline{x}a}$ -μH-x
XPL-1SG·S-$\sqrt[2]{}$paddle-VAR-REP
'I repeatedly paddle.'

(185) a. Yaa nxashéin. *progressive with regular -eH-n*
ÿaa= n- x- $\sqrt[2]{sha^{w}}$-eH-n
along=NCNJ-1SG·S-$\sqrt[2]{}$marry-VAR-NSFX
'I am marrying her.'

b. *Yaa nxasháan. **progressive with irregular -μH-n*
ÿaa= n- x- $\sqrt[2]{sha^{w}}$-μH-n
along=NCNJ-1SG·S-$\sqrt[2]{}$marry-VAR-NSFX
intended: 'I am marrying her.'

(186) a. *Xashéix'w. *repetitive with regular -eH-x'*
x- $\overset{2}{\sqrt{}}$sha^{w}-eH-x'
1SG·S-$\overset{2}{\sqrt{}}$marry-VAR-REP
intended: 'I repeatedly marry her.'

b. Xasháax'w. *repetitive with irregular -μH-x'*
x- $\overset{2}{\sqrt{}}$sha^{w}-μH-x'
1SG·S-$\overset{2}{\sqrt{}}$marry-VAR-REP
'I repeatedly marry her.'

The root $\overset{2}{\sqrt{}}$*sha^{w}* 'marry' exhibits occult labialization, but $\overset{2}{\sqrt{}}$*xa* 'paddle' does not. The root $\overset{2}{\sqrt{}}$*sha^{w}* 'marry' also irregularly occurs with *-ÿ* in the perfective *woosh wudisháay* 'they are married to each other' and in the nominalization *woosh dasháay* 'married couple' (Leer 1976a: 536). The related noun *sháa* 'woman' shows labialization when possessed: *ax sháawu* 'my woman' and not **ax sháayi*.

The roots $\overset{1}{\sqrt{}}$*ni^{h}* ~ $\overset{1}{\sqrt{}}$*ne^{h}* 'occur, happen' and $\overset{2}{\sqrt{}}$*ÿa^{h}* 'resemble' unexpectedly lack high tone with *-n*. This is shown in (187) and (188). Note that $\overset{2}{\sqrt{}}$*ÿa^{h}* 'resemble' still shows ablaut with *-e*, just not the expected high tone *-eH*. This may historically be due to laryngeal phenomena, but the details have not been worked out.

(187) a. *Yaa at nanéen. **progressive with regular -μH-n*
ÿaa= at= n- $\overset{1}{\sqrt{}}$ni^{h} -μH-n
along=4N·O=NCNJ-$\overset{1}{\sqrt{}}$occur-VAR-NSFX
intended: 'Something is happening.'

b. Yaa at naneen. *progressive with irregular -μ-n*
ÿaa= at= n- $\overset{1}{\sqrt{}}$ni^{h} -μ -n
along=4N·O=NCNJ-$\overset{1}{\sqrt{}}$occur-VAR-NSFX
'Something is happening.'

(188) a. *Yaa xat nayéin. **progressive with regular -eH-n*
ÿaa= xat= n- $\overset{2}{\sqrt{}}$ÿa^{h} -eH-n
along=1SG·O=NCNJ-$\overset{1}{\sqrt{}}$resemble-VAR-NSFX
intended: 'S/he is coming to resemble me.'

b. Yaa xat nayein. *progressive with irregular -e-n*
ÿaa= xat= n- $\overset{1}{\sqrt{}}$ÿa^{h} -e -n
along=1SG·O=NCNJ-$\overset{1}{\sqrt{}}$resemble-VAR-NSFX
'S/he is coming to resemble me.'

The patterns in (179)–(188) are summarized in table 2.12. The roots $\overset{2}{\sqrt{}}$*ya^{w}* 'pack on back', $\overset{1}{\sqrt{}}$*na^{w}* 'die', $\overset{2}{\sqrt{}}$*xa* 'paddle', and $\overset{2}{\sqrt{}}$*sha^{w}* 'marry' all show stem differences from the regular √*Ca* roots with both *-n* and *-X* suffixes in Adv. The root $\overset{1}{\sqrt{}}$*ni^{h}* 'occur, happen' shows one stem difference from the regular √*Ci^{h}* roots with *-n* in Adv and the root $\overset{2}{\sqrt{}}$*ÿa^{h}* 'resemble' shows one difference from the regular √*Ca^{h}* roots with *-n* in Adv.

		-n				*-X*			
Root	*Gloss*	-μH	-eH	-μ	-e	-μH	-eH	-μ	-e
√*Ca*	(regular)		✓				✓		
$\overset{2}{\sqrt{}}$*ya*^{w}	'pack on back'	✓				✓			
$\overset{1}{\sqrt{}}$*na*^{w}	'die'	✓				✓			
$\overset{2}{\sqrt{}}$*xa*	'paddle'		✓			✓			
$\overset{2}{\sqrt{}}$*sha*^{w}	'marry'		✓			✓			
√*Ci*^{h}	(regular)	✓						✓	
$\overset{1}{\sqrt{}}$*ni*^{h}	'occur'			✓				✓	
√*Ca*^{h}	(regular)		✓						✓
$\overset{2}{\sqrt{}}$*ÿa*^{h}	'resemble'				✓				✓

Table 2.12: Irregular lack of ablaut and high tone with Adv

2.4. V-agreement is absent with arguments

V-agreement does not occur with arguments. The heads of DPs and PPs merged within VP or *v*P would not c-command V since they would be below the phrasal projection that contains them. But the D arguments merged in VP and *v*P can c-command V, so it is structurally possible for them to be V-agreement triggers. I have found no evidence for D, DP, or PP affecting stem variation so I conclude that none of these are V-agreement triggers regardless of their c-command status.

It is practically impossible to compile a paradigm of all DPs and PPs that could affect the realization of V because DP and PP are recursive and hence potentially infinite. Limiting the evidence to just known forms of D or P is not as daunting a task, but this would still require a prohibitive number of examples. In this section I only show that the object D pronouns merged in VP and the subject D pronouns merged in *v*P have no effect on the realization of V. To show this I use a bivalent activity root $\overset{2}{\sqrt{}}$*xa* 'eat', using an activity imperfective which has V as *-H*. The data in (189) give the various object D pronouns with a covert third person subject. The data in (190) give the various subject D pronouns with a covert third person object, excluding the 3→3 case which is in (189e). All of these forms lack any overt material other than √, V, and D, and in every case V is realized with *-H*.

(189) a. Xat xá. *1st singular object*
xat= $\overset{2}{\sqrt{}}$xa-H
1SG·O-$\overset{2}{\sqrt{}}$eat-VAR
'S/he/it eats me.', 'S/he/it is eating me.'

b. Haa xá. *1st plural object*
haa=$\overset{2}{\sqrt{}}$xa-H
1PL·O-$\overset{2}{\sqrt{}}$eat-VAR
'S/he/it eats us.', 'S/he/it is eating us.'

c. Ixá. *2nd singular object*
i- $\sqrt[2]{\text{xa}}$-H
2SG·O-$\sqrt[2]{\text{eat}}$-VAR
'S/he/it eats you.', 'S/he/it is eating you.'

d. Yee xá. *2nd plural object*
ÿee= $\sqrt[2]{\text{xa}}$-H
1PL·O-$\sqrt[2]{\text{eat}}$-VAR
'S/he/it eats you guys.', 'S/he/it is eating you guys.'

e. Axá. *3rd object → 3rd subject*
a- $\sqrt[2]{\text{xa}}$-H
ARG-$\sqrt[2]{\text{eat}}$-VAR
'S/he/it eats him/her/it.', 'S/he/it is eating him/her/it.'

f. Kuxá. *4th human object*
ku- $\sqrt[2]{\text{xa}}$-H
4H·O-$\sqrt[2]{\text{eat}}$-VAR
'S/he/it eats someone.', 'S/he/it is eating people.'

g. At xá. *1st singular object*
at= $\sqrt[2]{\text{xa}}$-H
4N·O-$\sqrt[2]{\text{eat}}$-VAR
'S/he/it eats something.', 'S/he/it is eating stuff.'

(190) a. Xaxá. *1st singular subject*
x- $\sqrt[2]{\text{xa}}$-H
1SG·S-$\sqrt[2]{\text{eat}}$-VAR
'I eat it.', 'I am eating it.'

b. Tooxá. *1st plural subject*
tu- $\sqrt[2]{\text{xa}}$-H
1PL·S-$\sqrt[2]{\text{eat}}$-VAR
'We eat it.', 'We are eating it.'

c. Ixá. *2nd singular subject*
i- $\sqrt[2]{\text{xa}}$-H
2SG·S-$\sqrt[2]{\text{eat}}$-VAR
'You eat it.', 'You are eating it.'

d. Yixá. *2nd plural subject*
ÿi- $\sqrt[2]{\text{xa}}$-H
2PL·S-$\sqrt[2]{\text{eat}}$-VAR
'You guys eat it.', 'You guys are eating it.'

e. Duxá. *4th human subject*
du- $\sqrt[2]{\text{xa}}$-H
4H·S-$\sqrt[2]{\text{eat}}$-VAR
'Someone eats it.', 'People are eating it.'

Similar patterns can be found in e.g. Eggleston 2017. I conclude that the subject and object D pronouns have no effect on V-agreement and so cannot be V-agreement triggers. Given the total lack of any attested evidence for variation with DPs or PPs, I conclude generally that arguments do not participate in V-agreement.

2.5. V-agreement is absent with *v* and Voice

V-agreement does not occur with *v* or Voice. The diagnostic context for V-agreement with these heads would be in the imperfective aspect where Asp is covert. The presence or absence of Ɛ would be irrelevant because *v* and Voice c-command Ɛ and hence any V-agreement triggered by *v* or Voice would supersede that of Ɛ. As far as I am aware, there are no alternations in V values in imperfectives when *v* or Voice is changed.

A causative example of the lack of influence from *v* on V is given in (191) with the monovalent activity root $\sqrt[1]{ta^h}$ 'sg. sleep'. The intransitive form in (191a) has a covert *v* which projects the *v*P that hosts the subject D pronoun *x̲-* 'I'. The causative in (191b) has the *v* changed to overt *s-* along with the introduction of an object. Both forms have the same *-H* in V.

(191) a. X̲atá. *unergative activity imperfective*
x̲- $\sqrt[1]{ta^h}$ -H
1SG·S-$\sqrt[1]{}$sleep·SG-VAR
'I sleep.', 'I am sleeping.'

b. Ix̲satá. *causative activity imperfective*
i- x̲- s- $\sqrt[1]{ta^h}$ -H
2SG·O-1SG·S-CSV-$\sqrt[1]{}$sleep·SG-VAR
'I make you sleep.', 'I am putting you to sleep.'

Similarly, applicatives fail to show influence from *v* on V. This is shown with the bivalent root $\sqrt[2]{x̲a}$ 'eat' in (192). The transitive form in (192a) has a covert *v* and appears in the imperfective aspect with *-H* in V. The applicative form in (192b) has the *s-* in *v* and a recipient PP, but continues to show the same *-H* in V.

(192) a. Xákwl'i x̲ax̲á. *transitive activity imperfective*
xákw'li x̲- $\sqrt[2]{x̲a}$-H
soapberry 1SG·S-$\sqrt[2]{}$eat-VAR
'I eat soapberries.', 'I am eating soapberries.'

b. Xákwl'i i éex' x̲asx̲á. *applicative activity imperfective*
xákw'li i ee -x' x̲- s- $\sqrt[2]{x̲a}$-H
soapberry [PP 2SG BASE-LOC] 1SG·S-APPL-$\sqrt[2]{}$eat-VAR
'I feed you soapberries.', 'I am feeding you soapberries.'

The Voice head also shows no effect on imperfective aspect forms when it is introduced for either argument suppression (ch. 5 secs. 3) or for middle voice (ch. 5 sec. 5). This is shown by the data in (193) and (194) where the imperfective forms have *-μH* in V regardless of *d-*.

(193) a. X'úx' x̲ahóon. *transitive activity imperfective*
x'úx' x̲- $\sqrt[2]{}$hun-μH
book 1SG·S-$\sqrt[2]{}$sell -VAR
'I sell books.', 'I am selling books.'

b. X̲adahóon. *antipassive activity imperfective*
x̲- d- $\sqrt[2]{}$hun-μH
1SG·S-APSV-$\sqrt[2]{}$sell -VAR
'I sell.', 'I am selling.'

(194) a. X̲áat k'áax̲i x̲axáas'. *transitive activity imperfective*
x̲áat k'áax̲ -í x̲- $\sqrt[2]{}$xas' -μH
fish f·kidney-PSS 1SG·S-$\sqrt[2]{}$scrape-VAR
'I am scraping (out) the fish's kidney.' (Story & Naish 1973: 181)

b. Sh x̲adaxáas'. *middle activity imperfective*
sh= x̲- d- $\sqrt[2]{}$xas' -μH
RFLX·O=1SG·S-MID-$\sqrt[2]{}$scrape-VAR
'I am scraping myself.'

There are alternations in eventuality class where the addition of *v* or Voice causes a change from an activity to an achievement or vice-versa. The data in (195) and (196) demonstrates this with the monovalent root $\sqrt[1]{}$*.i* 'cook'. When used in an unaccusative without *v* the imperfective in (195b) is ungrammatical. But when *s-* is added in *v* to causativize the structure the imperfective becomes grammatical in (196b).

(195) a. Wé x'áax' uwa.ée. *unaccusative perfective*
wé x'áax' u- i- $\sqrt[1]{}$.i -μH
MDST apple ZPFV-STV-$\sqrt[1]{}$cook-VAR
'The apple got cooked.'

b. *Wé x'áax' ée. **unaccusative activity imperfective*
wé x'áax' $\sqrt[1]{}$.i -μH
MDST apple $\sqrt[1]{}$cook-VAR
'The apple is getting cooked.'

(196) a. Wé x'áax' x̲wasi.ée. *causative perfective*
wé x'áax' wu-x̲- s- i- $\sqrt[1]{}$.i -μH
MDST apple PFV-1SG·S-CSV-$\sqrt[1]{}$cook-VAR
'I cooked the apple.'

b. Wé x'áax' x̲asa.ée. *causative activity imperfective*
wé x'áax' x̲- s- $\sqrt[1]{}$.i -μH
MDST apple 1SG·S-$\sqrt[1]{}$cook-VAR
'I cook the apple.', 'I am cooking the apple.'

This alternation is discussed further in chapter 4 section 3.2.3 in the context of causativization. I do not believe is a case of V-agreement per se, but rather a case of *v* making the imperfective aspect

possible so that V-agreement with √ can be detected. Given the argument in section 1.3.1.1 that roots can be specified for durativity and the argument in section 1.3.1.3 that roots can be specified for stem variation and thus V-agreement, I suggest that cases like (195b) versus (196b) arise because the root is specified for stem variation but not for durativity. The addition of *v* makes durativity available and thus the imperfective aspect. This newly available imperfective aspect allows the already existing lexical specification of stem variation to appear. The V value must be lexically specified because it is just as unpredictable as any activity imperfective. Thus the value of V comes from √ and not from *v*.

2.6. V-agreement and Asp

The Asp head is the most common trigger of V-agreement across all Tlingit sentences because it is usually the highest overt functional head in a sentence: main clause, non-past, non-dubitative, affirmative, non-imperfective clauses will lack overt C, T, Mod, and Neg but will have overt Asp. Table 2.13 gives a synoptic overview of V-agreement with Asp in these contexts, including the presence of Ɛ and Adv and also C when it is closely associated with a particular Asp configuration. The Asp columns show the irrealis prefix, perfective or conjugation class prefix, and the modal prefix *g̲-*. The Ɛ shows the presence or absence of the stative prefix *i-*. The V columns indicate the possible stem variation values in V that can occur, collapsing together all of the phonological variation that depends on root shapes and ignoring invariable stems. The Adv column includes the repetitive suffixes *-X* = {*-x̲*, *-ch*, *-k*, *-t*, *-t'*, *-x'*, *-s'*, *-l'*}. Each of these combinations of Asp, Ɛ, V, Adv, and C is called a 'mode' by Leer (1978b, 1991) via a loose analogy to the aspect versus mode system of Dene languages (Hoijer 1946b; Rice & Hargus 1989; Axelrod 1993).[25]

Table 2.13 shows that the overall distribution of V with respect to Asp is complex and not easily reduced to a single set of rules. Each combination of Asp, Ɛ, and Adv instead constitutes a subparadigm which has its own set of rules depending on conjugation class, root shape, and other lexical properties. Because of this complexity, V-agreement with Asp is difficult to reason about as a single system, but further investigation into each of the paradigms in table 2.13 may uncover organizing principles that have so far been missed. One useful approach would be to restrict the paradigms to only a single conjugation class and a single root shape, such as *n*-conjugation √*CV*.

In the simplest cases of overt Asp it is relatively clear that this overrides the value of V specified by lower heads in the derivation, with the sole exception of Adv as discussed earlier in section 2.3. The canonical example of Adv overriding a lower V-agreement value is perfective aspect. Asp is covert in most imperfectives and so does not condition the value of V which is instead supplied by the root (sec. 2.1). But in the perfective aspect Asp is overt with either *u-* or *wu-*, and consequently the value of V is replaced by one specified by Asp according to root phonological properties. The data in (197) illustrate this contrast with an activity root $\sqrt[2]{x̲a}$ which has lexically specified *-H* in the imperfective aspect but which has *-μH* instead in the perfective. Similarly, the data in (198) give a stative root $\sqrt[1]{ÿat'}$ 'long' with lexically specified *-H* in the imperfective and *-μH* in the perfective.

25. Note that where Dene description contrasts mode (imperfective, perfective, future, optative) versus aspect (momentaneous, persistive, reversative, durative, etc.), Leer's 'mode' category for Tlingit covers many more contrasts and lacks an orthogonal 'aspect' category. The nearest equivalent to Dene 'aspects' are the (non)motion derivations.

Aspect, etc.	Asp			Ɛ	V						Adv	C
	IRR	ASP	MOD	STV	-H	-μ	-μH	-e	-eH	-⊗		
impfv. activity					✓	✓	✓					
impfv. state				i-	✓	✓	✓	✓	✓			
impfv. positional					✓		✓		✓		-n	
impfv. repetitive event					✓	✓	✓	✓	✓		-X	
impfv. repetitive state				i-	✓	✓	✓	✓	✓		-k	
impfv. extensional state		CNJ-				✓	✓					
impfv. multipos. state		CNJ-			✓						-kw(t)	
prospective (‘future’)	w-	g-	g̱-				✓					
perfective (∅)		(w)u-		i-	✓	✓	✓					
perfective (non-∅)		wu-		i-		✓	✓					
realizational		CNJ-		i-			✓					
consecutive		CNJ-					✓					
admonitive	u-	CNJ-					✓					
imperative		CNJ-			✓	✓	✓			✓		
hortative		CNJ-	g̱-		✓	✓	✓					
potential	u-	CNJ-	g̱-	i-		✓	✓					
progressive		n-			✓		✓		✓		-n	
conditional		CNJ-			✓		✓		✓		-n	-í
habitual (∅)		u-			✓	✓	✓				(-ÿ)-ch	
habitual (non-∅)		CNJ-			✓	✓	✓	✓	✓		-ch	
contingent		CNJ-	g̱-		✓		✓		✓		-n	-ín

Table 2.13: Distribution of stem variation (V) across aspect, mood, & modality categories

(197) a. X̱ax̱á. *activity imperfective with -H*
x̱- $\sqrt[2]{}$x̱a-H
1SG·S-$\sqrt[2]{}$eat-VAR
‘I eat it.’, ‘I am eating it.’

b. X̱waax̱áa. *perfective aspect with -μH*
wu-x̱- i- $\sqrt[2]{}$x̱a-μH
PFV-1SG·S-STV-$\sqrt[2]{}$eat-VAR
‘I ate it.’, ‘I have eaten it.’

c. *X̱waax̱á. **perfective aspect with -H*
wu-x̱- i- $\sqrt[2]{}$x̱a-H
PFV-1SG·S-STV-$\sqrt[2]{}$eat-VAR
intended: ‘I ate it.’, ‘I have eaten it.’

(198) a. Yayát'. *state imperfective with -H*
i- $^{1}\sqrt{}$ÿat'-H
STV-$^{2}\sqrt{}$eat -VAR
'It is longs.'

b. Wooyáat'. *perfective aspect with -μH*
wu-i- $^{1}\sqrt{}$ÿat'-μH
PFV-STV-$^{1}\sqrt{}$long-VAR
'It became long.'

c. *Wooyát'. **perfective aspect with -H*
wu-i- $^{1}\sqrt{}$ÿat'-H
PFV-STV-$^{1}\sqrt{}$long-VAR
intended: 'It became long.'

As seen by the wide variety of V values in table 2.13, a particular aspect, mood, or modality selects more than one value for V. Any given verb will have only one possible value for V, so as a whole the system is deterministic, but the complexity of interactions can make it seem chaotic. Some variation in the selection of values is because of phonology, specifically the constraints on stem realization imposed by root shape where e.g. *-μ* is blocked with *√CVC'* roots and *-μH* occurs instead. Some stem variation with Asp is dependent on conjugation class, where for example a perfective of a *√CVC* root will have *-H* if the verb is *∅*-conjugation and *-μ*/*-μH* otherwise (*n*, *g̲*, *g*). And finally some stem variation with Asp is purely lexical, such as the three roots $^{1}\sqrt{}$*gut* 'sg. go', $^{1}\sqrt{}$*.at* 'pl. go', and $^{1}\sqrt{}$*nuk* 'sg. sit' that have truncating -⊗ with loss of their coda consonant (giving [CV́]) in the imperative. But in every case discussed here it is the combination of Asp with these other factors that determines stem variation and hence the value of V in the surface form, and so Asp is modelled as the source of most V-agreement.

In the following subsections I document the aspects, moods, and modalities where Asp determines the value of V without any interference from Adv suffixes. For the remaining aspects, moods, and modalities that include Adv suffixes see section 2.3. I present some generalizations about imperfective aspect with overt Asp in section 2.6.1. Then I describe the very regular prospective aspect in section 2.6.1 where all non-irregular stems are *-μH*. I detail the conjugation class–based split in perfective stems in section 2.6.3. The three morphologically and semantically similar realizational, consecutive, and admonitive categories are described in section 2.6.4. I move on to the imperative mood in section 2.6.5, noting how it is partially lexicalized but partially predictable. Finally I review the hortative modality in section 2.6.6 and the potential modality in section 2.6.7, both of which are characterized by the presence of the modal prefix *g̲-* in Asp and somewhat similar patterns of stem variation. The remaining categories listed at the end of table 2.13 all include an Adv suffix and so were detailed earlier in section 2.3 in the context of interactions between V and Adv.

2.6.1. Imperfective aspect and V

Imperfective aspect in Tlingit is a set of related aspectual morphosyntactic patterns that all generally denote an eventuality where the event time *E* contains the reference time *R*, i.e. $R \subseteq E$. There are three morphological factors involved in distinguishing different kinds of imperfective aspect in Tlingit: (i) presence or absence of an overt conjugation prefix {*n-*, *g̲-*, *g-*} in Asp, (ii) presence or absence of *i-* in Ɛ, and (iii) presence or absence of a suffix in Adv. For imperfective aspect with Adv suffixes

see section 2.3. Excluding Adv, the other two factors give rise to three (not four!) flavours of imperfective aspect structures which are sketched in (199). The absence of an activity *CNJ*-imperfective is interesting but as yet there is no explanation for this lacuna.

(199)

	covert Ɛ	overt Ɛ (*i-*)
covert Asp	activity *Ø*-imperfective	state *Ø*-imperfective
overt Asp (*n-*, *g̲-*, *g-*)	—	state *CNJ*-imperfective

The covert Asp head of a *Ø*-imperfective aspect form does not assign any value to V and so V receives its value from √ (secs. 1.3.1.1 & 2.1), or perhaps from Ɛ in states with overt *i-* (sec. 2.2). But the *Ø*-imperfectives are not the only kind of imperfective aspect forms since there are also *CNJ*-imperfectives as indicated in (199). These *CNJ*-imperfectives only occur as states with overt *i-* in Ɛ for unknown reasons. The *CNJ*-imperfectives without Adv are called 'extensional states' and the forms with overt Adv are called 'multipositional states'. An **extensional state** imperfective denotes a state of being extended along a path in space; compare "the river flows along the valley" and "the road runs over the pass" in English. A **multipositional state** denotes a state of being scattered in multiple positions along some path in space; compare "water is scattered along the trail (in puddles)".

The data in (200)–(202) illustrate three extensional states, one for each of the three overt conjugation class prefixes *n-*, *g̲-*, and *g-*. The two *n-* and *g̲*-conjugation extensional states in (200) and (201) are lexically specified whereas the *g*-conjugation example in (202) is derived from a motion verb. The forms in (200) and (201) are the only documented lexically specified extensional states.

(200) a. Naalée. *extensional state n-imperfective with -μH*
n- i- $^{1}\sqrt{}$li^{h}-μH
NCNJ-STV-$^{1}\sqrt{}$far-VAR
'It is far, distant.'

b. *Yalée. **state Ø-imperfective with -μH*
i- $^{1}\sqrt{}$li^{h}-μH
STV-$^{1}\sqrt{}$far-VAR
intended: 'It is far, distant.'

c. *Lée. **activity Ø-imperfective with -μH*
$^{1}\sqrt{}$li^{h}-μH
$^{1}\sqrt{}$far-VAR
intended: 'It is far, distant.'

(201) a. G̲aadlaan. *extensional state g̲-imperfective with -μH*
g̲- i- $^{1}\sqrt{}$dlan-μ
GCNJ-STV-$^{1}\sqrt{}$deep -VAR
'It is deep.'

b. *Yadlaan. **state Ø-imperfective with -μH*
i- $^{1}\sqrt{}$dlan-μ
STV-$^{1}\sqrt{}$deep -VAR
intended: 'It is deep.'

c. *Dlaan. **activity Ø-imperfective with -μH*
$^{1}\sqrt{}$dlan-μH
$^{1}\sqrt{}$deep -VAR
intended: 'It is deep.'

(202) a. Aax̲ gaashóo. *extensional state g-imperfective with -μH*
á -dáx̲ g̲- i- $^{1}\sqrt{}$shu^{h}-μH
3N-ABL G̲CNJ-STV-$^{1}\sqrt{}$end -VAR
'It extends up from there.'

b. *Aax̲ yashóo. **state Ø-imperfective with -μH*
á -dáx̲ i- $^{1}\sqrt{}$shu^{h}-μH
3N-ABL STV-$^{1}\sqrt{}$end -VAR
intended: 'It extends up from there.'

c. *Aax̲ shóo. **activity Ø-imperfective with -μH*
á -dáx̲ $^{1}\sqrt{}$shu^{h}-μH
3N-ABL $^{1}\sqrt{}$end -VAR
intended: 'It extends up from there.'

Leer asserts that extensional states can be derived from motion verbs but it is not clear whether the mechanism he describes is actually productive or not (Leer 1991: 319–321). He gives examples of the same root $^{1}\sqrt{}$*shu^{h}* 'end, extend'[26] in (202) with *n-* and *g̲*-conjugation forms along with similar examples of $^{1}\sqrt{}$*da* 'flow' and $^{1}\sqrt{}$*.at* 'pl. go', though he says the *g̲*-conjugation of the latter is questionable. For reference I present his examples with my analysis in (203)–(205).

(203) a. Aadé naashóo. *extensional state n-imperfective with -μ*
á -dé n- i- $^{1}\sqrt{}$shu^{h}-μH
3N-ABL NCNJ-STV-$^{1}\sqrt{}$end -VAR
'It extends toward it.'

b. Áx̲ g̲aashóo. *extensional state g̲-imperfective with -μ*
á -x̲ g̲- i- $^{1}\sqrt{}$shu^{h}-μ
3N-PERT G̲CNJ-STV-$^{1}\sqrt{}$end -VAR
'It extends down along it.'

(204) a. Aadé naadaa. *extensional state n-imperfective with -μ*
á -dé n- i- $^{1}\sqrt{}$da -μ
3N-ABL NCNJ-STV-$^{1}\sqrt{}$flow-VAR
'It flows toward it.'

b. Áx̲ g̲aadaa. *extensional state g̲-imperfective with -μ*
á -x̲ g̲- i- $^{1}\sqrt{}$da -μ
3N-PERT G̲CNJ-STV-$^{1}\sqrt{}$flow-VAR
'It flows down along it.'

26. The root $^{1}\sqrt{}$*shu^{h}* 'end, extend' also forms the nouns *a shú* 'its end' and *a shoowú* 'part of it', hence the gloss 'end'.

Root Shape	*Root Form*	*Root Gloss*	*Conj.*			V				
			n	*g̲*	*g*	-H	-μ	-μH	-e	-eH
√CV	√*da*	'flow'	✓	✓			✓			
√CV^{h}	√*li^{h}*	'far'	✓					✓		
	√*shu^{h}*	'extend'	✓	✓	✓			✓		
√CVC	√*dlan*	'deep'		✓			✓			
	√*.at*	'pl. go'	✓	✓			✓			
√CVC'	(unkn.)									
√CV'C	(unkn.)									

Table 2.14: Stem variation patterns in extensional state *CNJ*-imperfectives

(205) a. Aadé has naa.aat. *extensional state n-imperfective with -μ*
á -dé has=n- i- ^{1}√.at -μ
3N-ABL PLH= NCNJ-STV-^{1}√go·PL-VAR
'It flows toward it.'

b. Áx̲ has g̲aa.aat. *extensional state g̲-imperfective with -μ*
á -x̲ has=g̲- i- ^{1}√.at -μ
3N-PERT PLH= G̲CNJ-STV-^{1}√go·PL-VAR
'It flows down along it.'

The V-agreement model requires that extensional state *CNJ*-imperfectives have their V values specified by Asp because this is the highest overt functional head in these structures. The data in (200)–(205) shows some signs of regular patterning, but there is so little information available that the observed patterns may be accidental. Nonetheless, I summarize what we have above in table 2.14. Only √*CV*, √*CV^{h}*, and √*CVC* roots are represented in extensional states. Both *-μ* and *-μH* values for V are attested, and there does not seem to be any connection between these and conjugation class. But there is a striking pattern where both √*CV^{h}* roots appear with *-μH* and both √*CVC* roots appear with *-μ*. This correlation with root shape is not predicted by phonological phenomena nor by any other morphological phenomena so it may be significant. We need more data on extensional states, including both corpus examples and elicited paradigms, to see if there is any rhyme or reason to V-agreement in these unusual imperfective aspect forms with overt Asp.

As noted earlier, I have not encountered any *CNJ*-imperfectives that denote activities, i.e. imperfective forms with an overt conjugation prefix in Asp and without an overt *i-* in Ɛ. All activity imperfectives must consequently derive their V values from √. It is not clear what conclusions we might draw from the lack of activity *CNJ*-imperfectives, but notably this is at odds with the Dene languages which have imperfective aspect forms with all four of their conjugation prefixes across both activities and 'neuter' states (cf. e.g. Rice 2000a: ch. 11).

Conj.	*Pvb.*	Asp	ε	√	V	*Stem*
		w-g̱-g-		√CVC	-μH	[CV́V́C]
		w-g̱-g-		√CVC'	-μH	[CV́V́C']
ø		w-g̱-g-		√CV'C	-μH	[CV́V́C]
		w-g̱-g-		√CV	-μH	[CV́V́]
		w-g̱-g-		√CV^{h}	-μH	[CV́V́]
		w-g̱-g-		√CVC	-μH	[CV́V́C]
		w-g̱-g-		√CVC'	-μH	[CV́V́C']
n		w-g̱-g-		√CV'C	-μH	[CV́V́C]
		w-g̱-g-		√CV	-μH	[CV́V́]
		w-g̱-g-		√CV^{h}	-μH	[CV́V́]
	yei=	w-g̱-g-		√CVC	-μH	[CV́V́C]
	yei=	w-g̱-g-		√CVC'	-μH	[CV́V́C']
g̱	yei=	w-g̱-g-		√CV'C	-μH	[CV́V́C]
	yei=	w-g̱-g-		√CV	-μH	[CV́V́]
	yei=	w-g̱-g-		√CV^{h}	-μH	[CV́V́]
	kei=	w-g̱-g-		√CVC	-μH	[CV́V́C]
	kei=	w-g̱-g-		√CVC'	-μH	[CV́V́C']
g	kei=	w-g̱-g-		√CV'C	-μH	[CV́V́C]
	kei=	w-g̱-g-		√CV	-μH	[CV́V́]
	kei=	w-g̱-g-		√CV^{h}	-μH	[CV́V́]

Table 2.15: Patterns of prospectives based on conjugation class and root shape

2.6.2. Prospective aspect and V

Prospective aspect exhibits a remarkably simple and regular stem variation paradigm: all stems have long high tone *-μH* regardless of any other morphosyntactic parameters. The complete set of regular patterns is given in table 2.15. The only exceptions to these patterns are invariable stems and forms that include an Adv suffix, where the value of V is determined either lexically or by Adv and not Asp.

The patterns in table 2.15 show that root shape is phonologically irrelevant for *-μH* so both open and closed syllable roots behave the same and there is no distinction between *√CVC* versus *√CVC'* and *√CV'C* closed syllables. Similarly, conjugation class has no effect on the stem. The selection of preverb is dependent on conjugation class like with with the conjugation-dependent repetitive imperfectives (sec. 2.3.3.1) and the progressive aspect (sec. 2.3.3.4), but this is irrelevant for V.

The complexity of morphology in Asp – the irrealis *w-*, the *g-* conjugation prefix, and the *g̱-* modal prefix – makes it difficult to say exactly what determines the value *-μH* in V for prospective aspect. It could be that only one of these is specified with [μH$_{\varepsilon}$], or that a combination of two of them together provide this feature, or perhaps it is the specific combination of all three that gives rise to V-agreement with *-μH*. Perhaps the complexity of Asp in prospective aspect is why the stem variation paradigm is so simple, but this would be difficult to capture with the current model. See

chapter 6 sections 3.5.1 and 4.4.1 for more discussion of the prospective aspect, and see section 1 in that chapter for the model of Asp more generally.

The data in (206)–(207) illustrate the appearance of prospective aspect. The forms in (206) give open syllable roots in all four conjugation classes and the forms in (207) give closed syllable √*CVC* roots in all four conjugation classes. I have freely mixed √*CV* and √*CV*^{h} roots because *-μH* is always realized the same for both root shapes. But the closed syllable roots are all √*CVC* roots because it is only this closed syllable root shape that displays a contrast between *-μ* and *-μH* values for V, so giving √*CVC'* and √*CV'C* roots would underdetermine the exclusive appearance of *-μH* in the prospective aspect.

(206) a. Kukaxáa. *Ø-conj. open root prospective with -μH*
w- g- g- x- ^{2}√xa-μH
IRR-GCNJ-MOD-1SG·S-^{2}√eat-VAR
'I will eat it.'

b. Kukatáa. *n-conj. open root prospective with -μH*
w- g- g- x- ^{1}√ta^h -μH
IRR-GCNJ-MOD-1SG·S-^{2}√sleep·SG-VAR
'I will sleep.'

c. Yei kkwalagóo. *g-conj. open root prospective with -μH*
yei= w- g- g- x- l- ^{2}√gu -μH
down=IRR-GCNJ-MOD-1SG·S-XTN-^{2}√wipe-VAR
'I will wipe it.'

d. Kei kkwashée. *g-conj. open root prospective with -μH*
kei=w- g- g- x- ^{2}√shi^h-μH
up= IRR-GCNJ-MOD-1SG·S-^{2}√sing -VAR
'I will sing it.'

(207) a. Kukajáak. *Ø-conj. closed root prospective with -μH*
w- g- g- x- ^{2}√jak-μH
IRR-GCNJ-MOD-1SG·S-^{2}√kill -VAR
'I will kill it.'

b. Kukahóon. *n-conj. closed root prospective with -μH*
w- g- g- x- ^{2}√hun-μH
IRR-GCNJ-MOD-1SG·S-^{2}√sell -VAR
'I will sell it.'

c. Yei kkwaxóox. *g-conj. closed root prospective with -μH*
yei= w- g- g- x- ^{2}√xux -μH
down=IRR-GCNJ-MOD-1SG·S-^{2}√summon-VAR
'I will summon him/her/it.'

d. Kei kkwagwáal. *g-conj. closed root prospective with -μH*
kei=w- g- g- x- ^{2}√gwal-μH
up= IRR-GCNJ-MOD-1SG·S-^{2}√beat -VAR
'I will beat it.'

Conj.	*Pvb.*	Asp	Ɛ	√	V	
		(w)u-	i-	√CVC	-H	[CV́C]
		(w)u-	i-	√CVC'	-H	[CV́C']
∅		(w)u-	i-	√CV'C	-H	[CV́C]
		(w)u-	i-	√CV	-μH	[CV́V́]
		(w)u-	i-	√CV^h	-μH	[CV́V́]
		wu-	i-	√CVC	-μ	[CV̀V̀C]
		wu-	i-	√CVC'	-μH	[CV́V́C']
n		wu-	i-	√CV'C	-μH	[CV́V́C]
		wu-	i-	√CV	-μ	[CV̀V̀]
		wu-	i-	√CV^h	-μ	[CV̀V̀]
		wu-	i-	√CVC	-μ	[CV̀V̀C]
		wu-	i-	√CVC'	-μH	[CV́V́C']
g̲		wu-	i-	√CV'C	-μH	[CV́V́C]
		wu-	i-	√CV	-μ	[CV̀V̀]
		wu-	i-	√CV^h	-μ	[CV̀V̀]
		wu-	i-	√CVC	-μ	[CV̀V̀C]
		wu-	i-	√CVC'	-μH	[CV́V́C']
g		wu-	i-	√CV'C	-μH	[CV́V́C]
		wu-	i-	√CV	-μ	[CV̀V̀]
		wu-	i-	√CV^h	-μ	[CV̀V̀]

Table 2.16: Patterns of perfectives based on conjugation class and root shape

2.6.3. Perfective aspect and V

The perfective aspect exhibits a stem variation paradigm that is partly dependent on conjugation class and partly dependent on root phonological shape. The root shape part of the paradigm is divided between open syllables and closed syllables, with the closed syllables being further subdivided between √*CVC* on the one hand and √*CVC'* and √*CV'C* on the other. The conjugation class part of the paradigm is divided between the *∅*-conjugation class on the one hand and the non-*∅*-conjugation classes (*n*, *g*, *g*) on the other. The complete set of regular patterns is shown in table 2.16, excluding the usual irregular cases of invariable stems and Adv suffixes.[27]

The perfective aspect is insensitive to the root shape subdivision of open syllable roots between √*CV* and √*CV^h*. Thus only conjugation class determines the perfective V-agreement form, with *-μH* for *∅*-conjugation class verbs and *-μ* for the others. In fact, this *-μ* of the non-*∅*-conjugation classes is the same for closed syllable √*CVC* roots and presumably *-μH* only occurs with √*CVC'* and √*CV'C* roots because *-μ* is prohibited by phonological constraints on the spellout of V. This suggests that *-μ* is a kind of default value for V-agreement in the perfective aspect.

Both the closed syllable roots and open syllable roots have distinct forms for the *∅*-conjugation

27. For the *∅*-conjugation (*w*)*u-* – i.e. *u-* or *wu-* – see chapter 6 section 2.2. I am unsure if there is one underlying form.

class. The closed syllable roots have *-H* where the open syllable roots have *-μH*. This can be seen in the data in (208) and (209) below, where the first verb in each set differs from the remainder.

(208) a. Xwaaxáa. *Ø-conj. open root perfective with -μH*
wu-x- i- $^{2}\sqrt{}$xa-μH
PFV-1SG·S-STV-$^{2}\sqrt{}$eat-VAR
'I ate it.', 'I have eaten it.'

b. Xwaataa. *n-conj. open root perfective with -μ*
wu-x- i- $^{2}\sqrt{}$ta^{h} -μ
PFV-1SG·S-STV-$^{1}\sqrt{}$sleep·SG-VAR
'I slept.', 'I have slept.'

c. Xwaligoo. *g-conj. open root perfective with -μ*
wu-x- l- i- $^{2}\sqrt{}$gu -μ
PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$wipe-VAR
'I wiped it.', 'I have wiped it.'

d. Xwaashee. *g-conj. open root perfective with -μ*
wu-x- i- $^{2}\sqrt{}$shi^{h}-μ
PFV-1SG·S-STV-$^{2}\sqrt{}$sing -VAR
'I sang it.', 'I have sung it.'

(209) a. Xwaaják. *Ø-conj. closed root perfective with -μH*
wu-x- i- $^{2}\sqrt{}$jak-μH
PFV-1SG·S-STV-$^{2}\sqrt{}$kill -VAR
'I killed it.', 'I have killed it.'

b. Xwaahoon. *n-conj. closed root perfective with -μ*
wu-x- i- $^{2}\sqrt{}$hun-μH
PFV-1SG·S-STV-$^{2}\sqrt{}$sell -VAR
'I sold it.', 'I have sold it.'

c. Xwaaxoox. *g-conj. closed root perfective with -μ*
wu-x- i- $^{2}\sqrt{}$xux -μH
PFV-1SG·S-STV-$^{2}\sqrt{}$summon-VAR
'I summoned him/her/it.', 'I have summoned him/her/it.'

d. Xwaagwaal. *g-conj. closed root perfective with -μ*
wu-x- i- $^{2}\sqrt{}$gwal-μH
PFV-1SG·S-STV-$^{2}\sqrt{}$beat -VAR
'I beat it.', 'I have beaten it.'

If *-μ* is the only underlying value for the other conjugation classes then the syntax need only have a single feature [μ_{ε}] for V-agreement in the *n*-, *g*-, and *g*-conjugation class perfective aspect forms. But the split between different values for the *Ø*-conjugation class with the same Asp head poses an interesting problem for the model. The Asp head must be the source of V-agreement since there are no higher functional heads in the main clause, non-past, non-dubitative, affirmative, non-repetitive

perfective aspect. Somehow either Asp or V needs to know about the phonological material in √ and to select *-H* if there is a coda consonant in √ or else to select *-μH*. One possible avenue for a purely synchronic account of this is to introduce an extra constraint in the phonology against trimoraicity so that [CV́:C] does not occur (since [$\acute{V}_{\mu}$:$_{\mu}$C$_{\mu}$]), but this still requires syntactic information from Asp because it only applies to the perfective aspect. I note that Leer's diachronic model of stem variation (apx. B sec. 2.8) is implicitly designed to avoid this problem with the abstract "*-ÿ*" stem variation that is realized as [V́] with closed syllable roots but as [V́:] with open syllable roots. It may be useful to introduce a similar intermediate level of abstraction in the syntactic features for V-agreement, but this approach seems somewhat stipulative.

2.6.4. Realizational, consecutive, and admonitive and V

The realizational, consecutive, and admonitive all have the same stem variation paradigm with *-μH* and share similar morphology in the rest of their structures. I suggest in chapter 6 section 2.2 that all three are essentially variations on perfective aspect with *CNJ-* = {*∅*, *n-*, *g̲-*, *g-*} conjugation prefixes instead of the *u-*/*wu-* of the ordinary perfective. This is most clearly seen with the realizational which is morphologically close to the perfective except that it has *CNJ-* instead of *u-*/*wu-* and has *-μH* in V. The complete set of regular patterns for the realizational, consecutive, and admonitive are given in table 2.17.

The realizational aspect is "in general translated like the Perfective, but seems to convey an impression of vividness or immediacy" (Leer 1991: 379) and Leer suggests that it "refers to a state resulting from a past event [and] treats the past event as if it were being witnessed by the speaker" (Leer 1991: 381). As a *CNJ*-perfective the realizational would be the Tlingit counterpart to *CNJ*-perfectives in Dene languages (cf. Rice 2000a: 256–281), but with an inverted frequency of use: *u-*/*wu*-perfectives (< **ŋ^{w}-*) are the norm and *CNJ*-perfectives are rare in Tlingit whereas in Dene languages *CNJ*-perfectives are the norm and the **ŋ*-perfective is rare and/or exceptional (Hargus & Tuttle 1997: 191–195; Rice 2000a: 247–248).

The consecutive aspect is effectively the realizational aspect in an adjunct clause with concomitant Ɛ-suppression of *i-* (ch. 3 sec. 4.1). It is unusual because Ɛ-suppression occurs without overt C since the consecutive does not occur with the subordinate clause suffix *-í*. The usual translations of the consecutive are along the lines of "after having *V*-ed…" or "when *subject V*-ed (*object*)…".

The admonitive is the irrealis counterpart of the realizational with the addition of irrealis *u-* and Ɛ-suppression. It is probably a hybrid aspect/mood given the addition of irrealis without any structural conditioning (ch. 6 sec. 4). Leer gives the schematic English translations "beware lest *V*", "be careful to not left *V*", and "watch out or … will/might/could *V*" (Leer 1991: 430).

The data in (210)–(212) illustrate the realizational,[28] consecutive, and admonitive with four √*CVC* roots, one for each conjugation class. A cautionary note is in order: these three aspectual structures are rare in everyday speech and may not be available for all speakers. The consecutive forms are frequently encountered in traditional narratives and are understood if not used by all of my consultants. The realizational forms are more rare but I have tested them with a few of my consultants and have successfully used them in conversation (though only for dramatic effect), but I

28. The obscure temporal adverb *tsaatsguyéig̲aa* 'at long last' probably contains *ÿee* 'time' (cf. *ÿeedát* 'moment; now', *ÿéeÿi* 'former', *ÿeen* 'during') and adessive *-g̲áa* 'vicinity; for'. Possibly related are *tsaás* ~ *ts'ás* 'I wish' (Leer 1973a: 09/135) and the mirative *gwá* (Leer 1973a: f05/185).

Type	*Conj.*	*Pvb.*	Asp	Ɛ	√	V	*Stem*
realizational	*Ø*		CNJ-	i-	√CV(ʼ)C(ʼ)	-μH	[CV́V́C(ʼ)]
			CNJ-	i-	√CV(h)	-μH	[CV́V́]
	n		CNJ-	i-	√CV(ʼ)C(ʼ)	-μH	[CV́V́C(ʼ)]
			CNJ-	i-	√CV(h)	-μH	[CV́V́]
	g̲		CNJ-	i-	√CV(ʼ)C(ʼ)	-μH	[CV́V́C(ʼ)]
			CNJ-	i-	√CV(h)	-μH	[CV́V́]
	g		CNJ-	i-	√CV(ʼ)C(ʼ)	-μH	[CV́V́C(ʼ)]
			CNJ-	i-	√CV(h)	-μH	[CV́V́]
consecutive	*Ø*		CNJ-		√CV(ʼ)C(ʼ)	-μH	[CV́V́C(ʼ)]
			CNJ-		√CV(h)	-μH	[CV́V́]
	n		CNJ-		√CV(ʼ)C(ʼ)	-μH	[CV́V́C(ʼ)]
			CNJ-		√CV(h)	-μH	[CV́V́]
	g̲		CNJ-		√CV(ʼ)C(ʼ)	-μH	[CV́V́C(ʼ)]
			CNJ-		√CV(h)	-μH	[CV́V́]
	g		CNJ-		√CV(ʼ)C(ʼ)	-μH	[CV́V́C(ʼ)]
			CNJ-		√CV(h)	-μH	[CV́V́]
admonitive	*Ø*		u-CNJ-		√CV(ʼ)C(ʼ)	-μH	[CV́V́C(ʼ)]
			u-CNJ-		√CV(h)	-μH	[CV́V́]
	n		u-CNJ-		√CV(ʼ)C(ʼ)	-μH	[CV́V́C(ʼ)]
			u-CNJ-		√CV(h)	-μH	[CV́V́]
	g̲		u-CNJ-		√CV(ʼ)C(ʼ)	-μH	[CV́V́C(ʼ)]
			u-CNJ-		√CV(h)	-μH	[CV́V́]
	g		u-CNJ-		√CV(ʼ)C(ʼ)	-μH	[CV́V́C(ʼ)]
			u-CNJ-		√CV(h)	-μH	[CV́V́]

Table 2.17: Patterns of realizationals, consecutives, and admonitives

have also encountered confusion about the same forms with other speakers. Although admonitive forms are occasionally found in older traditional narratives I have never successfully elicited an admonitive nor heard one used in the wild. I suspect that any fluent speaker should comprehend all three structures and should be able to use them given some exposure and practice, but the realizational and admonitive are best considered archaic and the consecutive as belonging to a special discourse register.

(210) a. ※Tsaatsguyéig̲aa x̲aajáak̲. *Ø-conj. closed root realizational with -μH*
tsaatsguyéig̲aa x̲- i- ²√jak̲-μH
at·long·last ZCNJ-1SG·S-STV-²√kill -VAR
'At long last I have finally killed it.'

b. ※Tsaatsguyéigaa naxaahóon. *n-conj. closed root realizational with -μH*
tsaatsguyéigaa n- x- i- ²√hun-μH
at·long·last NCNJ-1SG·S-STV-²√sell -VAR
'At long last I have finally sold it.'

c. ※Tsaatsguyéigaa kaaxóox. *g-conj. closed root realizational with -μH*
tsaatsguyéigaa g- x- i- ²√xux -μH
at·long·last GCNJ-1SG·S-STV-²√summon-VAR
'At long last I have finally summoned him/her/it.'

d. ※Tsaatsguyéigaa gaxaagwáal. *g-conj. closed root realizational with -μH*
tsaatsguyéigaa g- x- i- ²√gwal-μH
at·long·last GCNJ-1SG·S-STV-²√beat -VAR
'At long last I have finally beaten it.'

(211) a. ※Xajáak... *Ø-conj. closed root consecutive with -μH*
x- ²√jak-μH
ZCNJ-1SG·S-²√kill -VAR-SUB
'Me having killed it...'

b. ※Naxahóon... *n-conj. closed root consecutive with -μH*
n- x- ²√hun-μH
NCNJ-1SG·S-²√sell -VAR-SUB
'Me having sold it...'

c. ※Kaxóox... *g-conj. closed root consecutive with -μH*
g- x- ²√xux -μH
GCNJ-1SG·S-²√summon-VAR-SUB
'Me having summoned him/her/it...'

d. ※Gaxagwáal... *g-conj. closed root consecutive with -μH*
g- x- ²√gwal-μH
GCNJ-1SG·S-²√beat -VAR-SUB
'Me having beaten it...'

(212) a. ※Xwajáak tsé. *Ø-conj. closed root admonitive with -μH*
u- x- ²√jak-μH tsé
IRR-ZCNJ-1SG·S-²√kill -VAR ADMON
'Lest I have killed it.'

b. ※Naxwahóo. tsé. *n-conj. closed root admonitive with -μH*
u- n- x- ²√hun-μH tsé
IRR-NCNJ-1SG·S-²√sell -VAR ADMON
'Lest I have sold it.'

c. ※Kwaxóox tsé. *g-conj. closed root admonitive with -μH*
u- g- x- ²√xux -μH tsé
IRR-GCNJ-1SG·S-²√summon-VAR ADMON
'Lest I have summoned him/her/it.'

d. ※Gooxagwáal. tsé. *g-conj. closed root admonitive with -μH*
u- g- x- $^{2}\sqrt{}$gwal-μH tsé
IRR-GCNJ-1SG·S-$^{2}\sqrt{}$beat -VAR ADMON
'Lest I have beaten it.'

2.6.5. Imperative mood and V

The imperative mood has a moderately complex stem variation paradigm. Like the hortative (sec. 2.6.6) and potential modalities (sec. 2.6.7), the imperative has atypical stem variation with some *Ø*-conjugation open syllable roots that are termed *Ø*$^{+}$-conjugation class verbs. Also the imperative stems of motion verbs with certain directional preverbs from *Ø*-conjugation class motion derivations occur with long vowels rather than the expected short vowels. And the imperative uniquely has the truncation stem -⊗ with the monovalent motion roots $^{1}\sqrt{}$*gut* 'sg. go', $^{1}\sqrt{}$*.at* 'pl. go', and $^{1}\sqrt{}$*nuk* 'sg. sit'.

Imperative mood can only be used with second person subjects, or second person objects for unaccusatives. Objects – i.e. *i-* 'you sg.', *ÿee=* 'you pl.' – are always overt, as is the second person plural subject *ÿi-* 'you pl.'. If *d-* in Voice is absent then the second person plural subject is covert *pro*, otherwise it is overt *i-* 'you sg.'. The *pro* second person singular subject and its alternation with the overt subject is discussed further in chapter 5 section 2.2.2 in the context of short distance subject raising from *v*P to VoiceP. Leer describes the hortative modality as the first and third person counterpart of the imperative since the hortative is restricted to first and third person where the imperative is restricted to second person (Leer 1991: 425). The morphology of the hortative differs in that it contains modal *g̲-* prefix which is absent in the imperative and the stem variation paradigms are different between the two, but there is probably a pragmatic connection between them.

The regular patterns of imperative mood are given in table 2.18. Every imperative is characterized by the presence of the lexically specified conjugation class prefix, or the absence of this in the case of the *Ø*-conjugation class. The imperative patterrns for the non-*Ø*-conjugation classes are relatively straightforward although there is an interesting split between open and closed syllables: the imperative of a closed syllable root has *-μ*/*-μH* where the imperative of an open syllable root has *-H*. There is no reason in the model for why these two should behave differently since open syllable roots can also have *-μ* or *-μH*. The data in (213) illustrate regular imperative forms of verbs with open roots in the three non-*Ø*-conjugation classes. The data in (214) likewise illustrate imperatives for closed syllable √*CVC* roots in the three non-*Ø*-conjugation classes.

(213) a. Natá! *n-conj. open root imperative with -H*
n- $^{1}\sqrt{}$ta^{h} -H
NCNJ-2SG·S-$^{1}\sqrt{}$sleep·SG-VAR
'Sleep!'

b. G̲alg̲ú! *g̲-conj. open root imperative with -H*
g̲- l- $^{1}\sqrt{}$g̲u -H
GCNJ-2SG·S-XTN-$^{2}\sqrt{}$wipe-VAR
'Wipe it!'

c. Gashí! *g-conj. open root imperative with -H*
g- $^{1}\sqrt{}$shi^{h}-H
GCNJ-2SG·S-$^{2}\sqrt{}$sing -VAR
'Sing it!'

Conj.	*Pvb.*	Asp	ɛ	√	V	Stem
				√CVC	-H	[CV́C]
				√CVC’	-H	[CV́C’]
ø				√CV’C	-H	[CV́C]
				√CV	-H	[CV́]
				√CV^{h}	-H	[CV́]
	DIR=			√CVC	-μ	[CV̀V̀C]
ø	DIR=			√CVC’	-μH	[CV́V́C’]
	DIR=			√CV’C	-μH	[CV́V́C]
ø$^{+}$				√CV	-μH	[CV́V́]
				√CV^{h}	-μH	[CV́V́]
		n-		√CVC	-μ	[CV̀V̀C]
		n-		√CVC’	-μH	[CV́V́C’]
n		n-		√CV’C	-μH	[CV́V́C]
		n-		√CV	-H	[CV́]
		n-		√CV^{h}	-H	[CV́]
		g̱-		√CVC	-μ	[CV̀V̀C]
		g̱-		√CVC’	-μH	[CV́V́C’]
g̱		g̱-		√CV’C	-μH	[CV́V́C]
		g̱-		√CV	-H	[CV́]
		g̱-		√CV^{h}	-H	[CV́]
		g-		√CVC	-μ	[CV̀V̀C]
		g-		√CVC’	-μH	[CV́V́C’]
g		g-		√CV’C	-μH	[CV́V́C]
		g-		√CV	-H	[CV́]
		g-		√CV^{h}	-H	[CV́]

Table 2.18: Patterns of imperatives based on conjugation class and root shape

(214) a. Nahoon! *n-conj. closed root imperative with -μ*
n- $^{2}\sqrt{}$hun-μ
NCNJ-2SG·S-$^{2}\sqrt{}$sell -VAR
'Sell it!'

b. Gaxoox! *g-conj. closed root imperative with -μ*
g- $^{2}\sqrt{}$xux -μ
GCNJ-2SG·S-$^{2}\sqrt{}$summon-VAR
'Summon him/her/it!'

c. Gagwaal! *g-conj. closed root imperative with -μ*
g- $^{2}\sqrt{}$gwal-μ
GCNJ-2SG·S-$^{2}\sqrt{}$beat -VAR
'Beat it!'

The regular patterns of imperatives with *Ø*-conjugation class verbs are more complex. The basis case for the vast majority of *Ø*-conjugation verbs is actually very simple: the stem is always *-H* regardless of root shape. An example of a *Ø*-conjugation imperative with an open syllable root is given in (215), and that for a closed syllable root in (216).

(215) Xá! *Ø-conj. open root imperative with -H*
$^{2}\sqrt{}$xa-H
ZCNJ-2SG·S-$^{2}\sqrt{}$eat-VAR
'Eat it!'

(216) Ják! *Ø-conj. closed root imperative with -H*
$^{2}\sqrt{}$jak-H
ZCNJ-2SG·S-$^{2}\sqrt{}$kill -VAR
'Kill it!'

The remaining two cases of *Ø*-conjugation imperatives depend on apparently unrelated properties. First, if the root is a closed syllable and the verb has a directional preverb DIR= in the set *kei=* 'up', *yei=* 'down', *yeik=* 'beachward', *daak=* 'inland', *daak=* 'seaward', *neil=* 'home, inside', or *gunayéi=* ~ *gunéi=* 'starting' then the stem will have *-μ* or *-μH* depending on the root shape (√*CVC* vs. √*CVC'* or √*CV'C*).[29] All of these are introduced by *Ø*-conjugation motion derivations; most are associated with a *-ch* repetitive imperfective (ch. 6 sec. 3.3.4.2), but *neil=* is associated with a *-μ* repetitive imperfective (ch. 6 sec. 3.3.4.1) and *gunayéi=* ~ *gunéi=* with a *-x* repetitive imperfective (ch. 6 sec. 3.3.4.3) so the repetitive imperfective diagnostic for motion verb differentiation does not capture this set of preverbs. The data in (217) shows each preverb with the monovalent motion root $^{1}\sqrt{}$*kux* 'go by boat, drive land vehicle'; all of the forms have *-μ* instead of the expected *-H* of other *Ø*-conjugation imperatives.

29. The identification of these preverbs is from Leer 1991: 209. Technically *gunayéi=* ~ *gunéi=* is a manner preverb rather than a directional preverb.

(217) a. Kei k̲oox̲! *∅-conj. directional √CVC imperative with -μ*
kei= $^{1}\sqrt{}$k̲ux̲-μ
up= ZCNJ-2SG·S-$^{1}\sqrt{}$boat-VAR
'Boat/drive up!'

b. Yei k̲oox̲! *∅-conj. directional √CVC imperative with -μ*
yei= $^{1}\sqrt{}$k̲ux̲-μ
down=ZCNJ-2SG·S-$^{1}\sqrt{}$boat-VAR
'Boat/drive down!'

c. Yeik̲ k̲oox̲! *∅-conj. directional √CVC imperative with -μ*
yeik̲= $^{1}\sqrt{}$k̲ux̲-μ
beach=ZCNJ-2SG·S-$^{1}\sqrt{}$boat-VAR
'Drive beachward!'

d. Daak̲ k̲oox̲! *∅-conj. directional √CVC imperative with -μ*
daak̲= $^{1}\sqrt{}$k̲ux̲-μ
inland=ZCNJ-2SG·S-$^{1}\sqrt{}$boat-VAR
'Boat/drive inland!'

e. Daak k̲oox̲! *∅-conj. directional √CVC imperative with -μ*
daak= $^{1}\sqrt{}$k̲ux̲-μ
seaward=ZCNJ-2SG·S-$^{1}\sqrt{}$boat-VAR
'Boat/drive seaward!'

f. Neil k̲oox̲! *∅-conj. directional √CVC imperative with -μ*
neil= $^{1}\sqrt{}$k̲ux̲-μ
home=ZCNJ-2SG·S-$^{1}\sqrt{}$boat-VAR
'Boat/drive homeward!', 'Drive inside!'

g. G̲unayéi k̲oox̲! *∅-conj. directional √CVC imperative with -μ*
g̲unayéi= $^{1}\sqrt{}$k̲ux̲-μ
INCEP= ZCNJ-2SG·S-$^{1}\sqrt{}$boat-VAR
'Start boating/driving!'

Second, there are a small number of *∅*-conjugation verbs based on open syllable *√CV* or *√CV^{h}* roots that have *-μH* instead of the expected *-H* in the imperative. These same verbs have *-μH* instead of expected *-μ* in the hortative (sec. 2.6.6) and potential (sec. 2.6.7) modalities. I refer to them as *∅*$^{+}$-conjugation verbs because they are *∅*-conjugation class members with 'something extra': an extra mora in the imperative and an extra high tone in the potential and hortative. The data in (218) illustrate this contrast with the root $^{2}\sqrt{}$*s'u* 'twist to make limber, loose' and the data in (219) show the same contrast with the root $^{2}\sqrt{}$*s'a^{h}* 'claim as payment'.

(218) a. S'óo! *∅$^{+}$-conj. √CV imperative with -μH*
$^{2}\sqrt{}$s'u -μH
ZCNJ-2SG·S-$^{2}\sqrt{}$twist-VAR
'Twist it loose!'

Vce/*v*	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	akaawaháa	's/he dug it'	+	+	$\sqrt[2]{ha}$	'mv mass'	achievement	$\emptyset^{+}$
	ashukaawajáa	's/he instructed him/her'	+	+	$\sqrt[2]{ja^{h}}$	'instruct'	achievement	$\emptyset^{+}$
	as'óo	's/he twists it to limber'	+	+	$\sqrt[2]{s'u}$	'twist'	activity (-*μH*)	$\emptyset^{+}$
	as'áa	's/he claims it as payment'	+	+	$\sqrt[2]{s'a^{h}}$	'claim'	activity (-*μH*)	$\emptyset^{+}$
	aawasháa	's/he married her (woman)'	+	+	$\sqrt[2]{sha^{w}}$	'marry'	achievement	$\emptyset^{+}$
	aawawóo	's/he sent, ordered him/her'	+	+	$\sqrt[2]{wu}$	'send'	achievement	$\emptyset^{+}$
	ax'áa	's/he bends it to limber'	+	+	$\sqrt[2]{x'a^{h}}$	'bend'	activity (-*μH*)	$\emptyset^{+}$
	a<u>x</u>áa	's/he paddles'	–	+	$\sqrt[2]{\underline{x}a}$	'paddle'	activity (-*μH*)	$\emptyset^{+}$
	ayawsiháa	's/he gathered it up'	+	+	$\sqrt[2]{ha}$	'mv mass'	achievement	$\emptyset^{+}$
s-	*awsikóo*	's/he came to know it'	+	+	$\sqrt[2]{ku^{h}}$	'know'	achievement	$\emptyset^{+}$
	wusináa	'it became damp'	+	–	$\sqrt[0]{na^{h}}$	'damp'	achievement	$\emptyset^{+}$
d-	*wudiwóo*	's/he took lunch'	–	+	$\sqrt[2]{wu}$	'send?'	achievement	$\emptyset^{+}$
	wudiláa	's/he cheered, yelled'	–	+	$\sqrt[2]{la}$	'yell'	achievement	$\emptyset^{+}$

Table 2.19: Documented roots with $\emptyset^{+}$-conjugation forms

b. *S'ú! **$\emptyset^{+}$-conj. √CV imperative with -H*

$\sqrt[2]{s'u}$ -H

ZCNJ-2SG·S-$\sqrt[2]{}$twist-VAR

intended: 'Twist it loose!'

(219) a. S'áa! *$\emptyset^{+}$-conj. √CV^{h} imperative with -μH*

$\sqrt[2]{s'a^{h}}$ -μH

ZCNJ-2SG·S-$\sqrt[2]{}$claim-VAR

'Claim it as payment!'

b. *S'á! **$\emptyset^{+}$-conj. √CV^{h} imperative with -H*

$\sqrt[2]{s'a^{h}}$ -H

ZCNJ-2SG·S-$\sqrt[2]{}$claim-VAR

intended: 'Claim it as payment!'

Leer offers a few lexical entries for verbs that exhibit this unusual $\emptyset^{+}$-conjugation class behaviour in imperatives as well as in hortatives and potentials (Leer 1991: 269 fn. 9). Eggleston (2017) adds a few more to Leer's list; I have yet to review Leer 1976a or Leer 1978c for any others. I list Leer's and Eggleston's $\emptyset^{+}$-conjugation verbs in table 2.19.[30] A notable property of these verbs is that they are only activities or achievements, never states nor motions. In addition, the activities have -*μH* for their imperfective aspect stem, but this may be accidental because -*μH* is probably the most common value among activities.

Finally, there are three roots which occur with unique stems in the imperative. All three are closed syllable √*CVC* monovalent motion roots: $\sqrt[1]{gut}$ 'sg. go', $\sqrt[1]{.at}$ 'pl. go', and $\sqrt[1]{nuk}$ 'sg. sit'. Where

30. Leer gives $\emptyset^{+}$ as "*Ø·*" (Leer 1976a, 1978c) or "*Ø(-ÿ)*" (Leer 1991: 204, 269–270) and Eggleston "*CV́V* Imp/Hort/Pot".

they would otherwise be expected to have either *-H* (*∅*-conj.) or *-μ* (*n*/*g̲*/*g*-conj.) in the imperative, they instead have a unique truncating stem -⊗ where the coda consonant disappears and the stem vowel is realized as short and high: √*CVC* + -⊗ → [CV́]. If there was only one root that behaved this way it could modeled as a lone irregularity, but because there are three I have adjusted the stem variation model to fit them. The data in (220) illustrate four imperatives based on $\sqrt[1]{gut}$ 'sg. go' with four different conjugation classes specified by motion derivations.

(220) a. Át gú! *∅-conj.* $\sqrt[1]{gut}$ *'sg. go' imperative with* -⊗
á -t $\sqrt[1]{gut}$ -⊗
3N-PNCT ZCNJ-2SG·S-$\sqrt[1]{go}$·SG-VAR
'Go there!', 'Get there!', 'Arrive there!'

b. Aadé nagú! *n-conj.* $\sqrt[1]{gut}$ *'sg. go' imperative with* -⊗
á -dé n- $\sqrt[1]{gut}$ -⊗
3N-ALL NCNJ-2SG·S-$\sqrt[1]{go}$·SG-VAR
'Go there!', 'Go toward there!', 'Head there!'

c. Aanáx̲ g̲agú! *g̲-conj.* $\sqrt[1]{gut}$ *'sg. go' imperative with* -⊗
á -náx̲ g̲- $\sqrt[1]{gut}$ -⊗
3N-PERL G̲CNJ-2SG·S-$\sqrt[1]{go}$·SG-VAR
'Go down through there!'

d. Aadáx̲ gagú! *g-conj.* $\sqrt[1]{gut}$ *'sg. go' imperative with* -⊗
á -dáx̲ g- $\sqrt[1]{gut}$ -⊗
3N-ABL GCNJ-2SG·S-$\sqrt[1]{go}$·SG-VAR
'Go from there!', 'Leave there!'

All three roots $\sqrt[1]{gut}$ 'sg. go', $\sqrt[1]{.at}$ 'pl. go', and $\sqrt[1]{nuk}$ 'sg. sit' are very high frequency and are probably learned very early before the stem variation system has fully coalesced in the learner's grammar. It is thus likely that the forms I have modelled withg -⊗ are actually lexicalized VP stems that partially supplete their stem variation paradigms. Under this analysis the -⊗ is not a phonological operation and the VP is instead stored as a phonological chunk like [kʷú] with a structure [$_{VP}$ √ V] where the V has some arbitrary V-agreement feature that codes for the suppletion. Refining this analysis requires a more detailed specification of the syntax–phonology interface in Tlingit verbs. Historically I believe these irregular stems arose from debuccalization of the *∅*-conjugation *[kʷut] and levelling away the non-*∅*-conjugation *[kʷuʰt].

2.6.6. Hortative modality and V

The hortative modality has the same stem variation paradigm for all conjugation classes with the exception of the *∅*⁺-conjugation verbs mentioned earlier in section 2.6.5 on imperatives. Aside from these *∅*⁺-conjugation verbs, if the *-μ* → *-μH* alternation with √*CVC'* and √*CV'C* roots is analyzed as underlyingly *-μ* then this is the only value for regular stems in the hortative modality. The complete set of regular patterns for the hortative are shown in table 2.20.

The data in (221) illustrate hortatives with open syllable roots for each of the four conjugation classes. The data in (222) show the same for closed syllable √*CVC* roots. The data in (223) show that √*CVC'* and √*CV'C* roots have *-μH* rather than *-μ* but are otherwise identical.

Conj.	*Pvb.*	Asp	Ɛ	√	V	Stem
		g̱-		√CVC	-μ	[CV̀V̀C]
		g̱-		√CVC’	-μH	[CV́V́C’]
Ø		g̱-		√CV’C	-μH	[CV́V́C]
		g̱-		√CV	-H	[CV́]
		g̱-		√CV^{h}	-H	[CV́]
Ø$^{+}$		g̱-		√CV	-μH	[CV́V́]
		g̱-		√CV^{h}	-μH	[CV́V́]
		n-g̱-		√CVC	-μ	[CV̀V̀C]
		n-g̱-		√CVC’	-μH	[CV́V́C’]
n		n-g̱-		√CV’C	-μH	[CV́V́C]
		n-g̱-		√CV	-H	[CV́]
		n-g̱-		√CV^{h}	-H	[CV́]
		g̱-g̱-		√CVC	-μ	[CV̀V̀C]
		g̱-g̱-		√CVC’	-μH	[CV́V́C’]
g̱		g̱-g̱-		√CV’C	-μH	[CV́V́C]
		g̱-g̱-		√CV	-H	[CV́]
		g̱-g̱-		√CV^{h}	-H	[CV́]
		g-g̱-		√CVC	-μ	[CV̀V̀C]
		g-g̱-		√CVC’	-μH	[CV́V́C’]
g		g-g̱-		√CV’C	-μH	[CV́V́C]
		g-g̱-		√CV	-H	[CV́]
		g-g̱-		√CV^{h}	-H	[CV́]

Table 2.20: Patterns of hortatives based on conjugation class and root shape

(221) a. Ḵaxaa. *Ø-conj. open root hortative with -μ*
g̱- x̱- $\sqrt[2]{}$x̱a-μ
ZCNJ-MOD-1SG·S-$\sqrt[2]{}$eat-VAR
‘Let me eat it.’

b. Naḵataa. *n-conj. open root hortative with -μ*
n- g̱- x̱- $\sqrt[2]{}$ta^{h} -μ
NCNJ-MOD-1SG·S-$\sqrt[2]{}$sleep·SG-VAR
‘Let me sleep.’

c. Ḵaaḵalag̱oo. *g̱-conj. open root hortative with -μ*
g̱- g̱- x̱- l- $\sqrt[2]{}$g̱u
ḠCNJ-MOD-1SG·S-XTN-$\sqrt[2]{}$wipe
‘Let me wipe it.’

d. Gak̲ashee. *g-conj. open root hortative with -μ*
g- g̲- x̲- $^{2}\sqrt{}$shi^{h}-μ
GCNJ-MOD-1SG·S-$^{2}\sqrt{}$sing -VAR
'Let me sing it.'

(222) a. K̲ajaak̲. *Ø-conj. closed root √CVC hortative with -μ*
g̲- x̲- $^{2}\sqrt{}$jak̲-μ
ZCNJ-MOD-1SG·S-$^{2}\sqrt{}$kill -VAR
'Let me kill it.'

b. Nak̲ahoon. *n-conj. closed root √CVC hortative with -μ*
n- g̲- x̲- $^{2}\sqrt{}$hun-μ
NCNJ-MOD-1SG·S-$^{2}\sqrt{}$sell -VAR
'Let me sell it.'

c. K̲aak̲ax̲oox̲. *g̲-conj. closed root √CVC hortative with -μ*
g̲- g̲- x̲- l- $^{2}\sqrt{}$x̲ux̲
G̲CNJ-MOD-1SG·S-XTN-$^{2}\sqrt{}$summon
'Let me summon him/her/it.'

d. Gak̲agwaal. *g-conj. closed root √CVC hortative with -μ*
g- g̲- x̲- $^{2}\sqrt{}$gwal-μ
GCNJ-MOD-1SG·S-$^{2}\sqrt{}$beat -VAR
'Let me beat it.'

(223) a. K̲atóos'. *Ø-conj. closed root √CVC' hortative with -μ*
g̲- x̲- $^{2}\sqrt{}$tus' -μH
ZCNJ-MOD-1SG·S-$^{2}\sqrt{}$toast-VAR
'Let me toast it.'

b. Nak̲as'óow. *n-conj. closed root √CV'C hortative with -μ*
n- g̲- x̲- $^{2}\sqrt{}$s'u'w-μH
NCNJ-MOD-1SG·S-$^{2}\sqrt{}$chop -VAR
'Let me sell it.'

c. K̲aak̲axéet'. *g̲-conj. closed root √CVC' hortative with -μ*
g̲- g̲- x̲- l- $^{2}\sqrt{}$xit'
G̲CNJ-MOD-1SG·S-XTN-$^{2}\sqrt{}$sweep
'Let me sweep it.'

d. Gak̲asháat. *g-conj. closed root √CV'C hortative with -μ*
g- g̲- x̲- $^{2}\sqrt{}$sha't-μH
GCNJ-MOD-1SG·S-$^{2}\sqrt{}$grab -VAR
'Let me grab it.'

The spellout of *g̲*-conjugation hortatives in (221c), (222c), and (223c) is slightly different from the other three conjugation classes because the prefixal material has a long vowel *k̲aak̲a* [qʰà:qʰà]

with *g̲-g̲-x̲-* instead of a short vowel like in *gak̲a* [kàqʰà] with *g-g̲-x̲-*. This is inconsistent with Story's description (Story 1966: 135) but is shown in Leer's prefix charts (Leer 1991: 195) and in Eggleston's paradigms (Eggleston 2017). There is no obvious prosodic motivation for this lengthening and previous researchers have not commented on its occurrence; perhaps aspiration is moraic here? The combination of *g̲-x̲-* as *k̲a* [qʰà] is regular in this context and the anticipatory spread of aspiration to the other *g̲-* as *k̲aa* [qʰàː] and not **g̲aa* [qàː] is also regular here.

The *Ø*⁺-conjugation class exceptions in the hortative are similar to those in the imperative: *√CV* and *√CVʰ* roots appear with *-μH* instead of the otherwise expected *-μ* and thus have high tone stems. The difference from the imperative is that among imperatives the expected stem would be *-H* whereas among hortatives the expected stem would be *-μ*, but the exceptional *Ø*⁺-conjugation imperatives and hortatives both have *-μH* instead. The hortative is shown with the root *²√s'u* 'twist to limber, loosen' in (224) and with the root *²√s'aʰ* 'claim as payment' in (225).

(224) a. K̲as'óo. *Ø⁺-conj. √CV hortative with -μH*
g̲- x̲- ²√s'u -μH
ZCNJ-MOD-1SG·S-²√twist-VAR
'Let me twist it loose.'

b. *K̲as'oo. **Ø⁺-conj. √CV hortative with -μ*
g̲- x̲- ²√s'u -μ
ZCNJ-MOD-1SG·S-²√twist-VAR
intended: 'Let me twist it loose.'

(225) a. K̲as'áa. *Ø⁺-conj. √CVʰ hortative with -μH*
g̲- x̲- ²√s'aʰ -μH
ZCNJ-MOD-1SG·S-²√claim-VAR
'Let me claim it as payment.'

b. *K̲as'aa. **Ø⁺-conj. √CVʰ hortative with -μ*
g̲- x̲- ²√s'aʰ -μ
ZCNJ-MOD-1SG·S-²√claim-VAR
intended: 'Let me claim it as payment.'

As noted in section 2.6.5, the hortative modality is only allowed with first and third person subjects or objects in unaccusatives. This is shown by the grammatical forms in (226) for the first person and in (228) for the third person whereas both forms in (227) for the second person are ungrammatical. The imperative would usually be used in place of the forms in (227).

(226) a. Nak̲atéew. *first singular subject hortative*
n- g̲- x̲- ²√ti'w-μH
NCNJ-MOD-1SG·S-²√read-VAR
'Let me read it.'

b. Nax̲tootéew. *first plural subject hortative*
n- g̲- tu- ²√ti'w-μH
NCNJ-MOD-1PL·S-²√read-VAR
'Let's read it.'

(227) a. *Nageetéew. *second singular subject hortative*
n- g- i- $^{2}\sqrt{}$ti'w-μH
NCNJ-MOD-2SG·S-$^{2}\sqrt{}$read-VAR
intended: 'Let's you read it.'

b. *Naxyitéew. *second plural subject hortative*
n- g- ÿi- $^{2}\sqrt{}$ti'w-μH
NCNJ-MOD-2PL·S-$^{2}\sqrt{}$read-VAR
intended: 'Let's you guys read it.'

(228) a. Angatéew. *third subject hortative*
a- n- g- $^{2}\sqrt{}$ti'w-μH
ARG-NCNJ-MOD-$^{2}\sqrt{}$read-VAR
'Let him/her read it.'

b. Has angatéew. *plural third subject hortative*
has=a- n- g- $^{2}\sqrt{}$ti'w-μH
PLH= ARG-NCNJ-MOD-$^{2}\sqrt{}$read-VAR
'Let them read it.'

2.6.7. Potential modality and V

The potential modality has a relatively simple stem paradigm that is identical with the hortative modality (sec. 2.6.6). Thus the majority of forms have *-μ* except (i) the *√CVC'* and *√CV'C* roots have *-μH* instead and (ii) the *Ø*$^{+}$-conjugation verbs – which are only *√CV* and *√CV*^{h} – also have *-μH*. The regular patterns of the potential modality are shown in table 2.21.

The aspectual material of the potential modality is nearly the same as the hortative modality except that it adds the irrealis prefix *u-* and also the stative prefix *i-* in Ɛ. The irrealis is generally realized as rounding of either a vowel or a consonant and the stative prefix as lengthening of a vowel (ch. 3 sec. 2.1). There is also some lengthening in spellout of the prefixes that has not been discussed or explained in previous work, similar to the lengthening noted with the hortative in section 2.6.6.

The data in (229) illustrates potential forms of open syllable roots for the four conjugation classes. The data in (230) does the same for the *√CVC* roots, and the data in (231) for the *√CVC'* and *√CV'C* roots.

(229) a. Kwaaxaa. *Ø-conj. open root potential with -μ*
u- g- x- i- $^{2}\sqrt{}$xa-μ
IRR-ZCNJ-MOD-1SG·S-STV-$^{2}\sqrt{}$eat-VAR
'I can eat it.'

b. Nakwaataa. *n-conj. open root potential with -μ*
u- n- g- x- i- $^{2}\sqrt{}$ta^{h} -μ
IRR-NCNJ-MOD-1SG·S-STV-$^{2}\sqrt{}$sleep·SG-VAR
'I can sleep.'

c. Kwaakaligoo. *g-conj. open root potential with -μ*
u- g- g- x- l- $^{2}\sqrt{}$gu -μ
IRR-GCNJ-MOD-1SG·S-XTN-$^{2}\sqrt{}$wipe-VAR
'I can wipe it.'

Conj.	*Pvb.*	Asp	Ɛ	√	V	Stem
		u-g̱-	i-	√CVC	-μ	[CV̀V̀C]
		u-g̱-	i-	√CVC’	-μH	[CV́V́C’]
ø		u-g̱-	i-	√CV’C	-μH	[CV́V́C]
		u-g̱-	i-	√CV	-H	[CV́]
		u-g̱-	i-	√CV^{h}	-H	[CV́]
ø$^{+}$		u-g̱-	i-	√CV	-μH	[CV́V́]
		u-g̱-	i-	√CV^{h}	-μH	[CV́V́]
		u-n-g̱-	i-	√CVC	-μ	[CV̀V̀C]
		u-n-g̱-	i-	√CVC’	-μH	[CV́V́C’]
n		u-n-g̱-	i-	√CV’C	-μH	[CV́V́C]
		u-n-g̱-	i-	√CV	-H	[CV́]
		u-n-g̱-	i-	√CV^{h}	-H	[CV́]
		u-g̱-g̱-	i-	√CVC	-μ	[CV̀V̀C]
		u-g̱-g̱-	i-	√CVC’	-μH	[CV́V́C’]
g̱		u-g̱-g̱-	i-	√CV’C	-μH	[CV́V́C]
		u-g̱-g̱-	i-	√CV	-H	[CV́]
		u-g̱-g̱-	i-	√CV^{h}	-H	[CV́]
		u-g-g̱-	i-	√CVC	-μ	[CV̀V̀C]
		u-g-g̱-	i-	√CVC’	-μH	[CV́V́C’]
g		u-g-g̱-	i-	√CV’C	-μH	[CV́V́C]
		u-g-g̱-	i-	√CV	-H	[CV́]
		u-g-g̱-	i-	√CV^{h}	-H	[CV́]

Table 2.21: Patterns of potentials based on conjugation class and root shape

d. Gookaashee. *g-conj. open root potential with -μ*
u- g- g̱- x̱- i- ^{2}√shi^{h}-μ
IRR-GCNJ-MOD-1SG·S-STV-^{2}√sing -VAR
‘I can sing it.’

(230) a. Ḵwaajaaḵ. *ø-conj. closed root √CVC potential with -μ*
u- g̱- x̱- i- ^{2}√jaḵ-μ
IRR-ZCNJ-MOD-1SG·S-STV-^{2}√kill -VAR
‘I can kill it.’

b. Naḵwaahoon. *n-conj. closed root √CVC potential with -μ*
u- n- g̱- x̱- i- ^{2}√hun-μ
IRR-NCNJ-MOD-1SG·S-STV-^{2}√sell -VAR
‘I can sell it.’

c. Ḵwaaḵaaxoox. *g-conj. closed root √CVC potential with -μ*
u- g- g- x- l- ²√xux -μ
IRR-GCNJ-MOD-1SG·S-XTN-²√summon-VAR
'I can summon him/her/it.'

d. Gookaagwaal. *g-conj. closed root √CVC potential with -μ*
u- g- g- x- i- ²√gwal-μ
IRR-GCNJ-MOD-1SG·S-STV-²√beat -VAR
'I can beat it.'

(231) a. Ḵwaatóos'. *∅-conj. closed root √CVC' potential with -μ*
u- g- x- i- ²√tus' -μH
IRR-ZCNJ-MOD-1SG·S-STV-²√toast-VAR
'I can toast it.'

b. Nakwaas'óow. *n-conj. closed root √CV'C potential with -μ*
u- n- g- x- i- ²√s'u'w-μH
IRR-NCNJ-MOD-1SG·S-STV-²√chop -VAR
'I can sell it.'

c. Ḵwaaḵaaxéet'. *g-conj. closed root √CVC' potential with -μ*
u- g- g- x- l- ²√xit' -μH
IRR-GCNJ-MOD-1SG·S-XTN-²√sweep-VAR
'I can sweep it.'

d. Gookaasháat. *g-conj. closed root √CV'C potential with -μ*
u- g- g- x- i- ²√sha't-μH
IRR-GCNJ-MOD-1SG·S-STV-²√grab -VAR
'I can grab it.'

The *∅*⁺-conjugation class exceptions in the potential are just like those in the hortative (sec. 2.6.6), namely that *√CV* and *√CVʰ* roots appear with *-μH* instead of the otherwise expected *-μ* and thus have high tone stems. This is shown with the root *²√s'u* 'twist to limber, loosen' in (232) and with the root *²√s'aʰ* 'claim as payment' in (233).

(232) a. Ḵwaas'óo. *∅⁺-conj. √CV potential with -μH*
u- g- x- i- ²√s'u -μH
IRR-ZCNJ-MOD-1SG·S-STV-²√twist-VAR
'I can twist it loose.'

b. *Ḵwaas'oo. **∅⁺-conj. √CV potential with -μ*
u- g- x- i- ²√s'u -μ
IRR-ZCNJ-MOD-1SG·S-STV-²√twist-VAR
intended: 'I can twist it loose.'

(233) a. Kwaas'áa. *Ø⁺-conj. √CVʰ potential with -μH*
u- g- x- i- $^{2}\sqrt{}$s'aʰ -μH
IRR-ZCNJ-MOD-1SG·S-STV-$^{2}\sqrt{}$claim-VAR
'I can claim it as payment.'

b. *Kwaas'aa. **Ø⁺-conj. √CVʰ potential with -μ*
u- g- x- i- $^{2}\sqrt{}$s'aʰ -μ
IRR-ZCNJ-MOD-1SG·S-STV-$^{2}\sqrt{}$claim-VAR
intended: 'I can claim it as payment.'

2.7. V-agreement and Neg

Negation in Tlingit is based on an overt particle that I place in Neg above AspP, outside of and linearly preceding the verb word. The negative particle is generally something like *tléil* [tɬʰéːɬ] or *tlél* [tɬʰéɬ] but there are a variety of different forms depending on dialect and other less understood factors; see chapter 6 section 4.5.1.2 for details. In addition to the negative particle the verb generally includes the irrealis prefix *u-* (ch. 6 sec. 4) and usually features Ɛ-suppression with the loss of *i-* in Ɛ if it occurs in the corresponding affirmative form (ch. 3 sec. 4.1). Most negated verbs show stem variation that is different from their affirmative counterparts. I analyze this as Neg triggering V-agreement.

In this section I sketch only the bare essentials of V-agreement with Neg. In general I have the sense that the Neg paradigm of V-agreement is less complex than the Asp paradigm of V-agreement detailed in section 2.6, but it is still far more complex than the relatively simple paradigms of e.g. T and C. I do not present a complete paradigm of negative stem variation because this would require repeating every single one of the patterns shown in sections 2.1 through 2.6. Eggleston reviews the regular negative stem variation phenomena in her dissertation (Eggleston 2013) and also provides an extensive set of both regular and irregular examples in her verb lexicon documentation (Eggleston 2017). The whole paradigm is ostensibly presented by Leer in his dissertation (Leer 1991: 206–209) but his representation is hard to decipher and does not track dialect variation or lexical irregularities.

The ε-feature specified by Neg overrides the ε-feature specified by √ in a *Ø*-imperfective aspect form as represented with the tree in figure 2.16. This is shown by the data in (234) which contrasts an affirmative activity imperfective in (234a) with the negatives in (234b) and (234c). The negative form with the same *-μH* stem as the affirmative in (234b) is ungrammatical and instead the grammatical negative form in (234c) has *-μ*.

(234) a. Xasa.ée. *affirmative activity imperfective with -μH*
x- s- $^{1}\sqrt{}$.i -μH
1SG·S-CSV-$^{1}\sqrt{}$cook-VAR
'I cook it.', 'I am cooking it.'

b. *Tléil uxsa.ée. **negative activity imperfective with -μH*
tléil u- x- s- $^{1}\sqrt{}$.i -μH
NEG IRR-1SG·S-CSV-$^{1}\sqrt{}$cook-VAR
intended: 'I don't cook it.', 'I am not cooking it.'

Figure 2.16: Neg V-agreement supersedes √ V-agreement

c. Tléil uxsa.ee. *negative activity imperfective with -μ*
tléil u- x̲- s- ¹√.i -μ
NEG IRR-1SG·S-CSV-¹√cook-VAR
'I don't cook it.', 'I am not cooking it.'

If Ɛ also triggers V-agreement (sec. 2.2) then Neg must also supersede Ɛ for V-agreement because Neg is higher than Ɛ. This is illustrated by the data in (235) where although the affirmative form in (235a) has *-μH*, the negative form with *-μH* in (235b) is ungrammatical and the negative form with *-μ* in (235c) is grammatical.

(235) a. X̲aya.óo. *affirmative state imperfective with -μH*
x̲- i- ¹√.u -μH
1SG·S-STV-²√own-VAR
'I own it.'

b. *Tléil x̲wa.óo. **negative state imperfective with -μH*
tléil u- x̲- ¹√.u -μH
NEG IRR-1SG·S-²√own-VAR
intended: 'I don't own it.'

c. Tléil x̲wa.oo. *negative state imperfective with -μ*
tléil u- x̲- ¹√.u -μ
NEG IRR-1SG·S-²√own-VAR
intended: 'I don't own it.'

Negation can replace other less common values of V in imperfectives such as the irregular *-eH-n* stem found in the verb based on ¹√*haʰ* 'many' in (236). The irregular affirmative stem *-eH-n* of (236a) is replaced by the regular *-μ* with negation in (236c). Thus Neg appears to regularize this irregular verb, a phenomenon also sometimes seen with Mod, T, and C.

(236) a. Shayadihéin. *affirmative state imperfective with -eH-n*
sha- ÿ- d- i- ¹√haʰ -eH-n
head-QUAL-MID-STV-¹√many-VAR-NSFX
'They are many, numerous.'

b. *Tléil shayawdahéin. **negative state imperfective with -eH-n*
tléil sha- ÿ- u- d- $^{1}\sqrt{\text{ha}^{\text{h}}}$ -eH-n
NEG head-QUAL-IRR-MID-$^{1}\sqrt{\text{many}}$-VAR-NSFX
intended: 'They are not many, numerous.'

c. Tléil shayawdahaa. *negative state imperfective with -μ*
tléil sha- ÿ- u- d- $^{1}\sqrt{\text{ha}^{\text{h}}}$ -μ
NEG head-QUAL-IRR-MID-$^{1}\sqrt{\text{many}}$-VAR
'They are not many, numerous.'

The data presented so far have all been ∅-imperfectives that lack overt Asp. But the ε-feature specified by Neg can also supersede that specified by overt Asp. This is shown in (237) with a contrast between affirmative and negative prospective aspect forms. The affirmative in (237a) has *-μH* as is expected for all regular prospective aspect forms, but the negative in (237c) has *-μ* instead.

(237) a. Kukaxáa. *affirmative prospective aspect with -μH*
w- g- g- x- $^{2}\sqrt{\text{xa}}$-μH
IRR-GCNJ-MOD-1SG·S-$^{2}\sqrt{\text{eat}}$-VAR
'I will eat it.'

b. *Tléil kukaxáa. **negative prospective aspect with -μH*
tléil w- g- g- x- $^{2}\sqrt{\text{xa}}$-μH
NEG IRR-GCNJ-MOD-1SG·S-$^{2}\sqrt{\text{eat}}$-VAR
intended: 'I won't eat it.'

c. Tléil kukaxaa. *negative prospective aspect with -μ*
tléil w- g- g- x- $^{2}\sqrt{\text{xa}}$-μ
NEG IRR-GCNJ-MOD-1SG·S-$^{2}\sqrt{\text{eat}}$-VAR
'I won't eat it.'

As implied by the preceding data, many if not most cases of V-agreement with Neg involve *-μ* and hence a long low vowel in the stem. Aside from the prohibition of *-μ* with *√CVC'* and *√CV'C* roots, there are other cases where the V-agreement value triggered by Neg is something other than *-μ*. Usually this seems to be *-H*. Crucially, Neg never triggers the ablaut values of *-e* or *-eH* that can occasionally be found with √ and Ɛ as well as Adv, so Neg V-agreement is never 'unusual'. The perfective aspect forms in (238) show affirmative *-μH* in (238a) but both negative *-μH* and *-μ* are ungrammatical in (238b) and (238b) and instead the grammatical negative in (238d) has *-H*.

(238) a. Xwasi.ée. *affirmative perfective aspect with -μH*
wu-x- s- i- $^{1}\sqrt{\text{.i}}$ -μH
PFV-1SG·S-CSV-STV-$^{1}\sqrt{\text{cook}}$-VAR
'I cooked it.'

b. *Tléil xwasa.ée. **negative perfective aspect with -μH*
tléil u- wu-x- s- $^{1}\sqrt{\text{.i}}$ -μH
NEG IRR-PFV-1SG·S-CSV-$^{1}\sqrt{\text{cook}}$-VAR
intended: 'I didn't cook it.'

c. *Tléil xwasa.ee. **negative perfective aspect with -μ*
tléil u- wu-x- s- $^{1}\sqrt{}$.i -μ
NEG IRR-PFV-1SG·S-CSV-$^{1}\sqrt{}$cook-VAR
intended: 'I didn't cook it.'

d. Tléil xwasa.í. *negative perfective aspect with -H*
tléil u- wu-x- s- $^{1}\sqrt{}$.i -H
NEG IRR-PFV-1SG·S-CSV-$^{1}\sqrt{}$cook-VAR
'I didn't cook it.'

There may be a paradigmatic motivation for *-H* rather than *-μ* in some negatives. The negative imperfective in (234c) actually is one of two variant forms which are shown together in (239). The distribution of these variants is unknown; Leer (1991: 187) predicts only the *xwasa* [χʷà.sà] form but Eggleston (2017) gives only the *uxsa* [ʔùχ.sà] form and I have heard both though not from the same speaker. The *xwasa* form in (239b) would have the same surface phonology as the negative perfective if *-μ* in (238b) were grammatical. The use of *-H* in the negative perfective of open syllable roots could therefore be a kind of paradigmatic homophony avoidance, ensuring that the perfective and imperfective remain distinct. I have not investigated negative stem paradigms enough to say whether homophony avoidance is a motivation for the use of *-H* rather than *-μ* in negation, but probably at least some of the other cases of negative *-H* might be explained by the same reasoning.

(239) a. Tléil uxsa.ee. *negative activity imperfective with -μ* (= 234c)
tléil u- x- s- $^{1}\sqrt{}$.i -μ
NEG IRR-1SG·S-CSV-$^{1}\sqrt{}$cook-VAR
'I don't cook it.', 'I am not cooking it.'

b. Tléil xwasa.ee. *negative activity imperfective with -μ*
tléil u- x- s- $^{1}\sqrt{}$.i -μ
NEG IRR-1SG·S-CSV-$^{1}\sqrt{}$cook-VAR
'I don't cook it.', 'I am not cooking it.'

Aside from invariable stems, there are many cases where the V-agreement of Neg is identical to the V-agreement of Asp. In such cases V no longer distinguishes affirmative and negative forms. As discussed in section 2.6.3, the perfective aspect of a *n-*, *g-*, or *g*-conjugation class verb will generally have *-μ*. The negative counterpart of such a perfective will also have *-μ* as shown by the pair in (240).

(240) a. Xwaahoon. *affirmative n-conj. perfective with -μ*
wu-x- i- $^{2}\sqrt{}$hun-μ
PFV-1SG·S-STV-$^{2}\sqrt{}$sell -VAR
'I sold it.'

b. Tléil xwahoon. *negative n-conj. perfective with -μ*
tléil u- wu-x- $^{2}\sqrt{}$hun-μ
NEG IRR-PFV-1SG·S-$^{2}\sqrt{}$sell -VAR
'I didn't sell it.'

In cases where there is no surface difference between the affirmative and negative stems, I assume that Neg still supersedes the V-agreement specification of lower heads. The homophony of

stems between affirmative and negative is thus an accidental overlap in the paradigmatic specification of V values among Neg and the functional heads beneath it. This same assumption holds across the entire V-agreement system including between the lower heads themselves, but Neg is the first locus of V-agreement where the paradigm is appreciably smaller than that of lower heads and so homophony becomes relatively more common.

One potential criticism of V-agreement with Neg is that negation introduces irrealis marking with the irrealis prefix *u-* in Asp (ch. 6 sec. 4.5), and thus it could be the irrealis *u-* rather than Neg itself which triggers V-agreement in negated forms. This criticism is inadequate because it is possible for irrealis to occur both with and without negation and in such pairs there can be different V values. One such pair was shown earlier in (237) with affirmative and negative prospective aspect forms that both include irrealis *w-*. Another pair is shown in (241) where the root is lexically specified for irrealis (sec. 1.4) and so both affirmative and negative contain *u-* but the affirmative has *-μH* where the negative has *-H*. The perfective forms in (242) have the same value for V, with the only difference between them being the presence or absence of *i-* in Ɛ.

(241) a. Yéi x̲waajée. *affirmative state imperfective with -μH*
yéi= u- x̲- i- $\sqrt[2]{\text{ji}^{\text{h}}}$ -μH
thus=IRR-1SG·S-STV-$\sqrt[2]{\text{think}}$-VAR
'I think so about it.' (Eggleston 2017)

b. Tléil yéi x̲wají. *negative state imperfective with -H*
tléil yéi= u- x̲- $\sqrt[2]{\text{ji}^{\text{h}}}$ -H
NEG thus=IRR-1SG·S-$\sqrt[2]{\text{think}}$-VAR
'I don't think so about it.' (Eggleston 2017)

(242) a. Yéi x̲waajee. *affirmative perfective aspect with -μ*
yéi= wu-x̲- i- $\sqrt[2]{\text{ji}^{\text{h}}}$ -μ
thus=PFV-1SG·S-STV-$\sqrt[2]{\text{think}}$-VAR
'I have thought so about it.' (Eggleston 2017)

b. Tléil yéi x̲wajee. *negative perfective aspect with -μ*
tléil yéi= u- wu-x̲- $\sqrt[2]{\text{ji}^{\text{h}}}$
NEG thus=IRR-PFV-1SG·S-$\sqrt[2]{\text{think}}$
'I haven't thought so about it.' (Eggleston 2017)

2.8. V-agreement and Mod

The prohibitive and optative in Tlingit are formed by the addition of a particle and some associated morphology to imperfective or perfective aspect forms. The prohibitive is roughly 'don't' or 'let it not be' where the optative is 'hopefully' or 'let it be'.[31] The prohibitive and optative are detailed in chapter 6 section 4.5 in the context of structurally conditioned irrealis marking. Here I focus only on their effects on V-agreement.

The prohibitive and optative each have a distinctive particle – prohibitive *líl* 'don't or *tléil* 'not' and optative *gu.aal* 'hopefully' (usu. also *gushí* 'maybe') – but both share the same morphosyntax

31. Richard Dauenhauer (p.c. 2010) suggested a translation of Paul McCartney's "Let it be" as *Gu.aal yéi uteek̲* using $\sqrt[1]{\text{ti}^{\text{h}}}$ 'exist' and the optative: *yaa k̲oosgé ayanask̲éiji / gu.aal yéi uteek̲* 's/he habitually speaks wisdom / let it be so'.

in the verb word: irrealis *u-* in Asp, Ɛ-suppression (ch. 3 sec. 4.1), and a suffix *-k̲* that I analyze as a functional head Mod[32] and gloss either PHIB or OPT depending on the context. The prohibitive and optative can only be added to imperfective or perfective aspect (Leer 1991: 87), but it is not clear if they can be added to *CNJ*-imperfectives or *CNJ*-perfectives (cf. ch. 6 sec. 2). In chapter 6 I suggest that the prohibitive and optative could be unified with the negative into a single functional phrase lP, but for now I maintain Mod as distinct from Neg.

The *-k̲* in Mod of the prohibitive and optative triggers V-agreement that can supersede that of lower functional heads. Compare the basis case of a perfective with *-μH* in (243) with the prohibitive data in (244) and the optative data in (245). Both the prohibitive and optative feature *-μ* in (244b) and (245b) in contrast with the *-μH* of the perfective in (243).

(243) X̲waax̲áa. *perfective aspect with -μH*
wu-x̲- i- ²√x̲a-μH
PFV-1SG·S-STV-²√eat-VAR
'I ate it.', 'I have eaten it.'

(244) a. *Líl x̲wax̲áayik̲. **prohibitive perfective aspect with -μH*
líl u- wu-x̲- ²√x̲a-μH-k̲
PHIB IRR-PFV-1SG·S-²√eat-VAR-PHIB
intended: 'Let me not have eaten it.'

b. Líl x̲wax̲aayík̲. *prohibitive perfective aspect with -μ*
líl u- wu-x̲- ²√x̲a-μ -k̲
PHIB IRR-PFV-1SG·S-²√eat-VAR-PHIB
'Let me not have eaten it.'

(245) a. *Gu.aal kwshé x̲wax̲áayik̲. **optative perfective aspect with -μH*
líl u- wu-x̲- ²√x̲a-μH -k̲
OPT =DUB PHIBIRR-PFV-1SG·S-²√eat-VAR
intended: 'Hopefully I have eaten it.'

b. Gu.aal kwshé x̲wax̲aayík̲. *optative perfective aspect with -μ*
gu.aal =gushí u- wu-x̲- ²√x̲a-μ -k̲
OPT =DUB IRR-PFV-1SG·S-²√eat-VAR-OPT
'Hopefully I have eaten it.'

The configuration in (245b) is represented by the tree in figure 2.17. The root is lexically specified for [H_ε] since this root supports an activity imperfective like *x̲ax̲á* 'I eat it; I am eating it'. The perfective Asp head is specified for [μH_ε] as shown by the form in (243). Both of these are superseded by the Mod head with its specification of [μ_ε] as is realized in (245b).

Like Neg in section 2.7, demonstrating the paradigm of V-agreement with Mod requires a large number of minimal pairs of various √, Ɛ, and Asp triggered V-agreement with the addition of Mod. Unlike Neg, the documentation of stem variation in prohibitives and optatives is spotty and scattered; probably the most extensive examples are in Eggleston 2017. We need more documentation

32. Implying 'modality' though this must somehow be distinct from the *g̲-* modal prefix in Asp.

Figure 2.17: Mod V-agreement supersedes Asp V-agreement

review, corpus investigation, and elicitation data to determine the actual paradigm of the prohibitive and optative, but for now it seems to fit into the larger V-agreement system in much the same way as negation. Indeed, if Neg and Mod are unified as the functional phrase lP then the V-agreement mechanisms – though not necessarily the V value paradigms – would be identical between negation and prohibition.

2.9. V-agreement and T

The traditional 'decessive' suffix *-ín* (Story 1966: 105, 162–163) was analyzed by Leer as an "epimode" (or "metamode") alongside the prohibitive/optative structure (Leer 1991: 87, 157f 212, 454). Cable (2017c) found that it conforms to a crosslinguistic semantics of 'discontinuous past' where the introduction of an optional past tense implies a cessation implicature. Extrapolating from Cable's identification as a tense marker, I analyze this optional past tense suffix *-ín* as the realization of T, and thus the head of the functional phrase TP. The overt *-ín* in T triggers V-agreement that supersedes lower V-agreement values.

The data in (246) and (247) illustrate the effect of T on V-agreement with the perfective aspect, thus superseding V-agreement specified by Asp. The form in (246) is a *∅*-conjugation class perfective aspect with *-H* as expected for a *√CVC* root. The morphosyntax of past tense comprises Ɛ-suppression (ch. 3 sec. 4.1) and overt *-ín* in T. The *-H* of the perfective is ungrammatical in (247a) and instead the past tense form has *-μ* as shown in (247b).

(246) Xwaaják. *perfective aspect with -H*
wu-x- i- $\sqrt[2]{}$jak-H
PFV-1SG·S-STV-$\sqrt[2]{}$kill -VAR
'I killed it.', 'I have killed it.'

(247) a. *Xwajágín. **past perfective with -H*
wu-x- $\sqrt[2]{}$jak-H -ín
PFV-1SG·S-$\sqrt[2]{}$kill -VAR-PAST
intended: 'I had killed it'

Figure 2.18: T V-agreement supersedes Asp V-agreement

b. Xwajaagín. *past perfective with -μ*
wu-x- $\sqrt[2]{}$jak-μ -ín
PFV-1SG·S-$\sqrt[2]{}$kill -VAR-PAST
'I had killed it'

The configuration in (247b) is represented by the tree in figure 2.18. The root $\sqrt[2]{}$*jak* 'kill' is not specified for [DURATIVE$_\varepsilon$] so it cannot support an activity imperfective, and so we cannot tell what if any V-agreement feature is part of its lexical entry. The perfective Asp head is specified for [H$_\varepsilon$] as shown by the form in (246). But since (247a) is ungrammatical, this [H$_\varepsilon$] is superseded by the [μ$_\varepsilon$] that is specified for T as shown by (247b).

Like the potential and optative in section 2.8, the paradigm of stem variation for the past tense is not coherently documented. The examples in Eggleston 2017 are extensive (around 1150 forms) but paradigmatically limited because nearly all of them are based on potential modality forms where the past form and the non-past form would both have *-μ* (or *-μH* with √*CVC'* and √*CV'C*). Reviewing the 90 or so past tense forms based imperfective aspect forms, it looks like *-μ* is the most common, replacing *-μH* and *-H* in various non-past forms. A number of counterexamples where the past tense has e.g. *-μH* or *-H* are based on invariable stems or stems with Adv in which case V would be predictably prevented from agreeing with overt T. A more thorough review of the documentation and corpus data are warranted to confirm the stem variation paradigms for over T. Nevertheless, the extant data support the modelling of T as a trigger for V-agreement.

2.10. V-AGREEMENT AND C

Tlingit has three morphologically distinct clause types, though more than three distinctions can be made from syntactic context and restrictions on aspect and argument structure. Clause type morphology is partly represented by suffixes on the verb word which I analyze as complementizers and thus instances of C. Covert C is prototypically seen in main clauses where there is no overt complementizer. One overt C is the 'subordinate' suffix *-í* which exhibits polar tone realized as the tonal opposite of the preceding syllable. Another overt C is the relative clause suffix *-i* (the 'attributive'); this has the same vowel as the subordinate suffix but it has invariable low tone regardless of pre-

Figure 2.19: C V-agreement supersedes Asp V-agreement

ceding syllables. In this section I limit discussion to the 'subordinate' *-í* suffix in C which can form adjunct and complement clauses. The details for complement clauses are identical; the details of V-agreement in relative clauses with *-i* in C are different and I leave them to further research on relativization.

The data in (248) and (249) illustrate the effect of C on V-agreement with a marked adjunct clause that has *-í* in C. The form in (248) is a baseline perfective aspect in a main clause context. The data in (249) show the corresponding forms as adjunct clauses. The adjunct clause with *-μH* in (249a) is ungrammatical despite *-μH* appearing for the perfective aspect in the main clause, and instead the grammatical adjunct clause in (249b) as *-μ*. Note that since *-í* in C has polar tone, its realization in this context is high tone which is opposite the low tone of the stem with *-μ*.

(248) Xwasi.ée. *main clause perfective with -μH*
wu-x- s- i- ^{1}√.i -μH
PFV-1SG·S-CSV-STV-^{1}√COOK-VAR
'I cooked it.', 'I have cooked it.'

(249) a. * Xwasa.éeyi kei wjitúk. **adjunct clause perfective with -μH*
wu-x- s- ^{1}√.i -μH-í kei=wu-d- sh-i- ^{1}√tuk -H
[$_{CP}$ PFV-1SG·S-CSV-^{1}√COOK-VAR-SUB$_{C}$] up= PFV-MID-PEJ-STV-^{1}√EXPLODE-VAR
intended: '[When I cooked it] it exploded.'

b. Xwasa.eeyí kei wjitúk. *adjunct clause perfective with -μ*
wu-x- s- ^{1}√.i -μ -í kei=wu-d- sh-i- ^{1}√tuk -H
[$_{CP}$ PFV-1SG·S-CSV-^{1}√COOK-VAR-SUB$_{C}$] up= PFV-MID-PEJ-STV-^{1}√EXPLODE-VAR
'[When I cooked it] it exploded.'

The model for V-agreement with C is essentially the same as for T and other functional heads. Figure 2.19 shows the abbreviated structure that corresponds to the adjunct clause in (249b). The Asp head specifies [μH_{ε}] but this is superseded by [μ_{ε}] which is specified by C.

The subordinate suffix *-í* is used for both adjunct clauses and complement clauses. The data in (250) illustrates the same perfective aspect verb in (248) as a complement clause with identical morphology.

(250) a. * Xwasa.éeyi yéi xwaajée. **complement clause perfective with -μH*
wu-x- s- $^{1}\sqrt{}$.i -μH-í yéi= u- x- i- $^{2}\sqrt{}$ji^{h} -μH
[$_{CP}$ PFV-1SG·S-CSV-$^{1}\sqrt{}$cook-VAR-SUB$_{C}$] thus=IRR-1SG·S-STV-$^{2}\sqrt{}$think-VAR
intended: 'I think [that I cooked it].'

b. Xwasa.eeyí yéi xwaajée. *complement clause perfective with -μ*
wu-x- s- $^{1}\sqrt{}$.i -μ -í yéi= u- x- i- $^{2}\sqrt{}$ji^{h} -μH
[$_{CP}$ PFV-1SG·S-CSV-$^{1}\sqrt{}$cook-VAR-SUB$_{C}$] thus=IRR-1SG·S-STV-$^{2}\sqrt{}$think-VAR
'I think [that I cooked it].'

As with Neg, Mod, and T, the stem variation paradigms of C have not been coherently documented in much detail. Leer for example says "Subordinative verb forms are constructed from the Declarative modes by adding the order –5 suffix *-i*' to the Non-assertive/Irrealis stem variant" (Leer 1991: 214), but this does not fit the data in (251).

(251) a. Tléil xwaxá. *negative activity imperfective with -H*
tléil u- x- $^{2}\sqrt{}$xa-H
NEG IRR-1SG·S-$^{2}\sqrt{}$eat-VAR
'I don't eat it.', 'I'm not eating it.' (Leer 1991: 221)

b. Tléil xwaxaayí... *subordinate activity imperfective with -H*
tléil u- x- $^{2}\sqrt{}$xa-μ -í
NEG IRR-1SG·S-$^{2}\sqrt{}$eat-VAR-SUB
'while I don't eat it...', 'while I'm not eating it...' (Leer 1991: 221)

The overall pattern of V-agreement with C seems to revolve around *-μ* which is indeed common in V-agreement with Neg. But Neg shows more variety in its V-agreement paradigm, where with C the *-μ* value is certainly the norm if not the default. Assessing the existing data is difficult because there is significant interference from invariable stems, phonological blocking of *-μ* with *√CVC'* and *√CV'C* roots, and morphosyntactic blocking by Adv suffixes. Regardless, it is clear that overt C has an effect on the realization of V and thus triggers V-agreement, but the paradigms of V-agreement still need to be worked out for many cases.

Clauses without overt C are common: main clauses, complement clauses, adjunct clauses, relative clauses, and consecutive aspect can all occur without an overt complementizer. Among these I believe there are only two cases where a covert C could potentially be involved in the selection of V values: unmarked relative clauses and consecutive aspect. The case of unmarked relative clauses is complex because the presence or absence of the relative clause suffix *-i* in C depends on factors that are not fully worked out, so I set it aside for a detailed study of relativization. I claim that the case of consecutive aspect does not support a covert C triggering V-agreement.

As sketched in section 2.6.4, consecutive aspect probably only occurs as an adjunct clause without an overt complementizer. I believe it is the adjunct clause counterpart to the realizational aspect, with the two differing only in that realizationals have overt *i-* in Ɛ and consecutives do not.

Ɛ-suppression is required for adjunct clauses with overt *-í* in C, so it may also reflect adjunct clause embedding for consecutive aspect forms. Crucially, the stem variation of realizationals and consecutives is identical: both have *-μH*. I take this to mean that the V-agreement specified by Asp for the realizational is not affected by clause embedding. If consecutives are adjunct clauses with covert C then they are an interesting case of Ɛ-suppression from clause embedding without a change in V-agreement. This implies that the syntactic parameters for Ɛ-suppression are structurally distinct from those of V-agreement, and so that Ɛ-suppression needs more investigation. Perhaps not coincidentally, Ɛ-suppression does not occur in relative clauses in certain contexts (Leer 1991: 159, 222), further suggesting that these two similar long distance phenomena are not the same under the hood. See chapter 3 section 4.1 for more on Ɛ-suppression.

3 ƐP: Eventuality structure

I seem to be a verb – an evolutionary process –
an integral function of the universe.

R. Buckminster Fuller, *I Seem To Be A Verb* (1970).

1 Basic functions of *i-*: Lexical and grammatical states . . . 177
2 The Ɛ head is *i-* . . . 179
  2.1 Phonology of the *i-* prefix . . . 179
  2.2 Syntax of the Ɛ head . . . 192
3 Indicating states with Ɛ . . . 198
  3.1 Lexical states have overt Ɛ . . . 198
  3.2 Grammatical states have overt Ɛ . . . 202
4 Lack of overt Ɛ . . . 217
  4.1 Suppression of Ɛ: Absent vs. covert . . . 218
  4.2 States without Ɛ: Positional imperfectives . . . 229
  4.3 Absence of Ɛ: The elsewhere case . . . 232
5 Evolution of Ɛ in Na-Dene . . . 235

Many Tlingit verbs occur with a prefix *i-* immediately before the verb stem. This prefix is variously realized as the vowel *i*, a syllable *ya* or *wa*, or as lengthening of a preceding vowel. I analyze the *i-* prefix as the realization of an Ɛ head that projects a phrase ƐP.[1] The *i-* prefix in Ɛ indicates that the eventuality denoted by the verb is stative, and so the symbol Ɛ reflects its role in expressing the eventuality category of states.

The *i-* has two distinct functions. On the one hand, *i-* marks lexical states where its presence is lexically specified by the root. On the other hand, *i-* marks grammatical states where its presence is conditioned by aspect marking independent of the lexical specification. This split in functionality is typical for the functional heads within the verb word as can be seen with the *v* head in chapter 4 and the Voice head in chapter 5 among others. I summarize these two basic functions in section 1. I show that the imperfective aspect distinguishes lexically specified states versus lexically specified

1. I pronounce 'Ɛ' as either 'E' /ʔi/ or 'epsilon' /ˈɛpsɪlɑn/, and use the Unicode U+0190 Latin Capital Letter Open E.

activities by the presence or absence of *i-*. Then other aspects ignore this distinction so that for example the perfective aspect requires *i-* regardless of the lexical specification because perfective aspect forms always denote result states.

Section 2 documents the basic phonological and syntactic properties of the Ɛ head. The phonological realization of *i-* is fairly complex (sec. 2.1). The basis case where *i-* appears as a vowel [ì] is only found when one of Voice or *v* contains overt material (sec. 2.1.1). In other contexts *i-* may be realized as a syllable (secs. 2.1.2 & 2.1.3) or as lengthening of a preceding vowel /a, i, u/ (sec. 2.1.4), and in one corner case it can fail to surface (sec. 2.1.5). The *i-* prefix also has distinct phonology in the Southern and Tongass dialects (sec. 2.1.6). Syntactically the Ɛ head can only contain one instance of *i-* (sec. 2.2.1) and it must take VP as a complement (sec. 2.2.2). The ƐP projected by Ɛ does not usually participate in argument structure, but ƐP could potentially host the degree of comparison argument that is introduced by the comparative form of dimensional state verbs (sec. 2.2.3).

The two functions of *i-* in Ɛ are detailed in section 3. The use of Ɛ with lexical states is addressed in section 3.1 and its use with grammatical states is addressed in section 3.2. I subdivide the grammatical states into two groups: basic states that are specified by material in Asp (sec. 3.2.1) and derived states which include an additional repetitive suffix Adv that forms a 'pluristative' counterpart to pluractionals (sec. 3.2.2).

Section 4 catalogues the many verbal structures that lack overt Ɛ. Some of these are instances of Ɛ-suppression where a higher functional head like Neg requires that *i-* not be present in contexts where it would otherwise appear (sec. 4.1). These structures are potentially analyzable with an empty Ɛ head, maintaining the position for semantic interpretation as a state but failing to realize in the phonological form. The possibility of an empty Ɛ head may then account for positional imperfectives where there is apparently a stative interpretation without overt *i-* (sec. 4.2). But there are still many structures where there is no justification for Ɛ-suppression or an otherwise empty Ɛ, and I argue that these actually lack ƐP entirely as a kind of elsewhere case (sec. 4.3).

The dual functionality of *i-* as an indicator of lexically conditioned states on the one hand and aspectually conditioned states on the other is structurally unusual. We would expect aspectually conditioned states to be expressed closer to the Asp head that conditions them, whereas lexically conditioned states would be expressed close to the root. The Ɛ head however is close only to the root and is separated from Asp by the interceding *v*P and VoiceP. Section 5 presents comparative historical evidence that suggests Ɛ was originally next to Asp and has migrated down to its position near the root because of now extinct phonological alternations. Eyak still shows this higher position for Ɛ, but the Dene languages generally reflect only the lower position of Ɛ in the form of obscure consonant alternations in the onset of certain verb stems.

Leer describes the *i-* prefix as the "I-component" of the classifier (Leer 1991: 94); he catalogues the aspect and modality contexts where *i-* occurs but does not ascribe it any meaning (Leer 1991: 96). Boas (1917: 33–35) considers *i-* to indicate "definiteness of time", although he is not particularly specific about what this means. Story (1966: 86) describes *i-* as the distinguishing feature of her 'A-extensors' that contrast with the non-*i-* 'B-extensors', and simply follows Boas for their meaning. She notes there (and in Story & Naish 1973: 370–371) that the *i-* does not occur in negatives and in 'decessives' that feature past tense *-ín*. Krauss recognizes Tlingit *i-* as a cognate of the Eyak stative prefix *yi-* ~ *i-* (Krauss 1965a, 1969). Krauss seems to be the first to suggest that *i-* indicates stativity,

but he discusses it mostly from a phonological point of view. My proposal that *i-* directly encodes stativity is thus novel, but it is a straightforward argument from the literature and facts once we accept that the verbal morphology is semantically compositional.

1. Basic functions of *i-*: Lexical and grammatical states

The *i-* prefix has two basic functions: indicating lexical states and indicating grammatical states. Both functions are connected to the expression of stative eventualities, and so *i-* can be taken as a general marker of stativity in Tlingit. It does not occur in all verbs that denote states, so its absence cannot be taken to entail that the verb denotes an event.

The lexical state function of *i-* is grammatically unpredictable, and so must be encoded as a property of the root. It is witnessed in the affirmative main clause forms of imperfective aspect for verbs that denote states, contrasting with verbs that denote activities where *i-* does not appear. Compare the forms for a lexical state based on the root $\sqrt[1]{\text{x̲an}}$ 'near; love' in (1) with the forms for a lexical activity based on the root $\sqrt[1]{.i}$ 'cooked' in (2). Only the form with *i-* in (1a) is grammatical for a state, and only the form without *i-* in (2b) is grammatical for an activity.

(1) a. X̲at isix̲án. *lexical state with i-*
x̲at= i- s- i- $\sqrt[1]{\text{x̲an}}$-H
1SG·O=2SG·S-CSV-STV-$\sqrt[1]{\text{near}}$-VAR
'You (sg.) love me.'

b. *X̲at isax̲án. **lexical state without i-*
x̲at= i- s- $\sqrt[1]{\text{x̲an}}$-H
1SG·O=2SG·S-CSV- $\sqrt[1]{\text{near}}$-VAR
intended: 'You (sg.) love me.'

(2) a. *X̲at isi.ée. **lexical activity with i-*
x̲at= i- s- i- $\sqrt[1]{.\text{i}}$ -μH
1SG·O=2SG·S-CSV-STV-$\sqrt[1]{\text{cook}}$-VAR
intended: 'You (sg.) cook me.'

b. X̲at isa.ée. *lexical activity without i-*
x̲at= i- s- $\sqrt[1]{.\text{i}}$ -μH
1SG·O=2SG·S-CSV- $\sqrt[1]{\text{cook}}$-VAR
'You (sg.) cook me.'

The grammatical state function of *i-* is grammatically predictable, determined by the particular grammatical aspect that is applied to the verb. The prototypical case of grammatical stativity in Tlingit is the perfective aspect. The data in (3) and (4) illustrate the perfective aspect with the same roots as in (1) and (2) above. In both cases only the forms with *i-* are grammatical, showing that the affirmative main clause form of perfective aspect requires the presence of *i-*.

(3) a. Xat yisixán. *grammatical state with i-*
xat= wu-i- s- i- $^{1}\sqrt{}$xan-H
1SG·O=PFV-2SG·S-CSV-STV-$^{1}\sqrt{}$near-VAR
'You (sg.) have come to love me.'

b. *Xat yisaxán. **grammatical state without i-*
xat= wu-i- s- $^{1}\sqrt{}$xan-H
1SG·O=PFV-2SG·S-CSV- $^{1}\sqrt{}$near-VAR
intended: 'You (sg.) have come to love me.'

(4) a. *Xat yisi.ée. **grammatical activity with i-*
xat= wu-i- s- i- $^{1}\sqrt{}$.i -μH
1SG·O=PFV-2SG·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
intended: 'You (sg.) have cooked me.'

b. Xat yisa.ée. *grammatical activity without i-*
xat= wu-i- s- $^{1}\sqrt{}$.i -μH
1SG·O=PFV-2SG·S-CSV- $^{1}\sqrt{}$cook-VAR
'You (sg.) have cooked me.'

The presence of *i-* in perfective aspect forms is because the perfective aspect denotes a result state. In (3a) the verb describes a state that holds after you have transitioned from not loving to loving me. The perfective of a lexical state thus entails a preceding event where some transition into the state occurs. In (4b) the verb describes a state that holds after you have caused me to become cooked. The perfective of a lexical activity thus also entails a preceding event where some transition into the state occurs.

As mentioned above, there are verb forms that seem to be stative but which lack *i-*. One particularly common case involves the 'positional imperfective' verbs that describe an entity being in a position or postural configuration at a location (Leer 1991: 324–329). The data in (5) illustrates the positional based on the root $^{1}\sqrt{}$*han* 'sg. stand'. Only the form without *i-* in (5a) is grammatical even though we might expect from its translation that the verb should denote a state.

(5) a. Yáat xahán. *positional imperfective without i-*
yá -t x- $^{1}\sqrt{}$han -H
PROX-PNCT 1SG·S- $^{1}\sqrt{}$stand·SG-VAR
'I am standing here'

b. *Yáat xayahán. **positional imperfective with i-*
yá -t x- i- $^{1}\sqrt{}$han -H
PROX-PNCT 1SG·S-STV-$^{1}\sqrt{}$stand·SG-VAR
'I am standing here'

We have yet to confirm that positionals like (5a) are definitely states and not activities, partly because we do not have a well-developed array of semantic diagnostics for stativity in Tlingit. If the positionals are indeed states then their lack of *i-* is perplexing, but it could be that their stative interpretation arises from some kind of implication involving spatial semantics. I return to this issue in section 4.2.

2. The Ɛ head is *i-*

I identify the *i-* prefix as the sole exponent of the Ɛ head in Tlingit. Although identified by its realization as the vowel [ì] when the *v* or Voice heads are overt, *i-* has a few other phonological realizations depending on the presence or absence of other prefixal material that precedes it in the verb word. These details are discussed in section 2.1 on the phonology of Ɛ.

Syntactically, Ɛ takes the VP as its complement and projects a phrase ƐP. Because Ɛ takes VP as its complement it necessarily c-commands both √ and V as well as any arguments (DPs or PPs) merged within VP and any Adv suffixes adjoined to VP. The ƐP loosely corresponds to Travis's concept of 'inner aspect' and her InnerAspP (Travis 1991, 2010), but my arguments for ƐP are distinct and my conclusions are not entirely congruent with Travis's findings. A particularly significant difference between my ƐP and Travis's InnerAspP is that Ɛ is conditioned by both lexical aspect and grammatical aspect, and that lexical aspect is not determined by Ɛ but instead Ɛ reflects the lexical specification of the root.

2.1. Phonology of the *i-* prefix

I represent the prefix in Ɛ as *i-*, suggesting that its underlying form is the vowel /i/. I illustrate its phonological behaviour in this section, sketching some probable explanations but stopping short of offering a formal phonological analysis. The data presented in this section is extremely limited and is intended only as a guide for further investigation. I also limit my discussion to the Northern Tlingit dialects because the details of the Southern and Tongass Tlingit dialects have yet to be fully described, although I do note the disappearance of *i-* in these dialects in section 2.1.6.

The *i-* prefix has five patterns of realization: (i) a vowel *i* [ì], (ii) a syllable *ya* [jà], (iii) a syllable *wa* [wà], (iv) lengthening of a preceding vowel, and (v) deletion with the perfective and second plural subject. These five patterns are discussed individually in subsections 2.1.1–2.1.5. Case (i) is the basis for the analysis of the prefix as an underlying high front vowel /i/ and arises specifically when any of the *d-* prefix of Voice and/or the *s-*, *l-*, or *sh-* prefixes of *v* are present along with *i-*. All the remaining cases arise when both Voice and *v* prefixes are absent in the surface form so there is a basic dichotomy between case (i) and the rest. Case (ii) can be thought of as the reanalysis of /i/ as a consonant /j/ with an epenthetic vowel to fill out the syllable, and this case particularly arises when *i-* turns out to be word initial. Case (iii) shows labialization of the palatal approximant similar to instances of labial spreading elsewhere in Tlingit. Case (iv) is effectively the deletion of the segmental features of the /i/ vowel while retaining its associated mora. Case (v) is probably underparsing of /i/ due to the strict metrical structure constraints on the phonological Conjunct domain.

2.1.1. Case i: Vowel *i*

The *i-* prefix is realized as a vowel [ì] in the nucleus of the syllable in the Classifier domain when either or both of the Voice and *v* heads have overt content: *d-* /t/ in Voice and any of *s-* /s/, *l-* /ɬ/, or *sh-* /ʃ/ in *v*. All the logically possible combinations are attested and the complete inventory of such forms is shown in table 3.1. For the Voice and *v* columns in table 3.1, the presence of an empty head is represented by *∅* and the absence of the same head is represented by a blank cell; the surface forms do not differentiate these logical possibilities. All these forms have the pattern [Cì] where [C] is an unaspirated (and non-ejective) coronal stop, fricative, or affricate. The orthographic form of *d-* + *sh-* + *i-* is two letters *ji* whereas the forms of *d-* + *s-*/*l-* + *i-* are three letters *dzi* and *dli* respectively, so monographic *j* for /tʃ/ conceals its phonological complexity.

Voice	+	*v*	+	Ɛ	→	*orth.*	*IPA*
		s-		*i-*		*si*	[sì]
		l-		*i-*		*li*	[ɬì]
		sh-		*i-*		*shi*	[ʃì]
d-				*i-*		*di*	[tì]
d-		Ø		*i-*		*di*	[tì]
d-		*s-*		*i-*		*dzi*	[tsì]
d-		*l-*		*i-*		*dli*	[tɬì]
d-		*sh-*		*i-*		*ji*	[tʃì]

Table 3.1: Realizations of *i-* with *d-* and/or *s-*/*l-*/*sh-*

The data in (6)–(9) demonstrate that *i-* can only be realized as [ì] in the same syllable containing one of the *d-*, *s-*, *l-*, or *sh-* prefixes. The *i-* cannot be realized as a coda consonant in (6b)–(9b), nor as an onset consonant of its own epenthesized syllable in (6c)–(9c), nor as the nucleus of its own syllable with an epenthetic onset as in (6d)–(9d). Crucially, all of the ungrammatical patterns in (6)–(9) are phonotactically plausible because they can be found elsewhere in the language, so it is specifically the phonological grammar of *i-* and its realization with the Voice and *v* prefixes that conditions the ungrammaticality.

(6) a. Áx̱ dixwás'. *d- with i- as vowel i*
[ʔáχ tì.ˈxʷás']
á -x̱ d- i- ^{1}√xwas' -H
3N-PERT MID-STV-^{1}√hang·PL-VAR
'They are hanging there.'

b. * Áx̱ dayxwás'. **d- with i- as coda consonant*
[ʔáχ tàj.ˈxʷás']

c. * Áx̱ dayaxwás'. **d- with i- as onset consonant*
[ʔáχ tà.jà.ˈxʷás']

d. * Áx̱ dayixwás'. **d- with i- as separate syllable*
[ʔáχ tà.jì.ˈxʷás']

(7) a. Si.áat'. *s- with i- as vowel i*
[sì.ˈʔá:t']
s- i- ^{0}√.at' -μH
INTR-STV-^{0}√cold-VAR
'It is cold.'

b. * Say.áat'. **s- with i- as coda consonant*
[sàj.ˈʔá:t']

c. * Saya.áat'. **s- with i- as onset consonant*
[sà.jà.ˈʔá:t']

d. *Sayi.áat'. *s- with i- as separate syllable
[sà.jì.ˈʔáːtʼ]

(8) a. Lichán. *l- with i- as vowel i
[ɬì.ˈtʃʰán]
l- i- $^{0}\sqrt{}$chan-H
INTR-STV-$^{0}\sqrt{}$stink -VAR
'It stinks.'

b. *Laychán. *l- with i- as coda consonant
[ɬàj.ˈtʃʰán]

c. *Layachán. *l- with i- as onset consonant
[ɬà.jà.ˈtʃʰán]

d. *Layichán. *l- with i- as separate syllable
[ɬà.jì.ˈtʃʰán]

(9) a. X̱ashik'áan. sh- with i- as vowel i
[χà.ʃì.ˈkʼáːn]
x̱- sh- i- $^{2}\sqrt{}$k'an-H
1SG·S-PEJ-STV-$^{2}\sqrt{}$hate -VAR
'It stinks.'

b. *X̱ashayk'áan. *sh- with i- as coda consonant
[χà.ʃàj.ˈkʼáːn]

c. *X̱ashayak'áan. *sh- with i- as onset consonant
[χà.ʃà.jà.ˈkʼáːn]

d. *X̱ashayik'áan. *sh- with i- as separate syllable
[χà.ʃà.jì.ˈkʼáːn]

I take the underlying form of *i-* to be /i/ on the basis of its appearance in this section. The data in section 2.1.2 suggest an alternative underlying form of *y-* /j/, which is exactly what Krauss (1969: 66) proposes. I have one argument in favour of /i/ rather than /j/, based on the lengthening described in section 2.1.4. The realization of /V/ + /i/ as [Vː] is easy to analyze as a combination of /V/ with the remaining mora of /i/ after its segmental features are deleted. If the underlying form were instead a consonant /j/ then we would have to explain why it surfaces as vowel lengthening rather than as a sequence [Vj] which is phonotactically possible and found elsewhere in verb forms.

2.1.2. Case ii: Syllable *ya*

When *i-* is realized without any preceding prefixes in its domain the resulting form is always *ya* [jà]. This realization is common with imperfective states, such as the one based on the monovalent root $^{1}\sqrt{}$*t'a*^{h} 'hot' in (10) and the one based on the bivalent root $^{2}\sqrt{}$*hen* 'claim' in (11). The bivalent root with *x̱at=* 'me' in (11) shows that proclitics in the Disjunct domain do not affect the realization of *i-*. The ungrammatical form in (10b) shows that *i-* cannot be realized as a syllable [ʔì] with an epenthetic [ʔ] onset. The ungrammatical form in (10c) shows that *i-* cannot be realized as a syllable [jì] either with

i- as [j] and an epenthetic [ì] or with an epenthetic onset [j] and *i-* as [ì]. Finally, the ungrammatical form in (10d) shows that *i-* cannot be realized as a coda consonant [j] preceded by an epenthetic onset [ʔ] and vowel [à].

(10) a. Yat'aa. *i- as syllable ya*
[jà.ˈt'àː]
i- $\sqrt[1]{}$t'a^{h}-μ
STV-$\sqrt[1]{}$hot -VAR
'It is hot.'

b. *It'aa. **i- as syllable ʔi*
[ʔì.ˈt'àː]

c. *Yit'aa. **i- as syllable yi*
[jì.ˈt'àː]

d. *Ayt'aa. **i- as syllable ʔay*
[ʔàj.ˈt'àː]

(11) a. X̲at yahéin. *i- as syllable ya*
[χàt jà.ˈhéːn]
x̲at= i- $\sqrt[2]{}$hen -μH
1SG·O=STV-$\sqrt[2]{}$claim-VAR
'S/he claims me.'

b. *X̲at ihéin. **i- as syllable ʔi*
[χàt ʔì.ˈhéːn]

c. *X̲at yihéin. **i- as syllable yi*
[χàt jì.ˈhéːn]

d. *X̲at ayhéin. **i- as syllable ʔay*
[χàt ʔàj.ˈhéːn]

Typically when *i-* is preceded by other Conjunct or Disjunct domain prefixes like the first person singular subject *x̲-* 'I' or incorporated *sha-* 'head', the *i-* is realized as vowel lengthening as detailed in section 2.1.4. But some speakers instead realize *i-* as *ya* in the same contexts, and a few speakers can apparently alternate freely between the two realizations. This is shown in (12) using the bivalent root $\sqrt[2]{}$*tin* 'see' in an imperfective state with the first person subject *x̲-*. For a speaker who can produce both forms, the trisyllabic [χà.jà.tʰíːn] in (12a) and the disyllabic [χàː.ˈtʰíːn] in (12b) are both grammatical; see section 2.1.4.1 for further discussion.

(12) a. X̲ayatéen. *i- as syllable ya*
[χà.jà.ˈtʰíːn]
x̲- i- $\sqrt[2]{}$tin-μH
1SG·S-STV-$\sqrt[2]{}$see -VAR
'I can see him/her/it.'

b. X̲aatéen. *i- as lengthening*
[χàː.ˈtʰíːn]

Another context where the *i-* prefix spells out as *ya* is when it is preceded by the second person singular subject *i-* and nothing else. This is shown with the same root $\sqrt[2]{}$*tin* 'see' in (13). In this context the lengthening for *i-* is ungrammatical as shown in (13b), and the subject prefix cannot be *y-* as in (13c).

(13) a. Iyatéen. *i- with i- as syllable ya*
[ʔì.jà.ˈtʰíːn]
i- i- $\sqrt[2]{}$tin-μH
2SG·S-STV-$\sqrt[2]{}$see-VAR
'You (sg.) can see him/her/it.'

b. *Eetéen. **i- with i- as lengthening*
[ʔìː.ˈtʰíːn]

c. *Yitéen. **y- with i- as vowel i*
[jì.ˈtʰíːn]

As shown in (14), the *ya* realization of *i-* along with the second person singular subject *i-* 'you sg.' also occurs when the subject is preceded by the ∅-conjugation perfective prefix *u-*. The sequence of *u-i-* is canonically realized as the long *ee* [ʔìː] as shown in (14a), but many (most?) speakers can instead have it as short i [ʔì] as in (14b) and thus surface-identical with forms lacking the perfective *u-* as illustrated in (13) above.

(14) a. Eeyaxáa. *i- as syllable ya*
[ʔìː.jà.ˈχáː]
u- i- i- $\sqrt[2]{}$xa-μH
ZPFV-2SG·S-STV-$\sqrt[2]{}$eat-VAR
'You (sg.) ate it.'

b. Iyaxáa. *i- as syllable ya*
[ʔì.jà.ˈχáː]
u- i- i- $\sqrt[2]{}$xa-μH
ZPFV-2SG·S-STV-$\sqrt[2]{}$eat-VAR
'You (sg.) ate it.'

I believe that there are other contexts where *i-* can surface as *ya* given the right combinations of prefixes in the Conjunct and Disjunct domains, but the details escape me at present. I refer the interested reader to the prefix realization charts by Leer (1991: 185–202) and Eggleston (2013: 185–221) for many other contexts needing phonological analysis.

2.1.3. Case iii: Syllable *wa*

The stative *i-* prefix is realized as *wa* when it would normally surface as *ya* except there is something in the preceding phonology that triggers labialization. One common context for this is when the first person plural subject *tu-* immediately precedes *i-*. The data in (15) show this with the bivalent verb root $\sqrt[2]{}$*tin* 'see' in a state imperfective. Only the form with *wa* in (15a) is acceptable, and both *ya* in (15b) and lengthening in (15c) are rejected.

(15) a. Ituwatéen. *tu- with i- as syllable wa*
[ʔì.tʰù.wà.ˈtʰíːn]
i- tu- i- $\sqrt[2]{}$tin-μH
2SG·O-1PL·S-STV-$\sqrt[2]{}$see -VAR
'We can see you.'

b. * Ituyatéen. **tu- with i- as syllable ya*
[ʔì.tʰù.jà.ˈtʰíːn]

c. * Itootéen. **tu- with i- as lengthening*
[ʔì.tʰùː.ˈtʰíːn]

Another common context is when *i-* is preceded by the *Ø*-conjugation class perfective prefix *u-*. This is shown in (16) with the monovalent root $\sqrt[1]{}$*x̲i* 'overnight'. Since this is a *Ø*-conjugation class verb the perfective aspect selects *u-* rather than the *wu-* for perfectives of other conjugation classes; see section 2.1.4.3 for the realization of *wu-i-*.

(16) a. Uwax̲ée. *u- with i- as syllable wa*
[ʔù.wà.ˈχíː]
u- i- $\sqrt[1]{}$x̲i -μH
ZPFV-STV-$\sqrt[1]{}$overnight-VAR
'S/he overnighted.'

b. * Uyax̲ée. **u- with i- as syllable ya*
[ʔù.jà.ˈχíː]

c. * Oox̲ée. **u- with i- as lengthening*
[ʔùː.ˈχíː]

The alternation between *ya* in section 2.1.2 and *wa* here is not arbitrary. There are a variety of instances of /j/ in Tlingit which regularly surface as [w], as well as instances of /j/ that are only ever [j] and instances of /w/ that are only ever [w]. The alternation of /j/ → [w] is a consequence of an older pattern of regular labialization between the velar approximant /uɣ/ and the labialized velar approximant /w/. Most dialects of Tlingit have merged surface [uɣ] with surface [j], but surface [w] is retained as distinct. In a dialect where /uɣ/ is retained, the labialization is easily accounted for by the addition of a [lab] feature to the velar approximant. Modelling the synchronic alternation in dialects without /uɣ/ is less obvious and needs further work.

When the perfective *u-* or *wu-* is preceded by a /CV/ prefix and followed by some other material that is not *i-*, the perfective is realized as a labial approximant [w] in the coda of the preceding syllable as shown in (17). In dialects that retain /m/, the realization of the perfective is [m] rather than [w] as shown in (18).

(17) a. Akawsi.ée *perfective as coda w*
[ʔà.kʰàw.sì.ˈʔíː]
a- k- wu-s- i- $\sqrt[1]{}$.i -μH
3·O-SRO-PFV-CSV-STV-$\sqrt[1]{}$cook-VAR
'S/he cooked it (small round).'

b. Kawtusi.ée *perfective as coda w*
[kʰàw.tʰù.sì.ˈʔíː]
k- wu-tu- s- i- $^{1}\sqrt{}$.i -μH
SRO-PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$COOK-VAR
'We cooked it (small round).'

(18) a. Akamsi.ée *perfective as coda m*
[ʔà.kʰàm.sì.ˈʔíː]
a- k- mu-s- i- $^{1}\sqrt{}$.i -μH
3·O-SRO-PFV- CSV-STV-$^{1}\sqrt{}$COOK-VAR
'S/he cooked it (small round).'

b. Kamtusi.ée *perfective as coda m*
[kʰàm.tʰù.sì.ˈʔíː]
k- mu-tu- s- i- $^{1}\sqrt{}$.i -μH
SRO-PFV- 1PL·S-CSV-STV-$^{1}\sqrt{}$COOK-VAR
'We cooked it (small round).'

But when the perfective is preceded by a /CV/ prefix and followed directly by *i-*, the realization is strikingly different. We might expect the sequence *wu-i-* to be long [wùː] as in section 2.1.4.3, but (19) shows that the realization is actually *CV-wu-i* → [CV̀ː.wà]. Thus the *i-* prefix once again spells out as a syllable *wa*. The labialization of the perfective prefix spreads to the *i-* prefix but the perfective prefix itself has apparently disappeared leaving behind only a mora to lengthen the preceding syllable.

(19) a. Tléix' yaawaxée. *perfective as lengthening with i- as syllable wa*
[tɬʰéːx' jàː.wà.ˈχíː]
tléix' ÿa- wu-i- $^{1}\sqrt{}$xi -μH
one face-PFV-STV-$^{1}\sqrt{}$OVERNIGHT-VAR
'One night passed.'

b. *Tléix' yaayaxée. **perfective as lengthening with i- as syllable ya*
[tɬʰéːx' jàː.jà.ˈχíː]

c. *Tléix' yaaaxée. **perfective as lengthening with i- as lengthening*
[tɬʰéːx' jàː.ˈχíː]

d. *Tléix' yawyaxée. **perfective as coda w with i- as syllable ya*
[tɬʰéːx' jàw.jà.ˈχíː]

e. *Tléix' yawwaxée. **perfective as coda w with i- as syllable wa*
[tɬʰéːx' jàw.wà.ˈχíː]

f. *Tléix' yawooxée. **perfective as coda w with i- as lengthening*
[tɬʰéːx' jà.wuː.ˈχíː]

The realization of *i-* as *wa* in this context is presumably explained the same way as other *wa* realizations. The phonology of the perfective is still inconclusive and further work needs to be done to identify all of its alternations from the extant data. As mentioned in the preceding section, the

verb prefix realization charts by Leer (1991: 185–202) and Eggleston (2013: 185–221) probably cover nearly all of the possible forms but they have yet to be thoroughly analyzed and modelled.

The realization of *i-* as *wa* may or may not be triggered by material outside of the Conjunct domain such as the *tu-* 'mind' prefix that occurs among the incorporated nouns. Compare the two forms in (20) that represent an imperfective state based on the root $\sqrt[1]{ti^h}$ 'be, exist'; a literal translation is 'I am minded about it'. Some speakers generally prefer *wa* in (20a) or *ya* in (20b), but all recognize both and some regularly produce both.

(20) a. *tu- with i- as syllable wa*

A	daa	x̲at	tuwatee.
[ʔà	tàː	χàt	tʰù.wà.ˈtʰìː]
a	daa	x̲at=	tu- i- $\sqrt[1]{ti^h}$-μ
3N·PSS	around-LOC	1SG·O=mind-STV-$\sqrt[1]{}$be -VAR	

'I care about it.', 'I am of a mind about it.'

b. *tu- with i- as syllable ya*

A	daa	x̲at	tuyatee.
[ʔà	tàː	χàt	tʰù.jà.ˈtʰìː]
a	daa	x̲at=	tu- i- $\sqrt[1]{ti^h}$-μ
3N·PSS	around-LOC	1SG·O=mind-STV-$\sqrt[1]{}$be -VAR	

'I care about it.', 'I am of a mind about it.'

The optionality of labial spread in (20) contrasts with the mandatory labial spread in (15). The *tu-* 'we' in (15) is homophonous with the *tu-* 'mind' in (20), but they are positionally distinct: *tu-* mind is an incorporated noun in AspP and thus spelled out in the Disjunct domain whereas *tu-* 'we' is a subject D pronoun in *v*P and thus spelled out in the Conjunct domain. The *i-* prefix, as the realization of Ɛ, must necessarily spell out in the Conjunct domain. Thus *tu-* 'we' is in the same domain as *i-*, but *tu-* 'mind' is in a different domain. This difference in domains can account for the difference in mandatory versus optional spread of labialization.

Similar variation holds for the areal *k̲u-* 'area, space, weather' as shown by the imperfective state in (21). But the labialization is mandatory with the perfective in (22). The explanation here is the presumably the same as before: the stative *i-* prefix is in the same Conjunct domain as the perfective *wu-* whereas the areal *k̲u-* is in the Disjunct domain.

(21) a. *k̲u- with i- as syllable wa*

K̲uwak'éi.			
[qʰʷù.wà.ˈk'éː]			
k̲u-	i-	$\sqrt[1]{k'e}$	-μH
AREAL-STV-$\sqrt[1]{}$good-VAR			

'It is good weather.'

b. *k̲u- with i- as syllable ya*

[qʰʷù.jà.ˈk'éː]

(22) a. *k̲u-wu- with i- as syllable wa*

K̲oowak'éi.			
[qʰʷùː.wà.ˈk'éː]			
k̲u-	wu-i-	$\sqrt[1]{k'e}$	-μH
AREAL-PFV-STV-$\sqrt[1]{}$good-VAR			

'It has become good weather.'

b. *K̲ooyak'éi. **k̲u-wu- with i- as syllable ya*

[qʰʷùː.jà.ˈk'éː]

2.1.4. Case iv: Vowel lengthening

As already mentioned in earlier sections, the *i-* prefix is often realized as lengthening of a preceding vowel. The only three vowels that appear long when preceding *i-* are /a/, /i/, and /u/; each vowel is discussed in sections 2.1.4.1–2.1.4.3 respectively.

There is never an instance of long /e/ that arises from coalescence with the *i-* prefix. This absence of long /e/ is probably related to the relatively recent development of this phoneme from earlier sequences of */aj/, and thus the morphological absence of short [e] that could be lengthened by a following *i-*. From a phonological perspective then the lack of long /e/ from *i-* is accidental. This accidental gap is supported by the fact that long /e/ can arise in other contexts such as the combination of *se-* /se/ 'voice' and the perfective *u-* in (23).

(23) A káa daak has seiwaháa,
[ʔà kʰáː tàːk hàs sèː.wà.ˈháː
a ká -μH dáak= hás=se- u- i- $^{1}\sqrt{}$ha -μH
3N·PSS$_i$ HSFC-LOC seaward=PLH= voice-ZPFV-STV-$^{1}\sqrt{}$mv·invis-VAR

yá aadé yaawaxaayi yé.
já ˈʔàː.té jàː.wà.ˈqʰàː.jì jé]
yá á -dé ÿa- wu-i- $^{1}\sqrt{}$xa-μ -i yé
PROX [CP 3N$_i$-ALL QUAL-PFV-STV-$^{1}\sqrt{}$say-VAR-REL] way$_i$
'They remembered it, this way that he had said so.' (Story & Naish 1973: 170.2333)

2.1.4.1. Long *aa*

The stative *i-* prefix can be realized as lengthening of a preceding [a] vowel, giving rise to a syllable [Càː]. This occurs at least with the first person singular subject prefix *x-* in both imperfective and perfective aspects, but there are other also other contexts not discussed here for brevity. The data in (24) shows that the *x-* prefix, epenthesized as a syllable *xa* [χà] can either absorb the *i-* and become a long *xaa* [χàː] as in (24a) or alternatively the *i-* can spell out as its own syllable *ya* as in (24b). The ungrammatical form in (24c) shows that *x-* must be epenthesized and cannot simply take *i-* as a nucleus.[2] The *i-* cannot colour the epenthetic vowel in (24c) and cannot be a coda in (24e).

(24) a. Yéi saxaahéi. *x- with i- as lengthening*
[jéː sà.χàː.ˈhéː]
yéi= se- x- i- $^{2}\sqrt{}$haʰ-eH
thus=voice-1SG·S-STV-$^{2}\sqrt{}$will -VAR
'I want it so.', 'I will it to be thus.'

b. Yéi saxayahéi. *x- with i- as syllable ya*
[jéː sà.χàː.ˈhéː]

c. *Yéi saxihéi. **x- with i- as vowel i*
[jéː sà.χà.jà.ˈhéː]

d. *Yéi saxeehéi. **x- with i- as long vowel ee*
[jéː sà.χìː.ˈhéː]

e. *Yéi saxayhéi. **x- with i- as coda y*
[jéː sà.χàj.ˈhéː]

2. This calls into question the analysis of *x-* as a single consonant and not *xa-*, but that is a problem for another day.

The lengthening effect of *i-* cannot occur with the Disjunct domain. This is shown in (25) with the same verb root $^{1}\sqrt{ha^{h}}$ 'will, desire', using a third person (covert) subject so that the *se-* prefix immediately precedes the *i-* prefix. Only the syllabic *ya* realization of *i-* in (25a) is allowed.

(25) a. Yéi asayahéi. *se- with i- as ya*
[jéː ʔà.sà.jà.ˈhéː]
yéi= a- se- i- $^{2}\sqrt{ha^{h}}$-eH
thus=3·O-voice-STV-$^{2}\sqrt{}$will -VAR
'S/he wants it so.', 'S/he wills it to be thus.'

b. *Yéi asaahéi. **se- with i- as long aa*
[jéː ʔà.sàː.ˈhéː]

c. *Yéi aseehéi. **se- with i- as long ee*
[jéː ʔà.sìː.ˈhéː]

d. *Yéi aseihéi. **se- with i- as long ei*
[jéː ʔà.sèː.ˈhéː]

e. *Yéi asayhéi. **se- with i- as coda y*
[jéː ʔà.sàj.ˈhéː]

Although the imperfective aspect context in (24) allows a free choice between *i-* as lengthening and as *ya*, only the lengthening realization is allowed with the perfective aspect. This is shown in (26a) where only the long *x̲waa* in (26a) is acceptable and the disyllabic *x̲waya* in (26b) is prohibited.

(26) a. X̲waax̲áa. *wu-x̲- with i- as lengthening*
[χʷàː.ˈχáː]
u- x̲- i- $^{2}\sqrt{}$x̲a-μH
ZPFV-1SG·S-STV-$^{2}\sqrt{}$eat-VAR
'I ate it.'

b. *X̲wayax̲áa. **wu-x̲- with i- as syllable ya*
[χʷà.jà.ˈχáː]

c. *X̲wix̲áa. **wu-x̲- with i- as vowel i*
[χʷì.ˈχáː]

d. *X̲weex̲áa. **wu-x̲- with i- as long vowel ee*
[χʷìː.ˈχáː]

e. *X̲wayx̲áa. **wu-x̲- with i- as coda y*
[χʷàj.ˈχáː]

As mentioned above, there are other realizations of *i-* as part of a long *aa*. Looking through Leer 1991: 185–202 for example, I note sequences of *g̲-i-* → *g̲aa*, *n-i-* → *naa*, and *g̲-g̲-i-* as *g̲aag̲aa*. There is obviously much more to be investigated with this and the other lengthening realizations of *i-*.

2.1.4.2. Long *ee*

The stative *i-* prefix can be realized as lengthening of a preceding [i] at least it when it occurs with the perfective *wu-* and the second person singular subject *i-* 'you sg.'. As shown earlier in section 2.1.2, this does not happen with the combination of the Ø-conjugation perfective *u-* and second singular *i-*, only with the unspecialized perfective *wu-*.

(27) a. Yeesháat. *wu-i- with i- as lengthening*
[jìː.ˈʃáːt]
wu-i- i- $^{2}\sqrt{}$sha't-μH
PFV-2SG·S-STV-$^{2}\sqrt{}$grab -VAR
'You (sg.) grabbed it.'

b. *Yiyasháat. **wu-i- with i- as syllable ya*
[jì.jà.ˈʃáːt]

c. *Yiyisháat. **wu-i- with i- as syllable yi*
[jì.jì.ˈʃáːt]

d. *Yiysháat. **wu-i- with i- as coda y*
[jìj.ˈʃáːt]

The realization of perfective *wu-* and second person *i-* is regularly *yi* [jì] as shown in (28). Here the stative *i-* is suppressed by addition of the subordinate clause suffix *-í* (see sec. 4.1.4). The combination of *wu-* + *i-* → *yi* [jì] is historically explained by the delabialization of **ŋʷ-* > **ÿu-* > *wu-* in something like **ŋʷ-i-* → **ŋi*, but a synchronic analysis of this pattern is still wanting. With *wu-* + *i-* → *yi* in place however, the addition of stative *i-* as in (27a) is relatively straightforward to analyze as lengthening of the preceding [ì] vowel.

(28) Yisháadidáx̱...
[jì.ˈʃáː.tì.táχ]
wu-i- $^{2}\sqrt{}$sha't-μH-í =dáx̱
PFV-2SG·S-$^{2}\sqrt{}$grab -VAR-SUB=ABL
'After you (sg.) have grabbed it...'

2.1.4.3. Long *oo*

The stative *i-* prefix can be realized as lengthening of a preceding [u] when it is preceded by the perfective prefix *wu-* in the case that this would otherwise spell out as [wù]. This is shown by the data in (29). The *ya* form in (29b), the *wa* form in (29c), the coda *y* form in (29d), and the coda *w* form in (29e) are all ungrammatical.

(29) a. Wootaa. *wu- with i- as lengthening*
[wùː.ˈtʰàː]
wu-i- $^{1}\sqrt{}$taʰ -μ
PFV-STV-$^{2}\sqrt{}$grab-VAR
'S/he slept.'

b. *Wuyataa. **wu- with i- as syllable ya*
[wù.jà.ˈtʰàː]

c. *Wuwataa. **wu- with i- as syllable wa*
[wù.wà.ˈtʰàː]

d. *Wuytaa. **wu- with i- as coda y*
[wuj.ˈtʰàː]

e. *Wuwtaa. **wu- with i- as coda w*
[wuw.ˈtʰàː]

The realization of *wu-* + *i-* as *woo* [wùː] contrasts with the realization of *u-* + *i-* as *uwa* [ʔù.wà] which was presented ealier in section 2.1.3. This contrast is exactly paralleled by a difference in conjugation class (*∅* for *u-* and *n*, *g̱*, *g* for *wu-*) which is the basis for identifying *u-* as the perfective prefix specific to the *∅*-conjugation class. This distinction disappears in other contexts, such as when the perfective prefix is preceded by some other /CV/ prefix like *ka-* or *sha-*, complicating both the morphological and phonological analyses of the perfective. See chapter 6 section 2.2 for more discussion.

2.1.5. Case v: Deletion with perfective and 2nd plural

The stative *i-* prefix regularly fails to be realized either as segmental or suprasegmental material in one specific context. This context is when both Voice and *v* are absent, when the subject is the second person plural *ÿi-*, and when the perfective is present as *wu-* (or perhaps *u-*; the two prefixes are realized the same with *ÿi-*). This is shown by the forms in (30) which realize the sequence *wu-ÿi-i-* with the root $\sqrt[2]{\underline{x}a}$ 'eat'.

(30) a. Yeeyx̱áa. *wu-ÿi- with i- deleted*
[jìːj.ˈχáː]
wu-ÿi- i- $\sqrt[2]{\underline{x}}$a-μH
PFV-2PL·S-STV-$\sqrt[2]{}$eat-VAR
'You guys ate it.'

b. *Yeeyyax̱áa. **wu-ÿi- with i- as syllable ya*
[jìːj.jà.ˈχáː]

c. *Yeeyyix̱áa. **wu-ÿi- with i- as syllable yi*
[jìːj.jì.ˈχáː]

d. *Yeeyix̱áa. **wu-ÿi- with i- as vowel i*
[jìː.jì.ˈχáː]

e. *Yiyeex̱áa. **wu-ÿi- with i- as lengthening*
[jìː.jìː.ˈχáː]

The data in (31) illustrate a nearly identical phonological context except for the addition of causative *s-* before *i-* so that the linear prefix sequence is *wu-ÿi-s-i-* instead of *wu-ÿi-i-* as in (30). In this context the *i-* is realized in (31a) as the vowel of the syllable [sì]. The *wu-ÿi-* in (31a) spells out as *yeey* [jìːj] which is exactly the same as in (30a).

(31) a. Yeeysi.ée. *wu-ÿi-s- with i- as vowel i*
[jìːj.sì.ˈʔíː]
wu-ÿi- s- i- $\sqrt[1]{}$.i -μH
PFV-2PL·S-CSV-STV-$\sqrt[1]{}$cook-VAR
'You guys cooked it.'

b. *Yeeysayax̱áa. **wu-ÿi-s- with i- as syllable ya*
[jìːj.sà.jà.ˈχáː]

c. *Yeeysayix̱áa. **wu-ÿi-s- with i- as syllable yi*
[jìːj.sà.jì.ˈχáː]

d. *Yeeysayxáa. *wu-ÿi-s- with i- as coda y
[jìːj.sàj.ˈχáː]

e. *Yeeysxáa. *wu-ÿi-s- with i- deleted
[jìːjs.ˈχáː]

The comparison between *yeey* [jìːj] in (30a) and *yeeysi* [jìːj.sì] in (31a) suggests that either *i-* has no surface realization in (30a) or that somehow it has been merged with the coda *y* of *yeey* [jìːj]. This disappearance of *i-* has not previously been remarked upon, but it is entirely regular across all dialects with no interpretive consequences so it demands a phonological explanation.

2.1.6. Disappearance of *i-* in Southern and Tongass

The Southern (Sanya & Henya) dialects and the Tongass dialect all reportedly show regular disappearance of the [ì] vowel in [Cì] realizations of the stative *i-* prefix (Williams, Williams, & Leer 1978: 16–17; Leer 1991: 180 rule 13′c). According to Leer's descriptions, this occurs specifically when the [Cì] syllable containing *i-* (i.e. the Classifier syllable) is preceded by any monomoraic [CV] syllable or bimoraic [CVː] syllable. This is illustrated by Leer's data in (32) which I have analyzed from his presentation in Williams, Williams, & Leer 1978: 16–17. When *li* [ɬi] is word-initial in (32a) or preceded by a [CVC] syllable in (32b) it spells out normally, but when *li* [ɬi] is preceded by the syllable *haà* [ha^{h}] in (32c) the [i] disappears and the [ɬ] is resyllabified as the coda of a syllable *haàl* [ha^{h}ɬ].

(32) *Tongass Tlingit*

a. Litseèn. [*Ci*] *word initial*
[ɬi.ˈts^{h}i^{h}n]
l- i- $^{1}\sqrt{}$tsin -^{h}
XTN-STV-$^{1}\sqrt{}$animate-VAR
'S/he is strong.' (Williams, Williams, & Leer 1978: 17)

b. Xat litseèn. [*Ci*] *preceded by* [*CVC*]
[χat ɬi.ˈts^{h}i^{h}n]
xat= l- i- $^{1}\sqrt{}$tsin -^{h}
1SG·O=XTN-STV-$^{1}\sqrt{}$animate-VAR
'I am strong.' (Williams, Williams, & Leer 1978: 17)

c. Haà ltseèn. [*C*] *preceded by* [*CV^{h}*]
[ha^{h}‿ɬ.ˈts^{h}i^{h}n]
haà= l- i- $^{1}\sqrt{}$tsin -^{h}
1PL·O=XTN-STV-$^{1}\sqrt{}$animate-VAR
'We are strong.' (Williams, Williams, & Leer 1978: 17)

The same phenomenon is also attested in transcriptions of Henya and Sanya Tlingit speakers from Klawock and Saxman respectively (Waterman 1922; Velten 1939, 1944; Leer 1969, 1975c; Dauenhauer & Dauenhauer 1987; Thornton 2012). It appears to be universal and obligatory in these Southern dialects just as much as it is in the Tongass dialect. Also, although previously unreported, I have personally encountered it in the speech of Transitional Tlingit speakers from Wrangell and Kake. There it instead seems to be optional because the same speaker may or may not do it, but I am unsure of what factors condition its presence or absence. Although Leer describes the disappearance

of *i* as a total absence and thus deletion, I have occasionally heard it in Transitional Tlingit as either devoicing of the vowel as e.g. [si̥] or gemination of the consonant as e.g. [sː] which suggests that the segment might retain its timing features in some contexts.

There has been so little research on the phonetics and phonology of the Southern and Tongass dialects of Tlingit that the above discussion is essentially all I can offer about this phenomenon. As mentioned in appendix A sections 3.1 and 3.2, there are a number of reasonably good audio recordings of these dialects that could support further investigation of phonetic and phonological topics, but only the Tongass recordings have any significant amount of accompanying transcriptions.

2.2. Syntax of the Ɛ head

In this section I detail some basic syntactic properties of Ɛ. First I show in section 2.2.1 that a verb can only exhibit a single *i-*, concluding that Ɛ can contain only one element. Then in section 2.2.2 I show that the Ɛ head must select VP as its complement and that it cannot occur without a complement nor can it select any other phrase as its complement. Finally in section 2.2.3 I raise the possibility that although Ɛ has not yet been shown to introduce any argument phrases, there are comparative state structures with associated phrases that could plausibly be analyzed as introduced within ƐP.

2.2.1. Ɛ must contain only one value

The Ɛ head can only contain a single value *i-* when it is overt. This is the case even when there are multiple syntactic operations that could license overt Ɛ: only one *i-* still appears. For example, a lexical state (sec. 3.1) contains a root that lexically specifies the appearance of *i-*. One such root is illustrated in (33) showing the requirement for overt *i-* in Ɛ.

(33) a. Xat yanéekw. *lexical state with i-*
xat= i- $^{1}\sqrt{}$nikw-μH
1SG·O=STV-$^{1}\sqrt{}$sick -VAR
'I am sick.'

b. *Xat néekw. **lexical state without i-*
xat= $^{1}\sqrt{}$nikw-μH
1SG·O= $^{1}\sqrt{}$sick -VAR
intended: 'I am sick.'

A grammatical state (sec. 3.2) contains a grammatical element such as an Asp head that requires the appearance of *i-*. This is shown in (34) with the perfective aspect that grammatically specifies the presence of *i-* in Ɛ.

(34) a. Xat woonéekw. *grammatical state with i-*
xat= wu-i- $^{1}\sqrt{}$nikw-μH
1SG·O=PFV-STV-$^{1}\sqrt{}$sick -VAR
'I became sick.', 'I got sick.'

b. *Xat wunéekw. **grammatical state without i-*
xat= wu- $^{1}\sqrt{}$nikw-μH
1SG·O=PFV- $^{1}\sqrt{}$sick -VAR
intended: 'I became sick.', 'I got sick.'

The lexical state in (33a) and the grammatical state in (34a) are both constructed with the same root, so in both cases the root contains a feature that conditions the presence of *i-*. In (34a) then there are actually two different elements specifying *i-*: the root and the aspectual prefix *wu-*. But the combination of these two does not result in two instances of *i-* as shown in (35).

(35) *Xat wooyanéekw. **grammatical and lexical state with i-i-*
xat= wu-i- i- $^{1}\sqrt{}$nikw-μH
1SG·O= PFV-STV-STV-$^{1}\sqrt{}$sick -VAR
intended: 'I became sick.', 'I got sick.'

Various other combinations of triggers for *i-* are possible, but in all cases only one *i-* is ever realized. I conclude that Ɛ can only contain one instance of *i-*. This does not preclude a model where there is more than one ƐP with only one Ɛ head being spelled out. Similar considerations apply to the *v*P where there is more empirical support for a multiple-*v*P analysis; see chapter 4 section 5 for discussion. I leave this possibility unexplored for now, though elaboration of possible multiple ƐP models is a desideratum for further investigation of the Ɛ head.

2.2.2. Ɛ MUST SELECT VP

The Ɛ head must select VP as its complement without exception. Aside from the attested structure of [$_{ƐP}$ Ɛ VP] where Ɛ selects VP, there are two other logically possible alternatives: (i) Ɛ lacks a complement and (ii) Ɛ selects something else as a complement. Both of these alternatives are unequivocally ungrammatical as I show below.

The Ɛ head must select a complement. Consider for example the lexical state imperfective in (36). In this structure the Ɛ head selects a VP comprising the object D pronoun *xat* 'me', the root $^{1}\sqrt{}$*k'e* 'good', and the stem variation *-μH* in V.

(36) Xat yak'éi.
xat= i- $^{1}\sqrt{}$k'e -μH
1SG·O=STV-$^{1}\sqrt{}$good-VAR
'I am good.'

We could imagine the possibility of the VP being either missing or elided in the context of an answer to a question such as the polar yes/no question in (37). But the data in (38) show that this is ungrammatical with (38a), and that only the full answer in (38b) is grammatical.

(37) Iyak'éi gí? *polar yes-no question*
i- i- $^{1}\sqrt{}$k'e -μH gí
2SG·O-STV-$^{1}\sqrt{}$good-VAR YN
'Are you good?'

(38) a. *Aaá, xat ya. **absent VP*
aaá xat= i-
yes 1SG·O=STV-
intended: 'Yes, I am.'

b. Aaá, xat yak'éi. *overt VP*
aaá xat= i- $^{1}\sqrt{}$k'e -μH
yes 1SG·O=STV-$^{1}\sqrt{}$good-VAR
'Yes, I am good.'

This ungrammaticality of a complementless Ɛ is a reflection of a more general constraint on complementation within the verbal structure in Tlingit. Each of the heads above V – namely Asp, Voice, *v*, and Ɛ – has a different set of selectional restrictions but all of these require some kind of complement in every case. Also the minimal complement for any of the heads above V is VP because it is impossible to select just a root or just stem variation alone.

The only complement available to Ɛ is VP, and so Ɛ cannot select anything else as its complement. The other functional heads in the verb – Asp, Voice, and *v* – can all select ƐP but none of these phrases can be selected by Ɛ. This leaves only VP available as a complement, and since Ɛ must select something it must select VP. I defer the possibility of Ɛ selecting non-verbal phrases like NP and AdjP for now, reserving this for a more detailed future discussion of VP; but see the discussion of VP in chapter 2.

2.2.3. Ɛ MIGHT SPECIFY ARGUMENTS

My model of ƐP so far is as simple as possible: there is a phrase ƐP that is the complement of Asp, Voice, or *v*, that has a head Ɛ, and that selects VP as its complement. This is the situation shown in (39) using *v* as the head selecting ƐP. If Ɛ really does project a phrase ƐP then this suggests that more material could occur within this phrase beyond just the head realized as *i-*. In this section I note some avenues for further exploration of ƐP even though I have no concrete conclusions.

(39) *basic structure of ƐP*

The ƐP does not require any other material within it other than Ɛ and its complement. This is a consequence of Bare Phrase Structure (BPS) as proposed within the Minimalist Program (Chomsky 1995; Saito & Fukui 1998; Fukui 2011; Nunes 2013). X′-Theory proposes universal structures like that shown in (40) with a phrase YP containing a head Y, an intermediate projection Y′ from Y, a maximal projection YP of Y, a 'specifier' X of YP, and a complement Z of YP. BPS supports similar structures like that in (41) with a phrase YP that contains a head Y, a sister of this head Z, and a sister X of the first projection of Y. Crucially, both the specifier and complement positions in (40) are defined with respect to the maximal projection YP, but in (41) these same positions are defined with respect to their immediate sisters that are directly reachable through their containing projection.

(40) *X′-Theory*

(41) *Bare Phrase Structure*

X′-Theory insists on the presence of the Spec(YP) position in all phrases YP, and the absence of this position is ungrammatical as shown in (42). This is because X′-Theory is templatic, and a template always contains all possible positions. In contrast, the Sister(YP) position need not exist unless there is evidence for it. Thus although the X′-Theoretical structure in (42) is ill-formed, the equivalent BPS structure in (43) is well-formed. Because of this, ƐP structures like that in (39) above are predicted by BPS but not by X′-Theory.

(42) * *X′-Theory*

(43) ✓ *Bare Phrase Structure*

Even though BPS does not require the existence of a Sister(YP) position, it is nonetheless possible for syntactic material to occur within a phrase and c-command the head. So BPS does not itself *exclude* the possibility of non-head and non-complement material in Tlingit's ƐP, it is just that BPS does not *entail* the existence of non-head non-complement material. It is possible for ƐP to consist solely of Ɛ and a complement VP, which is the situation we have seen so far. But BPS also suggests that ƐP could contain more material in some circumstances. I look at one possible situation here.

Since ƐP is part of the Classifier domain, its contents at spellout are strongly restricted by the phonology. The phonological Classifier domain consists of the overt contents of the three heads Voice, *v*, and Ɛ. These must be minimally spelled out as a single fricative, or at most as a single syllable. There is no phonological evidence for anything ever appearing in between these three heads, thus suggesting that ƐP must consist only of Ɛ and its complement VP. But my model still has nominal material merged in both VP and *v*P which is either covert or undergoes movement out of these phrases for various reasons, so the same could also be true of material merged in ƐP. Classifier domain phonology therefore cannot be used as an argument against the ramification of ƐP.

Because ƐP could contain covert material, it is possible that ƐP could host an argument. Arguments in Tlingit are known to be at least D, DP, and PP, so we would look for an ƐP that might host one or another of these. The structure of such an ƐP would be something like that shown in (44).

(44) *ƐP containing an argument XP*

Comparatives are a class of verbal structures that could potentially host an argument in ƐP, fitting the model in (44). Comparative verbs are derived from intransitive states with the addition of comparative morphology and a comparative argument. The comparative argument is either a PP

like *NP yáanáx̱* 'more than NP' or *NP k̲ín* 'less than NP', or an adverb like *k̲únáx̱* 'very' or *k̲údáx̱* 'too much', or else the dummy adverb *yéi* 'thus'. This argument could be introduced in ƐP through the process of forming a comparative.

To illustrate this possibility, first consider the ordinary state imperfective illustrated in (45). The form in (45a) is an unremarkable lexical state with one argument, the second person singular object *i-* 'you (sg.)'. We might expect to be able to add an argument of comparison to this state since the root $\sqrt[1]{dal}$ 'heavy' denotes a degree (dimensional, gradable) state. But the ungrammatical form in (45b) shows that our expectation is wrong: the degree PP *yá gwéil yáanáx̱* 'more than this bag' cannot simply be added to the clause as an argument of comparison.

(45) a. X̱at yadál. *imperfective state*
x̱at= i- $\sqrt[1]{\text{dal}}$ -H
1SG·O=STV-$\sqrt[1]{\text{heavy}}$-VAR
'I am heavy.'

b. * Yá gwéil yáanáx̱ x̱at yadál. **imperfective state with comparison*
yá gwéil yáanáx̱ x̱at= i- $\sqrt[1]{\text{dal}}$ -H
[PP PROX bag SUP] 1SG·O=STV-$\sqrt[1]{\text{heavy}}$-VAR
intended: 'I am heavier than this bag.'

Degree comparison is actually possible in Tlingit, but its expression with a degree verb requires some derivational morphology to convert the ordinary state into a state with a comparative argument. In the description of Na-Dene languages this derivational phenomenon is often known as 'comparative aspect' (Bogal-Albritten 2010) although it is not actually involved with grammatical aspect.[3] I refer to this phenomenon in Tlingit as the 'comparative derivation' to avoid the confusion with aspectual categories and because it is regularly produced by a derivational operation.

The comparative derivation is composed of a comparative prefix *k-* or *g-* preceding Asp, the *u-* irrealis prefix in Asp, and *-μH* stem variation in V. The comparative prefix is usually *k-* which is homophonous with the classificatory *k-* 'small round object', but the two can cooccur. The allomorph *g-* is found irregularly in a handful of verbs like *yéi googéink'* 'it is comparatively small'. The sequence of irrealis *u-* and stative *i-* in Ɛ spells out as a long vowel *oo* [ùː] (sec. 2.1.4.3).

If we add the comparative derivation to the verb of (45) we find that it is ungrammatical without an overt argument as shown by the data in (46) and (47). The form in (46a) shows that the addition of just the comparative morphology does not produce a grammatical verb. Instead, the simplest form in (46b) includes an additional preverb *yéi* 'thus'. The form in (47a) shows that this *yéi* can be replaced by a comparative PP, and (47b) shows that the two are mutually exclusive.

(46) a. *X̱at koodáal. **comparative impfv. state*
x̱at= k- u- i- $\sqrt[1]{\text{dal}}$ -μH
1SG·O=CMPV-IRR-STV-$\sqrt[1]{\text{heavy}}$-VAR
intended: 'I am comparatively heavy.'

3. The Dene specialist term 'aspect' refers to lexically or derivationally specified Aktionsart-like categories such as 'neuter' (= stative), 'momentaneous' (= achievement), 'durative' (≈ activity), and 'conclusive' (≈ accomplishment). The term 'mode' refers to four stem variation classes that are associated with grammatical aspect and modality: imperfective, perfective, future, and optative. See Axelrod 1993 for detailed discussion and exemplification.

Figure 3.1: Tree with comparative as an argument of ƐP

b. Yéi x̲at koodáal. *comparative impfv. state with Adv*
yéi= x̲at= k- u- i- ^{1}√dal -μH
thus=1SG·O=CMPV-IRR-STV-^{1}√heavy-VAR
'I am comparatively heavy.'

(47) a. Yá gwéil yáanáx̲ x̲at koodáal. *comparative impfv. state with PP*
yá gwéil yáanáx̲ x̲at= k- u- i- ^{1}√dal -μH
[PP PROX bag SUP] 1SG·O=CMPV-IRR-STV-^{1}√heavy-VAR
'I am heavier than this bag.'

b. * Yá gwéil yáanáx̲ yéi x̲at koodáal. **comparative impfv. state with PP + Adv*
yá gwéil yáanáx̲ yéi= x̲at= k- u- i- ^{1}√dal -μH
[PP PROX bag SUP] thus=1SG·O=CMPV-IRR-STV-^{1}√heavy-VAR
intended: 'I am heavier than this bag.'

The facts in (46) and (47) mean that the comparative derivation adds an argument to the structure. Like other arguments, this comparative argument is not optional but can be filled by a kind of dummy in the form of *yéi* 'thus'. This *yéi* is itself an instantiation of the comparative argument since it is incompatible with an overt comparative argument.

Comparatives are only possible with states, suggesting that the argument is associated with stativity. The comparative prefix *k-* ~ *g-* might be first merged in ƐP along with the argument of comparison, both elements being evacuated from these positions later in the derivation. This is illustrated by the structure in figure 3.1. The comparative *k-* is represented as a head Adv with a complement PP for the overt comparative argument. The AdvP projected by the comparative is first merged within ƐP, with its two components moved up the tree after Asp is merged.

I have not investigated of whether ƐP can actually host arguments, so I have suggested it here as a future avenue of study. The overt presence of a state indicator in Tlingit (and Eyak) is probably not crosslinguistically unique, but there is very little descriptive literature to compare against, to say nothing of formal models of state indicators. My model probably makes predictions about how ƐP arguments should work, but since I have not explored this area I am still unsure about its consequences for the syntax and semantics.

3. Indicating states with Ɛ

States in Tlingit can be identified by the presence of *i-* in Ɛ, and so when Ɛ is overt it is a stativity indicator. Two kinds of states with *i-* can be distinguished by their paradigmatic behaviour. The appearance of *i-* in basic imperfective aspect forms is unpredictable and must be lexically specified. The appearance of *i-* in other contexts such as the perfective aspect is grammatically predictable and universal across the lexicon. There is thus a division between lexical states where the appearance of *i-* is lexically specified and grammatical states where the appearance of *i-* is grammatically specified. I detail the lexical states in section 3.1 and the grammatical states in section 3.2.

3.1. Lexical states have overt Ɛ

The imperfective aspect regularly distinguishes between states and activities by the presence or absence of the *i-* prefix respectively. This presence or absence of *i-* in the imperfective aspect is unpredictable and must be lexically specified for each root. Lexical states are only identifiable in the imperfective aspect because all other aspects either specify overt Ɛ regardless of the lexical specification (sec. 3.2) or instead require the absence of overt Ɛ (sec. 4). I exclude the imperfective state forms that contain a repetitive Adv suffix together with overt Ɛ because I consider these to be derived rather than lexically specified (sec. 3.2.2). I suggest that lexical stativity can be implemented by the specification of an ε-feature [STATE$_{\varepsilon}$] in the lexical entry of the root, and that this feature is probed for by Ɛ when it realizes *i-*.

The data in (48) and (49) illustrate the contrast between a lexically specified activity and state as they are realized with imperfective aspect. The data in (48) shows that the monovalent root $\sqrt[1]{gax}$ 'cry' can support an activity imperfective in (48a) but not a state imperfective with *i-* in (48b). The data in (49) likewise shows that the monovalent root $\sqrt[1]{nikw}$ 'sick' cannot form an activity imperfective in (49a) but does support a state imperfective with *i-* in (49b).

(48) a. Gáax̱. *activity imperfective without i-*
$\sqrt[1]{gax}$-μH
$\sqrt[1]{cry}$ -VAR
'S/he is crying.'

b. *Yagáax̱. **state imperfective with i-*
i- $\sqrt[1]{gax}$-μH
STV-$\sqrt[1]{cry}$ -VAR
intended: 'S/he is crying.'

(49) a. *Néekw. **activity imperfective without i-*
$\sqrt[1]{nikw}$-μH
$\sqrt[1]{sick}$ -VAR
intended: 'S/he is sick.'

b. Yanéekw. *state imperfective with i-*
i- $\sqrt[1]{nikw}$-μH
STV-$\sqrt[1]{sick}$ -VAR
'S/he is sick.'

Figure 3.2: Tree for intransitive state imperfective with overt Ɛ in (49b)

We can imagine the possibility of a state of crying and the possibilty of an activity of sickness, but the predicted forms are ungrammatical in Tlingit. So the language excludes these possibilities, and thus there must be some property of each root's lexical entry that specifies whether the root can form an activity imperfective without *i-* or a state imperfective with *i-*. I account for the specification of stativity with an ε-feature [STATE$_\varepsilon$] that is part of the lexical entry of the root. The analysis of the state imperfective in (49b) is shown in figure 3.2. The Ɛ head probes for the [STATE$_\varepsilon$] feature and, detecting this, realizes the *i-* prefix. The corresponding analysis for (48b) lacks the [STATE$_\varepsilon$] feature in the root and so the derivation crashes.

The vast majority of lexical states are unaccusative intransitives so that there is only a single argument which is merged in VP and realized either as an object D pronoun in AspP or as a word-external DP (not a PP and not marked with ergative *-ch*). Most unaccusative lexical states are based on monovalent roots like (49b) and so occur without a *v* head (cf. ch. 4 sec. 2.2.3). But some unaccusative lexical states are based on nullivalent roots like those in (50) and (51).

(50) a. *Ya.áat'. **nullivalent unaccusative state without* v
i- $^0\sqrt{}$.at' -μH
STV-$^0\sqrt{}$cold-VAR
intended: 'It is cold.'

b. Si.áat'. *nullivalent unaccusative state with s-*
s- i- $^0\sqrt{}$.at' -μH
INTR-STV-$^0\sqrt{}$cold-VAR
'It is cold.'

(51) a. *Yatéx̱. **nullivalent unaccusative state without* v
i- $^0\sqrt{}$tex̱ -H
STV-$^0\sqrt{}$acrid-VAR
intended: 'It is acrid.'

b. Litéx̱. *nullivalent unaccusative state with l-*
l- i- $\sqrt[0]{}$tex̱ -H
INTR-STV-$\sqrt[0]{}$acrid-VAR
'It is acrid.'

The preponderance of unaccusative verbs that are states might be taken to suggest that unaccusatives are stative, and thus that stativity is dependent on argument structure. This is untenable because there are unaccusatives that are not states and there are states that are not unaccusative. The data in (52) and (53) illustrate this with the root $\sqrt[1]{}$*nix̱* 'safe'. The perfective forms in (52) show that this verb must be unaccusative. The imperfective forms in (53) show that this verb cannot be either a state or an activity, and thus that the root is an achievement. This means that the unaccusative → state implication does not hold.

(52) a. X̱at wooneex̱. *unaccusative achievement perfective*
x̱at= wu-i- $\sqrt[1]{}$nix̱-μ
1SG·O=PFV-STV-$\sqrt[1]{}$safe-VAR
'I have recovered.', 'I have become safe.'

b. *X̱waaneex̱. **unergative achievement perfective*
wu-x̱- i- $\sqrt[1]{}$nix̱-μ
PFV-1SG·S-STV-$\sqrt[1]{}$safe-VAR
intended: 'I have recovered.', 'I have become safe.'

(53) a. *X̱at yaneex̱. **unaccusative state imperfective*
x̱at= i- $\sqrt[1]{}$nix̱-μ
1SG·O=STV-$\sqrt[1]{}$safe-VAR
'I am recovered.', 'I am safe.'

b. *X̱at neex̱. **unaccusative activity imperfective*
x̱at= $\sqrt[1]{}$nix̱-μ
1SG·O=$\sqrt[1]{}$safe-VAR
'I am recovering.', 'I'm getting safe.'

There are a small number of lexical states that are transitive, regularly appearing with both a subject and an object. A number of these transitive lexical states are actually causatives, identified by the presence of an overt *v* value and a corresponding intransitive lexical state without an overt *v*. One is illustrated with the monovalent root $\sqrt[1]{}$*nikw* 'sick' in (54), showing the unaccusative without overt *v* in (54a) and the causative with overt *s-* in *v* in (54b).

(54) a. X̱at yanéekw. *unaccusative state*
x̱at= i- $\sqrt[1]{}$nikw-μH
1SG·O=STV-$\sqrt[1]{}$sick -VAR
'I am sick.'

b. X̱at isinéekw. *causative (transitive) state*
x̱at= i- s- i- $\sqrt[1]{}$nikw-μH
1SG·O=2SG·S-CSV-STV-$\sqrt[1]{}$sick -VAR
'You make me sick.'

But a few transitive lexical states occur without an overt *v*, thus being based on bivalent roots. I have identified at least six which are listed in table 3.2 with *∅* for the *v* column. One of these six, specifically *ayatéen* 's/he/it can see him/her/it', is defective because it can only occur as an imperfective aspect form and is ungrammatical as e.g. a perfective or a prospective.

(55) a. Ixaatéen. *transitive state imperfective*
i- x- i- $\sqrt[2]{}$tin-μH
2SG·O-1SG·S-STV-$\sqrt[2]{}$see-VAR
'I can see you.', 'I am able to see you.'

b. *Ixwaateen. **transitive state perfective*
i- wu-x- i- $\sqrt[2]{}$tin-μ
2SG·O-PFV-1SG·S-STV-$\sqrt[2]{}$see-VAR
intended: 'I could see you.', 'I was able to see you.'

c. *Yei ikkwatéen. **transitive state perfective*
yei= i- w- g- g- x- i- $\sqrt[2]{}$tin-μH
down=2SG·O-IRR-GCNJ-MOD-1SG·S-STV-$\sqrt[2]{}$see-VAR
intended: 'I will be able to see you.'

Another transitive state, *ayasáakw* 's/he calls, names it', contains a repetitive suffix *-kw* which disappears in other aspectual contexts so that the imperfective form is probably derived rather than being basic (andsec. 3.2.2). This is shown in (56) where the form with *-kw* in (56a) is grammatical but the form without *-kw* in (56b) is not, and *-kw* is furthermore absent in the perfective in (56c) and the prospective in (56d).

(56) a. Yéi ayasáakw. *transitive state imperfective with -kw*
yéi= a- i- $\sqrt[2]{}$sa -μH-kw
thus=ARG-STV-$\sqrt[2]{}$name-VAR-REP
'S/he calls/names it thus.'

b. *Yéi ayasáa. **transitive state imperfective without -kw*
yéi= a- i- $\sqrt[2]{}$sa -μH
thus=ARG-STV-$\sqrt[2]{}$name-VAR
intended: 'S/he calls/names it thus.'

c. Yéi aawasáa. *transitive state perfective*
yéi= a- wu-i- $\sqrt[2]{}$sa -μH
thus=ARG-PFV-STV-$\sqrt[2]{}$name-VAR
'S/he called/named it thus.'

d. Yéi akgwasáa. *transitive state prospective*
yéi= a- w- g- g- $\sqrt[2]{}$sa -μH
thus=ARG-IRR-GCNJ-MOD-$\sqrt[2]{}$name-VAR
'S/he will call/name it thus.'

The remaining four transitive states can be divided into two groups based on whether they have a lexically specified irrealis prefix *u-* or not. The two with lexical irrealis are *yéi oowajée* 's/he thinks

so of it' and *oowayáa* 'it resembles it'. The two without lexical irrealis are *ayahéin* 's/he claims, owns it' and *aya.óo* 's/he owns it'. The occurrence of such transitive states means that the stative → unaccusative implicature also does not hold, and thus unaccusative ↔ stative.

There are only a very few lexical states that are unergative, regularly appearing with only a subject argument. As far as I am aware all unergative lexical states feature an expletive object prefix such as *a-* or *ku̱-*. The presence of an expletive object suggests that this blocks the active argument from being realized in the object position, and thus that their unergativity is a kind of fallback realization of the argument. One such unergative state is shown in (57), based on the root $\sqrt[1]{ka}$ 'lazy'. (This particular root is known only from this verb, so the monovalency is not verified.) The grammatical form in (57a) has an overt subject D pronoun, wheras the equivalent object D pronoun in (57b) is ungrammatical.

(57) a. Ooxdzikáa. *unergative lexical state with subject*
a- u- x- d- s- i- $\sqrt[1]{ka}$ -μH
XPL-IRR-1SG·S-MID-XTN-STV-$\sqrt[1]{lazy}$-VAR
'I am lazy.'

b. *Xat udzikáa. **unergative lexical state with object*
xat= u- d- s- i- $\sqrt[1]{ka}$ -μH
1SG·O=IRR-MID-XTN-STV-$\sqrt[1]{lazy}$-VAR
intended: 'I am lazy.'

Table 3.2 provides a small selection of lexical states, organized into groups based on the presence or absence and form of *v*. Most of the states are members of the *g*-conjugation class which is because most lexical states are members of this class; see chapter 6 section 3.4.1 for further discussion of this correlation and its possible implications. Stem variation in imperfective states is unpredictable and so must be lexically specified, but there do not seem to be any particular correlations between the lexical specification of stativity and the lexical specification of stem variation: there are quite a few states with *-μH* stems but there are plenty of states with other stems as well, and *-μH* stems are also common in lexical activities. Root valency is also apparently not connected to lexical stativity since all three possible valencies are attested.

3.2. Grammatical states have overt Ɛ

Aspects other than the imperfective all predictably have or lack *i-* regardless of the lexical specification of the root. Aspects that require the presence of *i-* in Ɛ thus use *i-* to indicate grammatical stativity, and thus that the eventuality described by the verb is a state. The canonical example of this is the perfective aspect which in affirmative main clause contexts always requires overt Ɛ. The data in (58)–(60) shows that roots which derive states, activities, and achievements all behave the same in the perfective aspect in that they all require the stative prefix *i-* to be present in the verb.

(58) a. Wutusinéekw. *perfective of state with i-*
wu-tu- s- i- $\sqrt[1]{nikw}$-μH
PFV-1PL·S-CSV-STV-$\sqrt[1]{sick}$ -VAR
'We made him/her/it sick.'

v	*Imperfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Stem*	*Conj.*
–	*yadál*	's/he/it is heavy'	+	–	$\sqrt[1]{dal}$	'heavy'	*-H*	*g*
	yak'éi	'it is good'	+	–	$\sqrt[1]{k'e}$	'good'	*-μH*	*g*
	yanéekw	's/he/it is sick'	+	–	$\sqrt[1]{nikw}$	'sick'	*-μH*	*g*
	yat'aa	'it is hot'	+	–	$\sqrt[1]{t'a^h}$	'hot'	*-μ*	*n*
	yéi yatee	'it is thus'	+	–	$\sqrt[1]{ti^h}$	'be'	*-μ*	*n*
	yatseen	's/he/it is alive'	+	–	$\sqrt[1]{tsin}$	'animate'	*-μ*	*g/Ø*
Ø	*ayahéin*	's/he claims, owns it'	+	+	$\sqrt[2]{hen}$	'claim'	*-μH*	*n*
	yéi oowajée	's/he thinks so of it'	+	+	$\sqrt[2]{ji^h}$	'think'	*-μH*	*n*
	aya.óo	's/he owns it'	+	+	$\sqrt[2]{.u}$	'buy'	*-μH*	*Ø/n*
	ayasáakw	's/he calls, names it'	+	+	$\sqrt[2]{sa}$	'name'	*-μH-kw*	*Ø*
	ayatéen	's/he/it can see him/her/it'	+	+	$\sqrt[2]{tin}$	'see'	*-μH*	*g*
	oowayáa	'it resembles it'	+	+	$\sqrt[2]{ÿa^h}$	'resemble'	*-μH*	*g̲/n*
s-	*si.áat'*	'it is cold'	+	–	$\sqrt[0]{.at'}$	'cold'	*-μH*	*Ø*
	sigóo	'it is fun, joyous'	+	–	$\sqrt[0]{gu}$	'joy'	*-μH*	*g*
	oodzikáa	's/he is lazy'	–	+	$\sqrt[1]{ka}$	'lazy'	*-μH*	*g*
	asinéekw	'it makes him/her sick'	+	+	$\sqrt[1]{nikw}$	'sick'	*-μH*	*g*
	sitóo	's/he is clever'	+	–	$\sqrt[0]{tu}$	'mind'	*-μH*	*g*
	asix̲án	's/he/it loves him/her/it'	+	+	$\sqrt[1]{x̲an}$	'near'	*-H*	*g*
l^s-	*lichán*	'it stinks'	+	–	$\sqrt[0]{chan}$	'stink'	*-H*	*g*
	lichéesh	'it is easy to get'	+	–	$\sqrt[0]{chish}$	'gettable'	*-μH*	*Ø/g*
	lidzée	'it is difficult'	+	–	$\sqrt[0]{dzi}$	'difficult'	*-μH*	*g*
	li.oos	's/he is playful'	+	–	$\sqrt[0]{.us}$	'playful'	*-μ*	*g*
	alitsáakw	's/he is saving it'	+	+	$\sqrt[1]{tsa'kw}$	'lasting'	*-μH*	*g̲*
	lits'áa	'it smells good'	+	–	$\sqrt[0]{ts'a}$	'aroma'	*-μH*	*g*
l-	*li.aan*	's/he is gentle'	+	–	$\sqrt[0]{.an}$	'gentle'	*-μ*	*g*
	akalidéix'	's/he embarasses him/her'	+	+	$\sqrt[1]{dex'}$	'shame'	*-μH*	*g/n*
	ligaaw	's/he/it is noisy'	+	–	$\sqrt[0]{gaw}$	'drum'	*-μ*	*g*
	akwliseek	's/he is shy of him/her'	+	+	$\sqrt[1]{sik}$	'shy'	*-μ*	*g*
	litéx̲	'it is acrid'	+	–	$\sqrt[0]{tex̲}$	'acrid'	*-H*	*g*
	liyék	'it is roomy'	+	–	$\sqrt[0]{yek}$	'room'	*-H*	*g*
sh-	*wak̲shigáal'*	's/he has a cataract'	+	–	$\sqrt[0]{gal'}$	'clam'	*-μH*	*g?*
	ashigóok	's/he knows (how to do) it'	+	+	$\sqrt[2]{guk}$	'know how'	*-μH*	*g*
	yaa ashigéi	's/he is stingy with it'	+	+	$\sqrt[2]{ge}$	'stingy'	*-μH*	*g*
	shig̲eek̲	's/he is stingy'	+	–	$\sqrt[1]{gik̲}$	'stingy'	*-μ*	*g*
	ashik'áan	's/he/it hates him/her/it'	+	+	$\sqrt[2]{k'an}$	'hate'	*-μH*	*g*

Table 3.2: Some lexical state verbs

b. *Wutusanéekw. **perfective of state without i-*
wu-tu- s- $^{1}\sqrt{}$nikw-μ
PFV-1PL·S-CSV- $^{1}\sqrt{}$sick -VAR
intended: 'We made him/her/it sick.'

(59) a. Wutusi.ée. *perfective of activity with i-*
wu-tu- s- i- $^{1}\sqrt{}$.i -μ
PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
'We cooked it.'

b. *Wutusa.ée. **perfective of activity without i-*
wu-tu- s- $^{1}\sqrt{}$.i -μ
PFV-1PL·S-CSV- $^{1}\sqrt{}$cook-VAR
intended: 'We cooked it.'

(60) a. Wutusineex̲. *perfective of achievement with i-*
wu-tu- s- i- $^{1}\sqrt{}$nix̲-μ
PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$safe-VAR
'We rescued, saved him/her/it.'

b. *Wutusaneex̲. **perfective of achievement without i-*
wu-tu- s- $^{1}\sqrt{}$nix̲-μ
PFV-1PL·S-CSV- $^{1}\sqrt{}$safe-VAR
intended: 'We rescued, saved him/her/it.'

Since the perfective aspect requires the presence of stative *i-*, it must denote a state. In fact, perfective aspect necessarily denotes a result state that holds after some previous eventuality of state change. The specific eventuality class of the previous eventuality is irrelevant; the only necessity is that the previous eventuality involves some change to the world so that the result state can hold. As such, the state realized by perfective aspect is grammatically predictable and supersedes the lexical specification of any particular root. This is the essence of grammatical states.

Grammatical states can be modelled similarly to lexical states: the Asp probes within its c-command domain for the presence of the stative ε-feature in the Ɛ head. The achievement root $^{1}\sqrt{}$*na*^{h} 'die' is illustrated in (61), showing the requirement for *i-*. The structure of the grammatical form in (61a) is represented in figure 3.3.

(61) a. Woonaa. *perfective with i-*
wu-i- $^{1}\sqrt{}$na^{h}-μ
PFV-STV-$^{1}\sqrt{}$die -VAR
'S/he/it died.'

b. *Wunaa. **perfective without i-*
wu- $^{1}\sqrt{}$na^{h}-μ
PFV- $^{1}\sqrt{}$die -VAR
intended: 'S/he/it died.'

Figure 3.3: Tree for grammatical state where Asp probes down for Ɛ

Figure 3.4: Tree for grammatical state where Ɛ probes up for Asp

The major modelling difference between a grammatical state and a lexical state is the site of the feature [STATE$_{\varepsilon}$]. In a lexical state this is specified in the root and Ɛ probes for it. In a grammatical state it is specified in Ɛ and Asp probes for it. An alternative approach is upward probing: Ɛ contains [uSTATE$_{\varepsilon}$] in both cases, but in a lexical state Ɛ probes downwards and in a grammatical state Ɛ probes upwards. This approach is represented with the almost identical structure in figure 3.4. In boat approaches the problem boils down to an asymmetric relationship: lexical states are specified below Ɛ but grammatical states are specified above Ɛ. At present I am agnostic between these two approaches, having yet to explore any of the differences between them. I have also not explored any other potential models of this phenomenon.

I draw a distinction between basic and derived grammatical states, based on the absence or presence of an Adv suffix that expresses iterativity. Basic grammatical states are detailed in section 3.2.1. These characteristically include some overt aspectual prefix – a perfective prefix {*wu-*, *u-*} or a conjugation prefix {*n-*, *g̲-*, *g-*} – which triggers the presence of overt *i-* in Ɛ. Derived grammatical

states are detailed in section 3.2.2. These mostly lack an overt aspectual prefix and crucially have a repetitive suffix which I analyze as an Adv adjoined to AspP. The derived grammatical states may potentially have their ε-feature introduced by the Adv suffix rather than Asp.

3.2.1. Basic grammatical states: Aspects and modalities

Basic grammatical states are those which are formed only by *i-* in Ɛ along with some material in Asp that selects Ɛ. Each combination of overt Asp and Ɛ is grammatically predictable on the basis of root lexical properties other than the [STATE$_\varepsilon$] feature, and crucially these combinations are possible for roots that are not lexically specified for stativity. As discussed above, the canonical example of a basic grammatical state is the perfective aspect. The perfective is illustrated in (62) with the motion root $\sqrt[2]{\textit{gix'}}$ 'throw, toss, pitch', using the *n*-conjugation motion derivation which supplies a conjugation class but not a path PP.[4]

(62) a. Xwaagéex'. *perfective of motion with i-*
wu-x- i- $\sqrt[2]{\text{gix'}}$ -μH
PFV-1SG·S-STV-$\sqrt[2]{\text{throw}}$·SG-VAR
'I tossed it.', 'I threw it.'

b. *Xwagéex'. **perfective of motion without i-*
wu-x- $\sqrt[2]{\text{gix'}}$ -μH
PFV-1SG·S- $\sqrt[2]{\text{throw}}$·SG-VAR
'I tossed it.', 'I threw it.'

Another basic grammatical state occurs with the realizational aspect. This is a specialized kind of perfective aspect that denotes a result state holding after some long anticipated ('finally', 'at long last') eventuality (Leer 1991: 378–381). It is indicated by the presence of the lexically or derivationally specified conjugation class prefix along with *i-* in Ɛ and *-μH* stem variation; see chapter 6 section 2.2 for more discussion. The same root $\sqrt[2]{\textit{gix'}}$ 'throw, toss, pitch' is given in (63) as a realizational showing the requirement for *i-*.

(63) a. Naxaagéex'. *realizational of motion with i-*
n- x- i- $\sqrt[2]{\text{gix'}}$ -μH
NCNJ-1SG·S-STV-$\sqrt[2]{\text{throw}}$·SG-VAR
'At long last I have finally tossed/threw it.'

b. *Naxagéex'. **realizational of motion without i-*
n- x- $\sqrt[2]{\text{gix'}}$ -μH
NCNJ-1SG·S- $\sqrt[2]{\text{throw}}$·SG-VAR
intended: 'At long last I have finally tossed/threw it.'

The potential modality is another basic grammatical state. This structure expresses circumstantial or deontic possibility (Burge 2017: 50) and is indicated by the *CNJ-* conjugation class prefix with irrealis *u-* and modal *g-* along with *i-* in Ɛ and either *-μ* or *-μH* stem variation (Leer 1991: 385–392); see chapter 6 section 4.4.2 for more discussion of the potential modality. The data in (64) illustrates the root $\sqrt[2]{\textit{gix'}}$ 'throw, toss, pitch' as a potential, again showing that *i-* is required.

4. See chapter 6 section 3.3 for details on the motion derivation system.

(64) a. Nakwaagéex'. *potential of motion with i-*
u- n- g- x- i- $^{2}\sqrt{}$gix' -μH
IRR-NCNJ-MOD-1SG·S-STV-$^{2}\sqrt{}$throw·SG-VAR
'I can toss/throw it.', 'I'm able to toss/throw it.'

b. *Nakwagéex'. **potential of motion without i-*
u- n- g- x- $^{2}\sqrt{}$gix' -μH
IRR-NCNJ-MOD-1SG·S- $^{2}\sqrt{}$throw·SG-VAR
'I can toss/throw it.', 'I'm able to toss/throw it.'

Some imperfective aspect forms with overt conjugation class prefixes – the *CNJ*-imperfectives (ch. 6 sec. 2.1.2) – regularly occur with overt *i-* in Ɛ. These might be considered to be basic grammatical states because they have an overt aspectual prefix and *i-*. But unlike the perfective, realizational, and potential, these *CNJ*-imperfectives are limited to a small set of roots, specifically roots that describe states of being extended along a path in space. I instead analyze these as special kinds of lexical states where an overt conjugation prefix is required because of its spatial semantics.

3.2.2. Derived grammatical states: Repetitive imperfective states

Derived grammatical states are those which are formed by *i-* in Ɛ even though Asp does not contain an overt aspectual prefix like perfective *wu-*. At first glance these appear to be imperfective states and thus we might expect them to be lexically specified, but a closer look shows that the root cannot be the source of the stativity because many are formed from roots that do not support an imperfective state form. Instead it is the presence of a repetitive Adv suffix that conditions the presence of *i-* in Ɛ.

I describe five different kinds of derived grammatical states in the following subsections, but there are probably more to be gleaned from the lexical documentation. Alternating repetitive states in section 3.2.2.1 describe states of regular alternation between eventualities; they are distinguished by the *yoo=* 'back and forth' preverb and the *-k* repetitive suffix. Tendency states in section 3.2.2.2 describe the property of regularly being engaged in an event; they are distinguished by the *-k* or the *-kw* repetitive suffix and often include detransitivization with *d-*. Plural dimension states in section 3.2.2.3 describe dimensions that hold for multiple entities; they occur with the plural *-x'* suffix and are restricted to roots that denote dimensions. Spotty states in section 3.2.2.4 are specifically associated with verb roots that denote having spots and distinctly feature the *-x* repetitive sufix that is otherwise not found in states. Finally there are at least two repetitive states with the *-s'* and *-l'* suffixes described in section 3.2.2.5.

I suggest four possible analyses for derived grammatical states, depending partly on the position of the Adv suffix and partly on its role in probing for the [STATE$_{\varepsilon}$] feature that is realized by *i-* in Ɛ. These four possibilities are listed in (65). The first analysis in (65a) is essentially the same as the derivation of basic grammatical states (sec. 3.2.1). The second analysis in (65b) instead shifts the probe from Asp to the Adv head that contains the repetitive suffix, assuming that the Adv head is adjoined to AspP. The third analysis in (65c) is the same except that the Adv head is instead adjoined to ƐP. The fourth analysis in (65d) places the Adv head in VP and thus requires it to probe up to the Ɛ head; this arrangement is similar to the one for lexical states.

Figure 3.5: Tree for derived grammatical state in (65a) where Asp probes Ɛ

Figure 3.6: Tree for derived grammatical state in (65b) where Adv in AspP probes Ɛ

(65)	a.	covert Asp	probes down for *i-* in Ɛ
	b.	Adv adjoined to AspP	probes down for *i-* in Ɛ
	c.	Adv adjoined to ƐP	probes down for *i-* in Ɛ
	d.	Adv adjoined to VP	probes up for *i-* in Ɛ

The tree in figure 3.5 reflects the possible analysis in (65a). The covert Asp head probes Ɛ for the [STATE$_\varepsilon$] feature. This is the same as the basic grammatical state of section 3.2.1, the only difference being that the Asp head is covert rather than overt. This analysis has the disadvantage of not capturing the connection between the repetitive suffix in Adv and stativity. Another disadvantage is that it requires the empty Asp head to have a syntactic function when otherwise empty heads generally have only a semantic contribution and do nothing in the syntax. I find the analysis in (65a) and figure 3.5 the least satisfying of all four possibilities.

Figure 3.7: Tree for derived grammatical state in (65c) where Adv in ƐP probes Ɛ

The tree in figure 3.6 reflects the possible analysis in (65b). The repetitive suffix in Adv is adjoined to AspP above the Asp head; I take no position here on the height of Adv with respect to other things merged above Asp in AspP, but presumably there are predictable scope differences that might have empirical consequences. The Adv suffix probes Ɛ, ensuring that the structure represents a state. This analysis specifically associates the Adv suffix with aspect because of its position in AspP, and thus predicts the possibility of interactions between Asp and Adv. Repetitives can be combined with aspects aside from the imperfective – such as what Leer (1991: 215–218, 497–505) calls 'durative epiaspect', as well as the habitual (ch. 6 sec. 2.2) – and in these structures the Asp head is overt with various constraints on its realization. This analysis which places Adv within AspP could be leveraged to explain this association between repetitives and aspect marking, with the repetitive imperfective forms reflecting a kind of umarked elsewhere case with its covert Asp.

The tree in figure 3.7 reflects the possible analysis in (65c). This is a variation on the preceding analysis where Adv is merged in ƐP rather than AspP. Even though the tree is somewhat ugly, this analysis is appealing because it emphasizes the relationship between stative marking and the selection the Adv suffix by placing them in a local relationship. Although there is a fairly large inventory of repetitive suffixes,[5] only a few reliably occur in stative structures with overt *i-* in Ɛ, namely *-k* ~ *-kw* and *-x'* with only a couple of rare cases of *-x̲* and *-s'* or *-l'* (see sections 3.2.2.4 and 3.2.2.5). The association between particular Adv suffixes and *i-* in Ɛ could then be explained as a local relationship.

The last tree in figure 3.8 reflects the possible analysis in (65d). Here the Adv suffix is adjoined to VP and consequently is asymmetrically c-commanded by Ɛ rather than the other way around. This is similar to the analysis of lexical states described in section 3.1, except rather than √ introducing the [STATE$_\varepsilon$] feature it is Adv introducing [STATE$_\varepsilon$] instead. The representation in figure 3.8 has the Adv head probe upward to Ɛ, but just like with lexical states this organization could be reversed so that Ɛ probes Adv. This analysis predicts that the repetitive imperfective states should be similar to the lexical states, but given that repetitive imperfective states are more productive I feel that this analysis is probably misguided. My preference is thus either (65b) or (65c).

5. At least the suffixes *-x̲*, *-ch*, *-k* ~ *-kw*, *-t*, *-x'*, *-t'*, *-s'*, and *-l'* are documented with more than one or two roots.

Figure 3.8: Tree for derived grammatical state in (65d) where Adv in VP probes Ɛ

3.2.2.1. Alternating repetitive states with *yoo=i-...-k*

The alternating repetitive imperfective state is the most frequently encountered derived grammatical state. It describes a state of alternation between two mutually incompatible eventualities, e.g. standing in two distinct locations, switching between the presence and absence of a property, or acting in two different ways. Prototypical examples of alternating states include lights blinking on and off, balls bouncing up and down, and branches swinging back and forth. Alternating repetitive imperfective states are formed with the alternating preverb *yoo=* 'back and forth, to and fro, up and down' together with *i-* in Ɛ and the suffix *-k*. The motion root $\sqrt[2]{}$*gix'* 'throw, toss, pitch' in section 3.2.1 is given here in (66) as an alternating repetitive imperfective state, showing that the *i-* cannot be omitted.[6]

(66) a. Yoo xayagíx'k. **alternating repetitive imperfective state with i-*
yoo=x- i- $\sqrt[2]{}$gix' -H -k
ALT= 1SG·S-STV-$\sqrt[2]{}$throw·SG-VAR-REP
'I am tossing it back and forth.'

b. *Yoo xagíx'k. **alternating repetitive imperfective state without i-*
yoo=x- $\sqrt[2]{}$gix' -H -k
ALT= 1SG·S- $\sqrt[2]{}$throw·SG-VAR-REP
'I am tossing it back and forth.'

The alternating repetitive imperfective with *yoo=i-...-k* is grammatically predictable because it is available for any verb that is a member of the *n*-conjugation class (ch. 6 sec. 3.3.3). This is independent of whether the root is specified for the [STATEε] feature, and so it is distinct from the

6. Some speakers have an alternative form *yoo xaagíx'k* [jùː χàː.ˈqíx'k] with a long vowel in the syllable *xaa* [χàː] instead of a separate syllable *ya* [jà]. See section 2.1.4.1 for more on this phonological variation.

lexical specification of states discussed in section 3.1. The depdenency on conjugation class could be thought of as lexical because conjugation class is usually lexically specified by the root, and so it could be argued that these are actually lexical states. But motion verbs are not lexically specified for conjugation class which is instead supplied by a motion derivation (ch. 6 sec. 3.3). And non-motion verbs can be combined with motion derivations when this is semantically reasonable, and a motion derivation can specify the *n*-conjugation and so override some lexically specified conjugation class. This introduced *n*-conjugation class automatically makes available the alternating repetitive imperfective. Thus roots specified for some other conjugation class can be productively derived into the *n*-conjugation class using entirely post-lexical machinery. This means that the *yoo=i-...-k* alternating repetitive imperfective is not really lexically specified.

3.2.2.2. Tendency states with *i-...-k(w)*

A tendency state is a derived grammatical state which is expressed by a combination of *i-* in Ɛ and the repetitive Adv suffix *-k* or *-kw*.[7] Tendency states are discussed further in chapter 6 section 2.1.1.2 in the context of iterativity with *∅*-imperfectives. The data in (67) and (68) illustrate a typical tendency state. The forms in (67) show that the bivalent root $\sqrt[2]{hun}$ 'sell' supports only an imperfective activity without *i-* and not an imperfective state with *i-*. Then the data in (68) shows the imperfective tendency state that can be derived from the basic activity by the addition of *i-* and *-kw* along with passivization.

(67) a. *Xayahóon. **imperfective state with i-*
x- i- $\sqrt[2]{\text{hun}}$-μH
1SG·S-STV-$\sqrt[2]{\text{sell}}$ -VAR
intended: 'I sell it.', 'I'm selling it.'

b. Xahóon. *imperfective activity without i-*
x- $\sqrt[2]{\text{hun}}$-μH
1SG·S- $\sqrt[2]{\text{sell}}$ -VAR
'I sell it.', 'I'm selling it.'

(68) a. Dihúnkw. *imperfective tendency state with i-*
d- i- $\sqrt[2]{\text{hun}}$-H -kw
PASV-STV-$\sqrt[2]{\text{sell}}$ -VAR-REP
'It sells well.' (i.e. 'It has the property of repeatedly selling.')

b. *Dahúnkw. **imperfective tendency state without i-*
d- $\sqrt[2]{\text{hun}}$-H -kw
PASV- $\sqrt[2]{\text{sell}}$ -VAR-REP
intended: 'It sells well.'

The extant documentation of tendency states suggests that they can only be intransitive, and so many have *d-* in Voice as an antipassivizer or passivizer (ch. 5 secs. 3 & 4). The presence of *d-* is not necessary however, since there are examples of similar verbs without *d-* that are based on monovalent roots. One such inherently intransitive tendency state without *d-* is shown in (69) and

7. Usually *-k* versus *-kw* is phonologically predictable from labialization spreading, but many tendency states occur unpredictably with *-kw*. There does not seem to be any semantic distinction between the two.

(70), based on the monovalent root $^{1}\sqrt{wash}$ 'gape; yawn'. As before, the forms in (69) show that the root supports an imperfective activity. Then the forms in (70) show that the tendency state can be formed by the addition of *i-* and *-k*.

(69) a. *Xat x'ayawaash. **imperfective activity with i-*
xat= x'e- i- $^{1}\sqrt{}$wash-μ
1SG·O=mouth-STV-$^{1}\sqrt{}$gape -VAR
intended: 'I am yawning.'

b. Xat x'awaash. *imperfective activity without i-*
xat= x'e- $^{1}\sqrt{}$wash-μ
1SG·O=mouth- $^{1}\sqrt{}$gape -VAR
'I yawn', 'I am yawning.'

(70) a. Xat x'ayawáshk. **imperfective tendency state with i-*
xat= x'e- i- $^{1}\sqrt{}$wash-H -k
1SG·O=mouth-STV-$^{1}\sqrt{}$gape -VAR-REP
'I yawn a lot.' (i.e. 'I have the property of repeatedly yawning.')

b. *Xat x'awáshk. **imperfective tendency state without i-*
xat= x'e- $^{1}\sqrt{}$wash-H -k
1SG·O=mouth- $^{1}\sqrt{}$gape -VAR-REP
intended: 'I yawn a lot.'

The requirement that tendency states be intransitive is probably related to the expression of stativity since there is a strong – though not exclusive – correlation between stativity and unaccusativity. To my knowledge this has never been explored, but a reasonable first test would be constructing some tendency states with transitive activities and overt object DPs.

3.2.2.3. Plural dimension states with *d-i-...-x'*

Plural dimension states are imperfective forms that denote dimensions that hold for multiple entities. They are formed with overt *d-* in Voice, *i-* in Ɛ, and the plural suffix *-x'*. They are only attested with roots that denote dimension states, and so could arguably be considered to be lexically specified since they only occur with stative roots. But they also fit with the derived grammatical states because they have an overt repetitive suffix along with *i-*. I give them here with the caveat that they might be better analyzed as lexical states.

The forms in (71) and (72) illustrate the contrast between an ordinary imperfective state and a plural dimensional state, using the two dimensional state roots $^{1}\sqrt{ÿat'}$ 'long' and $^{1}\sqrt{dal}$ 'heavy'. Both of these roots are known to form comparatives with *k-u-* as discussed in chapter 6 section 4.3.1, and so they pass this diagnostic for dimensionality, and the (71a) and (72a) forms confirm that these are imperfective states.

(71) a. Yayát'. *imperfective state*
i- $^{1}\sqrt{}$ÿat'-H
STV-$^{1}\sqrt{}$long-VAR
i. 'It is long.'
ii.*'They are long.'

b. Diyát'x'. *imperfective plural dimensional state*
d- i- $^{1}\sqrt{}$ÿat'-H -x'
MID-STV-$^{1}\sqrt{}$long-VAR-PL
i.*'It is long.'
ii. 'They are long.'

(72) a. Yadál. *imperfective dimensional state*
i- $^{1}\sqrt{}$dal -H
STV-$^{1}\sqrt{}$heavy-VAR
i. 'It is heavy.'
ii.*'They are heavy.'

b. Didálx'. *imperfective plural dimensional state*
d- i- $^{1}\sqrt{}$dal -H -x'
MID-STV-$^{1}\sqrt{}$heavy-VAR-PL
i.*'It is heavy.'
ii. 'They are heavy.'

The reason for the obligatory presence of *d-* in Voice is still unclear (ch. 5 sec. 7.3.1). But its presence raises a question about the relationship between *d-*, *i-*, and *-x'*. Since *-x'* is a plurality marker with nouns, it could be either pluralizing the object or pluralizing the eventuality in plural dimensional states. If it is associated with the object then the plurality of states could simply be an entailment from the plurality of objects, and thus the *-x'* could be merged either in VP (where objects are merged) or in VoiceP (because of the overt *d-*). Either position could be unrelated to lexical and grammatical aspectual properties, and so the *-x'* could plausibly not be the trigger for *i-*. This possibility is supported by the fact that plural dimensional states can only be formed from roots that are lexically specified for stativity, and so the *i-* could be lexical rather than grammatical.

3.2.2.4. Spotty states with *i-…-x̲*

Spotty states are a very small set of repetitive imperfective states that have *i-* together with the *-x̲* suffix and which are attested only in verbs that denote having spots. This identification as 'spotty' might be an accident of the documentation, or perhaps my failure to note other repetitive states with *-x̲*. These spotty states are not well documented, so I give some attested examples below and leave them unexplained for now.

The data in (73) illustrates an alternation between a perfective without *-x̲* and an imperfective state with *i-* and *-x̲*. This is the clearest example of an alternation between aspects without and with *-x̲*, but it also has an overt *l-* in *v* that appears in the imperfective form. I have tentatively analyzed this as an extensional, but I am not particularly confident about this.

(73) a. S'íx' kawdich'ách'. *perfective without -x̲*
s'íx' k- wu-d- i- $^{1}\sqrt{}$ch'ach'-H
dish SRO-PFV-MID-$^{1}\sqrt{}$spot-VAR
'The dish got spots.' (Story & Naish 1973: 206)

b. Tsaa doogú kadlich'ách'x̲. *imperfective state with i- and -x̲*
tsaa dook -í k- d- l- i- $^{1}\sqrt{}$ch'ach'-H
seal skin -PSSHSFC-MID-XTN-STV-$^{1}\sqrt{}$spot -VAR
'A seal skin is spotty.' (Story & Naish 1973: 206)

The remaining data in (74)–(76) represent such rarely attested forms that we cannot say much about them without elicitation. The form in (74) is based on a root √*ch'al'* 'pale' which is also attested as an obscure noun *ch'áal'* 'pale as from embarrassment' (Leer 1973a: 10/238) and which may be related to the better known noun *ch'áal'* 'willow' (Leer 1973a: 10/236). I suspect that this describes spots characterized by a lack of colour, i.e. light spots against a dark background.

(74) Kakaach'ál'x̲.
k- k- i- ^{1}√ch'al'-H -x̲
SRO-HSFC-STV-^{1}√pale -VAR-REP
'It has spots.' (Leer 1973a: 10/238)

The two forms in (75) and (76) are probably variants of the same root. The root √*kax'* is also attested in the noun *káax'* 'spruce grouse' (*Falcipennis canadensis* L. 1758) of which the male notably features white spots against dark brown feathers. The same root is also found in the deverbal noun *x̲askáax'* 'cross fox' with *x̲a-* from *x̲aaw* 'fur, hair' and *s-* in *v*. The root √*gax'* is otherwise only known to mean 'annoy by noise; pray', so it is likely that the 'spotted' meaning in (76) is either a mishearing or an phonological variant of √*kax'*.

(75) G̲uwakaan yádi kajikáx'x̲.
g̲uwakaan ÿát -í k- d- sh- i- ^{1}√kax'-H -x̲
deer child-PSS SRO-MID-PEJ-STV-^{1}√spot -VAR-REP
'A young deer has spots.' (Story & Naish 1973: 206)

(76) S'ísaa kadzigáx'x̲.
s'ísaa k- d- s- i- ^{1}√gax'-H -x̲
cloth SRO-MID-XTN-STV-^{1}√spot -VAR-REP
'The cloth is spotted.' (Story & Naish 1973: 206)

3.2.2.5. Repetitive states with *i-…-s'* or *i-…-l'*

I have encountered two repetitive imperfective states with the *-s'* and *-l'* suffixes. The combination of *i-* and *-s'* is attested with the root √*x̲ek̲* 'wake early; lack sleep' as shown in (77); note that this is documented only in the Tongass dialect but is plausible for others. The combination of *i-* and *-l'* is attested with the root ^{2}√*gu'k* 'know how'; two attested forms are given in (78).

(77) Ÿax̲ek̲s'. (*Tongass Tlingit*)
i- √x̲ek̲ -s'
STV-√wake·early-REP
'S/he gets up early.' (Leer 1973a: f02/23)

(78) a. Akaagúkl'.
a- ka- i- ^{2}√gu'k -H -l'
ARG-QUAL-STV-^{2}√know·how-VAR-REP
'S/he tries hard to become skilled at it.' (Leer 1976a: 671)

b. Kax̲aagúkl'.
ka- x̲- i- ^{2}√gu'k -H -l'
QUAL-1SG·S-STV-^{2}√know·how-VAR-REP
'I try hard at it.' (Leer 1973a: f05/176)

These are not the only roots attested with *-s'* or *-l'*, but these are the only two that are attested with these suffixes in repetitive imperfective states with stative *i-*. It may be possible to construct other similar repetitive states with these suffixes, but further elicitation is needed.

3.2.2.6. Repetitive motion states without a suffix

Motion roots support a variety of repetitive imperfectives, including the alternating repetitive imperfective states with *yoo=i-...k* of section 3.2.2.1. They also support two unique repetitive imperfectives that occur without an overt repetitive suffix, and one of these two includes *i-*. I consider both of these to feature a covert Adv suffix that provides the iterative semantics, and so the one with *i-* has its Ɛ conditioned in the same way as the other repetitive states discussed above.

Non-motion verbs have repetitive imperfective structures that are determined by the conjugation class. The *Ø*-conjugation has a repetitive imperfective with *-x̲*, the *n*-conjugation has a repetitive imperfective with *yoo=i-...-k* discussed earlier in section 3.2.2.1, and the *g̲-* and *g*-conjugations have repetitive imperfectives with *yei=...-ch* and *kei=...-ch* respectively (ch. 6 sec. 3.4). Motion verbs instead have repetitive imperfectives that are determined by their motion derivations, and these repetitive imperfectives do not necessarily match the ones determined by conjugation class for non-motion verbs (ch. 6 sec. 3.3). Nearly all of these repetitive imperfectives include an overt repetitive suffix like the *Ø*-conjugation examples in (79) with the *-ch*, *-x̲*, and *-k* suffixes.

(79) a. Daak̲ x̲agútch. *Ø-conj. rep. impfv. with -ch*
daak̲= x̲- $^{1}\sqrt{}$gut -H -ch
inland=1SG·S-$^{1}\sqrt{}$go·SG-VAR-REP
'I repeatedly go inland.'

b. Gági x̲agútx̲. *Ø-conj. rep. impfv. with -x̲*
gági= x̲- $^{1}\sqrt{}$gut -H -x̲
emerge=1SG·S-$^{1}\sqrt{}$go·SG-VAR-REP
'I repeatedly go out into the open.'

c. Yan yoo x̲ayagútk. *Ø-conj. rep. impfv. with -k*
ÿán= yoo=x̲- i- $^{1}\sqrt{}$gut -H -k
ground=ALT= 1SG·S-STV-$^{1}\sqrt{}$go·SG-VAR-REP
'I am repeatedly going up and down on the ground.'

There is one type of *Ø*-conjugation motion derivation repetitive imperfective that lacks an overt suffix. The data in (80) illustrates this with the PP *haa-{t,x̲,dé}* '{to, at, toward} here'. Only the form without a suffix in (80a) is grammatical, and the forms with the *-x̲*, *-ch*, or *-k* suffixes are incorrect.

(80) a. Haax̲ x̲agoot. *Ø-conj. rep. impfv. without suffix*
haa-x̲ x̲- $^{1}\sqrt{}$gut -μ
CIS -PERT 1SG·S-$^{1}\sqrt{}$go·SG-VAR
'I repeatedly go here.'

b. *Haax̲ x̲agútch. **Ø-conj. rep. impfv. with -ch*
haa-x̲ x̲- $^{1}\sqrt{}$gut -H -ch
CIS -PERT 1SG·S-$^{1}\sqrt{}$go·SG-VAR-REP
intended: 'I repeatedly go here.'

Figure 3.9: Tree for repetitive imperfective with covert Adv suffix in (80a)

c. *Haax̲ x̲agútx̲. *Ø-conj. rep. impfv. with -x̲
haa-x̲ x̲- ¹√gut -H -x̲
CIS -PERT 1SG·S-¹√go·SG-VAR-REP
intended: 'I repeatedly go here.'

d. *Haax̲ yoo x̲ayagútk. *Ø-conj. rep. impfv. with -k
haa-x̲ yoo=x̲- i- ¹√gut -H
CIS -PERT ALT= 1SG·S-STV-¹√go·SG-VAR
intended: 'I am repeatedly going back and forth here.'

Imperfective aspect without a repetitive suffix and without *i-* normally has an interpretation of being an ongoing event, i.e. a durative atelic activity. But the form in (80a) does not have the meaning of a basic imperfective aspect form; it cannot mean 'I am in the process of going here'. Instead (80a) only has an iterative interpretation where there is a single durative atelic activity composed of a set of subevents of motion, meaning 'I am in the process of going here again and again'. Unlike all other repetitive imperfectives in Tlingit, this form uniquely has an iterative interpretation without a repetitive suffix. I suggest that there is a covert repetitive suffix which introduces this interpretation, and thus that there is an empty Adv merged at the same place as the other repetitive event modifiers.

Given that the repetitive Adv elements are adjoined to AspP, the sentence in (80a) should have a structure something like that of figure 3.9. The covert Adv suffix in AspP provides the iterative interpretation necessary to make the form a repetitive imperfective rather than a basic (non-repetitive) imperfective.

This covert Adv analysis can be extended to cover an unusual derived grammatical state that is documented with a couple of motion verbs. Two examples of this repetitive state are given in (81), both based on the motion verb root $^{1}\sqrt{gut}$ 'sg. go'. One further example recorded without without context is given in (82) with the motion verb root $^{1}\sqrt{ha}$ 'move invisibly, appear'.

(81) a. Tléil kei gaxdusháat; kaa yáanáx yagóot.
tléil kei=w- g- g- du- $^{2}\sqrt{}$sha't-μH kaa yáanáx i- $^{1}\sqrt{}$gut -μH
NEG up= IRR-GCNJ-MOD-4H·S-$^{2}\sqrt{}$catch-VAR 4H SUP STV-$^{1}\sqrt{}$go·PL-VAR
'People won't catch him; he goes faster than people.' (Story & Naish 1973: 44.454)

b. X'eis'awáa x'oosí iwdzihéixwaa;
x'eis'awáa x'oos-í i- wu-d- s- i- $^{1}\sqrt{}$hexw-μH-aa
ptarmigan foot -PSS 2SG·O-PFV-PASV-CSV-STV-$^{1}\sqrt{}$magic -VAR-SFX
ách áwé iyagóot.
á -ch á -wé i- i- $^{1}\sqrt{}$gut -μH
3N-ERG FOC-MDST 2SG·S-STV-$^{1}\sqrt{}$go·SG-VAR
'You were magicked with a ptarmigan foot; that's why you go fast.'
(Story & Naish 1973: 130.1743)

(82) Yaháa.
i- $^{1}\sqrt{}$ha -μH
STV-$^{1}\sqrt{}$mv·invis-VAR
'(He/she/it) moves fast.' (Leer 1973a: 01/5)

This imperfective state from a motion verb is unpredicted if it is supposed to arise from the lexical specification because motion roots do not form imperfective states. But if it is analyzed with a covert Adv then the Adv could be appealed to as the trigger for the presence of *i-*. We see the same thing with other Adv suffixes that can form both repetitive imperfective states and repetitive imperfective activities, so the covert Adv would fit neatly into the larger pattern of repetitive states and activities. To confirm this we would need to confirm the existence of iterative semantics in forms like those in (81). If they are not iterative then the existence of covert Adv would be questionable.

4. Lack of overt Ɛ

As detailed in section 3, overt Ɛ always appears together with some element that conditions its presence. In the case of lexical states the trigger for overt Ɛ is the root (sec. 3.1), and in the case of grammatical states the trigger for overt Ɛ is either Asp (sec. 3.2.1) or a repetitive Adv suffix (sec. 3.2.2). If there is no trigger for Ɛ then Ɛ simply does not appear.

There are some contexts where a trigger for Ɛ is present but nevertheless Ɛ is not realized in the surface form. One or two of these contexts can be explained by phonological phenomena (sec. 2.1), but the majority have no plausible phonological explanation. These non-phonological contexts lacking Ɛ do feature certain syntactic elements that predict that Ɛ must be absent, so that there is a competition between syntactic elements that require overt Ɛ and syntactic elements that prohibit overt Ɛ. I refer to this phenomenon as the suppression of overt Ɛ, or Ɛ-suppression for short. The Ɛ-suppression phenomenon poses a challenge to the analysis of Ɛ: the absence of *i-* can usually be taken to entail the absence of Ɛ and thus ƐP, but Ɛ-suppression suggests the possibility that absence

of *i-* could instead reflect an ƐP with an empty Ɛ. If Ɛ can be present but empty – i.e. covert – then what operation is necessary to make the *i-* prefix disappear? I detail the contexts of Ɛ-suppression the implications of this phenomenon for the model of Ɛ in section 4.1.

A few contexts that lack overt Ɛ and also lack Ɛ-suppression are interesting because their semantic interpretations suggest that they are stative. If the appearance of *i-* in Ɛ reflects a general stativity operator in the semantics then we would expect that these state-like contexts should have overt Ɛ, but in fact they do not. I detail these apparent states without Ɛ in section 4.2.

Finally, there are many contexts without a trigger for overt Ɛ such as imperfective activities, progressive aspect, conditional mood, and hortative modality. I know of no syntactic or semantic abstractions that could unify all such cases where overt Ɛ does not occur. I conclude that these remaining contexts which lack overt Ɛ do not form any kind of natural class. I outline these in section 4.3, suggesting that they are essentially the elsewhere case for stativity in Tlingit.

4.1. Suppression of Ɛ: Absent vs. covert

The phenomenon of Ɛ-suppression is where a trigger for Ɛ exists and so *i-* would be expected, but another element higher in the derivation requires that this *i-* not appear. The canonical example of this is the negation of perfective aspect. Recall from section 3.2 that the perfective aspect requires the presence of *i-* as shown in (83). As such, the presence of *wu-* in Asp is a trigger for the presence of *i-* in Ɛ.

(83) a. Wutusi.ée. *perfective with i-*
wu-tu- s- i- $^{1}\sqrt{}$.i -μH
PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$COOK-VAR
'We cooked it.'

b. *Wutusa.ée. **perfective without i-*
wu-tu- s- $^{1}\sqrt{}$.i -μH
PFV-1PL·S-CSV- $^{1}\sqrt{}$COOK-VAR
intended: 'We cooked it.'

The addition of negation to the perfective aspect causes this otherwise expected *i-* to disappear. Thus the form in (84a) with *i-* is ungrammatical, and the form without *i-* in (84b) is grammatical even though *wu-* is still present.

(84) a. *Tléil wutusi.í. **negative perfective with i-*
tléil wu-tu- s- i- $^{1}\sqrt{}$.i -H
NEG PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$COOK-VAR
intended: 'We didn't cook it.'

b. Tléil wutusa.í. *negative perfective without i-*
tléil wu-tu- s- $^{1}\sqrt{}$.i -H
NEG PFV-1PL·S-CSV- $^{1}\sqrt{}$COOK-VAR
'We didn't cook it.'

Although the negation of perfective aspect is the usual example of Ɛ-suppression, this phenomenon is not limited to perfectives. Instead it happens with all combinations of negation and either

Figure 3.10: Tree for Ɛ-suppression with absent Ɛ in (84b)

lexical or grammatical stativity as detailed in section 4.1.1 below. The same disappearance of *i-* also occurs with the introduction of the optative/prohibitive suffix *-k̲* as detailed in section 4.1.2, with the introduction of the past tense *-ín* as detailed in section 4.1.3, and with the introduction of some but not all clausal embedding suffixes as detailed in section 4.1.4.

There are two basic approaches to modelling Ɛ-suppression. One is to suppose that the Ɛ head that would realize *i-* instead fails to exist when it is suppressed; I refer to this as 'absent Ɛ'. The other approach is to suppose that the Ɛ head continues to exist when it is suppressed, but that the *i-* in Ɛ disappears. I refer to this alternative as 'covert Ɛ'. The **absent Ɛ** approach assumes that all cases where *i-* does not occur – aside from phonological exceptions (sec. 2.1.5) – are due to the absence of Ɛ in the structure. Ɛ-suppression like in (84b) would then reflect a structure like that shown in figure 3.10 where there is no Ɛ and no ƐP. I reject this approach on semantic grounds explained below.

The **covert Ɛ** approach proposes that there are two distinct structures where *i-* does not occur: ones where Ɛ is entirely absent (and thus like absent Ɛ) and ones where Ɛ is present but empty. The absence of Ɛ occurs where there is never any lexical or grammatical expression of stativity such as imperfective activities, hortative mood, and prospective aspect. Covert Ɛ occurs specifically in cases of Ɛ-suppression. The covert Ɛ analysis of (84b) is shown in figure 3.11.

The covert Ɛ approach to Ɛ-suppression is appealing because it retains a structural position for the semantic operator that expresses stativity even when *i-* fails to occur. The negation of a state generally remains a state rather than say becoming an event, so we expect that even though the syntactic operation of negation suppresses the realization of Ɛ, this should not entail that the semantic operation of negation should make the eventuality into an event. This reasoning is even stronger for other Ɛ-suppression cases like past tense (sec. 4.1.3) and clause embedding (sec. 4.1.4): the claim that all past tense eventualities are events or that all embedded clauses denote events is bizarre if

Figure 3.11: Tree for Ɛ-suppression with covert Ɛ in (84b)

not nonsensical. The covert Ɛ analysis thus divorces the basic stativity expression of *i-* from its behaviour in what is apparently a functional head agreement mechanism like V-agreement (ch. 2 sec. 2). This implies that the lack of overt Ɛ in other contexts is not an indication of non-stativity; see section 4.3 for more discussion.

Although the structure in figure 3.11 represents Ɛ-suppression, it does not actually show how this is implemented by the syntax. Given that *i-* is the realization of the feature [STATE$_\varepsilon$], how does the introduction of an Ɛ-suppression trigger like Neg or C cause this feature to disappear? I suggest three possible solutions, but I have not evaluated them for either theoretical consistency or empirical consequences. One solution is some kind of feature deletion where the Ɛ-suppression trigger deletes the [STATE$_\varepsilon$] feature. This entails that this feature is not the basis of the semantic operator since deletion of the feature would also delete the operator. The semantic operator could instead be associated with the presence of the Ɛ head, ignoring its featural content.

The second solution to implementing Ɛ-suppression is reanalyze [STATE$_\varepsilon$] as a binary feature [±STATE$_\varepsilon$]. The usual instantiation of this feature would be the positive [+STATE$_\varepsilon$], but Ɛ-suppression would revalue the feature as the negative [−STATE$_\varepsilon$]. Then positive [+STATE$_\varepsilon$] would spell out as *i-* and negative [−STATE$_\varepsilon$] would have no phonological realization. The semantics would need to be entirely ignorant of the binary value of this feature, instead interpreting only its presence or absence. Alternatively, the semantics could ignore this feature altogether, instead interpreting the presence of the head like with deletion above. This binary solution is troublesome at least because it requires the introduction of binary features to the system, adding a great deal of complexity that is otherwise empirically unattested.

The third solution to implementing Ɛ-suppression is to introduce a second privative feature that causes *i-* to not be realized by phonology. This [COVERT$_{\varepsilon}$] feature would have no effect on the semantics, but would cause *i-* to disappear. Heads that trigger Ɛ-suppression would probe Ɛ for [COVERT$_{\varepsilon}$] and so the disappearance of overt Ɛ would be another kind of feature agreement. This seems to me to be the 'cleanest' solution, and it might have paralells in the analysis of anti-agreement phenomena in other languages, but I am still uncertain of any theoretical or empirical consequences.

As implied in the discussion above, Ɛ-suppression seems to be a purely syntactic phenomenon. There is no evidence that the lack of Ɛ with embedded clauses, past tense, or negation has any consequences for the semantic interpretation of states that would otherwise occur with overt *i-* in Ɛ. Furthermore, there is no phonological difference between cases where *i-* is predictably absent and cases where *i-* fails to occur because of Ɛ-suppression, so it appears to have no explanation from phonology. The unifying syntactic property of Ɛ-suppression is that every trigger involves an overt functional head above ƐP: Neg, Mod, T, or C. Furthermore, all of these functional heads are fairly high in the syntactic structure, realized either in the left periphery (Neg) or at the right edge of the verb word (Mod, T, C). This suggests that Ɛ-suppression is not just functional head agreement like V-agreement, being further connected to phenomena involving the clause peripheries. But Ɛ-suppression is still something of a mystery, with no obvious explanations for why it should occur.

The negative, optative, and prohibitive are all associated with both Ɛ-suppression and the irrealis prefix *u-*. The highest frequency context for Ɛ-suppression is probably negation, so it can seem like Ɛ-suppression and irrealis *u-* are correlated. This leads to a suggestion that the irrealis *u-* is the source of Ɛ-suppression rather than say Neg. But this analysis is untenable because the irrealis *u-* regularly occurs with overt *i-* in Ɛ in lexical states (ch. 6 sec. 4.2), in derived states (ch. 6 sec. 4.3), and in aspectually specified states (ch. 6 sec. 4.4). It is only with structurally conditioned irrealis (ch. 6 sec. 4.5) that the presence of irrealis *u-* and Ɛ-suppression cooccur. Furthermore, Ɛ-suppression occurs with past tense and embedded clauses, neither of which are associated with irrealis *u-*.

4.1.1. Neg suppresses Ɛ

Clausal negation in Tlingit is expressed with a negative particle *tléil* preceding the verb word along with irrealis marking by the addition of *u-* in the verb and Ɛ-suppression.[8] I discuss negation in more detail in chapter 6 section 4 in the context of irrealis marking with the *u-* prefix. Here I only present data that show that negation triggers Ɛ-suppression.

The data in (83) and (84) above show that negation of a perfective triggers Ɛ-suppression, and thus that Ɛ-suppression occurs with negation of a grammatical state. The same Ɛ-suppression occurs with negation of lexical states. As basis cases, an unaccusative intransitive lexical state is shown in (85) and a similar transitive lexical state in (86). As expected, both lexical states require the presence of overt *i-* in Ɛ.

(85) a. Xat yadál. *intransitive lexical state with i-*
xat= i- $^{1}\sqrt{}$dal -H
1SG·O=STV-$^{1}\sqrt{}$heavy-VAR
'I am heavy.'

8. The position of Neg with respect to DP arguments in the clause is still not clear, although DP$_S$ Neg DP$_O$ AspP is very common. I have tentatively assigned DP$_O$ to a landing site in AspP and DP$_S$ to either TP or CP, but the left periphery needs more investigation into its structure and composition.

b. *Xat dál. *intransitive lexical state without i-*
xat= $\sqrt[1]{}$dal -H
1SG·O=STV-$\sqrt[1]{}$heavy-VAR
intended: 'I am heavy.'

(86) a. Ixaatéen. *transitive lexical state with i-*
i- x- i- $\sqrt[2]{}$tin-μH
2SG·O-1SG·S-STV-$\sqrt[2]{}$see -VAR
'I can see you.'

b. Ixatéen. **transitive lexical state without i-*
i- x- $\sqrt[2]{}$tin-μH
2SG·O-1SG·S- $\sqrt[2]{}$see -VAR
'I can see you.'

The corresponding data in (87) and (88) confirm that Ɛ-suppression occurs with lexical states. Both the negated intransitive lexical state in (87b) and the negated transitive lexical state in (88b) occur with the expected addition of negative *tléil* and the irrealis prefix *u-* and lack *i-*.

(87) a. *Tléil xat uwadál. **negative imperfective state with i-*
tléil xat= u- i- $\sqrt[1]{}$dal -H
NEG 1SG·O=IRR-STV-$\sqrt[1]{}$heavy-VAR
intended: 'I am not heavy.'

b. Tléil xat udál. *negative imperfective state without i-*
tléil xat= u- $\sqrt[1]{}$dal -H
NEG 1SG·O=IRR- $\sqrt[1]{}$heavy-VAR
'I am not heavy.'

(88) a. *Tléil ixwaateen. **negative imperfective state with i-*
tléil i- u- x- i- $\sqrt[2]{}$tin-μ
NEG 2SG·O-IRR-1SG·S-STV-$\sqrt[2]{}$see -VAR
intended: 'I can't see you.'

b. Tléil ixwateen. *negative imperfective state without i-*
tléil i- u- x- $\sqrt[2]{}$tin-μ
NEG 2SG·O-IRR-1SG·S- $\sqrt[2]{}$see -VAR
intended: 'I can't see you.'

Negation also triggers Ɛ-suppression with derived grammatical states. The basis case in (89) illustrates an alternating repetitive imperfective state with *i-* based on the root $\sqrt[1]{}$*k'uts* '(ropelike) break, snap'. The corresponding data in (90) shows that the introduction of negation requires the absence of *i-*.

(89) a. Wé tíx' yoo xalik'útsk. *rep. imperfective state with i-*
wé tíx' yoo= x- l- i- $^{1}\sqrt{}$k'uts-H -k
MDST rope ALT= 1SG·S-CSV-STV-$^{1}\sqrt{}$break-VAR
'I am repeatedly breaking the rope.'

b. *Wé tíx' yoo xalak'útsk. **rep. imperfective state without i-*
wé tíx' yoo= x- l- $^{1}\sqrt{}$k'uts-H -k
MDST rope ALT= 1SG·S-CSV- $^{1}\sqrt{}$break-VAR
intended: 'I am repeatedly breaking the rope.'

(90) a. *Tléil wé tíx' yoo xwalik'útsk. **negative rep. imperfective state with i-*
tléil wé tíx' yoo= u- x- l- i- $^{1}\sqrt{}$k'uts-H
NEG MDST rope ALT= IRR-1SG·S-CSV-STV-$^{1}\sqrt{}$break-VAR
intended: 'I am not repeatedly breaking the rope.'

b. Tléil wé tíx' yoo xwalak'útsk. *negative rep. imperfective state without i-*
tléil wé tíx' yoo= u- x- l- $^{1}\sqrt{}$k'uts-H
NEG MDST rope ALT= IRR-1SG·S-CSV- $^{1}\sqrt{}$break-VAR
'I am not repeatedly breaking the rope.'

There is exactly one context where negation-triggered Ɛ-suppression fails to occur: the potential modality. This structure is formed by the combination of irrealis *u-*, the lexically or derivationally specified conjugation class prefix *CNJ-* ∈ {∅, *n-*, *ǵ-*, *g-*}, and the modality prefix *ǵ-* all together in Asp^{0}, with overt *i-* in Ɛ and usually *-μ* stem variation in V. For more details see chapter 2 section 2.6.7 and chapter 6 section 4.4.2 as well as the discussion in Leer 1991: 385–392. Unlike all other grammatical states, the potential modality retains *i-* under negation. The data in (91) and (92) are adapted from Leer (1991: 388 n. 69), showing that both the affirmative potential and the negative potential require overt *i-*.

(91) a. Gwál k̲waak̲asiteen. *potential modality state with i-*
gwál u- ǵ- ǵ- x̲- s- i- $^{2}\sqrt{}$tin-μ
DUB IRR-ǴCNJ-MOD-1SG·S-XTN-STV-$^{2}\sqrt{}$see -VAR
'I might see it.'

b. *Gwál k̲waak̲asateen. **potential modality state without i-*
gwál u- ǵ- ǵ- x̲- s- $^{2}\sqrt{}$tin-μ
DUB IRR-ǴCNJ-MOD-1SG·S-XTN- $^{2}\sqrt{}$see -VAR
intended: 'I might see it.'

(92) a. Gwál tléil k̲waak̲asiteen. *negative potential modality state with i-*
gwál tléil u- ǵ- ǵ- x̲- s- i- $^{2}\sqrt{}$tin-μ
DUB NEG IRR-ǴCNJ-MOD-1SG·S-XTN-STV-$^{2}\sqrt{}$see -VAR
'I might not see it.'

b. *Gwál tléil k̲waak̲asateen. **negative potential modality state without i-*
gwál tléil u- ǵ- ǵ- x̲- s- $^{2}\sqrt{}$tin-μ
DUB NEG IRR-ǴCNJ-MOD-1SG·S-XTN- $^{2}\sqrt{}$see -VAR
'I might not see it.'

Leer attempts to derive this anomaly from semantic scope, arguing that the potential operator scopes over the negation operator unlike all the other modality-expressing structures in Tlingit (Leer 1991: 388–389). But Leer's semantics is not compositionally derived from the morphology, so his argument cannot be applied in a morphosyntactic model with a compositional semantics. Furthermore, his analysis does not clearly distinguish between negation, irrealis, and non-stativity, nor does he account for Ɛ-suppression in non-negative contexts, so it is not clear how his system can be adapted to a compositional model. I have no suggestions on how to account for this failure of Ɛ-suppression, so for now I leave it unexplained.

4.1.2. Mod suppresses Ɛ

The optative and prohibitive structures are expressed with irrealis *u-* and the prohibitive-optative suffix *-k̲* ~ *-ík̲* added to perfective or imperfective aspect forms. I discuss the optative further in chapter 6 section 4.5.3 and the prohibitive in chapter 6 section 4.5.4. Here I only address the suppression of Ɛ in optatives and prohibitives. I analyze the prohibitive-optative suffix in this section as a functional head Mod that takes AspP as its complement. This is not coincidentally similar to my analysis of Neg; see chapter 6 section 4.5 for an alternative approach where I unify the negative, optative, and dubitative structures in the context of structurally conditioned irrealis marking.

The data in (93)–(95) show how the introduction of optative or prohibitive morphology to a perfective triggers Ɛ-suppression. The baseline case of a main clause perfective is given in (93) showing that it requires overt *i-* in Ɛ. The optative in (94) is formed with the optative particle *gu.aal* 'hopefully' and the dubitative *gushí* 'maybe' along with the prohibitive-optative suffix *-k̲*. The prohibitive in (95) is nearly identical with the prohibitive *líl* 'don't replacing the optative+dubitative particle combination. Both the optative in (94) and the prohibitive in (95) require that *i-* not be present in the surface form.

(93) a. X̲at yisiteen. *perfective with i-*
x̲at= wu-i- s- i- ²√tin-μ
1SG·O=PFV-2SG·S-XTN-STV-²√see -VAR
'You saw me.'

b. *X̲at yisateen. **perfective without i-*
x̲at= wu-i- s- ²√tin-μ
1SG·O=PFV-2SG·S-XTN- ²√see -VAR
intended: 'You saw me.'

(94) a. *Gu.aal kwshé x̲at yisiteeník̲. **optative perfective with i-*
gu.aal =gushí x̲at= u- wu-i- s- i- ²√tin-μ -k̲
OPT =DUB 1SG·O=IRR-PFV-2SG·S-XTN-STV-²√see -VAR-OPT$_{Mod}$
intended: 'Hopefully you saw me.'

b. Gu.aal kwshé x̲at yisateeník̲. *optative perfective without i-*
gu.aal =gushí x̲at= u- wu-i- s- ²√tin-μ -k̲
OPT =DUB 1SG·O=IRR-PFV-2SG·S-XTN- ²√see -VAR-OPT$_{Mod}$
'Hopefully you saw me.'

(95) a. *Líl xat yisiteeník. **prohibitive perfective with i-*
líl xat= u- wu-i- s- i- $^{2}\sqrt{}$tin-μ -k
PHIB 1SG·O=IRR-PFV-2SG·S-XTN-STV-$^{2}\sqrt{}$see -VAR-PHIB$_{Mod}$
intended: 'Don't have seen me.'

b. Líl xat yisateeník. *prohibitive perfective without i-*
líl xat= u- wu-i- s- $^{2}\sqrt{}$tin-μ -k
PHIB 1SG·O=IRR-PFV-2SG·S-XTN- $^{2}\sqrt{}$see -VAR-PHIB$_{Mod}$
'Don't have seen me.'

The data in (96)–(98) show the same Ɛ-suppression effect with a lexical state using the imperfective aspect of $^{1}\sqrt{}$*xan* 'near; love'. Once again (96) is the basis case, (97) the optative, and (98) the prohibitive. Where the ordinary imperfective state requires *i-*, both the optative and the prohibitive prohibit *i-*.

(96) a. Ixsixán. *imperfective state with i-*
i- x- s- i- $^{1}\sqrt{}$xan-H
2SG·O-1SG·S-CSV-STV-$^{1}\sqrt{}$love -VAR
'I love you.'

b. *Ixsaxán. **imperfective state without i-*
i- x- s- $^{1}\sqrt{}$xan-H
2SG·O-1SG·S-CSV- $^{1}\sqrt{}$love -VAR
intended: 'I love you.'

(97) a. *Gu.aal kwshé ixwsixánik. **optative imperfective state with i-*
gu.aal =gushí i- u- x- s- i- $^{1}\sqrt{}$xan-H -k
OPT =DUB 2SG·O-IRR-1SG·S-CSV-STV-$^{1}\sqrt{}$love -VAR-OPT$_{Mod}$
intended: 'Hopefully I I love you.'

b. Gu.aal kwshé ixwsaxánik. *optative imperfective state without i-*
gu.aal =gushí i- u- x- s- $^{1}\sqrt{}$xan-H -k
OPT =DUB 2SG·O-IRR-1SG·S-CSV- $^{1}\sqrt{}$love -VAR-OPT$_{Mod}$
'Hopefully I love you.'

(98) a. *Líl ixwsixánik. **prohibitive imperfective state with i-*
líl i- u- x- s- i- $^{1}\sqrt{}$xan-H -k
PHIB 2SG·O-IRR-1SG·S-CSV-STV-$^{1}\sqrt{}$love -VAR-PHIB$_{Mod}$
intended: 'Don't let me love you.', 'I shouldn't love you.'

b. Líl ixwsaxánik. *prohibitive imperfective state without i-*
líl i- u- x- s- $^{1}\sqrt{}$xan-H -k
PHIB 2SG·O-IRR-1SG·S-CSV- $^{1}\sqrt{}$love -VAR-PHIB$_{Mod}$
'Don't let me love you.', 'I shouldn't love you.'

A straightforward analysis of optative and prohibitive Ɛ-suppression is to treat it as structurally homologous to negative Ɛ-suppression. The *-k* suffix is characteristically shared by both structures

and appears at the right edge of the verb in more or less the same place as the T and C suffixes.[9] I suggest that this -*k̲* is the realization of a functional head much like T and C, and just like these other two heads it requires Ɛ-suppression when it is overt.

4.1.3. T suppresses Ɛ

The T head can be realized by a past tense suffix -*ín* (labialized to -*ún*) that appears at the end of the verb stem.[10] See chapter 2 section 2.9 for more details and Cable (2017c) for a semantic investigation of past tense in Tlingit. The presence of -*ín* in T always triggers Ɛ-suppression so that -*ín* and *i*- are in complementary distribution. The basis case in (99) gives a perfective aspect form where *i*- must occur. The addition of past tense -*ín* to the verb in (100) causes *i*- to disappear.

(99) a. Wutusi.ée. *nonpast perfective with i-*
wu-tu- s- i- $^{1}\sqrt{}$.i -μH
PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
'We cooked it.'

b. *Wutusa.ée. **nonpast perfective without i-*
wu-tu- s- $^{1}\sqrt{}$.i -μH
PFV-1PL·S-CSV- $^{1}\sqrt{}$cook-VAR
intended: 'We cooked it.'

(100) a. *Wutusi.eeyín. **past perfective with i-*
wu-tu- s- i- $^{1}\sqrt{}$.i -μ -ín
PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$cook-VAR-PAST$_{T}$
intended: 'We had cooked it.'

b. Wutusa.eeyín. *past perfective without i-*
wu-tu- s- $^{1}\sqrt{}$.i -μ -ín
PFV-1PL·S-CSV- $^{1}\sqrt{}$cook-VAR-PAST$_{T}$
'We had cooked it.'

The data in (101) and (102) show the same pattern for a lexical state with the root $^{1}\sqrt{}$*x̲an* 'near; love'. Just like the grammatical state above, the combination of past tense with the imperfective aspect results in the disappearance of *i*- in Ɛ.

(101) a. Ix̲six̲án. *nonpast imperfective state with i-*
i- x̲- s- i- $^{1}\sqrt{}$x̲an-H
2SG·O-1SG·S-CSV-STV-$^{1}\sqrt{}$love -VAR
'I love you.'

b. *Ix̲sax̲án. **nonpast imperfective state without i-*
i- x̲- s- $^{1}\sqrt{}$x̲an-H
2SG·O-1SG·S-CSV- $^{1}\sqrt{}$love -VAR
intended: 'I love you.'

9. I am not sure if -*k̲* can occur with overt T or C. If they are in complementary distribution then they could be analyzed as the same head which would structurallly unify the optative and prohibitive with the past tense and clause type. But that is a subject for a different dissertation.

10. The -*ín* in my experience is always realized with high tone, but Dauenhauer & Dauenhauer (1987) and Leer (1991) describe it as having polar tone like -*í* in C (see sec. 4.1.4). This needs phonetic and phonological study and could have consequences for the syntax-phonology interface via domain mapping.

(102) a. *Ixsixánín. **past imperfective state with i-*
i- x- s- i- $^{1}\sqrt{}$xan-H -ín
2SG·O-1SG·S-CSV-STV-$^{1}\sqrt{}$love -VAR-PAST$_{T}$
'I had loved you.'

b. Ixsaxánín. *past imperfective state without i-*
i- x- s- $^{1}\sqrt{}$xan-H -ín
2SG·O-1SG·S-CSV- $^{1}\sqrt{}$love -VAR-PAST$_{T}$
intended: 'I had loved you.'

There is at least one context which may have an overt T that is not *-ín* or its labialized counterpart *-ún*. This is the past tense embedded clause with *-í* and *yéeyi* (Leer 1991: 212, 470). The position of the *yéeyi* element after the *-í* complementizer suffix could potentially be adjoined to the clause, in which case it might not trigger Ɛ-suppression. But because the *-í* complementizer must be present in such cases and because this overt C head independently triggers Ɛ-suppression (sec. 4.1.4), it is empirically impossible to tell whether overt *yéeyi* is involved in Ɛ-suppression or not. It is furthermore unclear whether *yéeyi* is actually a T head inside of the embedded clause or if it is instead a modifier of the CP, particularly because *yéeyi* is also used as a past tense with nouns.

4.1.4. C suppresses Ɛ

The C head has a few different realizations depending on its syntactic function, and some but not all of these realizations trigger Ɛ-suppression. The subordinate clause suffix *-í* in C always triggers Ɛ-suppression whether it forms an adjunct clause or a complement clause, and whether it occurs within an enclosing PP or not. The relative clause suffix *-i* never triggers Ɛ-suppression; thus overt *i-* in Ɛ can occur in relative clauses with *-i* whereas it will never occur in adjunct or complement clauses with subordinate *-í*.

The data in (103)–(105) illustrate Ɛ-suppression of a grammatical state with *-í* in C for adjunct and complement clauses. The basis case in (103) gives a perfective aspect form with *i-* in Ɛ which is the usual example of a grammatical state. Both the adjunct clause in (104) and the complement clause in (105) are grammatical only without *i-* in Ɛ.

(103) a. Wutusi.ée. *main clause pfv. with i-*
wu-tu- s- i- $^{1}\sqrt{}$.i -μH
PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
'We cooked it.'

b. *Wutusa.ée. **main clause pfv. without i-*
wu-tu- s- $^{1}\sqrt{}$.i -μH
PFV-1PL·S-CSV- $^{1}\sqrt{}$cook-VAR
intended: 'We cooked it.'

(104) a. * Wutusi.eeyí kei wjitúk. **adjunct clause pfv. with i-*
wu-tu- s- i- $^{1}\sqrt{}$.i -μ -í kei=wu-d- sh- i- $^{2}\sqrt{}$tu'k -H
[$_{CP}$ PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$cook-VAR-SUB$_{C}$] up= PFV-PASV-PEJ-STV-$^{2}\sqrt{}$explode-VAR
'[When we cooked it] it exploded.'

b. Wutusa.eeyí kei wjitúk. *adjunct clause pfv. without i-*
wu-tu- s- $^{1}\sqrt{}$.i -μ -í kei=wu-d- sh- i- $^{2}\sqrt{}$tu'k -H
[$_{CP}$ PFV-1PL·S-CSV- $^{1}\sqrt{}$cook-VAR-SUB$_{C}$] up= PFV-PASV-PEJ-STV-$^{2}\sqrt{}$explode-VAR
intended: '[When we cooked it] it exploded.'

(105) a. *Xwasikóo wutusi.eeyí. **complement clause pfv. with i-*
wu-x- s- i- $^{2}\sqrt{}$ku -μH wu-tu- s- i- $^{1}\sqrt{}$.i -μ -í
PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$know-VAR [$_{CP}$ PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$cook-VAR-SUB$_{C}$]
'I know [that we cooked it].'

b. Xwasikóo wutusa.eeyí. *complement clause pfv. without i-*
wu-x- s- i- $^{2}\sqrt{}$ku -μH wu-tu- s- $^{1}\sqrt{}$.i -μ -í
PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$know-VAR [$_{CP}$ PFV-1PL·S-CSV- $^{1}\sqrt{}$cook-VAR-SUB$_{C}$]
intended: 'I know [that we cooked it].'

The relative clause suffix *-i* does not trigger Ɛ-suppression. This is shown in (106) which is based on the same perfective as in (103) above. Here the *i-* in Ɛ is mandatory since the form in (106b) without *i-* is ungrammatical.

(106) a. Wé wutusi.éeyi. k'únts' linúkts. *rel. clause pfv. with i-*
wé wu-tu- s- i- $^{1}\sqrt{}$.i -μH-i k'únts' l- i- $^{0}\sqrt{}$nukts-H
MDST [$_{CP}$ PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$cook-VAR-REL$_{C}$] potato INTR-STV-$^{0}\sqrt{}$sweet -VAR
'The potatoes [that we cooked] are sweet.'

b. *Wé wutusa.éeyi. k'únts' linúkts. **rel. clause pfv. without i-*
wé wu-tu- s- $^{1}\sqrt{}$.i -μH-i k'únts' l- i- $^{0}\sqrt{}$nukts-H
MDST [$_{CP}$ PFV-1PL·S-CSV- $^{1}\sqrt{}$cook-VAR-REL$_{C}$] potato INTR-STV-$^{0}\sqrt{}$sweet -VAR
intended: 'The potatoes [that we cooked] are sweet.'

When C is covert there is no Ɛ-suppression, even when the clause is embedded in some other clause. Unmarked embedded clauses notably occur as complements of propositional attitude verbs; one such case is shown in (107). Despite being embedded, the *i-* in Ɛ persists in (107a) since the embedding C head is covert. This shows that Ɛ-suppression is specifically triggered by the overt C rather than just the syntactic context of clause embedding, and thus that Ɛ-suppression is a kind of agreement.

(107) a. Xwasikóo wutusi.ée. *complement clause pfv. with i-*
wu-x- s- i- $^{2}\sqrt{}$ku -μH wu-tu- s- i- $^{1}\sqrt{}$.i -μH Ø
PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$know-VAR [$_{CP}$ PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$cook-VAR SUB$_{C}$]
'I know [that we cooked it].'

b. *Xwasikóo wutusa.ée. **complement clause pfv. without i-*
wu-x- s- i- $^{2}\sqrt{}$ku -μH wu-tu- s- $^{1}\sqrt{}$.i -μH Ø
PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$know-VAR [$_{CP}$ PFV-1PL·S-CSV- $^{1}\sqrt{}$cook-VAR SUB$_{C}$]
intended: 'I know [that we cooked it].'

4.2. States without Ɛ: Positional imperfectives

Most expressions of stative eventualties in Tlingit include overt *i-* in Ɛ except where it does not appear because of Ɛ-suppression (sec. 4.1). There is one particularly significant structure where the interpretation hints at stativity but *i-* in Ɛ does not occur and there is no trigger for Ɛ-suppression. This structure is the positional imperfective: an imperfective aspect form based on a handling root which denotes being at rest in a position or configuration in space (Leer 1991: 324–329).

Positional imperfectives are formed from motion roots such as $\sqrt[2]{ti}$ 'handle generic', $\sqrt[2]{tan}$ 'handle wooden/empty', $\sqrt[2]{.ax}$ 'handle fabric', $\sqrt[1]{.at}$ 'plural go', and $\sqrt[1]{da}$ 'flow'. Positionals based on bivalent roots unexpectedly form intransitives without overt Voice, perhaps because they are lexically specified with a distinct but homophonous root. This is illustrated by the root $\sqrt[2]{.ax}$ 'handle fabric' in (108) which forms a typical transitive motion perfective in (108a) but an intransitive positional imperfective in (108b) and not a passive in (108c).

(108) a. L'aak ax̲ jeet aawa.áx̲. *transitive motion perfective*
l'aak ax̲ jee -t a- wu-i- $\sqrt[2]{.ax}$ -H
dress [PP 1SG·PSS poss'n-PNCT] ARG-PFV-STV-$\sqrt[2]{}$hdl·fabric-VAR
'She gave me a dress.' (Story & Naish 1973: 99.1269)

b. I k'oodás'i yóot áx̲. *intransitive positional imperfective*
i k'oodás'-í yú -t $\sqrt[2]{.ax}$ -H
2SG·PSS shirt -PSS [PP DIST-PNCT] $\sqrt[2]{}$hdl·fabric-VAR
'Your shirt is (positioned, sitting, draped) over there.' (Story & Naish 1973: 125.1658)

c. *I k'oodás'i yóot da.áx̲. **passive positional imperfective*
i k'oodás'-í yú -t d- $\sqrt[2]{.ax}$ -H
2SG·PSS shirt -PSS [PP DIST-PNCT] PASV-$\sqrt[2]{}$hdl·fabric-VAR
intended: 'Your shirt is over there.'

The argument that positional imperfectives use a separate homophonous root is bolstered by a case of suppletion. The positional imperfective for 'singular sit' irregularly suppletes the root $\sqrt[1]{nuk}$ 'sg. sit' with the root $\sqrt[1]{.a}$ 'sg. sit'. This is shown by (109) and (110) where the positional imperfective with $\sqrt[1]{nuk}$ is ungrammatical in (109b), but the perfective with $\sqrt[1]{.a}$ is ungrammatical in (110a).

(109) a. X̲waanook. *perfective*
wu-x̲- i- $\sqrt[1]{}$nuk -μ
PFV-1SG·S-STV-$\sqrt[1]{}$sit·SG-VAR
'I sat down.'

b. * Át x̲anúk. **positional imperfective*
á -t x̲- $\sqrt[1]{}$nuk -H
[PP 3N-PNCT] 1SG·S-$\sqrt[1]{}$sit·SG-VAR
intended: 'I am seated there.'

(110) a. *Xwaa.aa. **perfective*
wu-x- i- $^{1}\sqrt{}$.a -μ
PFV-1SG·S-STV-$^{1}\sqrt{}$sit·SG-VAR
intended: 'I sat down.'

b. Át xa.áa. *positional imperfectives*
á -t x- $^{1}\sqrt{}$.a -H
[PP 3N-PNCT] 1SG·S-$^{1}\sqrt{}$sit·SG-VAR
'I am seated there.'

Positional imperfectives usually occur with a PP *NP-t* using the punctual postposition *-t* 'at/to/around (a point)', although this PP is not mandatory (Leer 1991: 325; contra Edwards 2009: 33). Leer asserts that they form an irregular part of larger paradigms of motion verbs using the motion derivation *yan* ~ *yax* ~ *yánde* (*∅*; *-μ* repetitive) 'ending, coming to rest', but he does not offer any argumentation supporting this. As their label implies they only ever occur in the imperfective aspect, but as shown in (111) the addition of past tense *-ín* is possible as is irrealis *u-*.

(111) a. Xwadihaan. *perfective*
wu-x- d- i- $^{1}\sqrt{}$han -μ
PFV-1SG·S-MID-STV-$^{1}\sqrt{}$stand·SG-VAR
'I stood up.'

b. Yáat xahán. *positional imperfective*
yá -t x- $^{1}\sqrt{}$han -H
[PP PROX-PNCT] 1SG·S-$^{1}\sqrt{}$stand·SG-VAR
'I am standing here.'

c. Tléil yáat xwahán. *negative positional imperfective*
tléil yá -t u- x- $^{1}\sqrt{}$han -H
NEG [PP PROX-PNCT] IRR-1SG·S-$^{1}\sqrt{}$stand·SG-VAR
'I am not standing here.'

d. Yáat xahánín. *past positional imperfective*
yá -t x- $^{1}\sqrt{}$han -H -ín
[PP PROX-PNCT] 1SG·S-$^{1}\sqrt{}$stand·SG-VAR-PAST
'I had been standing here.'

Positional imperfectives often have stem variation that is distinct from garden variety imperfective aspect, thus emphasizing their difference from both imperfective states and imperfective activities. Many positional imperfectives feature the *-n* suffix along with accompanying stem vowel ablaut which is only rarely attested with imperfective activities and only with one imperfective state ($^{1}\sqrt{ha^{h}}$ 'be many'). The data in (112) contrasts a perfective aspect form with the root $^{1}\sqrt{da}$ 'flow' and a positional imperfective with the same root, showing the appearance of ablaut *-eH* and the *-n* suffix.

(112) a. Wé héen woodaa. *perfective*
wé héen wu-i- $^{1}\sqrt{}$da -μ
MDST water PFV-STV-$^{1}\sqrt{}$flow-VAR
'The water/river flowed.'

b. Wé áa át déin. *positional imperfective*
wé áa á -t $^{1}\sqrt{}$da -eH-n
MDST lake [PP 3N-PNCT] $^{1}\sqrt{}$flow-VAR-NSFX
'The lake sits there.'

The interpretation of a positional imperfective is "being at rest or coming to rest" according to Leer (1991: 325). They have morphology more or less like imperfective activities, but their denotations seem to be more like states. Yet all positional imperfectives are ungrammatical when overt Ɛ is added to their forms. The data in (113) show this with the positional imperfective based on $^{1}\sqrt{}$*.at* 'plural go' which as a positional means 'plural be positioned'.

(113) a. Kas'éet nadáakw kát la.át. *positional imperfective without i-*
kas'éet nadáakw ká -t l- $^{1}\sqrt{}$.at -H
screw [PP table HSFC-PNCT] XTN- $^{1}\sqrt{}$go·PL-VAR
'The screws are (lying) on the table.' (Story & Naish 1973: 125.1657)

b. *Kas'éet nadáakw kát li.át. **positional imperfective with i-*
kas'éet nadáakw ká -t l- i- $^{1}\sqrt{}$.at -H
screw [PP table HSFC-PNCT] XTN-STV-$^{1}\sqrt{}$go·PL-VAR
intended: 'The screws are (lying) on the table.'

It is unclear whether positional imperfectives have a covert Ɛ or lack Ɛ entirely. If we assume that the lack of *i-* entails the absence of Ɛ then positional imperfectives must not include an ƐP, but this assumption is difficult to maintain in the face of Ɛ-suppression. Given the possibility of covert Ɛ from Ɛ-suppression, an argument can be made for positional imperfectives with a covert Ɛ that hosts the stative semantic operator thus supporting the state-like interpretation. It then is unclear why Ɛ in this context should be covert rather than overt with *i-*. The argument that Ɛ is absent in positional imperfectives is similarly nontrivial because without Ɛ there is no obvious place for a stative semantic operator. At present I cannot offer any solutions for this conundrum.

There is some indirect support for the existence of covert Ɛ in positional imperfectives which comes from multipositional imperfectives. According to Leer, multipositional imperfectives denote that "a group or mass is at rest" and is "distributed among various locations" (Leer 1991: 328), i.e. that a multiplicity of things are positioned or configured in a multiplicity of locations. The multipositional imperfectives are thus the iterative or pluristative counterpart of the positional imperfectives. Morphologically they are characterized by the pertingent *-x̲* postposition instead of *-t*, the *n*-conjugation prefix, overt *i-* in Ɛ, and the repetitive suffix *-k* or the sequence *-kw-t* if the root is an open syllable. The pairs in (114) and (115) illustrate the contrast between a positional imperfective and a multipositional imperfective.

(114) a. Át la.át. *positional imperfective*
á -t l- $^{1}\sqrt{}$.at -H
[PP 3N-PNCT] XTN-$^{1}\sqrt{}$go·PL-VAR
'They (all together) are lying there.' (Leer 1991: 328)

b. Áx̲ nali.átk *multipositional imperfective*
á -x̲ n- l- i- $^{1}\sqrt{}$.at -H -k
[PP 3N-PERT] NCNJ-XTN-STV-$^{1}\sqrt{}$go·PL-VAR-REP
'They (distributed) lie here and there along it.' (Leer 1991: 328)

(115) a. Át déin. *positional imperfective*
á -t $^{1}\sqrt{}$da -eH-n
[PP 3N-PNCT] $^{1}\sqrt{}$flow-VAR-NSFX
'It (body of water) is lying there.' (Leer 1991: 328)

b. Áx̲ naadákwt *multipositional imperfective*
á -x̲ n- i- $^{1}\sqrt{}$da -H -kw-t
[PP 3N-PERT] NCNJ-STV-$^{1}\sqrt{}$flow-VAR-REP-REP
'They (bodies of water) lie here and there along it.' (Leer 1991: 328)

The presence of *i-* in Ɛ for multipositional imperfectives implies that they denote imperfective states. The repetitive *-k* suffix is associated with stativity as seen in sections 3.2.2.1 and 3.2.2.2, so it could conceivably be the trigger for overt Ɛ in multipositional imperfectives as well. The apperance of the *n*-conjugation prefix in the multipositionals may be connected to its appearance in extensional imperfective states discussed in chapter 6 section 2.1.2, and so *n-* may also be connected to overt Ɛ. It remains to be seen how these various states are related to positional imperfectives and their unique lack overt of Ɛ.

4.3. Absence of Ɛ: The elsewhere case

Since overt Ɛ is an indicator of stativity, the lack of overt Ɛ could be taken as an indicator of the lack of stativity. But the Ɛ-suppression phenomenon (sec. 4.1) militates against this analysis since it occurs with forms that are semantically states rather than events. Instead I take the lack of overt Ɛ to be the elsewhere case with no syntactic or semantic implications, based on the motley variety of contexts where Ɛ does not occur. In this section I review this motley variety.

Most aspectual expressions lack overt Ɛ. The only aspects that have *i-* are the imperfective states, the perfectives, the realizationals, and the repetitive imperfective states which were discussed in section 3. The aspects without *i-* include imperfective activities, most repetitive imperfectives, progressives, habituals, consecutives, and prospectives as shown in (116)–(121) below. The imperfective activity forms in (116) are given with the activity root $^{2}\sqrt{}$*x̲a* 'eat', but the remainder use the stative root $^{1}\sqrt{}$*k'e* 'good' showing that lexically specified stativity is overridden by the grammatical lack of stative marking for these aspects. There are no obvious semantic or syntactic connections between any of these aspects without *i-* other than their lack of *i-*.

(116) a. X̲ax̲á. *activity imperfective aspect without i-*
x̲- $^{2}\sqrt{}$x̲a-H
1SG·S-$^{2}\sqrt{}$eat-VAR
'I am eating it.'

b. *X̲ayax̲á. **activity imperfective aspect with i-*
x̲- i- $^{2}\sqrt{}$x̲a-H
1SG·S-STV-$^{2}\sqrt{}$eat-VAR
intended: 'I am eating it.'

(117) a. Kei x̱at k'éich. *repetitive imperfective aspect without i-*
kei=x̱at= $^{1}\sqrt{}$k'e -μH-ch
up= 1SG·O=$^{1}\sqrt{}$good-VAR-REP
'I repeatedly become good/better.'

b. *Kei x̱at yak'éich. **repetitive imperfective aspect with i-*
kei=x̱at= i- $^{1}\sqrt{}$k'e -μH-ch
up= 1SG·O=STV-$^{1}\sqrt{}$good-VAR-REP
intended: 'I repeatedly become good/better.'

(118) a. Kei x̱at nak'éin. *progressive aspect without i-*
kei=x̱at= n- $^{1}\sqrt{}$k'e -μH-n
up= 1SG·O=NCNJ-$^{1}\sqrt{}$good-VAR-NSFX
'I am becoming good/better.'

b. *Kei x̱at naak'éin. **progressive aspect with i-*
kei=x̱at= n- i- $^{1}\sqrt{}$k'e -μH-n
up= 1SG·O=NCNJ-STV-$^{1}\sqrt{}$good-VAR-NSFX
intended: 'I am becoming good/better.'

(119) a. X̱at gak'éich. *habitual aspect without i-*
x̱at= g- $^{1}\sqrt{}$k'e -μH-ch
1SG·O=GCNJ-$^{1}\sqrt{}$good-VAR-REP
'I regularly become good/better.'

b. *X̱at gaak'éich. **habitual aspect with i-*
x̱at= g- i- $^{1}\sqrt{}$k'e -μH-ch
1SG·O=GCNJ-STV-$^{1}\sqrt{}$good-VAR-REP
intended: 'I regularly become good/better.'

(120) a. X̱at gak'éi. *consecutive aspect without i-*
x̱at= g- $^{1}\sqrt{}$k'e -μH
1SG·O=GCNJ-$^{1}\sqrt{}$good-VAR
'After me having become good/better.'

b. *X̱at gaak'éi. **consecutive aspect with i-*
x̱at= g- i- $^{1}\sqrt{}$k'e
1SG·O=GCNJ-STV-$^{1}\sqrt{}$good
intended: 'After me having become good/better.'

(121) a. X̱at gugak'éi. *prospective aspect+modality without i-*
x̱at= w- g- g̱- $^{1}\sqrt{}$k'e -μH
1SG·O=IRR-GCNJ-MOD-$^{1}\sqrt{}$good-VAR
'I will become good/better.'

b. *X̱at gugaak'éi. **prospective aspect+modality with i-*
x̱at= w- g- g̱- i- $^{1}\sqrt{}$k'e -μH
1SG·O=IRR-GCNJ-MOD-STV-$^{1}\sqrt{}$good-VAR
'I will become good/better.'

Moods are expressed in a similar way to the aspects, and all moods lack overt Ɛ. Thus *i-* never occurs in imperatives, admonitives, or conditionals. Mood marking can be combined with lexically stative roots like $\sqrt[1]{k'e}$ 'good', but as shown in (122)–(124) the resulting forms must lack *i-*. As with the aspects in (116)–(121), there are no obvious connections between the lack of *i-* among these moods.

(122) a. Igak'éi! *imperative mood without i-*
i- g- $\sqrt[1]{k'e}$ -μH
2SG·O-GCNJ-$\sqrt[1]{good}$-VAR
'Be good!'

b. *Igaak'éi! **imperative mood with i-*
i- g- i- $\sqrt[1]{k'e}$ -μH
2SG·O-GCNJ-STV-$\sqrt[1]{good}$-VAR
intended: 'Be good!'

(123) a. X̱at gook'éi. *admonitive mood without i-*
x̱at= g- u- $\sqrt[1]{k'e}$ -μH
1SG·O=GCNJ-IRR-$\sqrt[1]{good}$-VAR
'Lest I am good.'

b. *X̱at goowak'éi. **admonitive mood with i-*
x̱at= u- g- i- $\sqrt[1]{k'e}$ -μH
1SG·O=IRR-GCNJ-STV-$\sqrt[1]{good}$-VAR
intended: 'Lest I am good.'

(124) a. X̱at gak'éini. *conditional mood without i-*
x̱at= g- $\sqrt[1]{k'e}$ -μH-n -í
1SG·O=GCNJ-$\sqrt[1]{good}$-VAR-NSFX-SUB
'If I am good.'

b. *X̱at gaak'éini. **conditional mood with i-*
x̱at= g- i- $\sqrt[1]{k'e}$ -μH-n
1SG·O=GCNJ-STV-$\sqrt[1]{good}$-VAR-NSFX
intended: 'If I am good.'

Modalities are expressed with a dedicated *g̱-* prefix that is homophonous but paradigmatically distinct from (and can occur with) the *g̱*-conjugation prefix. Only one modality contains *i-*, namely the potential described in section 3.2.1. The prospective aspect+modality above in (121) and the hortative and contingent modalities in (125) and (126) all lack *i-*.

(125) a. X̱at gag̱ak'éi. *hortative modality without i-*
x̱at= g- g̱- $\sqrt[1]{k'e}$ -μH
1SG·O=GCNJ-MOD-$\sqrt[1]{good}$-VAR
'Let me be good.'

b. *X̱at gag̱aak'éi. **hortative modality with i-*
x̱at= g- g̱- i- $\sqrt[1]{k'e}$ -μH
1SG·O=GCNJ-MOD-STV-$\sqrt[1]{good}$-VAR
intended: 'Let me be good.'

(126) a. X̲at gag̲ak'éinín. *contingent modality without i-*
x̲at= g- g̲- $^{1}\sqrt{}$k'e -μH-n -í -n
1SG·O=GCNJ-MOD-$^{1}\sqrt{}$good-VAR-NSFX-SUB-INSTR
'Whenever I am good.'

b. *X̲at gag̲aak'éinín. **contingent modality with i-*
x̲at= g- g̲- i- $^{1}\sqrt{}$k'e -μH-n -í -n
1SG·O=GCNJ-MOD-STV-$^{1}\sqrt{}$good-VAR-NSFX-SUB-INSTR
intended: 'Whenever I am good.'

Polarity, tense, and clause type all characteristically lack overt Ɛ in marked contexts; this is analyzed as Ɛ-suppression in the cases where *i-* would otherwise be expected (sec. 4.1). Thus the unmarked affirmative may or may not have *i-*, but the marked negative with *tléil* almost always lacks *i-* (sec. 4.1.1). The unmarked nonpast tense may or may not have *i-*, but the marked past tense with *-ín* always lacks *i-* (sec. 4.1.3). And the unmarked clause may or may not have *i-*, but the subordinate clause (adjunct or complement) with *-í* always lacks *i-* (sec. 4.1.4).

I can find no syntactic or semantic properties that would unite all of the aspects that lack *i-*, moods that lack *i-*, modalities that lack *i-*, and the Ɛ-suppression contexts of negation, past tense, and clause embedding. Because of this, I conclude that the absence of Ɛ is not any kind of natural class in the syntax and so has no implications for the semantics. Thus it is not the case that presence/absence of Ɛ divides all verb forms into categories like say state versus event. Instead there are cases where Ɛ is overt, cases where overt Ɛ has been suppressed, and cases where Ɛ is covert, any of which may denote a state. We can say that structures with overt Ɛ are states, but not the converse.

5. Evolution of Ɛ in Na-Dene

The dual use of Ɛ in Tlingit for marking both lexical and grammatical states is apparently a kind of syntax-semantics mismatch. Consider the order of heads within the verb that is shown in (127). For lexical states the position of Ɛ very low and close to √ is not particularly surprising. But it is strange for Ɛ to be so low for grammatical states: we would instead expect Ɛ to be closer to Asp which hosts grammatical aspect. External reconstruction of Proto-Na-Dene suggests that the Ɛ head did use to be closer to Asp than to √, and that its position next to √ in Tlingit is probably due to historical reanalysis of an archaic phonological alternation (metathesis) as a distinct syntactic position. Thus the syntax-semantics mismatch of Ɛ in Tlingit is due to historical phenomena.

(127)

Preverb		Disjunct		Conjunct		Classifier			Stem		
PP*	Adv*	D_O	N*	Asp*	D_S	Voice	*v*	Ɛ	√	V	Adv*
[$_{AspP}$		[$_{DP}$	]		[$_{VoiceP}$		[$_{vP}$	[$_{ƐP}$	[$_{VP}$		]]]]]

Krauss (1969: 58–59) describes Eyak's stative prefix *i-* as occurring between D_S and *v* when Voice does not exist, but appearing after *v* when Voice contains *də-*. Krauss attributes this to harmony of the *ə* in *də-* with the *i-* prefix in the preceding syllable and consequent deletion of *i-*. Alternatively, if the *ə* in *də-* is epenthetic then metathesis bleeding epenthesis could instead account for the apparent rightward jump of *i-*. The position of unmetathesized *i-* between D_S and *v* is still somewhat odd, but syllable structure constraints could explain it as underlyingly between Asp and D_S since D_S

1.	[AspP …	[ƐP	*i-	[VoiceP	*d-	[vP	*ɬ-		(*ə)	[VP √	-VAR$_V$]]]]]	*Pre-Proto-Na-Dene*
2.	[AspP …	[ƐP	*i-	[VoiceP	*d-	[vP	*ɬ-		(*i)	[VP √	-VAR$_V$]]]]]	*Proto-Na-Dene*
3.	[AspP …			[VoiceP	d-	[vP	s-	[ƐP	i-	[VP √	-VAR$_V$]]]]]	*Tlingit*
4.	[AspP …	[ƐP	*i-	[VoiceP	*d-	[vP	*ɬ-		(*i)	[VP √	-VAR$_V$]]]]]	*Proto-Dene-Eyak*
5.	[AspP …	[ƐP	i-	[VoiceP	d-	[vP	ɬ-		(i)	[VP √	-VAR$_V$]]]]]	*Eyak*
6.	[AspP …			[VoiceP	*d-	[vP	*ɬ-		(*y)	[VP √	-VAR$_V$]]]]]	*Proto-Dene*

Figure 3.12: Suggested evolution of Ɛ = **i-* in Na-Dene languages

is generally a consonant. I take this to imply that Proto-Na-Dene had a stativity prefix **i-* in Ɛ immediately below Asp which had a primary role of indicating grammatical states and which became lexicalized in imperfectives. Metathesis completely shifted the position of this **i-* in Tlingit resulting in a semantically aberrant position for Ɛ in its grammatical state function, though fitting better with its lexical state function.

The Ɛ head is functionally absent in the Dene subfamily, but Krauss (1969: 59–64) convincingly argues for its historical residue in some irregular onsets of verb stems in various Dene languages. Unlike Tlingit and Eyak, many Dene languages have onsetless roots that spell out with various onset consonants that are either picked up from morphology preceding the stem or are prothetically inserted.[11] Krauss (1969: 62) points out that a Proto-Dene **y* (> *y* or *z* or *ž*) unexpectedly appears in the stem onset precisely when Eyak would have a preceding *di* with Voice *d-* and the metathesized *i-* of Ɛ. This onset **y* is now irregular, but it shows that the stative *i-* probably existed in Proto-Dene-Eyak in the same state-marking contexts as attested in Eyak and Tlingit.

The diagram in figure 3.12 illustrates the historical evolution of Ɛ as **i-* in the Na-Dene family using a context where all three of Ɛ, Voice, and *v* are valued. The solid arrows show descent of the Ɛ head, whereas the dotted arrows show synchronic phonological alternations in the realization of the Ɛ head. The first row represents a Pre-Proto-Na-Dene which had a stative prefix **i-* in ƐP between AspP and VoiceP. I omit the D_S subject: since **i-* was vocalic, D_S values would be realized either below or above Ɛ depending on variations in syllable structure. I propose an epenthetic vowel **ə* that would appear between **ɬ-* in *v* and the verb stem in VP, allowing *v* and Voice to spell out as a syllable in the Classifier domain; this epenthetic vowel *ə* still exists in Eyak when Ɛ is covert (Krauss 1969: 58). In row 2 the Proto-Na-Dene language develops either harmony or metathesis of the *i-* prefix of ƐP into the Classifier syllable. Row 3 shows Tlingit where the metathesis has been syntacticized as

11. Compare for example the onsetless French word *homme* /ɔm/ 'man' which picks up an onset from the preceding word like in *un homme* [ʔɛ̃.ˈnɔm] 'a man' and in *l'homme* [lɔm] 'the man'. It occurs with a prothetic glottal stop when there is no preceding consonant as in *le mot 'homme'* [lə mɔ ʔɔm] 'the word "man"'.

a structural change of ƐP position. Row 4 shows Proto-Dene-Eyak which maintains the PND status quo ante, and Eyak in row 5 largely preserves this situation. Row 6 illustrates Proto-Dene having completely lost ƐP with only the phonological residue of **y* immediately before the root and hence preserved in stems of onsetless roots.

The Tlingit *ya* [jà] realization of overt *i-* Ɛ without Voice or *v* deserves a short comment. Its alternative form *wa* [wà] is due to regular perseveratory (progressive) labialization spreading from a preceding labialized sound, and so is a reflection of the larger phenomenon of labialization spread. The *ya* form in modern Tlingit seems to show a consonantal realization *y* of the vowel *i*, but historically this consonant does not derive from *i* at all. Examples from Tongass Tlingit show the velar approximant *ÿ* /uɥ/ instead of the palatal approximant *y* /j/, e.g. Tongass *ÿadal* [uɥa.ˈtaɬ] 'it is heavy' versus Northern *yadál* [jà.ˈtáɬ] 'it is heavy'. This *ÿ* is derived from an earlier **ŋ* as described in appendix A section 6.1.3. This implies a reconstructed form **ŋa* for modern *ya*, with no trace of the *i-* element at all. To solve this quandary, I suggest that **ŋa* probably derives from earlier **ŋi*. This **ŋi* would then be cognate with the Eyak *i-* in its word-initial form *yi*. The relationship between **y* and **ŋ* in Proto-Na-Dene is fairly complex (e.g. Krauss & Leer 1981; Leer 2008), but I believe that this proposal should fit into the larger picture of sonorant development in the family.

4 *vP: Addition and restriction*

Ch'a yéi gugéink' áwé a kaax̲ shukaylis'úx̲ haa tlagu k̲wáanx'i aadé s k̲unoogu yé.
'We have uncovered only a tiny portion of the way our ancient people used to do things.'

Kichnáal̲x̲ George Davis in *Haa Tuwunáagu Yís* (1990, p. 312)

1 Basic functions of *s-*, *l-*, and *sh-* . . . 241
1.1 Additional argument contexts . . . 241
1.2 Meaning restriction contexts . . . 243
2 The *v* head is *s-*, *l-*, and *sh-* . . . 245
2.1 Phonology of the coronal fricative prefixes . . . 246
2.2 Syntax of the *v* head . . . 258
3 Adding arguments . . . 272
3.1 Intransitives: Derivation from nullivalent roots . . . 273
3.2 Causatives: Derivation from monovalent roots . . . 279
3.3 Applicatives: Derivation from bivalent roots . . . 288
4 Restricting meanings . . . 302
4.1 Qualification: Restriction of entities . . . 304
4.2 Extension: Restriction of eventualities . . . 308
4.3 Pejoratives: Restriction of evaluations . . . 310
5 Stacking of *v*P . . . 315
5.1 Deletion of overt *v* . . . 320
5.2 Overt *v* with covert *v* . . . 323
5.3 Covert *v* with overt *v* . . . 323
5.4 Covert *v* with covert *v* . . . 325
6 Exceptional cases of *s-*, *l-*, and *sh-* . . . 329
6.1 Roots with multiple different *v* . . . 330
6.2 Lexically specified *sh-* . . . 339
6.3 The *d-*/*l-* alternation . . . 340
7 *v* in the Na-Dene family . . . 341

The Tlingit verb word regularly appears with one of the three prefixes *s-* /s/, *l-* /ɬ/, or *sh-* /ʃ/ in a syllable immediately preceding the root. Leer labels these prefixes the "series component" of the classifier, and Krauss the "*ɬ*-component" (Leer 1991: 94). I reject the classifier as a syntactic primitive and instead analyse the *s-*, *l-*, and *sh-* prefixes as exponents of the *v* head in the syntax. I argue in this chapter that the *v* head is structurally and functionally independent of both the Ɛ and Voice heads. I also argue that although there are structures with a covert *v* equivalent to the traditional *Ø* value, there are also structures where *v* is completely absent and which consequently lack covert *v*.

The *s-* and *l-* values of *v* have two basic functions: adding arguments and restricting meanings. The *sh-* value appears to only restrict meanings, but there are some cases where it might irregularly add an argument. Adding arguments is quite general: a nullivalent root forms an intransitive, a monovalent root forms a causative, and a bivalent root forms an applicative. The argument adding function of *v* is thus much more than just causativity (cf. Kibrik 1993). The meaning restriction function also appears to be more or less general although it is less well understood. Restriction can apply at least to entities (qualification), eventualities (spatial extension), and evaluations (pejoration). Both argument addition and meaning restriction affect only one thing at a time, so that an alternation between e.g. *Ø* and *s-* may introduce a single argument but not more than one, and similarly an alternation between *Ø* and *s-* may introduce a single meaning restriction but not more than one.

The selection of *s-* versus *l-* is partly conditioned by phonology: if the Stem domain (= √ + V ± Adv) contains a coronal fricative or affricate /s, ɬ, ʃ, s', ɬ', ts, tɬ, tʃ, tsʰ, tɬʰ, tʃʰ, ts', tɬ', tʃ'/ then the prefix must be *l-* (sec. 2.1.1). But *s-* and *l-* can also occur in otherwise identical contexts where there is no coronal fricative or affricate, so the selection of *s-* versus *l-* is not just phonologically conditioned allomorphy. The factors conditioning selection in such cases are still obscure, although there are some partial associations with eventuality class and other lexical semantic properties which deserve further investigation. Some roots occur with more than one of *s-*, *l-*, and *sh-*, but the reasons for this selection are still not understood. The selection of *sh-* is much less common across the lexicon than the selection of either *s-* or *l-*, presumably due to its more limited semantics.

The basic functions of *s-*, *l-*, and *sh-* are first exemplified in section 1, introducing the essential distinction between argument addition and meaning restriction. The argument addition contexts in section 1.1 include the well known derivation of a causative from an intransitive, but also the derivation of an applicative from a transitive and the derivation of an intransitive from a nullivalent root that is ungrammatical as a verb without one of the three prefixes. The meaning restriction contexts in section 1.2 are syntactically distinguished from argument addition because they have one of the three *s-*, *l-*, or *sh-* prefixes but lack the addition of a DP or PP representing the added argument. Just like the argument addition contexts, the meaning restriction contexts can be divided into three cases: qualification of an object so that it denotes something long, extension of the eventuality so that it is stretched over a path in space, and pejoration where the speaker's or society's evaluation of the eventuality is negative with or without overt predicate negation.

Section 2 formally identifies the *s-*, *l-*, and *sh-* prefixes as instantiations of the *v* head. The phonology of *v* is sketched in section 2.1, showing the requirement for *l-* when coronal fricatives or affricates are present in the Stem domain (sec. 2.1.1), the irregular coalescence of *sh-* with the Stem onset (sec. 2.1.2), the irregular modification of the Stem onset with *l-* (sec. 2.1.3), and the regular lack of epenthetic [a] when preceded by certain prefixes (sec. 2.1.4). Section 2.2 details four syntactic properties of *v* apart from its argument adding and meaning restricting functions: the *v* head can contain only

one prefix (sec. 2.2.1), *v* can be covert in transitives and unergative intransitives (sec. 2.2.2), *v* can be absent in unaccusatives (sec. 2.2.3), and *v* must select either ƐP or VP as its complement (sec. 2.2.4).

Section 3 details the argument addition function of *v*, showing how the presence of *s-* or *l-* licenses the appearance of a DP or PP that would otherwise be ungrammatical. Nullivalent roots with overt *v* derive unaccusative intransitives (sec. 3.1), monovalent roots with overt *v* derive causatives (sec. 3.2), and bivalent roots with overt *v* derive applicatives with any one of the *-ch*, *-x'*, *-t*, or *-x̲* postpositions (sec. 3.3). Notably, although nullivalent roots with overt *v* are always unaccusative so that *v* adds only an object, monovalent roots with overt *v* form causatives where the added argument may be a subject (based on an unaccusative, sec. 3.2.1) or an object (based on an unergative, sec. 3.2.2). Causativization is also sometimes associated with a change of eventuality class with both achievement → activity and state → achievement attested (sec. 3.2.3), but whether this also occurs with applicativization is still unknown. Also, although applicativization is normally seen as the addition of an argument PP to a transitive structure, there is some preliminary evidence that unaccusative intransitives can have an argument PP added by the same mechanism (sec. 3.3.5).

Section 4 details the meaning restriction function of *v*, showing how the presence of *s-*, *l-*, or *sh-* without an added DP or PP introduces semantic restrictions on the interpretation of the verbal structure and its arguments. There are three cases: qualification that restricts the denotation of entities (sec. 4.1), extension that restricts the denotation of eventualities (sec. 4.2), and pejoration that restricts the speaker's or society's evaluation of the eventuality (sec. 4.3). Both the qualification and extension cases feature either *s-* or *l-* whereas the pejoration case features only *sh-*. Qualification specifies that the entity denoted by the internal argument (object of transitive or unaccusative) is long; a typical contrastive pair is a rock versus a stick. Extension specifies that the eventuality is extended in space and is effectively the same as qualification except applied to an eventuality rather than an entity; a typical contrastive pair is selling versus peddling (going around selling). Pejoration specifies that the speaker or society in general disapproves of the eventuality; a typical example is hatred. All three are lexically specified with some roots and but varying with others.

The analyses of *v* in sections 2–4 assume that only one *v*P can be present in a structure, and thus that only one *v* occurs. This assumption is supported by the fact that only one *s-*, *l-*, or *sh-* prefix can occur in any given verb form (sec. 2.2.1). Section 5 presents an alternative analysis where more than one *v*P can occur as long as only one *v* is spelled out in the surface form. Assuming the basis case of a single *v*P, there are four logical possibilities for two *v*Ps: one of two overt *v* heads is deleted (sec. 5.1), an overt *v* is merged above a covert (empty) *v* (sec. 5.2), a covert *v* is merged above an overt *v* (sec. 5.3), and both *v* heads are covert (sec. 5.4). The first two possibilities show some support from existing data, but the latter two are more problematic. The covert *v* + covert *v* possibility might however be supported by handling (transitive motion) verbs where an 'optional' argument PP could be introduced by the second covert *v*.

Section 6 documents three exceptional cases of the *s-*, *l-*, and *sh-* prefixes that do not fit neatly into the model developed in the preceding sections. The first case in section 6.1 is the occurrence of a single root with different overt *v* values and concomitant differences in interpretation. There is as yet no survey of such roots so it is difficult to say whether there are any regular patterns that could point to an analysis. I detail three sets of examples: $\sqrt[2]{}$*tin* 'see' (sec. 6.1.1), $\sqrt[1]{}$*x'a'n* 'angry' and the related $\sqrt[2]{}$*k'an* 'hate' (sec. 6.1.2), and $\sqrt[1]{}$*t'ix'* 'hard' (sec. 6.1.3). The second exceptional case in section 6.2 is lexically specified *sh-* which has no apparent pejorative interpretation. Some of these lexicalized

sh- instances are arguably frozen pejoratives, but others are both synchronically and diachronically inscrutable. Finally the third exceptional case in section 6.3 is the *d-*/*l-* alternation where a root alternates between an apparent detransitive with *d-* and an apparent causative with *l-* or *s-*. Because this alternation involves *d-* in Voice as well as *v*, the presentation in this chapter is limited to a short summary with a more detailed discussion postponed until chapter 5 section 7.2.

Section 7 discusses the relationship of Tlingit *v* with the **ɬ-* prefix in other Na-Dene languages. I suggest that my analysis of Tlingit *v*P should be relatively straightforward to adapt to Eyak and the Dene languages given the strong functional similarities and the historical claims that Tlingit *s-*, *l-*, and *sh-* are etymologically related to Proto-Na-Dene **ɬ-*. In particular, I expect that a great many supposedly lexical instances of **ɬ-* may be shown to be more or less regular after comparison with the functions of *v* in Tlingit. A careful review of alternations involving **ɬ-* in other Na-Dene languages may also shed some light on the more unusual or opaque instances of overt *v* in Tlingit.

1. Basic functions of *s-*, *l-*, and *sh-*

The three overt prefixes *s-*, *l-*, and *sh-* have a few different functions depending on their occurrence with particular roots. These functions can be grouped into two basic contexts: (i) addition of arguments and (ii) restriction of meaning. Addition of arguments involves the appearance of an argument in forms with *s-*, *l-*, or *sh-* versus the lack of the same argument in forms without those prefixes. Restriction of meaning involves the change in interpretation of forms with *s-*, *l-*, or *sh-* versus forms without those prefixes. I summarize the addition of arguments in section 1.1 and the restriction of meaning in section 1.2.

1.1. Additional argument contexts

The *s-* and *l-* prefixes regularly add an argument to a syntactic structure. The most familiar context for the addition of an argument is a causative structure where an intransitive verb without *s-* or *l-* has a transitive (causativized) counterpart with *s-* or *l-*. The data in (1) and (2) illustrate this with the monovalent root $\sqrt[1]{.i}$ 'cooked' and the *s-* prefix. Since the root is monovalent the form without a *s-* prefix is intransitive as in (1a) and cannot be transitive as in (1b). The addition of *s-* in (2a) no longer allows the form to be intransitive and instead a subject occurs as in (2b); thus *s-* is causative.

(1) a. Xat uwa.ée. *intransitive without s-*
xat= u- i- $\sqrt[1]{.i}$ -μH
1SG·O=ZPFV-STV-$\sqrt[1]{}$COOK-VAR
'I got cooked.'

b. *Xat eeya.ée. **transitive without s-*
xat= u- i- i- $\sqrt[1]{.i}$ -μH
1SG·O=ZPFV-2SG·S-STV-$\sqrt[1]{}$COOK-VAR
intended: 'You made me get cooked.', 'You cooked me.'

(2) a. *Xat wusi.ée. **intransitive with s-*
xat= wu-s- i- $\sqrt[1]{.i}$ -μH
1SG·O=PFV-CSV-STV-$\sqrt[1]{}$COOK-VAR
intended: 'I got cooked.' (actual: 'S/he made me get cooked.')

b. X̱at yisi.ée. *transitive with s-*
x̱at= wu-i- s- i- $^{1}\sqrt{}$.i -μH
1SG·O=PFV-2SG·S-CSV-STV-$^{1}\sqrt{}$COOK-VAR
'You made me get cooked.', 'You cooked me.' (e.g. overheated the sauna)

But the same addition of an argument can also be seen with a bivalent root like $^{2}\sqrt{}$*jak̲* 'kill'. The forms in (3) show that this root is bivalent because it cannot form an intransitive with covert *v*.

(3) a. *X̱at uwajáḵ. **intransitive without l-*
x̱at= u- i- $^{2}\sqrt{}$jak̲-H
1SG·O=ZPFV-STV-$^{2}\sqrt{}$kill -VAR
intended: 'I was killed.' (actual: 'S/he killed me.')

b. X̱at eeyajáḵ. *transitive without l-*
x̱at= u- i- i- $^{2}\sqrt{}$jak̲-H
1SG·O=ZPFV-2SG·S-STV-$^{2}\sqrt{}$kill -VAR
'You killed me.'

The *l-* prefix can be added to the root $^{2}\sqrt{}$*jak̲* 'kill' to produce an applicative.[1] The added argument in this case is a PP rather than a subject since there is already a subject with a bivalent root. The applicative argument in (4c) is instrumental with the ergative/instrumental *-ch* suffix, but it can instead be at least a locative with locative *-t* or a classification with pertingent *-x̱* as discussed further in section 3.3.

(4) a. *X̱at wuliją́ḵ. **intransitive with l-*
x̱at= u- l- i- $^{2}\sqrt{}$jak̲-H
1SG·O=ZPFV-APPL-STV-$^{2}\sqrt{}$kill -VAR
intended: 'I was killed.'

b. *X̱at yilijáḵ. **transitive with l-*
x̱at= u- i- l- i- $^{2}\sqrt{}$jak̲-H
1SG·O=ZPFV-2SG·S-APPL-STV-$^{2}\sqrt{}$kill -VAR
intended: 'You killed me.'

c. X̱'aanch x̱at yilijáḵ. *applicative with l-*
x̱'aan-ch x̱at= u- i- l- i- $^{2}\sqrt{}$jak̲-H
[PP fire -INSTR] 1SG·O=ZPFV-2SG·S-APPL-STV-$^{2}\sqrt{}$kill -VAR
'You killed me with fire.' (e.g. in a video game)

The addition of *s-*/*l-* to a monovalent root gives rise to a causative structure, and the addition of *s-*/*l-* to a bivalent root gives rise to an applicative structure. Tlingit also has nullivalent roots which cannot occur without overt *s-*/*l-* as shown in (5) using the root $^{0}\sqrt{}$chan 'stink, stench'.

1. The *l-* occurs here instead of *s-* because of the coronal affricate *j* [tʃ] in the root $^{2}\sqrt{}$*jak̲*. See section 2.1.1 for details.

	nullivalent e.g. $\sqrt[0]{chan}$ 'stink'		monovalent e.g. $\sqrt[1]{.i}$ 'cook'		bivalent e.g. $\sqrt[2]{jak}$ 'kill'	
	val.	*transitivity*	*val.*	*transitivity*	*val.*	*transitivity*
no *s-*/*l-*	0	*ungrammatical	1	intransitive	2	transitive
with *s-*/*l-*	1+0	intransitive	1+1	transitive	1+2	applicative

Table 4.1: Adding arguments with *s-* or *l-*

(5) a. *Xat woochán. **intransitive without l-*
xat= wu-i- $\sqrt[0]{}$chan-H
1SG·O=PFV-STV-$\sqrt[0]{}$stink -VAR
intended: 'I have become stinky.'

b. *Xat yeechán. **transitive without l-*
xat= wu-i- i- $\sqrt[0]{}$chan-H
1SG·O=PFV-2SG·S-STV-$\sqrt[0]{}$stink -VAR
intended: 'You have made me become stinky.'

With nullivalent roots the *s-*/*l-* again adds an argument to give rise to an intransitive. This is shown in (6) where *l-* combined with $\sqrt[0]{}$chan 'stink, stench' produces an unaccusative intransitive structure.

(6) Xat wulichán. *intransitive with l-*
xat= wu-l- i- $\sqrt[0]{}$chan-H
1SG·O=PFV-INTR-STV-$\sqrt[0]{}$stink -VAR
'I have become stinky.'

This section has shown that the *s-* and *l-* prefixes regularly add an argument to a verb. With nullivalent roots the result is intransitive, with monovalent roots the result is causative, and with bivalent roots the result is applicative. The set of transitivity patterns involving root valency and the *s-*/*l-* prefix is schematized in table 4.1. The 'val.' column represents the valency of the structure – the number of arguments – by a simple mathematical formula of <*addition*> + <*inherent*> where <*addition*> is the valency contributed by the overt *s-* or *l-* prefix and <*inherent*> is the valency contributed by the root from its lexical specification. I expand upon this argument adding phenomenon in section 3, offering a formal analysis within the syntactic model I have developed in preceding chapters.

1.2. Meaning restriction contexts

The *s-*, *l-*, and *sh-* prefixes are sometimes not accompanied by an additional argument. In such cases they instead introduce restrictions on the interpretation of the eventuality or on the entities involved in the eventuality. The addition of *s-* or *l-* may herald a qualificational restriction on an object so that its referent must somehow be long or extended in space. The pair in (7) illustrate this with the root $\sqrt[1]{dal}$ 'heavy'. The basis case is (7a) which describes the heaviness of an unqualified rock. The form in (7b) describes the heaviness of a log which qualified as a long object by the addition of *l-*.

(7) a. Wé té yadál. *ordinary state*
wé té i- $\sqrt[1]{}$dal -H
MDST rock STV-$\sqrt[1]{}$heavy-VAR
'That rock is heavy'

b. Wé x̱áaw lidál. *qualificational state with l-*
wé x̱áaw l- i- $\sqrt[1]{}$dal -H
MDST log XTN-STV-$\sqrt[1]{}$heavy-VAR
'That log is heavy.'

Qualificational *s-* or *l-* restricts the denotation of the entity referred to by the object of the verb. The same *s-* or *l-* may instead restrict the denotation of the eventuality referred to by the verb, with what I call extensional *s-* or *l-*. The data in (8) illustrates this extensional *l-* with the root $\sqrt[2]{}$*hun* 'sell'. The form in (8a) is the basis case which describes an eventuality of selling black seaweed. The form in (8b) adds the extensional *l-* along with a restriction on the interpretation where the selling eventuality must take place along some unspecified path in space. This extensional restriction underlies the English translations 'peddle' or 'go around selling'.

(8) a. Laak̲'ásk x̱waahoon. *ordinary transitive*
laak̲'ásk wu-x̱- i- $\sqrt[2]{}$hun-μ
blk·seaweed PFV-1SG·S-STV-$\sqrt[2]{}$sell -VAR
'I sold black seaweed.'

b. Laak̲'ásk x̱walihoon. *extensional transitive with l-*
laak̲'ásk wu-x̱- l- i- $\sqrt[2]{}$hun-μ
blk·seaweed PFV-1SG·S-XTN-STV-$\sqrt[2]{}$sell -VAR
'I peddled black seaweed.', 'I went around selling black seaweed.'

The introduction of *l-* in (8b) cannot be analyzed as qualificational because it does not restrict the denotation of the object. *Laak̲'ásk* 'black seaweed'[2] is a type of alga that is dried into black, popcorn-like balls and then eaten. It is usually stored and sold in plastic ziploc bags, and so neither as a small ball or as a bulging plastic bag does it have a shape that is long or stretched out.

The *sh-* prefix is uniquely associated with pejoration, expressing the negative evaluation of an eventuality according to either the speaker or to society in general. The pejorative *sh-* is particularly associated with negative antonyms (Cable 2017b), where it appears together with predicate negation for a variety of lexically specified states. One such negative antonym pair is given in (9): the affirmative form in (9a) is a state with overt *i-* in the imperfective aspect where the negative form in (9b) is predictably missing *i-* and has irrealis *u-* but in addition shows *sh-*.

2. *Laak̲'ásk* [ɬàːˈqˈásk] 'black seaweed' is *Pyropia abbottiae* (V.Krishnamurthy) S.C.Lindstrom 2011, recently renamed from *Porphyra abbottiae*. It is widely consumed in the Pacific Northwest (Turner 2003). The Tlingit name has no obvious etymology, but it resembles *laagák* [ɬàː.ˈqák] 'alga that grows on rocks; eelgrass' (Leer 1973a: 08/21, 1978c: 36). Leer (1978c: 92) suggests that the name was originally borrowed from Coast Tsimshian but offers no discussion.

(9) a. Yanéek'. *affirmative state*
i- $\sqrt[1]{}$nik'-μH
STV-$\sqrt[1]{}$tidy -VAR
'S/he is tidy, fastidious.'

b. Tléil ushnéek'. *pejorative negative state*
tléil u- sh-$\sqrt[1]{}$nik'-μH
NEG IRR-PEJ-$\sqrt[1]{}$tidy -VAR
'S/he is shabby, untidy.'

Although it is closely associated with predicate negation as in (9), the pejorative *sh-* also has a life independent of predicate negation: it is lexically specified as part of a number of verbs that denote eventualities disapproved of by society. The data in (10) illustrates this for the root $\sqrt[1]{}$*gek* 'stingy, cheap, ungenerous'. Only the form in (10b) with the pejorative *sh-* is grammatical, and because this cannot be predicted from any other structural properties the presence of *sh-* must be lexically specified.

(10) a. *Yageik. **lexicalized pejorative without sh-*
i- $\sqrt[1]{}$gek -μ
STV-$\sqrt[1]{}$stingy-VAR
intended: 'S/he is stingy, cheap.'

b. Shigeik. *lexicalized pejorative with sh-*
sh-i- $\sqrt[1]{}$gek -μ
PEJ-STV-$\sqrt[1]{}$stingy-VAR
'S/he is stingy, cheap.'

This section has shown that the *s-*, *l-*, and *sh-* prefixes can regularly restrict the meaning of an entity or eventuality associated with a verb. The meaning restriction contexts for *s-*, *l-*, and *sh-* are characteristically ones where there is no appearance of an additional overt argument phrase. In section 4 I describe the meaning restriction functions of the *s-*, *l-*, and *sh-* prefixes in greater detail. I suggest there that they can be productively analyzed in the syntax as the addition of covert arguments that host the meaning restriction semantics, thus structurally unifying them with the argument adding functions.

2. The *v* head is *s-*, *l-*, and *sh-*

I identify the *s-*, *l-*, and *sh-* prefixes as instantiations of the *v* head in the syntax. This is not an particularly novel approach: Hale (2003) identified the *ł-* prefix in Navajo as *v* (earlier as Voice in Hale 2001). Similarly, Embick (1996) identifies the *ł-* in Hupa as V, as do Rice & Saxon (2005). But my approach crucially differs from previous models in that the *v* head with the *s-*, *l-*, or *sh-* prefixes is syntactically distinct from the Voice head with *d-* prefix (ch. 5); previous analyses have always unified *d-* and *ł-* into a single syntactic unit. This split is justified by the complete syntactic and semantic independence of the two elements: *v* can occur without Voice and Voice can occur without *v* (see ch. 5 sec. 2.2.3). Their occurrence together as as a single surface unit is purely phonological: the *d-* + *ł-* → *l* phenomenon in Dene languages, the *də-* + *ł-* → *łə* phenomenon in Eyak, and the *d-* + {*s-*, *l-*,

sh-} → *dz*, *dl*, *j* phenomenon in Tlingit are all explainable by phonological operations at spellout and have no significant impacts on their syntactic or semantic properties.

In section 2.1 I detail four significant phonological phenomena associated with the *s-*, *l-*, and *sh-* prefixes. Section 2.1.1 documents a local harmony-like phenomenon where the appearance of a coronal affricate or fricative in the verb stem blocks the apperance of *s-* so that *l-* arises instead. Section 2.1.2 documents an irregular case where the *sh-* prefix replaces the onset of the verb stem. And section 2.1.3 documents an irregular harmony-like phenomenon where the stem onset changes in response to the presence of an immediately preceding *l-*. Finally section 2.1.4 documents the regular but unexpected lack of epenthetic [à] when *s-*, *l-*, or *sh-* is preceded by one of a particular set of prefixes, suggesting that this reflects constraints on metrical structure. I do not argue for any phonological explanations of these phenomena; I only present them here because their appearance can be confusing or misleading for the syntactic analysis.

In section 2.2 I detail four significant syntactic properties of the *s-*, *l-*, and *sh-* prefixes. Section 2.2.1 shows that the *v* head can only contain one of these values so that more than one prefix is impossible. Section 2.2.2 argues that *v* can be empty because it must exist to project the *v*P for subjects in transitives and unergatives even when there is no overt *s-*, *l-*, or *sh-* prefix. Section 2.2.3 argues that *v* can be absent rather than empty in unaccusatives since without a subject or a prefix there is no need for *v*P. Finally section 2.2.4 shows that *v* must select a complement and that this complement can only be either ƐP or VP and not any other phrase in the language.

2.1. Phonology of the coronal fricative prefixes

All three of the *s-* /s/, *l-* /ɬ/, and *sh-* /ʃ/ prefixes are fricatives, but Tlingit has a large inventory of fricatives so this is an insufficient generalization. Table 4.2 gives a minimal phonological feature specification for all of Tlingit's fricative phonemes, following Hall 2007.[3] The /s/, /ɬ/, and /ʃ/ phonemes can be specifically characterized as coronal and/or anterior non-ejective fricatives since they are distinguished by the [coronal] and [anterior] features as well as the lack of the [constricted glottis] feature. Therefore they form a natural class of phonological segments and their interactions with other phonological elements can potentially be reasoned about generically. They are individually distinguished by the [distributed] feature for /ɬ/ and /ʃ/ and by the [lateral] feature for /ɬ/, predicting an asymmetric division between the *s-* prefix on the one hand and *l-* and *sh-* on the other. It is unclear if this predicted division bears any empirical fruit, but *s-* sometimes does seem to be a sort of 'default' value for *v* (sec. 2.1.1).

2.1.1. Coronal affricates and fricatives require l^s-

The lateral fricative *l* [ɬ] obligatorily occurs instead of *s* [s] in *v* when the Stem domain contains a coronal fricative or affricate (Leer 1991: 176 rule 3). The coronal fricatives are the sets /s, ɬ, ʃ/, /s', ɬ'/ as shown in table 4.2. The coronal affricates are the sets /ts, tɬ, tʃ/, /tsʰ, tɬʰ, tʃʰ/, and /ts', tɬ', tʃ'/. I represent the appearance of *l-* that is conditioned by the stem as a notional prefix l^s-, indicating that the underlying form could logically be either *l-* or *s-*; in most cases it is impossible to tell which underlying form actually occurs, but I present one paradigm predicting an underlying *s-* in this section.

3. I have ignored the [f] and voiced fricatives that can be borrowed from English, e.g. *haa chéefu* [hàː ˈtʃʰíː.fʷù] 'our chief' (not **haa chéefi*) and *easyx̱ sitee* [ˈʔíː.zìːχ sìˈtʰìː] 'it's (of) easy'. The sound *sh'* [ʃ'] does not occur because of the historical merger of **sh'* > *s'* < **s'* (Leer 1991: 9), but there are also signs of **sh'* > *sh* and **sh'* > *ch'* in the lexicon.

	[s]	[s’]	[ɬ]	[ɬ’]	[ʃ]	[x]	[x’]	[xʷ]	[x’ʷ]	[χ]	[χ’]	[χʷ]	[χ’ʷ]
[consonant]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
[continuant]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
[anterior]	✓	✓	✓	✓	✓								
[coronal]	✓	✓	✓	✓	✓								
[distributed]			✓	✓	✓								
[lateral]			✓	✓									
[dorsal]						✓	✓	✓	✓	✓	✓	✓	✓
[labial]								✓	✓			✓	✓
[uvular]										✓	✓	✓	✓
[constr. glot.]		✓		✓			✓		✓		✓		✓

Table 4.2: Distinctive phonological features for fricative phonemes

First consider the root $^{1}\sqrt{}$*chu’n* /tʃʰun/ ‘wound’ which has an onset /tʃʰ/, i.e. an aspirated postalveolar affricate. The causative in (11a) with *s-* is ungrammatical and instead *l-* must be used as shown in (11b). I call this phenomenon the (phonological) *s-* → *l-* alternation.

(11) a. *Iwtusichún. **s- with stem onset ch*
[ʔìw.tʰù.sì.ˈtʃʰún]
i- wu-tu- s- i- $^{1}\sqrt{}$chu’n-H
2SG·O-PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$WOUND-VAR
intended: ‘We made you (sg.) become wounded.’, ‘We wounded you (sg.).’

b. Iwtulichún. *l- with stem onset ch*
[ʔìw.tʰù.ɬì.ˈtʃʰún]
i- wu-tu- l^s- i- $^{1}\sqrt{}$chu’n-H
2SG·O-PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$WOUND-VAR
‘We made you (sg.) become wounded.’, ‘We wounded you (sg.).’

The *s-* → *l-* alternation is documented by the verb forms below in (12)–(20). Each example shows a set of roots with consonants based on the triplet /s, ɬ, ʃ/, ideally with the vowel /a/ wherever such a root is attested with overt *v*. Forms are either state imperfectives or perfectives depending on the root’s lexical specification. For example, in (12) each root has one of the plain fricative onsets /s/, /ɬ/, or /ʃ/, and later in (15) each root has one of the aspirated affricate onsets /tsʰ/, /tɬʰ/, or /tʃʰ/.

(12) *plain fric. onset*

root		with *s-*		with *l-*		
orth.	IPA	orth.	IPA	orth.	IPA	gloss
√sak̲	saq	*awsisák̲	*ʔàw.sì.sáq	awlisák̲	ʔàw.ɬì.sáq	‘s/he exhausted it’
√la	ɬa	*awsiláa	*ʔàw.sì.ɬá:	awliláa	ʔàw.ɬì.ɬá:	‘s/he melted it’
√shan	ʃan	*awsishán	*ʔàw.sì.ʃán	awlishán	ʔàw.ɬì.ʃán	‘s/he aged him/her’

(13) *ejective fric. onset*

root		with *s-*		with *l-*		
orth.	IPA	orth.	IPA	orth.	IPA	gloss
√s’ak̲	s’aq	*sis’aak̲	*sì.s’à:q	lis’aak̲	ɬì.s’à:q	‘it is bony’
√l’aʰ	ɬ’a	*awsil’áa	*ʔàw.sì.ɬ’á:	awlil’áa	ʔàw.ɬì.ɬ’á:	‘s/he sucked it’

(14) *plain aff. onset*

root		with *s-*		with *l-*		
orth.	IPA	orth.	IPA	orth.	IPA	gloss
√dzi	tsi	*sidzée	*sì.tsí:	lidzée	ɬì.tsí:	‘it is difficult’
√dlan	tɬan	*awsidlaan	*ʔàw.sì.tɬà:n	awlidlaan	ʔàw.ɬì.tɬà:n	‘s/he made it deep’
√jak̲	tʃaq	*awsiják̲	*ʔàw.sì.tʃáq	awliják̲	ʔàw.ɬì.tʃáq	‘s/he killed it (appl.)’

(15) *asp. aff. onset*

root		with *s-*		with *l-*		
orth.	IPA	orth.	IPA	orth.	IPA	gloss
√tsin	tsʰin	*sitseen	*sì.tsʰì:n	litseen	ɬì.tsʰì:n	‘s/he is strong’
√tlax̲	tɬʰaχ	*awsitlax̲	*ʔàw.sì.tɬʰáχ	awlitlax̲	ʔàw.ɬì.tɬʰáχ	‘s/he made it mouldy’
√chan	tʃʰan	*sichán	*sì.tʃʰán	lichán	ɬì.tʃʰán	‘it stinks’

(16) *ejv. aff. onset*

root		with *s-*		with *l-*		
orth.	IPA	orth.	IPA	orth.	IPA	gloss
√ts’a	ts’a	*sits’áa	*sì.ts’á:	lits’áa	ɬì.ts’á:	‘it smells good’
√tl’ak’	tɬ’ak’	*awsitl’ák’	*ʔàw.sì.tɬ’ák’	awlitl’ák’	ʔàw.ɬì.tɬ’ák’	‘s/he wetted it’
√ch’ex̲’w	tʃ’eχ’ʷ	*wusich’éx̲’w	*wù.sì.tʃ’éχ’ʷ	wulich’éx̲’w	wù.ɬì.tʃ’éχ’ʷ	‘it got dirty’

The data in (17)–(20) illustrate roots with codas that contain coronal fricatives or affricates. These are presented in essentially the same order as above, except that aspirated affricates are prohibited in the coda (apx. A sec. 2.1) so there is no data possible for that particular set. These sets show that *l-* is required for roots ending with /s, ɬ, ʃ/, /s’, ɬ’/, /ts, tɬ, tʃ/, and /ts’, tɬ’, tʃ’/.

(17) *plain fric. coda*

root		with *s-*		with *l-*		
orth.	IPA	orth.	IPA	orth.	IPA	gloss
√was	was	*awsiwás	*ʔàw.sì.wás	awliwás	ʔàw.ɬì.wás	‘s/he roasted it’
√nal	naɬ	*awsinál	*ʔàw.sì.náɬ	awlinál	ʔàw.ɬì.náɬ	‘s/he steamed it’
√x’ash	x’aʃ	*awsix’ásh	*ʔàw.sì.x’áʃ	awlix’ásh	ʔàw.ɬì.x’áʃ	‘s/he bewitched him/her’

(18) *ejv. fric. coda*

root		with *s-*		with *l-*		
orth.	IPA	orth.	IPA	orth.	IPA	gloss
√xas’	xas’	*awsixás’	*ʔàw.sì.xás’	awlixás’	ʔàw.ɬì.xás’	‘s/he scraped it’
√gwal’	kʷaɬ’	*awsigwál’	*ʔàw.sì.kʷáɬ’	awligwál’	ʔàw.ɬì.kʷáɬ’	‘s/he curled it’

(19)

root		with *s-*		with *l-*		*plain aff. coda*
orth.	IPA	orth.	IPA	orth.	IPA	gloss
√kits	kʰits	*awsikíts	*ʔàw.sì.kʰíts	awlikíts	ʔàw.ɬì.kʰíts	's/he singed it'
√ni'tl	nitɬ	*awsinítl	*ʔàw.sì.nitɬ	awlinítl	ʔàw.ɬì.nítɬ	's/he fattened him/her'
√t'ach	t'atʃ	*awsit'ách	*ʔàw.sì.t'átʃ	awlit'ách	ʔàw.ɬì.t'átʃ	's/he slapped it'

(20)

root		with *s-*		with *l-*		*plain aff. coda*
orth.	IPA	orth.	IPA	orth.	IPA	gloss
√k'ats'	k'ats'	*sik'áts'	*sì.k'áts'	lik'áts'	ɬì.k'áts'	'it is pointy'
√kwatl'	qʰʷatl'	*awsikwátl'	*ʔàw.sì.qʰʷátɬ'	awlikwátl'	ʔàw.ɬì.qʰʷátɬ'	's/he melted it'
√tuch'	tʰutʃ'	*awsitúch'	*ʔàw.sì.tʰútʃ'	awlitúch'	ʔàw.ɬì.tʰútʃ'	's/he rolled it'

We have established that *l-* is required when the root contains a coronal fricative or affricate. But the constraint against *s-* is not only due to the phonology of roots. There are several suffixes in the Stem domain that include coronal affricates or fricatives, and the presence of these also requires *l-*. Some typical triggering suffixes are the repetitive suffixes *-ch* /tʃ/ and *-s'* /s'/. The data in (21) show that the root $\sqrt[2]{yik}$ 'pull' occurs with *s-* and not *l-*. But then in (22) the addition of the *-s'* suffix forces *l-* to appear instead of *s-*.

(21) a. Wutusiyeek. *with s-*
[wù.tʰù.sì.ˈjìːq]
wu-tu- s- i- $\sqrt[2]{yik}$-μ
PFV-1PL·S-XTN-STV-$\sqrt[2]{\text{pull}}$-VAR
'We pulled it (rope).'

b. *Wutuliyeek. **with l-*
[wù.tʰù.ɬì.ˈjìːq]
wu-tu- l- i- $\sqrt[2]{yik}$-μ
PFV-1PL·S-XTN-STV-$\sqrt[2]{\text{pull}}$-VAR
intended: 'We pulled it (rope).'

(22) a. *Wutusayíks'. **with s- and -s'*
[wù.tʰù.sà.ˈjíqs']
wu-tu- s- i- $\sqrt[2]{yik}$-H -s'
PFV-1PL·S-XTN-STV-$\sqrt[2]{\text{pull}}$-VAR-REP
intended: 'We repeatedly pulled it (rope).', 'We kept pulling it (rope).'

b. Wutulayíks'. *with l- and -s'*
[wù.tʰù.ɬà.ˈjíqs']
wu-tu- s- i- $\sqrt[2]{yik}$-H -s'
PFV-1PL·S-XTN-STV-$\sqrt[2]{\text{pull}}$-VAR-REP
'We repeatedly pulled it (rope).', 'We kept pulling it (rope).'

The alternation in (21) and (22) could be analyzed as an underlying *s-* whose surface form is transformed to [ɬ] by the phonology. Alternatively, the output form *l-* could be selected at spellout

with an abstract non-phonological element in *v*. I have not investigated the consequences of either model nor any other alternative models for this phenomenon. Crucially for any such model, there are instances of both *s-* and *l-* with the same root where each value has a distinct interpretation (see sec. 6), so it is not the case that *s-* and *l-* are simply allomorphs. And in the case of roots that contain a coronal fricative or affricate it is generally impossible to decide whether the underlying form is *s-* or *l-* since surface [ɬ] will always occur. In these cases I use the notional prefix l^{s}- as a kind of signal that [ɬ] could be present in surface forms due to the *s-* → *l-* alternation rather than *l-* being specifically selected. In cases like (21) versus (22) I usually represent an underlying *s-*, but I often miss the phenomenon due to either inattention or sporadic lexical documentation.

The *s-* → *l-* alternation described in this section must be scrupulously distinguished from any other kind of alternation between *s-* and *l-* that is unconditioned by phonology. As long as the Stem domain does not contain a coronal fricative or affricate, the syntax is actually free to choose between the *s-*, *l-*, or *sh-* values of *v* for whatever reason. I suspect that the *s-* → *l-* alternation developed first and then the *l-* value was reanalyzed as a new underlying form that gained independence. How *sh-* fits into this is still unclear; see section 7 for further discussion.

2.1.2. Irregular coalescence with stem onset

Generally the *s-*, *l-*, and *sh-* prefixes are always spelled out separately from the material in the Stem domain, i.e. the root and its suffixes. There is exactly one irregular case where *sh-* appears as the onset of the Stem syllable, specifically with the root $\sqrt[1]{xix}$ 'sg. fall, move through space; sg. run'. I refer to this with the theoretically undefined term of 'coalescence', though it is probably best analyzed as deletion of the onset consonant of the root and consequent resyllabification.

The data in (23) and (24) demonstrate nearly identical forms of perfectives for the two motion roots $\sqrt[1]{kak}$ 'squat, perch' and $\sqrt[1]{xix}$ 'sg. run'. These provide a baseline for comparison with the later data; in both cases the *d-sh-i-* sequence is predictably realized as [tʃi] and the onset of the stem is unmolested.

(23) Xwajikaak. *perfective*
[χʷà.tʃi.ˈqʰàːq]
wu-x- d- sh-i- $\sqrt[1]{kak}$ -μ
PFV-1SG·S-MID-PEJ-STV-$\sqrt[1]{\text{squat}}$-VAR
'I squatted.', 'I have squattted.'

(24) Xwajixeex. *perfective*
[χʷà.tʃi.ˈxìːx]
wu-x- d- sh-i- $\sqrt[1]{xix}$ -μ
PFV-1SG·S-MID-PEJ-STV-$\sqrt[1]{\text{run}}$·SG-VAR
'I ran.', 'I have run.'

The data in (25) and (26) illustrate the contrast between regular and irregular realization of the stem onset using the prospective aspect. All forms have the underlying sequence *d-sh-* which regularly surfaces as [ʃ] (see ch. 5 sec. 2.1.4 for details). The regular case in (25a) with the root $\sqrt[1]{kak}$ 'squat, perch' shows the [ʃ] in the coda of the pre-Stem syllable followed by the onset [qʰ] in the Stem syllable. The irregular case in (26b) with the root $\sqrt[1]{xix}$ sg. run' has the [ʃ] appearing in the onset of the Stem syllable and the otherwise expected onset [x] in the Stem has disappeared.

(25) a. Yei kk̲waashk̲áak̲. *prospective without coalescence*
[jè: kʷ.qʰwàʃ.ˈqʰá:q]
yei= w- g- g̲- x̲- d- sh-$^{1}\sqrt{}$k̲ak̲ -μH
down=IRR-GCNJ-MOD1SG·S-MID-PEJ-$^{1}\sqrt{}$squat-VAR
intended: 'I will squat down.'

b. *Yei kk̲waasháak̲. **prospective with coalescence*
[jè: kʷ.qʰwà.ˈʃá:q]
yei= w- g- g̲- x̲- d- sh-$^{1}\sqrt{}$k̲ak̲ -μH
down=IRR-GCNJ-MOD1SG·S-MID-PEJ-$^{1}\sqrt{}$squat-VAR
intended: 'I will squat down.'

(26) a. *Kuk̲ashxéex. **prospective without coalescence*
[kʰʷù.qʰàʃ.ˈxí:x]
w- g- g̲- x̲- d- sh-$^{1}\sqrt{}$xix -μH
IRR-GCNJ-MOD1SG·S-MID-PEJ-$^{1}\sqrt{}$run·SG-VAR
intended: 'I will run.'

b. Kuk̲ashéex. *prospective with coalescence*
[kʰʷù.qʰà.ˈʃí:x]
w- g- g̲- x̲- d- sh-$^{1}\sqrt{}$xix -μH
IRR-GCNJ-MOD1SG·S-MID-PEJ-$^{1}\sqrt{}$run·SG-VAR
'I will run.'

The data in (27)–(30) show that this phenomenon is not unique to the prospective aspect, but instead happens in any context where *d-sh-* is immediately followed by the root, i.e. where *i-* in Ɛ does not occur. The forms in (27) and (28) specifically illustrate the progressive aspect and the forms in (29) and (30) illustrate the imperative mood, showing that the same phenomenon occurs with two different temporal inflections and two different subjects. The regular cases in (27a) and (29a) again have the [ʃ] in the coda of the pre-Stem syllable followed by the onset [qʰ] in the Stem syllable. The irregular cases in (28b) and (30b) again have the [ʃ] as the onset of the Stem syllable and the otherwise expected [x] disappears.

(27) a. Yei nx̲ashk̲ák̲. *progressive without coalescence*
[jè: n.χàʃ.ˈqʰáq]
yei= n- x̲- d- sh-$^{1}\sqrt{}$k̲ak̲ -H
down=NCNJ-1SG·S-MID-PEJ-$^{1}\sqrt{}$squat-VAR
intended: 'I am squatting down.'

b. *Yei nx̲asháak̲. **progressive with coalescence*
[jè: n.χà.ˈʃáq]
yei= n- x̲- d- sh-$^{1}\sqrt{}$k̲ak̲ -H
down=NCNJ-1SG·S-MID-PEJ-$^{1}\sqrt{}$squat-VAR
intended: 'I am squatting down.'

(28) a. *Yaa nx̱ashxíx. **progressive without coalescence*
[jàː n.χàʃ.ˈxíx]
ÿaa= n- x̱- d- sh-$^{1}\sqrt{}$xix -H
along=NCNJ-1SG·S-MID-PEJ-$^{1}\sqrt{}$run·SG-VAR
intended: 'I am running along.'

b. Yaa nx̱ashíx. *progressive with coalescence*
[jàː n.χà.ˈʃíx]
ÿaa= n- x̱- d- sh-$^{1}\sqrt{}$xix -H
along=NCNJ-1SG·S-MID-PEJ-$^{1}\sqrt{}$run·SG-VAR
'I am running along.'

(29) a. Neeshk̲aak̲! *imperative without coalescence*
[nìːʃ.ˈqʰàːq]
n- i- d- sh-$^{1}\sqrt{}$k̲ak̲ -μ
NCNJ-2SG·S-MID-PEJ-$^{1}\sqrt{}$squat-VAR
'Squat!'

b. *Neeshaak̲. **imperative with coalescence*
[nìː.ˈʃàːq]
n- i- d- sh-$^{1}\sqrt{}$k̲ak̲ -μ
NCNJ-2SG·S-MID-PEJ-$^{1}\sqrt{}$squat-VAR
intended: 'Squat!'

(30) a. *Neeshxeex! **imperative without coalescence*
[nìːʃ.ˈxìːx]
n- i- d- sh-$^{1}\sqrt{}$xix -μ
NCNJ-2SG·S-MID-PEJ-$^{1}\sqrt{}$run·SG-VAR
intended: 'Run!'

b. Neesheex! *imperative with coalescence*
[nìː.ˈʃìːx]
n- i- d- sh-$^{1}\sqrt{}$xix -μ
NCNJ-2SG·S-MID-PEJ-$^{1}\sqrt{}$run·SG-VAR
'Run!'

As far as I am aware, the root $^{1}\sqrt{}$*xix* 'sg. fall, move through space; sg. run' is the only instance of coalescence of *sh-* with the stem onset. It is regular throughout the verbal paradigms of this root: as long as *d-sh-* immediately precedes the root they will coalesce regardless of any other morphological material in the verb word. The motivation for this phenomenon is entirely unknown, but it is stable across all dialects and speakers.

2.1.3. Irregular modification of stem onset

The phenomenon described in section 2.1.1 is a case of the *v* being modified to fit with phonological material in the Stem domain. This section demonstrates the reverse: a case of phonological material in the Stem domain being modified to fit *v*. This is attested only with the *l-* prefix and the root $^{1}\sqrt{}$*tsin*

'animate; strong'. Similar to the phenomenon in section 2.1.2, when *l-* in *v* immediately precedes the Stem, the onset of the Stem syllable is modified. In this case, rather than deleting the onset consonant, it is instead transformed from the expected alveolar affricate [tsʰ] to the unexpected postalveolar affricate [tʃʰ].

The forms in (31) and (32) are baseline examples of the root $\sqrt[1]{tsin}$ 'animate; strong' in affirmative state imperfective forms. The 'animate' interpretation in (31) has no *v* present whereas the 'strong' interpretation in (32) arises from combination of the root and the extensional *lˢ-*.

(31) Yatseen. *affirmative state imperfective*
[jà.ˈtsʰìːn]
i- $\sqrt[1]{}$tsin -μ
STV-$\sqrt[1]{}$active-VAR
'S/he/it is alive, active, animate.'

(32) Litseen. *affirmative state imperfective*
[ɬì.ˈtsʰìːn]
lˢ- i- $\sqrt[1]{}$tsin -μ
XTN-STV-$\sqrt[1]{}$active-VAR
'S/he/it is strong.'

The data for the negative state imperfective in (33) show that the stem in the 'animate' case behaves normally, arising as [tsʰ] and not [tʃʰ] as predicted by the root lexical entry of /tsʰin/. This contrasts with the data in (34) which shows that the form with [tsʰ] is ungrammatical and unpredictably the grammatical form has [tʃʰ].

(33) a. Tléil utseen. *negative with ts*
[tɬʰéːɬ ʔù.ˈtsʰìːn]
tléil u- $\sqrt[1]{}$tsin -μ
NEG IRR-$\sqrt[1]{}$active-VAR
'S/he/it is not alive, active, animate.'

b. *Tléil ucheen. **negative with ch*
[tɬʰéːɬ ʔù.ˈtʃʰìːn]
tléil u- $\sqrt[1]{}$tsin -μ
NEG IRR-$\sqrt[1]{}$active-VAR
intended: 'S/he/it is not alive, active, animate.'

(34) a. *Tléil ultseen. **negative with ts*
[tɬʰéːɬ ʔùɬ.ˈtsʰìːn]
tléil u- lˢ- $\sqrt[1]{}$tsin -μ
NEG IRR-XTN-$\sqrt[1]{}$active-VAR
intended: 'S/he/it is not alive, active, animate.'

b. Tléil ulcheen. *negative with ch*
[tɬʰéːɬ ʔùɬ.ˈtʃʰìːn]
tléil u- lˢ- $\sqrt[1]{}$tsin -μ
NEG IRR-XTN-$\sqrt[1]{}$active-VAR
'S/he/it is not alive, active, animate.'

Apparently the presence of [ɬ] immediately before the Stem syllable requires that the onset shift from [tsʰ] to [tʃʰ]. This is not attested anywhere else in Tlingit, so it is a unique irregularity. The motivation for this phenomenon is unknown but it is stable across all dialects and speakers.

2.1.4. Lack of the epenthetic *a* vowel

The fricative prefixes *s-*, *l-*, and *sh-* all spell out as onsets of syllables in the Classifier domain aside from their realization as codas with preceding *d-* (see ch. 5 sec. 2.1.4). When *s-*, *l-*, and *sh-* occur with *i-* in Ɛ the surface form is [Fì][4] where [F] = [s, ɬ, ʃ], and when they occur without *i-* the form is [Fà] with an epenthetic vowel [a]. But there are a small number of phonological contexts where the [a] vowel regularly does not appear, with the [F] consequently realized as the coda consonant of the preceding syllable in the Conjunct domain rather than the onset of its own syllable in the Classifier domain. This lack of epenthesis results in surface forms that are identical to forms with *d-* as discussed in chapter 5 section 2.1.4.

The usual appearance of a fricative prefix in *v* without *d-* or *i-* as [Fà] is shown by the three examples in (35). Each case is a non-state (event) imperfective aspect form so that *i-* does not occur, and each case is transitive with an overt first person singular subject. Even though the first person singular gets epenthesized, this syllable does not contain the fricative which is instead epenthesized in its own syllable.

(35) a. Cháas' x̲asa.ée. *epenthesized s-*
[tʃʰá:s' χà.sà.ˈʔí:]
cháas x̲- s- ¹√.i -μH
pink·salmon 1SG·S-CSV-¹√cook-VAR
'I am cooking pink salmon.'

b. Cháas' x̲alatín. *epenthesized l-*
[tʃʰá:s' χà.ɬà.ˈtʰín]
cháas x̲- l- ²√tin-H
pink·salmon 1SG·S-XTN-²√see -VAR
'I am watching pink salmon.'

c. Cháas' x̲asha.útlx̲. *epenthesized sh-*
[tʃʰá:s' χà.ʃà.ˈʔútɬχ]
cháas' x̲- sh- ²√.u'tl -H -x̲
pink·salmon 1SG·S-PEJ-²√boil·fish-VAR-REP
'I am boiling pink salmon repeatedly.'

There are several phonological contexts where [a] epenthesis fails to occur, aside from the aforementioned cases with *d-*. Leer describes these contexts as morphologically conditioned by an immediately preceding prefix: theargument marking prefix *a-*, perfective prefix *wu-*, perfective prefix *u-*, irrealis prefix *u-*, *n*-conjugation prefix *n-*, *g̲*-conjugation prefix *g̲-* only when it is word initial, modal

4. This [ì] from *i-* is usually devoiced or deleted when it is not in the initial syllable in Southern and Tongass Tlingit (Williams, Williams, & Leer 1978: 16–17), but the details of this phenomenon are still undescribed. In my experience, some Transitional Tlingit speakers (Wrangell, Kake, etc.) optionally delete the same [ì] with compensatory lengthening of [F], but the conditioning factors are unknown.

prefix *g̱-* only when it is word initial, and the distributive subject *dag̱a-* (Leer 1991: 175–180 rule 2).[5] This motley collection of prefixes shares little or nothing in common semantically, syntactically, or phonologically which suggests that there is something else at play. I strongly suspect that the conditioning environment instead involves the metrical structure of the verb, probably having something to do with syllable count, foot structure, stress assignment, and phonotactic constraints on syllable structure among other possibilities. But I have not explored the patterns enough to identify any clear generalizations.

The data below illustrate the lack of the epenthetic [a] vowel with *s-*, *l-*, and *sh-* in a couple of the contexts listed above; I have not assembled a complete paradigm because of the wide variety interactions with conjugation class, lexically specified irrealis *u-*, argument structure, etc. The set in (36)–(38) illustrate the context where the *s-*/*l-*/*sh-* prefix is immediately preceded by the argument marking *a-* prefix (see ch. 7 sec. 1.2.2). This is probably the most common case of lack of epenthesis encountered in everyday speech. The forms given here are imperfectives, but similar forms can be constructed with other aspects and moods as long as there are no overt prefixes between *a-* and *s-*/*l-*/*sh-*.

(36) a. *Cháas' asa.ée. **a- + epenthesized s-*
[tʃʰáːs' ʔà.sà.ˈʔíː]
cháas a- s- $^{1}\sqrt{}$.i -μH
pink·salmon ARG-CSV-$^{1}\sqrt{}$cook-VAR
intended: 'S/he is cooking pink salmon.'

b. Cháas' as.ée. *a- + unepenthesized s-*
[tʃʰáːs' ʔàs.ˈʔíː]
cháas a- s- $^{1}\sqrt{}$.i -μH
pink·salmon ARG-CSV-$^{1}\sqrt{}$cook-VAR
'S/he is cooking pink salmon.'

(37) a. *Cháas' alatín. **a- + epenthesized l-*
[tʃʰáːs' ʔà.ɬà.ˈtʰín]
cháas a- l- $^{2}\sqrt{}$tin-H
pink·salmon ARG-XTN-$^{2}\sqrt{}$see -VAR
intended: 'S/he is watching pink salmon.'

b. Cháas' altín. *a- + unepenthesized l-*
[tʃʰáːs' ʔàɬ.ˈtʰín]
cháas a- l- $^{2}\sqrt{}$tin-H
pink·salmon ARG-XTN-$^{2}\sqrt{}$see -VAR
'S/he is watching pink salmon.'

5. Leer does not actually identify the distinct prefixes, only their phonological forms. Thus he refers to a prefix *g̱-* which could be either the conjugation prefix or the modal prefix, implicitly assuming that they are phonologically identical.

(38) a. *Cháas' asha.útlx̱. **a- + epenthesized sh-*
[tʃʰáːs' ʔà.ʃà.ˈʔútɬχ]
cháas' a- sh-$^{2}\sqrt{}$.u'tl -H -x̱
pink·salmon ARG-PEJ-$^{2}\sqrt{}$boil·fish-VAR-REP
'S/he is boiling pink salmon repeatedly.'

b. Cháas' ash.útlx̱. *a- + unepenthesized sh-*
[tʃʰáːs' ʔàʃ.ˈʔútɬχ]
cháas' a- sh-$^{2}\sqrt{}$.u'tl -H -x̱
pink·salmon ARG-PEJ-$^{2}\sqrt{}$boil·fish-VAR-REP
'S/he is boiling pink salmon repeatedly.'

The addition of an unrelated prefix between *a-* and *s-*/*l-*/*sh-* causes the epenthetic [a] vowel to reappear. This is shown in (39) with the qualifier *k-* 'small round' added to the forms in (36), and in (40) added to the forms in (37). I do not have a ready example for *sh-* with the same root as in (38) so (41) uses the root $^{2}\sqrt{}$*xit* 'furrow, groove, scratch' instead.

(39) a. K'únts'k' aksa.ée. *a- + k- + epenthesized s-*
[kʼʷúnts'k' ʔàk.sà.ˈʔíː]
k'únts'-k' a- k- s- $^{1}\sqrt{}$.i -μH
potato -DIM ARG-SRO-CSV-$^{1}\sqrt{}$cook-VAR
intended: 'S/he is cooking little potatoes.'

b. *K'únts'k' akas.ée. **a- + k- + unepenthesized s-*
[kʼʷúnts'k' ʔà.kʰàs.ˈʔíː]
k'únts'-k' a- k- s- $^{1}\sqrt{}$.i -μH
potato -DIM ARG-SRO-CSV-$^{1}\sqrt{}$cook-VAR
'S/he is cooking little potatoes.'

(40) a. Cháas' aklatín. *a- + k- + epenthesized l-*
[tʃʰáːs' ʔàk.ɬà.ˈtʰín]
cháas a- k- l- $^{2}\sqrt{}$tin-H
pink·salmon ARG-HSFC-XTN-$^{2}\sqrt{}$see -VAR
intended: 'S/he is observing pink salmon.'

b. *Cháas' akaltín. **a- + k- + unepenthesized l-*
[tʃʰáːs' ʔà.kʰàɬ.ˈtʰín]
cháas a- k- l- $^{2}\sqrt{}$tin-H
pink·salmon ARG-HSFC-XTN-$^{2}\sqrt{}$see -VAR
'S/he is observing pink salmon.'

(41) a. X'úx' akshaxeet. *a- + k- + epenthesized sh-*
[xʼʷúxʼʷ ʔàk.ʃà.ˈxeet]
x'úx' a- k- sh-$^{2}\sqrt{}$xit -μ
book ARG-HSFC-PEJ-$^{2}\sqrt{}$furrow-VAR
'S/he is writing a book.'

b. *X'úx' akashxeet. **a- + k- + unepenthesized sh-*
[x'ʷúx'ʷ ʔà.kʰàʃ.ˈxeet]
x'úx' a- k- sh- $^{2}\sqrt{}$xit -μ
book ARG-HSFC-PEJ-$^{2}\sqrt{}$furrow-VAR
'S/he is writing a book.'

The data in (42)–(44) illustrate the lack of the epenthetic [a] vowel when preceded by the perfective *wu-*. Since the perfective normally requires the presence of *i-*, this prefix must be suppressed for the epenthetic vowel to plausibly occur. Thus the examples have a negative perfective where the *i-* should not appear (ch. 3 sec. 4.1). The object is switched to the second person singular *i-* 'you sg.' to avoid the *a-* prefix as a confound.

(42) a. *Tléil iwusa.í. **epenthesized wu- + s-*
[tɬʰéːɬ ʔì.wù.sà.ˈʔí]
tléil i- wu-s- $^{1}\sqrt{}$.i -H
NEG 2SG·O-PFV-CSV-STV-$^{1}\sqrt{}$cook-VAR
intended: 'S/he didn't cook you (sg.).'

b. Tléil iwus.í. *unepenthesized a- + s-*
[tɬʰéːɬ ʔì.wùs.ˈʔí]
tléil i- wu-s- $^{1}\sqrt{}$.i -H
NEG 2SG·O-PFV-CSV-STV-$^{1}\sqrt{}$cook-VAR
'S/he didn't cook you (sg.).'

(43) a. *Tléil iwulateen. **epenthesized wu- + l-*
[tɬʰéːɬ ʔì.wù.ɬà.ˈtʰìːn]
tléil i- wu-l- $^{2}\sqrt{}$tin-μ
NEG 2SG·O-PFV-XTN-STV-$^{2}\sqrt{}$see -VAR
intended: 'S/he didn't watch you (sg.).'

b. Tléil iwulteen. *unepenthesized wu- + l-*
[tɬʰéːɬ ʔì.wùɬ.ˈtʰìːn]
tléil i- wu-l- $^{2}\sqrt{}$tin-μ
NEG 2SG·O-PFV-XTN-STV-$^{2}\sqrt{}$see -VAR
'S/he didn't watch you (sg.).'

(44) a. *Tléil iwusha.óotl. **epenthesized wu- + sh-*
[tɬʰéːɬ ʔì.wù.ʃà.ˈʔúːtɬ]
tléil i- wu-sh- $^{2}\sqrt{}$.u'tl -μH
NEG 2SG·O-PFV-PEJ-STV-$^{2}\sqrt{}$boil·fish-VAR
intended: 'S/he didn't boil you (sg., fish).'

b. Tléil iwush.óotl. *unepenthesized wu- + sh-*
[tɬʰéːɬ ʔì.wùʃ.ˈʔúːtɬ]
tléil i- wu-sh- $^{2}\sqrt{}$.u'tl -μH
NEG 2SG·O-PFV-PEJ-STV-$^{2}\sqrt{}$boil·fish-VAR
intended: 'S/he didn't boil you (sg., fish).'

As implied earlier, I do not have an analysis at present for the presence or absence of epenthesis with *s-*/*l-*/*sh-*. Establishing a complete paradigm with a single verb may be impossible because of several competing morphosyntactic variables. It should be possible to assemble a complete paradigm if verb stems are ignored, and indeed there is no evidence that they matter for this phenomenon. It will be necessary to establish the underlying forms both of the prefixes like *a-* that are involved in the lack of epenthesis and of the prefixes that are not involved like *x̲-*. Though Leer (1991) does not supply enough data to investigate this phenomenon any further, Eggleston (2017) provides large numbers of partial verb paradigms that can support a future analysis of this phenomenon.

2.2. Syntax of the *v* head

In this section I detail some basic syntactic properties of *v*. First, I show in section 2.2.1 that *v* can only contain a single value so that combinations like *s-* + *l-* or *sh-* + *s-* are impossible. Second, in section 2.2.2 I show that *v* can occur without an overt value in both transitive and unergative intransitive verbs, supported by the appearance of subject D pronouns in the same linear position as when *v* is overt. Third, in section 2.2.3 I argue that *v* can be entirely absent in unaccusative intransitives; this contrasts with previous analyses that assume a covert element for unaccusatives just like in transitives and unergatives. Finally I show in section 2.2.4 that *v* can select either ƐP or VP as its complement depending on whether the particular structure requires the presence of Ɛ or not.

2.2.1. *v* must contain only one value

Although the *v* head can contain any one of the *s-*, *l-*, or *sh-* prefixes, it cannot contain more than one of these prefixes. This means that multiple overt forms of *v* are impossible in a single verb. For example, we might reasonably expect that a causative could be futher applicativized by adding another *s-* or *l-* prefix in *v*. The data in (45) show that this is not possible. The root $\sqrt[1]{.i}$ 'cook' is monovalent as shown by its intransitive in (45a) and it can be causativized with the addition of *s-* in (45b). But it cannot be further applicativized with another *s-* in (45c) nor with an *l-* in (45d), and for completeness the sequence *s-l-* in (45e) is also ungrammatical.

(45) a. X̲at uwa.ée. *intransitive*
x̲at= u- i- $\sqrt[1]{.i}$ -μH
1SG·O=ZPFV-STV-$\sqrt[1]{}$cook-VAR
'I got cooked.'

b. X̲at yisi.ée. *causative with s-*
x̲at= wu-i- s- i- $\sqrt[1]{.i}$ -μH
1SG·O=PFV-2SG·S-CSV-STV-$\sqrt[1]{}$cook-VAR
'You made me become cooked.'

c. * Wé sdóoxch x̲at yissi.ée. **applicative causative with s-s-*
wé sdóox-ch x̲at= wu-i- s- s- i- $\sqrt[1]{.i}$ -μH
[PP MDST stove -ERG] 1SG·O=PFV-2SG·S-APPL-CSV- STV-$\sqrt[1]{}$cook-VAR
[PP MDST stove -ERG] 1SG·O=PFV-2SG·S-CSV- APPL-STV-$\sqrt[1]{}$cook-VAR
intended: 'You made me become cooked with that stove.'

d. * Wé sdóoxch x̲at yilsi.ée. **applicative causative with l-s-*
wé sdóox-ch x̲at= wu-i- l- s- i- $\sqrt[1]{.i}$ -μH
[PP MDST stove -INSTR] 1SG·O=PFV-2SG·S-APPL-CSV-STV-$\sqrt[1]{}$cook-VAR
intended: 'You made me become cooked with that stove.'

e. * Wé sdóoxch x̲at yisli.ée. **applicative causative with l-s-*
wé sdóox-ch x̲at= wu-i- s- l- i- $^{1}\sqrt{}$.i -μH
[PP MDST stove -INSTR] 1SG·O=PFV-2SG·S-CSV-APPL-STV-$^{1}\sqrt{}$COOK-VAR
intended: 'You made me become cooked with that stove.'

It could be that forms like (45c)–(45e) are disallowed because causatives cannot be applicativized. But even if there were a constraint against the combination of causative and applicative, there are still other functions of *v* that could plausibly be combined with a causative such as the qualificational *v* and the pejorative *v*. The data in (46) show that combining qualificational *v* with causative *v* is not possible; note that (46a) can have the order XTN > CSV or CSV > XTN with the same surface form and same ungrammaticality.

(46) a. *Noodles x̲wassi.ée. **qualificational causative s-s-*
noodles wu-x̲- s- s- i- $^{1}\sqrt{}$.i-μH
noodles PFV-1SG·S-XTN-CSV- STV-$^{1}\sqrt{}$.i -μH
noodles PFV-1SG·S-CSV- XTN-STV-$^{1}\sqrt{}$.i -μH
intended: 'I cooked (long) noodles.'

b. *Noodles x̲walsi.ée. **qualificational causative l-s-*
noodles wu-x̲- l- s- i- $^{1}\sqrt{}$.i-μH
noodles PFV-1SG·S-XTN-CSV-STV-$^{1}\sqrt{}$.i -μH
intended: 'I cooked (long) noodles.'

c. *Noodles x̲wasli.ée. **qualificational causative s-l-*
noodles wu-x̲- s- l- i- $^{1}\sqrt{}$.i-μH
noodles PFV-1SG·S-CSV-XTN-STV-$^{1}\sqrt{}$.i -μH
intended: 'I cooked (long) noodles.'

The data in (47) show that combining pejorative *sh-* with a causative is also disallowed. The forms in (47a) and (47b) show this with the *s-* that is the usual causative for this root, whereas (47c) and (47d) show that the alternative *l-* is also not allowed in combination with *sh-*. These latter forms might be plausibly expected due to a switch from *s-* to *l-* since *sh-* introduces a coronal fricative.

(47) a. *Sdóo x̲washsi.ée. **pejorative causative sh-s-*
sdóo wu-x̲- sh- s- i- $^{1}\sqrt{}$.i-μH
stew PFV-1SG·S-PEJ-CSV-STV-$^{1}\sqrt{}$.i -μH
intended: 'I cooked stew wrongly, badly.'

b. *Sdóo x̲wasshi.ée. **pejorative causative s-sh-*
sdóo wu-x̲- s- sh- i- $^{1}\sqrt{}$.i-μH
stew PFV-1SG·S-CSV-PEJ-STV-$^{1}\sqrt{}$.i -μH
intended: 'I cooked stew wrongly, badly.'

c. *Sdóo x̲washli.ée. **pejorative causative sh-l-*
sdóo wu-x̲- sh- l- i- $^{1}\sqrt{}$.i-μH
stew PFV-1SG·S-PEJ-CSV-STV-$^{1}\sqrt{}$.i -μH
intended: 'I cooked stew wrongly, badly.'

d. *Sdóo xwalshi.ée. *pejorative causative l-sh-
sdóo wu-x̱- l- sh- i- $\sqrt[1]{}$.i-μH
stew PFV-1SG·S-CSV-PEJ-STV-$\sqrt[1]{}$.i -μH
intended: 'I cooked stew wrongly, badly.'

A large number of other possibilities remain to be tested such as combinations of applicative + applicative, intransitive + causative, intransitive + applicative, combinations with extensional *v*, combinations with verbs that feature lexical pejorative *sh-* (sec. 4.3), etc. But there is absolutely no evidence in any of the extensive lexical documentation, nor in the extensive documentation of narrative and oratory, that suggests that multiple values of *v* are possible. Generalizing from the ungrammaticality of the above examples and the total lack of natural evidence, I conclude that multiple values of *v* cannot happen in Tlingit. This does not however rule out the possibility of stacking multiple *v*Ps where only one is spelled out; I return to this issue in section 5.

2.2.2. *v* CAN BE COVERT IN TRANSITIVES AND UNERGATIVES

Transitive and unergative verbs may have a covert *v*. The occurrence of covert *v* is a consequence of the model: arguments that bear the [θ_2] feature (i.e. subjects) are initially merged in *v*P, so *v* must exist to project *v*P. This is empirically supported by the positions of subject D pronouns which are always realized in the same linear position whether *v* has a surface form or not. This implies that the subject D pronouns are in exactly the same configuration in both cases, and so when *v* lacks a surface form it is still present in the syntactic structure. I show this first for transitives and then for unergatives.

The data in (48) demonstrate that the subject D pronoun occurs immediately following Asp and immediately preceding overt *v*, using the monovalent root $\sqrt[1]{}$*i* 'cook'. The only grammatical form is (48a) where *wu-* in Asp precedes the subject *tu-* which precedes the *s-* in *v*. The ungrammatical forms in (48b)–(48d) show the subject in the other linear positions: before Asp in (48b), between *v* and Ɛ in (48c), and following Ɛ in (48d). The structure of the grammatical form in (48a) is illustrated by the tree in figure 4.1.

(48) a. K'únts' wutusi.ée. *Asp > D_{subj} > overt v > Ɛ*
k'únts' wu-tu- s- i- $\sqrt[1]{}$.i -μH
potato PFV-1PL·S-CSV-STV-$\sqrt[1]{}$cook-VAR
'We cooked potato(es).'

b. *K'únts' tuwusi.ée. **D_{subj} > Asp > overt v > Ɛ*
k'únts' tu- wu-s- i- $\sqrt[1]{}$.i -μH
potato 1PL·S-PFV-CSV-STV-$\sqrt[1]{}$cook-VAR
intended: 'We cooked potato(es).'

c. *K'únts' wustuwa.ée. **Asp > overt v > D_{subj} > Ɛ*
k'únts' wu-s- tu- i- $\sqrt[1]{}$.i -μH
potato PFV-CSV-1PL·S-STV-$\sqrt[1]{}$cook-VAR
intended: 'We cooked potato(es).'

d. *K'únts' wusitu.ée. **Asp > overt v > Ɛ > D_{subj}*
k'únts' wu-s- i- tu- $\sqrt[1]{}$.i -μH
potato PFV-CSV-STV-1PL·S-$\sqrt[1]{}$cook-VAR
intended: 'We cooked potato(es).'

Figure 4.1: Tree for transitive with overt *v* in (48a)

The data in (49) demonstrate the same facts for a verb where *v* does not appear in the surface form, using the bivalent root $\sqrt[2]{\underline{x}a}$ 'eat'. The gaps in the segmentation and gloss should be understood as placeholders for where *s-* occurs in (48). The form in (49a) is directly parallel to (48a) above with the subject D pronoun sandwiched between Asp and Ɛ. The two orderings of D before Asp in (49b) and D after Ɛ in (49d) are ungrammatical just as before. The order with the subject D pronoun following *v* results in the same surface form as when D precedes *v* because *v* has no surface realization, but since the structure is presumably the same [$_{vP}$ D [$_{vP}$ *v* ...]] as with an overt *v*, the analysis in (49c) reflects an ungrammatical structure like [$_{vP}$ *v* [$_{ƐP}$ D [$_{ƐP}$ Ɛ ...]]]. The structure of the grammatical form in (49a) is illustrated by the tree in figure 4.2.

(49) a. K'únts' wutuwax̱áa. *Asp* > D_{subj} > *covert* v > *Ɛ*
k'únts' wu-tu- i- $\sqrt[2]{\underline{x}}$a-μH
potato PFV-1PL·S- STV-$\sqrt[2]{}$eat-VAR
'We ate potato(es).'

b. *K'únts' tuwuwax̱áa. *D_{subj} > *Asp* > *covert* v > *Ɛ*
k'únts' tu- wu- i- $\sqrt[2]{\underline{x}}$a-μH
potato 1PL·S-PFV- STV-$\sqrt[2]{}$eat-VAR
intended: 'We ate potato(es).'

c. !*K'únts' wutuwax̱áa. **Asp* > *covert* v > D_{subj} > *Ɛ*
k'únts' wu- tu- i- $\sqrt[2]{\underline{x}}$a-μH
potato PFV- 1PL·S-STV-$\sqrt[2]{}$eat-VAR
intended: 'We ate potato(es).'

Figure 4.2: Tree for transitive with covert *v* in (49a)

d. *K'únts' wuwatuxáa. *Asp > covert* v > *Ɛ* > D_{subj}
k'únts' wu- i- tu- ²√xa-μH
potato PFV- STV-1PL·S-²√eat-VAR
intended: 'We ate potato(es).'

Monovalent roots can give rise to unergative intransitive verbs where the only core argument is the subject. Numerically there seem to be relatively few monovalent roots that derive unergatives in comparison to the majority of monovalent roots that derive unaccusatives (cf. sec. 2.2.3). Table 4.3 shows a selection of unergative verbs; these are gathered from entries in Story & Naish 1973: 265–342 that are listed with "(in)" (i.e. "intransitive") and that lack overt *v*, overt Voice (*d-*), incorporated nouns, and PP arguments.[6] The only exceptions in table 4.3 are three verbs that include an incorporated *x'e-* 'mouth' that does not appear to saturate an object argument.[7]

All of the unergatives in table 4.3 lack overt *v*. Like transitives without overt *v*, the order of prefixes is invariably Asp > D > *v* > Ɛ when an unergative takes a subject D pronoun as an argument. The data in (50) shows that the unergative based on the monovalent root ¹√*xex'w* 'pl. sleep' can only arise with the subject in between Asp and Ɛ as in (50a).

(50) a. Wutuwaxéix'w. *Asp* > D_{subj} > *covert* v > *Ɛ*
wu-tu- i- ¹√xex'w -μH
PFV-1PL·S- STV-¹√sleep·PL-VAR
'We slept.'

6. All verbs in table 4.2 were cross-checked against data from Leer 1973a and Leer 1976a.
7. The verb *x'ayaká* 's/he says' has *x'e-* only in the imperfective aspect and otherwise only includes *ÿa-*.

(Im)perfective	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
tá	's/he sleeps'	–	+	$\sqrt[1]{ta^h}$	'sg. sleep'	activity (*-H*)	*n*
gáax	's/he cries'	–	+	$\sqrt[1]{gax}$	'sg. cry'	activity (*-μH*)	*g*
x'ayaḱá	's/he says'	–	+	$\sqrt[1]{ḱa}$	'say'	activity (*x'e-* + *-H*)	*n*
has xéx'w	'they sleep'	–	+	$\sqrt[1]{xex'w}$	'pl. sleep'	activity (*-H*)	*n*
yoo x'eiwatán	's/he spoke'	–	+	$\sqrt[1]{.at}$	'handle w/e'	achievement?	*∅/n*
uwat'ei	's/he stayed behind'	–	+	$\sqrt[1]{t'e^h}$	'behind'	achievement?	*∅*
x'eiwat'áx	's/he gaped'	–	+	$\sqrt[1]{t'ax}$	'gape'	achievement?	*∅*
has woo.aat	'they went'	–	+	$\sqrt[1]{.at}$	'pl. go'	motion	–
woohoo	's/he waded'	–	+	$\sqrt[1]{hu}$	'wade'	motion	–
woonook	's/he sat down'	–	+	$\sqrt[1]{nuk}$	'sg. sit'	motion	(*g*)
woojeil	's/he groped'	–	+	$\sqrt[1]{jel}$	'grope'	motion	–
wooch'éix'	's/he pointed'	–	+	$\sqrt[1]{ch'ex'}$	'point'	motion	–
wooshee	's/he extended hand'	–	+	$\sqrt[1]{shi^h}$	'touch'	motion	–
wooleet	's/he slid, glided'	–	+	$\sqrt[1]{lit}$	'slide'	motion	–
woogoot	's/he went'	–	+	$\sqrt[1]{gut}$	'sg. go'	motion	–
has wookee	'they sat down'	–	+	$\sqrt[1]{ki}$	'pl. sit'	motion	(*g*)
wookoox	's/he boated'	–	+	$\sqrt[1]{kux}$	'go by boat'	motion	–
(*át*) *áa*	's/he sits (there)'	–	+	$\sqrt[1]{.a}$	'sg. sit'	position (*-μH*)	–
(*át*) *hán*	's/he stands (there)'	–	+	$\sqrt[1]{han}$	'sg. stand'	position (*-H*)	–
(*át*) *has nák*	'they stand (there)'	–	+	$\sqrt[1]{nak}$	'pl. stand'	position (*-H*)	–
(*át*) *tá*	's/he lies (there)'	–	+	$\sqrt[1]{ta^h}$	'sg. sleep'	position (*-H*)	–
(*át*) *has xéx'w*	'they lie (there)'	–	+	$\sqrt[1]{ta^h}$	'sg. sleep'	position (*-H*)	–

Table 4.3: Some unergative intransitive verbs with covert *v*

b. *Tuwuwaxéix'w. **D_{subj} > Asp > covert* v > $\mathcal{E}$

tu- wu- i- $\sqrt[1]{x}$ex'w -μH
1PL·S-PFV- STV-$\sqrt[1]{}$sleep·PL-VAR
intended: 'We slept.'

c. *Wuwatuxéix'w. **Asp > covert* v > $\mathcal{E}$ > D_{subj}

wu- i- tu- $\sqrt[1]{x}$ex'w -μH
PFV- STV-1PL·S-$\sqrt[1]{}$sleep·PL-VAR
intended: 'We slept.'

If subjects of unergatives are merged in the same way as subjects of transitives then we should expect the form in (50a) to have an underlying structure like that given in figure 4.3. But many of the unergatives in table 4.3 qualify their lone subject in much the same way as handling verbs can qualify their object. An analysis like figure 4.3 fails to capture this similarity betwee unergative subjects and transitive objects. We could instead suppose that the lone argument is merged first in VP like an object, then moved to *v*P where it arises as a subject. This is in keeping with the claim

Figure 4.3: Tree for unergative with covert *v* in (50a)

that unergatives are derived from unaccusatives ⟦FIXME: citations?⟧. The structure in figure 4.3 illustrates such an analysis with the subject D pronoun *tu-* 'we' first merged in VP.

There is additional evidence supporting the first merge of the lone argument of an unergative in VP. When an unergative is causativized the subject of the unergative arises as the object of the resulting causative. This is shown by the data in (51) where the object can only be plural with the root ¹√*x̲ex'w* 'pl. sleep'. Note that the subject can be singular in (51a) so the subject is insensitive to the qualification imposed by the root.

(51) a. Haa yisix̲éx'w. *plural object of causative with plural root*
haa= wu-i- s- i- ¹√x̲ex'w -H
1PL·O=PFV-2SG·S-CSV-STV-¹√sleep·PL-VAR
'You put us to sleep.'

b. *X̲at yisix̲éx'w. **singular object of causative with plural root*
x̲at= wu-i- s- i- ¹√x̲ex'w -H
1SG·O=PFV-2SG·S-CSV-STV-¹√sleep·PL-VAR
intended: 'You put me to sleep.'

There is still much to be explored with unergatives. For example, the total lack of documentation for unergative states should still be empirically verified with existing stative roots and with nonce roots. The non-motion roots ¹√*taʰ* 'sg. sleep', ¹√*x̲ex'w* 'pl. sleep', and ¹√*g̲ax̲* 'sg. cry' are all qualifying like motion roots which suggests that they may actually be unusual motion roots that allow an unmarked non-repetitive activity imperfective. This is reinforced by the fact that both ¹√*taʰ* 'sg. sleep' and ¹√*x̲ex'w* 'pl. sleep' support positional imperfectives like motion roots. The causative in (51) is also problematic for the analysis in figure 4.4 because we expect the causative subject to reflect $[\theta_2]$ and the object to reflect $[\theta_1]$ but the root is specified only for $[\theta_2]$. I leave these issues unresolved

Figure 4.4: Tree for unergative with subject first merged in VP

for now, concluding minimally that unergatives must have their subject in *v*P just like the subjects of transitives, and thus that both transitives and unergatives can have a covert *v* head.

2.2.3. *v* CAN BE ABSENT IN UNACCUSATIVES

Monovalent roots can give rise to unaccusative intransitive verbs where the only core argument is an object. Object D pronouns are introduced in VP and are obligatorily moved to AspP (see ch. 7 sec. 1.1.3). Although unaccusatives can occur with an overt *s-*, *l-*, or *sh-* prefix, there is no requirement for such a prefix. Thus when an intransitive verb takes only an object and has no *s-*, *l-*, or *sh-* prefix, there is no requirement for the existence of *v*. Although we could still stipulate that a covert *v* should exist in these unaccusatives, there is no empirical or theoretical justification for this assumption: the object has no interactions with *v*P and there is no evidence for any material in *v*.

The data in (52) illustrates a typical unaccusative achievement based on the monovalent root $^{1}\sqrt{dut'}$ 'hiccup'. The grammatical form in (52a) has an overt object D pronoun *xat=* 'me'. The ungrammatical form in (52b) instead has a subject D pronoun *x-* 'I'.

(52) a. Xat uwadút'. *unaccusative achievement with object D pronoun*
xat= u- i- $^{1}\sqrt{}$dut' -H
1SG·O=ZPFV-STV-$^{1}\sqrt{}$hiccup-VAR
'I have hiccuped.'

b. *Xwaadút'. **unergative achievement with subject D pronoun*
u- x- i- $^{1}\sqrt{}$dut' -H
ZPFV-1SG·S-STV-$^{1}\sqrt{}$hiccup-VAR
intended: 'I have hiccuped.'

The data in (52) reflect that the verb is *Ø*-conjugation since it occurs with the *u-* perfective prefix rather than the *wu-* perfective prefix found in other contexts (ch. 6 secs. 2.2 & 3). The data in (53) illustrates a *g*-conjugation achievement that occurs with the *wu-* perfective prefix. As before, only an object D pronoun is allowed in (53a) and a subject D pronoun in (53b) is ungrammatical.

(53) a. Xat wooneex. *unaccusative achievement with object D pronoun*
xat= wu-i- $\sqrt[1]{}$nix-μ
1SG·O=PFV-STV-$\sqrt[1]{}$safe-VAR
'I have recovered.', 'I have become safe.'

b. *Xwaaneex. **unergative achievement with subject D pronoun*
wu-x- i- $\sqrt[1]{}$nix-μ
PFV-1SG·S-STV-$\sqrt[1]{}$safe-VAR
intended: 'I have recovered.', 'I have become safe.'

The data in (54) illustrates a typical unaccusative state based on the monovalent root $\sqrt[1]{}$*nikw* 'sick'. The same facts hold: in (54a) an object D pronoun is allowed and in (54b) a subject D pronoun is ungrammatical.

(54) a. Xat yanéekw. *unaccusative state with object D pronoun*
xat= i- $\sqrt[1]{}$nikw-μH
1SG·O=STV-$\sqrt[1]{}$sick -VAR
'I am sick.'

b. *Xayanéekw. **unergative state with subject D pronoun*
x- i- $\sqrt[1]{}$nikw-μH
1SG·S-STV-$\sqrt[1]{}$sick -VAR
intended: 'I am sick.'

There are no documented examples of unaccusative activities. There are in fact only four monovalent roots that support actvities, and all are unergatives as discussed in section 2.2.2. There is thus a strong correlation between activities and bivalent roots, though bivalent roots may also be achievements.

The unaccusative forms in (52)–(54) show no evidence for the presence of a *v*P. There is no overt *v* and there is no subject D pronoun. There is a 'classifier' in that the *i-* prefix has a surface form, but I have analyzed this as a head Ɛ which is unrelated to *v*. Since there is no emprrical evidence for *v*P in unaccusatives and since there is no theoretical necessity for the existence of *v*P in unaccusatives, I argue that their structure completely lacks *v*P. Figure 4.5 gives a tree for the sentence in (53a) 'I have recovered, become safe'. The Asp head takes ƐP as its direct complement and there is no *v*P at all.

This *v*P-less analysis of unaccusatives contrasts with all previous analyses of these structures in Tlingit. Leer for example gives the lexical entry "*O-Ø-k'é·*" for the unaccusative state based on the monovalent root $\sqrt[1]{}$*k'e* 'good' (Leer 1991: 255). His representation explicitly includes *Ø-* to stand for the absence of a *s-*, *l-*, or *sh-* prefix, thus implying that there is a null element in this position. This is the same as his analysis for a transitive like his "*O-S-Ø-ǯaɢ*" based on the bivalent root $\sqrt[2]{}$*jak* 'kill', so that he does not differentiate between unaccusatives and transitives with *Ø-*. Eggleston gives a nearly identical "*O-Ø-k'éi*" for the same unaccusative stative based on $\sqrt[1]{}$*k'e* 'good' (Eggleston 2013: 17), thus

Figure 4.5: Tree for unaccusative achievement in (53a)

sharing the same implication as Leer. Story (1966) is somewhat harder to judge because she lumps the *d-* of Voice and the *i-* of Ɛ together with the *s-*, *l-*, *sh-* prefixes as a single syllabic unit. But I have found one example repeated in (55) that attests to her analysis of a null element in the *v* position of an unaccusative (Story 1966: 97). Story's analysis is given in the second line of (55) showing her symbol "#" for a null morpheme between the *n*-conjugation prefix and the root.

(55) Haa jeex' yéi dax̲ nateech.
ha ǰì -x' yé dʌχ nʌ- #- tì- -ǰ *Story's analysis of null in an unaccusative*
haa jee -x' yéi= dax̲=n- ¹√tiʰ-μ -ch
1SG·PSS pos'n-LOC thus=DPL= NCNJ- ¹√be -VAR-REP
'They are each in our possession.' (Story 1966: 97)

My approach to Tlingit unaccusatives is therefore novel. I see this as a natural consequence of avoiding nonfunctional elements which is a desideratum of any formal theory. This contrasts with templatic (position class) approaches to morphology that fail to distinguish between covert and absent material. Conceptually, in a templatic system a given position must exist regardless of whether it has any content. This naturally leads to the proliferation of nonfunctional zero elements, greatly increasing the complexity of the model.

Since Tlingit can have both unergatives with a lone subject and unaccusatives with a lone object, it fulfills the usual requirements for what is called 'split intransitivity': some intransitives take a subject but others take an object (e.g. Perlmutter 1978; Davies 1986; Gerdts 1991; Dixon 1994; Coon 2012). In my model the phenomenon is perhaps better described as 'split monovalency': some monovalent roots prefer [θ_1] arguments (objects) and other monovalent roots prefer [θ_2] arguments (subjects). It might be possible to reduce this difference to something in the lexical semantics because there is a correlation between unergativity and when the lone argument has agency (control, influence, initiation, etc.) in the eventuality. But there are many exceptions to this correlation and it is still

unclear how syntax should access this information and thus determine the presence or absence of *v*. I leave these issues unresolved for now.

2.2.4. *v* MUST SELECT ƐP OR VP

The *v* head can select an ƐP or it can select a VP. The structures where *v* takes an ƐP complement are all those where the surface form requires the presence of *i-* in Ɛ, whether this is lexically or grammatically conditioned. There may also be cases where Ɛ is covert, in which case *v* would continue to take the ƐP as its complement (see ch. 3). All other structures have *v* taking a VP complement. In every structure where *v* is present it must take one of the two ƐP or VP phrases as a complement; *v* cannot lack a complement.

There are several contexts where *v* selects ƐP as its complement; state imperfectives are one context where the presence of *i-* in Ɛ is lexically required by the eventuality specification of the root. The data in (56) illustrate a state imperfective with an overt *s-* prefix in *v*. Given that *s-* is the realization of *v* and that *i-* is the realization of Ɛ, the form in (56a) shows the linear order of $D_{subj} > v > Ɛ$. The data in (57) illustrate a state imperfective with a covert *v*, assuming the argument in section 2.2.2 that the presence of the subject D pronoun requires the presence of *v*. Given the covert *v*, the form in (57a) shows the same linear order of $D_{subj} > v > Ɛ$.

(56) a. I tláa xasixán. *state imperfective: overt* v *with i-*
I tláa x- s- i- $^{1}\sqrt{}$xan-H
2SG·PSS mother 1SG·S-CSV-STV-$^{1}\sqrt{}$love -VAR
'I love your mother.'

b. *I tláa xasaxán. **state imperfective: overt* v *without i-*
I tláa x- s- $^{1}\sqrt{}$xan-H
2SG·PSS mother 1SG·S-CSV- $^{1}\sqrt{}$love -VAR
intended: 'I love your mother.'

(57) a. Yaakw xaya.óo. *state imperfective: covert* v *with i-*
yaakw x- i- $^{2}\sqrt{}$.u -μH
boat 1SG·S-STV-$^{2}\sqrt{}$own-VAR
'I own a boat.'

b. *Yaakw xa.óo. **state imperfective: covert* v *without i-*
yaakw x- $^{2}\sqrt{}$.u -μH
boat 1SG·S- $^{2}\sqrt{}$own-VAR
intended: 'I own a boat.'

Perfective aspect is another typical context for *v* selecting ƐP as its complement. The data in (58) illustrate a perfective with an overt *s-* prefix in *v*. Since *s-* is the realization of *v* and *i-* is the realization of Ɛ, the form in (58a) shows the linear order of $D_{subj} > v > Ɛ$. The data in (58) illustrate a perfective with a covert *v*, and likewise the form in (58b) shows the same linear order of $D_{subj} > v > Ɛ$.

(58) a. I tláa wutusiteen. *perfective: overt* v *with i-*
I tláa wu-tu- s- i- $\sqrt[2]{}$tin-μ
2SG·PSS mother PFV-1PL·S-XTN-STV-$\sqrt[2]{}$see-VAR
'We saw your mother.'

b. *I tláa wutusateen. **perfective: overt* v *without i-*
I tláa wu-tu- s- $\sqrt[2]{}$tin-μ
2SG·PSS mother PFV-1PL·S-XTN- $\sqrt[2]{}$see-VAR
intended: 'We saw your mother.'

(59) a. Yaakw wutuwa.áx̱. *perfective: covert* v *with i-*
yaakw wu-tu- i- $\sqrt[2]{}$.ax̱ -H
boat PFV-1PL·S-STV-$\sqrt[2]{}$hear-VAR
'We heard a boat.'

b. *Yaakw wutu.áx̱. **perfective: covert* v *without i-*
yaakw wu-tu- $\sqrt[2]{}$.ax̱ -H
boat PFV-1PL·S- $\sqrt[2]{}$hear-VAR
intended: 'We heard a boat.'

If we accept that the linear order of $D_{subj} > v > Ɛ$ occurs in all of the grammatical forms in (56)–(58), then it follows that the *v* head takes ƐP as its complement in each case as sketched in (60). This is necessary given that Ɛ heads an ƐP as detailed in chapter 3, and that the linear order reflects the syntactic order. It is of course theoretically possible that ƐP actually occurs above *v*P and that somehow the linearization at spellout reorders the resulting sequence of $Ɛ > D_{subj} > v$, but there is no empirical evidence to support this approach so I dismiss it as unnecessarily complex.

(60) v *can select ƐP as its complement*

I have argued that *v* can select ƐP as its complement. But there are many verbal structures in Tlingit where Ɛ does not appear. If *v* always selected ƐP then these structures would require the presence of a covert, nonfunctional Ɛ. Just like how unaccusatives need not contain *v* (sec. 2.2.3) these *i*-less structures need not contain an Ɛ. If ƐP is absent then *v* must directly select VP as its complement instead of ƐP.

Activity imperfectives are a typical context for *v* selecting VP as its complement. The data in (61) illustrate an activity imperfectiver with an overt *s-* prefix in *v*. Since *s-* is the realization of *v* and *i-* the realization of Ɛ, the form in (61b) shows that overt *v* can occur without overt Ɛ. The data in (62)

illustrate an activity imperfective with a covert *v*, again assuming the argument in section 2.2.3 for covert *v* in a transitive structure. Given the covert *v*, the form in (62b) shows that covert *v* can occur without overt Ɛ.

(61) a. *K'wát' x̲asi.ée. **activity imperfective: overt* v *with i-*
k'wát' x̲- s- i- $^{1}\sqrt{}$.i -μH
egg 1SG·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
intended: 'I'm cooking an egg/eggs.'

b. K'wát' x̲asa.ée. *activity imperfective: overt* v *without i-*
k'wát' x̲- s- $^{1}\sqrt{}$.i -μH
egg 1SG·S-CSV- $^{1}\sqrt{}$cook-VAR
'I'm cooking an egg/eggs.'

(62) a. *K'wát' x̲ayax̲á. **activity imperfective: covert* v *with i-*
k'wát' x̲- i- $^{2}\sqrt{}$x̲a-H
egg 1SG·S-STV-$^{2}\sqrt{}$eat-VAR
intended: 'I'm eating an egg/eggs.'

b. K'wát' x̲ax̲á. *activity imperfective: covert* v *without i-*
k'wát' x̲- $^{2}\sqrt{}$x̲a-H
egg 1SG·S- $^{2}\sqrt{}$eat-VAR
'I'm cooking an egg/eggs.'

Progressive aspect is another typical context for *v* selecting VP as its complement. The data in (63) illustrate a progressive with an overt *s-* prefix in *v*. The form in (63b) shows that *s-* occurs without *i-* in this structure. The data in (64) similarly illustrate a progressive with a covert *v*, and likewise the form in (64b) lacks *i-*.

(63) a. *I tláa kei nax̲sinéekw. **progressive: overt* v *with i-*
I tláa kei= n- x̲- s- i- $^{1}\sqrt{}$nikw-μH
2SG·PSS mother up= NCNJ-1SG·S-CSV-STV-$^{1}\sqrt{}$sick -VAR
'I am starting to make your mother sick.'

b. I tláa kei nax̲sanéekw. *progressive: overt* v *without i-*
I tláa kei= n- x̲- s- $^{1}\sqrt{}$nikw-μH
2SG·PSS mother up= NCNJ-1SG·S-CSV- $^{1}\sqrt{}$sick -VAR
'I am starting to make your mother sick.'

(64) a. *Yaakw yaa nax̲aakél'. **progressive: covert* v *with i-*
yaakw ÿaa= n- x̲- i- $^{2}\sqrt{}$kel' -H
boat along=NCNJ-1SG·S-STV-$^{2}\sqrt{}$undo-VAR
'I am taking apart a boat.'

b. Yaakw yaa nax̲akél'. *progressive: covert* v *without i-*
yaakw ÿaa= n- x̲- $^{2}\sqrt{}$kel' -H
boat along=NCNJ-1SG·S- $^{2}\sqrt{}$undo-VAR
'I am taking apart a boat.'

There are two approaches to the facts in (61)–(64) with respect to Ɛ. One is to claim that Ɛ always exists in every form regardless of whether it contains *i-* or not. Such a covert Ɛ would be entirely nonfunctional: there is no evidence for the presence of a head indicating non-state eventualities, nor is there any evidence for argument structure in ƐP when *i-* is not present. The alternative approach is to suppose that no Ɛ exists when *i-* is not present. At least in lexically determined cases (e.g. activity imperfectives) and aspectually determined cases (e.g. progressive aspect), I analyze Ɛ as not existing (ch. 3). It then follows that the *v* head must take VP as its complement in all of the grammatical forms in (61)–(64). The resulting structure must then be something like that sketched in (65) where *v* selects VP.

(65) *v*P — v *can select VP as its complement*

The *v* head cannot occur without either one of ƐP or VP as its complement. The ƐP and VP are the only two phrases merged before *v* so the only possible structure lacking both of them is one where *v* lacks a complement entirely. This is shown below by forms that lack both a *i-* prefix and a verb stem (root and stem variation). The data in (66) and (67) present forms with overt *s-* in *v* using the monovalent root $\sqrt[1]{.i}$ 'cook'. The forms in (66) show a perfective where *v* takes an ƐP complement and an imperfective where *v* takes a VP complement. The ungrammatical data in (67) show that in both cases the *v* cannot occur without its complement.

(66) a. Wutusi.ée. — *overt* v *with ƐP complement*
wu-tu- s- i- $\sqrt[1]{.i}$ -μH
PFV-1PL.S-CSV-STV-$\sqrt[1]{}$COOK-VAR
'We cooked it.'

b. Tusa.ée. — *overt* v *with VP complement*
tu- s- $\sqrt[1]{.i}$ -μH
1PL.S-CSV-$\sqrt[1]{}$COOK-VAR
'We cook it.'

(67) a. *Wutusa. — **overt* v *without complement*
wu-tu- s-
PFV-1PL.S-CSV-
intended: 'We did.'

b. *Tusa. — **overt* v *without complement*
tu- s-
1PL.S-CSV-
intended: 'We do.'

The data in (68) and (69) present forms with a covert *v* using the bivalent root $\sqrt[2]{\underline{x}a}$ 'eat'. As before, the forms in (68) show a perfective where *v* has an ƐP complement and an imperfective where *v* has a VP complement. And once again the corresponding forms in (69) where *v* lacks a complement are ungrammatical.

(68) a. Wutuwax̱áa. *covert* v *with ƐP complement*
wu-tu- i- $\sqrt[2]{\underline{x}}$a-μH
PFV-1PL·S-STV-$\sqrt[2]{}$eat-VAR
'We ate it.'

b. Toox̱á. *covert* v *with VP complement*
tu- $\sqrt[2]{\underline{x}}$a-H
1PL·S-$\sqrt[2]{}$eat-VAR
'We ate it.'

(69) a. *Wutu. **covert* v *without complement*
wu-tu-
PFV-1PL·S-
intended: 'We did.'

b. *Too. **covert* v *without complement*
tu-
1PL·S-
intended: 'We do.'

The ungrammaticality of complementless *v* is one reflection of a more general constraint on ellipsis within the verbal structure. Each of the heads above V – i.e. Asp, Voice, *v*, Ɛ – shows a different set of selectional restrictions, but invariably all of these heads must have some kind of complement. Furthermore, the minimal complement for every head is always VP: the root and stem variation are present in every verbal structure in Tlingit.

3. Adding arguments

As sketched earlier in section 1.1, one function of *v* is the addition of an argument to the syntactic structure. Essentially, when *v* is overt it may add an argument. The particular structure, role, and surface realization of this additional argument depends on the root and the structure in which the root is embedded. The primary factor conditioning the added argument is the valency of the root: nullivalent roots with an overt *v* can form intransitives (sec. 3.1), monovalent roots with an overt *v* can form causatives (sec. 3.2), and bivalent roots with an overt *v* can form applicatives (sec. 3.3).

The syntactic category of the added argument can be either DP or PP depending on the valency of the root as shown in table 4.4. The lone argument of an intransitive derived from a nullivalent root is always an object DP. The additional argument for a monovalent root may be a subject or object DP thus forming a causative, or may at least in a few cases be a PP thus forming an applicative of an intransitive. The additional argument for a bivalent root can only be a PP, thus forming an applicative of a transitive. The attested postpositions found with added argument PPs are: ergative/instrumental *-ch* 'using, by way of', locative *-x'* 'for, to', punctual *-t* 'at', and pertingent *-x̱* 'of'. Other

	root valency		
	nullivalent	*monovalent*	*bivalent*
object DP	+	+	–
subject DP	–	+	–
PP	–	+	+

Table 4.4: Syntactic category of arguments added by *s-* or *l-*

postpositions like allative *-dé* 'toward' and instrumental *-n* 'with, using' do not occur in applicative PPs, but the theoretical implications of their absence have yet to be explored.

The *s-* and *l-* prefixes as presented in this section have more or less the same syntactic and semantic contributions in the addition of arguments. This is partly because the selection of *s-* versus *l-* is phonologically motivated as discussed in section 2.1.1. But roots that lack a coronal affricate or fricative do not require *l-* and so could phonologically occur with either *s-* or *l-*. In most cases only one is attested, but there are roots where both *s-* and *l-* occur along with different semantics. I discuss these exceptional cases of *s-* and *l-* in section 6.

The *sh-* prefix does not regularly add an overt argument to the syntactic structure. Instead its role is normally pejorative as detailed in section 4.3. But as noted later in section 6, there are occasionally attested forms that suggest *sh-* does add an overt argument in concert with its pejorative meaning. These irregular causative *sh-* instances may actually be structures where the *sh-* occurs together with a covert *s-* or *l-* in stacked *v*P structures that are discussed in section 5.

3.1. Intransitives: Derivation from nullivalent roots

Nullivalent roots are roots that have no θ-features in their lexical specification. Unlike monovalent and bivalent roots (cf. secs. 2.2.2 & 2.2.3), a nullivalent root cannot form a verb without an overt *v* head with either *s-* or *l-*. It is specifically the ungrammaticality of such roots in verbs without overt *v* that diagnoses them as being nullivalent in contrast to monovalent and bivalent roots.

The data in (70) and (71) illustrate the ungrammaticality of a nullivalent root without overt *v* using $\sqrt[0]{}$*chan* 'stink'. The forms in (70) show that $\sqrt[0]{}$*chan* 'stink' cannot form an unaccusative verb: the imperfective in (70a) shows that this verb cannot be a state, the imperfective in (70b) shows that it cannot be an activity, and the perfective in (70c) shows that it cannot be an achievement. The data in (71) show similarly that $\sqrt[0]{}$*chan* 'stink' cannot form an unergative verb.

(70) a. *Xat yachán. **unaccusative imperfective state*
xat= i- $\sqrt[0]{}$chan-H
1SG·O= STV-$\sqrt[0]{}$stink -VAR
intended: 'I stink.', 'I am stinky.'

b. *Xat chán. **unaccusative imperfective activity*
xat= $\sqrt[0]{}$chan-H
1SG·O= $\sqrt[0]{}$stink -VAR
intended: 'I stink.', 'I am stinking.'

c. *Xat woochán. **unaccusative perfective*
xat= wu-i- $^{0}\sqrt{}$chan-H
1SG·O=PFV-STV-$^{0}\sqrt{}$stink -VAR
intended: 'I have become stinky.'

(71) a. *Xayachán. **unergative imperfective state*
x- i- $^{0}\sqrt{}$chan-H
1SG·S-STV-$^{0}\sqrt{}$stink -VAR
intended: 'I stink.', 'I am stinky.'

b. *Xachán. **unergative imperfective activity*
x- $^{0}\sqrt{}$chan-H
1SG·S- $^{0}\sqrt{}$stink -VAR
intended: 'I stink.', 'I am stinking.'

c. *Xwaachán. **unergative perfective*
wu-x- i- $^{0}\sqrt{}$chan-H
PFV-1SG·S-STV-$^{0}\sqrt{}$stink -VAR
intended: 'I have become stinky.'

When $^{0}\sqrt{}$*chan* 'stink' is combined with overt *l*^{s}- in *v*, the result is an unaccusative verb that denotes a state of stinking. This is demonstrated by the three forms in (72) below. The grammatical form in (72a) shows imperfective aspect – the lack of an overt aspectual prefix – accompanied by stative *i-*. The ungrammatical form in (72b) shows that the equivalent activity without stative *i-* is impossible for this root. Then (72c) gives the perfective aspect counterpart to the state imperfective in (72a).

(72) a. Xat lichán. *unaccusative imperfective state*
xat= l^{s}- i- $^{0}\sqrt{}$chan-H
1SG·O= INTR-STV-$^{0}\sqrt{}$stink -VAR
'I stink.', 'I am stinky.'

b. *Xat lachán. **unaccusative imperfective activity*
xat= l^{s}- $^{0}\sqrt{}$chan-H
1SG·O= INTR- $^{0}\sqrt{}$stink -VAR
intended: 'I am stinking.'

c. Xat wulichán. *unaccusative perfective*
xat= wu-l^{s}- i- $^{0}\sqrt{}$chan-H
1SG·O=PFV-INTR-STV-$^{0}\sqrt{}$stink -VAR
'I have become stinky.'

The structure of the perfective in (72c) is given in figure 4.6. The *v* head introduces the object-licensing feature [uθ_1] which is checked by the introduction of the argument in *v*P. Since the feature is [θ_1] the form of the first person singular D pronoun must be the object *xat=* and not the subject *x-*. Since this D pronoun is *xat=* it cannot spell out within *v*P and thus raises to AspP for spellout. An alternative analysis to account for the movement of the D pronoun could be that there is some kind of EPP-like feature that looks specifically for something with [θ_1], thus leaving phonological form out of the machinery. I discuss this issue further in chapter 7 section 1.

Figure 4.6: Tree for intransitive with overt *v* in (72c)

Table 4.5 gives a sample of intransitives derived from nullivalent roots with *s-* or *l-*. Most of the nullivalent-derived intransitives are states, but there are also some achievements; no nullivalent roots support intransitive activities or motions. All the nullivalent-derived intransitives are unaccusatives, and this is probably related to the lack of activities and motions. A number are unambiguously associated with nouns such as *x̲'é* 'mouth', *saa* 'name', and *teel* 'scar', but there are just as many that have no corresponding noun such as *lidzée* 'it is difficult' (**dzée*), *lichéesh* 'it is obtainable, easy to get' (**chéesh*), or *wuliteesh* 's/he got lonely' (**teesh*).

Several of the verbs in table 4.5 are disyllabic or have a complex coda. In some cases this can be identified as a frozen suffix: *lich'éeyáx̲w* 's/he/it is slow, late' probably contains the deprivative *-áx̲w* and *lishís'x̲* 'it is raw' and *lix'wás'x̲* 'it is numb' probably contain the deprivative *-x̲*. In other cases there is no identifiable morphology. Thus the verb *li.eesháan* 's/he/it is pitiful, poor' is derived from the disyllabic interjection *eesháan* 'too bad, sad, poor' (perhaps ultimately from ¹√*shan* 'old, grey-haired'), and so the stem in *li.eesháan* is presumably monomorphemic; it could be notionally analyzed as ⁰√*.ish-μ-áan* but the suffix *-áan* does not occur elsewhere and the root is otherwise unknown. Similarly, the verb *lisháchk* 'it is swampy' is based on the noun *sháchk* 'muskeg, swamp' but there is otherwise no attested root *√*shach* and the repetitive suffix *-k* seems to be unrelated.

A few of the verbs in table 4.5 can be analyzed with a vocalic suffix *-í*, but the syntactic properties and semantic contributions of this suffix are unknown. Examples include *lidleeyí* 'it is meaty' with *dleey* 'meat', *lisaayí* 's/he is famous' with *saa* 'name', and *lix̲ooshí* 'it is unclear, suppurative' with *x̲óosh* 'open sore'. There are some verbs where the suffix is apparently frozen such as *x̲'asitánu* 's/he is discontented, griping' and *likoodzí* 'it is amazing'; the predicted roots ⁰√*tanʷ* and ⁰√*kuts* are otherwise unknown so it is not clear if they are originally disyllabic or if the final vowel is suffixal. Furthermore, there are verbs where the *-í* suffix may or may not appear such as *lijín* ~ *lijíni* 'it has a hand/arm' and

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	yakwsi.aan	's/he is pleasant faced'	+	–	$\overset{0}{\sqrt{}}$*.an*	'gentle'	state (-*μ*)	*g*
	sigóo	'it is fun, joyous'	+	–	$\overset{0}{\sqrt{}}$*gu*	'joy'	state (-*μH*)	*g*
	sigúk	'it has an ear, handle'	+	–	$\overset{0}{\sqrt{}}$*guk*	'ear'	state (-*H*)	?
s-	*x̲'asitánu*	's/he is discontented'	+	–	$\overset{0}{\sqrt{}}$*tanu*	'gripe'	state (-*H*)	*g*
	sitóo	's/he is clever'	+	–	$\overset{0}{\sqrt{}}$*tu*	'mind'	state (-*μH*)	*g*
	wusixaak	'it got bare-boned'	+	–	$\overset{0}{\sqrt{}}$*xak*	'shell'	achievement	*g*
	six̲'éi	'it has a mouth'	+	–	$\overset{0}{\sqrt{}}$*x̲'e*	'mouth'	state (-*μH*)	*g*
	lichán	'it stinks'	+	–	$\overset{0}{\sqrt{}}$*chan*	'stink'	state (-*H*)	*g*
	lichéesh	'it is easily gotten'	+	–	$\overset{0}{\sqrt{}}$*chish*	'gettable'	state (-*μH*)	*∅/g*
	lich'éeyák̲w	's/he/it is slow, late'	+	–	$\overset{0}{\sqrt{}}$*ch'éeÿák̲w*	'slow'	state (inv.)	*g*
	wulich'éx̲'w	'it got soiled, dirty'	+	–	$\overset{0}{\sqrt{}}$*ch'ex̲'w*	'dirt'	achievement	*∅*
	lidleeyí	'it is meaty'	+	–	$\overset{0}{\sqrt{}}$*dliÿ*	'meat'	state (-*μ-í*)	*g*
	lidzée	'it is difficult'	+	–	$\overset{0}{\sqrt{}}$*dzi*	'difficult'	state (-*μH*)	*g*
	li.eesháan	's/he/it is pitiful'	+	–	$\overset{0}{\sqrt{}}$*.eesháan*	'poor'	state (inv.)	*g*
	li.éil'	'it is salty'	+	–	$\overset{0}{\sqrt{}}$*.el'*	'salt'	state (-*μH*)	*∅*
	k̲uwligóos'	'it got cloudy'	+	–	$\overset{0}{\sqrt{}}$*gus'*	'cloud'	achievement	*g/g̲*
	wulihách	'it tingled'	+	–	$\overset{0}{\sqrt{}}$*hach*	'tingle'	achievement	*∅*
	lijín	'it has arms/hands'	+	–	$\overset{0}{\sqrt{}}$*jin*	'arm/hand'	state (-*H*)	?
	wulikích	'it putrified'	+	–	$\overset{0}{\sqrt{}}$*ki'ch*	'dead stink'	achievement	*∅*
l^s-	*likoodzí*	'it is amazing'	+	–	$\overset{0}{\sqrt{}}$*kudzi*	'amazing'	state (-*μ-í*)	*g*
	lináalx̲	's/he is wealthy'	+	–	$\overset{0}{\sqrt{}}$*nalx̲*	'wealth'	state (-*μH*)	*g*
	linúkts	'it is sweet'	+	–	$\overset{0}{\sqrt{}}$*nukts*	'sweet'	state (-*H*)	*g*
	lisaayí	's/he is famous'	+	–	$\overset{0}{\sqrt{}}$*sa*	'name'	state (-*μ-í*)	*g*
	lisháchk	'it is swampy'	+	–	$\overset{0}{\sqrt{}}$*shachk*	'muskeg'	state (-*H*)	?
	lisheey	'it is knotty (wood)'	+	–	$\overset{0}{\sqrt{}}$*shiÿ*	'knot'	state (-*μ*)	?
	lishís'k̲	'it is raw'	+	–	$\overset{0}{\sqrt{}}$*shis'k̲*	'raw'	state (-*H*)	*g*
	wulitíl	'it got scarred'	+	–	$\overset{0}{\sqrt{}}$*til*	'scar'	achievement	*∅*
	wuliteesh	's/he got lonely'	+	–	$\overset{0}{\sqrt{}}$*tish*	'lonely'	achievement	*∅/g̲*
	litóoch	'it is fresh, raw'	+	–	$\overset{0}{\sqrt{}}$*tuch*	'raw flesh'	state (-*μH*)	*∅*
	wulit'úch	'it stung, smarted'	+	–	$\overset{0}{\sqrt{}}$*t'u'ch*	'sting'	achievement	*∅*
	lits'áa	'it smells good'	+	–	$\overset{0}{\sqrt{}}$*ts'a*	'aroma'	state (-*μH*)	*g*
	kaliyéil	's/he is tricky'	+	–	$\overset{0}{\sqrt{}}$*yel*	'trick'	state (-*μH*)	*g*
	lix'wás'k̲	'it is numb'	+	–	$\overset{0}{\sqrt{}}$*x'was'k̲*	'numb'	state (-*H*)	*g*
	li.aan	's/he is gentle'	+	–	$\overset{0}{\sqrt{}}$*.an*	'gentle'	state (-*μ*)	*g*
	ligaaw	'it is loud, noisy'	+	–	$\overset{0}{\sqrt{}}$*gaw*	'drum'	state (-*μ*)	*g*
	likáx̲	'it is sappy, juicy'	+	–	$\overset{0}{\sqrt{}}$*kax̲*	'sap'	state (-*H*)	?
l-	*wuliteet*	'it was wave-tossed'	+	–	$\overset{0}{\sqrt{}}$*tit*	'wave'	achievement?	*n*
	litéx̲	'it is pungent'	+	–	$\overset{0}{\sqrt{}}$*tex̲*	'acrid'	state (-*H*)	*g*
	wulitúk	'it (tea) got too strong'	+	–	$\overset{0}{\sqrt{}}$*tuk*	'impurity'	achievement	*∅*
	lixáak	'it is fragrant'	+	–	$\overset{0}{\sqrt{}}$*xak*	'fragrance'	state (-*μH*)	*g*

Table 4.5: Some intransitive verbs derived with *s-* or *l-*

sigúk ~ *sigúgu* 'it has an ear, ear-shaped handle', and at least one verb *si<u>x</u>'éi* 'it has a mouth' where the *-í* suffix never appears (**si<u>x</u>'éiyi*).

It is tempting to argue that nullivalent roots are actually nouns, and so that because nouns have no arguments the *v* must do the job of adding the necessary argument. There are two reasons that this is not the case. One reason is that the stem variation may differ between the noun and the verb as shown by the data in (73) and (74). The noun only has a long vowel with low tone as shown in (73a), but the verb only has a short vowel with high tone as shown in (74a). The stem variation in the noun is arbitrary (lexically specified), but the stem variation in the verb is predictably determined by the combination of *Ø*-conjugation class membership and perfective aspect (ch. 6 sec. 2.2). If the verb was derived directly from the noun we would expect it to have the same stem variation as the noun – long and low given that N = *-μ* in (73a) – but this is not the case.

(73) a. Wé teel áa yoo ayak'útsk. *noun with -μ stem variation*
wé $\overset{0}{\sqrt{}}$til -μ á -μ yoo=a- i- $\overset{2}{\sqrt{}}$k'uts-H -k
MDST $\overset{0}{\sqrt{}}$scar-VAR$_N$ 3N-LOC ALT= XPL-STV-$\overset{2}{\sqrt{}}$break-VAR
'The scar keeps breaking open there.' (Story & Naish 1973: 35.314)

b. Wé tíl áa yoo ayak'útsk. **noun with -H stem variation*
wé $\overset{0}{\sqrt{}}$til -H á -μ yoo=a- i- $\overset{2}{\sqrt{}}$k'uts-H -k
MDST $\overset{0}{\sqrt{}}$scar-VAR$_N$ 3N-LOC ALT= XPL-STV-$\overset{2}{\sqrt{}}$break-VAR
intended: 'The scar keeps breaking open there.'

(74) a. A<u>x</u> jín wulitíl. *verb with -H stem variation*
a<u>x</u> jín wu-l^s- i- $\overset{0}{\sqrt{}}$til -H
1SG·PSS hand PFV-INTR-STV-$\overset{0}{\sqrt{}}$scar-VAR$_V$
'My hand got scarred.'

b. *A<u>x</u> jín wuliteel. **verb with -μ stem variation*
a<u>x</u> jín wu-l^s- i- $\overset{0}{\sqrt{}}$til -μ
1SG·PSS hand PFV-INTR-STV-$\overset{0}{\sqrt{}}$scar-VAR$_V$
intended: 'My hand got scarred.'

Another reason that nullivalent roots are not actually nouns is that there are examples of nullivalent roots which have no corresponding noun. One such root is $\overset{0}{\sqrt{}}$*ts'a* 'smell good, be aromatic' demonstrated in (75). This is clearly a nullivalent root since the form without overt *v* in (75a) is ungrammatical and the form with overt *l^s-* in *v* in (75b) is an unaccusative with the sole argument added by *v*.

(75) a. *Yats'áa. **unaccusative imperfective state without l^s-*
i- $\overset{0}{\sqrt{}}$ts'a -μH
STV-$\overset{0}{\sqrt{}}$aroma-VAR
intended: 'It is aromatic.', 'It smells good.'

b. Lits'áa. *unaccusative imperfective state with l^s-*
l^s- i- $\overset{0}{\sqrt{}}$ts'a -μH
INTR-STV-$\overset{0}{\sqrt{}}$aroma-VAR
'It is aromatic.', 'It smells good.'

Although the nullivalent root $\sqrt[0]{ts'a}$ 'aroma' supports the intransitive verb in (75b), there is no corresponding noun $\sqrt[0]{ts'a}$ + -μH_N → **ts'áa* or $\sqrt[0]{ts'a}$ + -μ_N → **ts'aa*. Instead the only way to express the equivalent concept as an entity is to nominalize the verbal structure such as *a lats'áayi* 'its aroma, its good smell'. It is possible that nounless nullivalent roots like $\sqrt[0]{ts'a}$ 'aroma' originally had corresponding nouns that are now lost, but this generalization is not useful for synchronic analysis.

Intransitive verbs with noun counterparts do not necessarily have to be based on nullivalent roots. For example, the monovalent root $\sqrt[1]{t'ix'}$ 'hard' gives rise to both a noun *t'éex'* 'ice' as shown in (76a) and verbs as shown in (76b) and (76c). The intransitive verb in (76b) takes a single argument without overt *v* so the root must be monovalent.

(76) a. T'éex' tayeet woo.áayjín g̲aat. *noun based on* $\sqrt[1]{t'ix'}$
$\sqrt[1]{}$t'ix'-μH taÿee -t ÿ- u- $\sqrt[1]{}$.a -μH-ÿ -ch -ín g̲aat
$\sqrt[1]{}$hard-VAR$_N$ beneath-PNCT QUAL-ZPFV-$\sqrt[1]{}$end·mv-VAR-ŸSFX-REP-PAST sockeye
'The sockeyes used to run up beneath the ice.' (Dauenhauer & Dauenhauer 1987: 246.37)

b. Yat'éex'. *intransitive verb based on* $\sqrt[1]{t'ix'}$
i- $\sqrt[1]{}$t'ix'-μH
STV-$\sqrt[1]{}$hard-VAR$_V$
'It is hard.'

c. X̲at yilit'íx'. *causative verb based on* $\sqrt[1]{t'ix'}$
x̲at= wu-i- l- i- $\sqrt[1]{}$t'ix'-H
1SG·O=PFV-2SG·S-CSV-STV-$\sqrt[1]{}$hard-VAR$_V$
'You froze me.'

One unusual example involves the noun *x̲án* 'near' that is illustrated in (77a). The remaining data in (77) show that the corresponding root √*x̲an* 'near; love' can only form a transitive structure in (77b) and not an intransitive as in (77c). Since *s-* normally adds only one argument, the root must be monovalent. But (77d) shows that the apparently monovalent root cannot be used to derive an intransitive. This and several similar roots remain puzzling if the connection between the noun and verbs is to be maintained by a single root lexical entry.

(77) a. Aadáx̲ du tláa x̲ánde ÿaa nagút du toowúch. *noun based on* $\sqrt[1]{x̲an}$
á -dáx̲ du tláa x̲án-dé ÿaa= n- $\sqrt[1]{}$gut -H du tú -í -ch
3N-ABL 3H·PSS mother near-ALL along=NCNJ-$\sqrt[1]{}$go·SG-VAR 3H·PSS mind-PSS-ERG
'Then he wanted to go near to his mother.' (Swanton 1909: 315.114)

b. X̲at isix̲án. *causative verb based on* $\sqrt[1]{x̲an}$
x̲at= i- s- i- $\sqrt[1]{}$x̲an-H
1SG·O-2SG·S-CSV-STV-$\sqrt[1]{}$near-VAR
'You love me.' (lit. 'You make/keep me near.')

c. *X̲at six̲án. **intransitive verb based on* $\sqrt[1]{x̲an}$
x̲at= s- i- $\sqrt[0]{}$x̲an-H
1SG·O-INTR-STV-$\sqrt[0]{}$near-VAR
intended: 'I am near.'

d. *Xat yaxán. *intransitive verb based on $\sqrt[1]{\text{xan}}$
xat= i- $\sqrt[1]{\text{xan}}$-H
1SG·O-STV-$\sqrt[1]{\text{near}}$-VAR
intended: 'I am near.'

It is still unclear how the valency of roots as diagnosed by verbal structures should be connected to the syntactic properties of nouns. For instance, we might expect that alienable nouns would derive from nullivalent roots and that inalienable nouns would derive from monovalent roots, but this expectation often seems to be violated. There is as yet no coherent survey of noun–verb relationships in Tlingit, so one needs to be done before further investigating this issue. But regardless of the relationship between noun and verb, it is clear that the argument adding function of *s-* and *l-* is essentially regular with nullivalent roots: *s-* and *l-* add one argument to a nullivalent root thus deriving an intransitive verb.

3.2. Causatives: Derivation from monovalent roots

Monovalent roots are roots that have one θ-feature in their lexical specification. Monovalent roots can form intransitive verbs (secs. 2.2.2 & 2.2.3) without an overt *v*. It is specifically this formation of an intransitive without overt *v* that diagnoses a root as monovalent. Then when an overt *v* is added to a monovalent root, the resulting structure can be transitive with an additional argument supplied with the overt *v*. Thus the overt *v* that adds an argument is causative with monovalent roots.

Table 4.6 lists a variety of causatives formed from monovalent roots. There are a very large number of causatives attested in the lexical documentation, so this is only a small sample collected by eyeballing several long lists (Leer 1973a, 1976a; Story & Naish 1973; Eggleston 2017) for unambiguous pairs of intransitives without overt *v* and transitives with an overt *v* that is not argument restricting (cf. sec. 4). The majority of causatives seem to be formed with *s-*; most instances of *l-* are conditioned by the presence of coronal fricatives or affricates in the root. There is no correlation between *s-* or *l-* and any of the conjugation classes (*∅*, *n*, *g̲*, *g*) or eventuality classes (state, activity, achievement, motion). Causatives are commonly achievements but this is probably because unaccusative intransitives are commonly achievements; see section 3.2.3 for more discussion.

3.2.1. Causatives of unaccusatives

The vast majority of attested causatives are derived from monovalent roots that produce unaccusative intransitives. The data in (78) illustrates a common example of a causativized unaccusative based on the monovalent root $\sqrt[1]{\textit{k'e}}$ 'good'. The form in (78a) shows that the root is monovalent and supports only an unaccusative, not an unergative as in (78b). This root cannot form a transitive as in (79a), but a causative with *l-* is possible in (79b).

(78) a. Xat wook'éi. *unaccusative intransitive*
xat= wu-i- $\sqrt[1]{\text{k'e}}$ -μH
1SG·O=PFV-STV-$\sqrt[1]{\text{good}}$-VAR
'I have become good.', 'I have improved.'

b. *Xwaak'éi. **unergative intransitive*
wu-x- i- $\sqrt[1]{\text{k'e}}$ -μH
PFV-1SG·S-STV-$\sqrt[1]{\text{good}}$-VAR
intended: 'I have become good.', 'I have improved.'

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	as.ée	's/he cooks it'	+	+	$\sqrt[1]{.i}$	'cook'	activity (-μH)	Ø
	awsidaa	's/he made it flow'	+	+	$\sqrt[1]{da}$	'flow'	achievement	*n*
	awsidút'	'it made him/her hiccup'	+	+	$\sqrt[1]{dut'}$	'hiccup'	achievement	Ø
	awsigaan	's/he burned it'	+	+	$\sqrt[1]{gan}$	'burn'	achievement	*g*
	awsigoot	's/he made him/her go'	+	+	$\sqrt[1]{gut}$	'sg. go'	motion	–
	awsihaa	's/he moved it invisibly'	+	+	$\sqrt[1]{ha}$	'invis. mv'	motion	–
	awsikoox	's/he piloted/drove it'	+	+	$\sqrt[1]{kux}$	'go boat'	motion	–
	awsinaa	's/he buried him/her'	+	+	$\sqrt[1]{na}$	'die'	achievement	*n*
	awsinee	's/he made it happen'	+	+	$\sqrt[1]{ni^h}$	'occur'	achievement	*n*
	asinéekw	's/he/it made him/her sick'	+	+	$\sqrt[1]{nikw}$	'sick'	state (-μH)	*g*
	awsineex	's/he saved him/her'	+	+	$\sqrt[1]{nix}$	'safe'	achievement	*g*
	awsinook	's/he seated him/her'	+	+	$\sqrt[1]{nuk}$	'sg. sit'	achievement	*g*
s-	*awsitaa*	's/he put him/her to sleep'	+	+	$\sqrt[1]{ta^h}$	'sg. sleep'	achievement	*n*
	awsitaa	's/he boiled it'	+	+	$\sqrt[1]{ta^h}$	'boil'	achievement	Ø
	awsitáax'w	's/he sank/drowned it'	+	+	$\sqrt[1]{tax'w}$	'drown'	achievement	*n*
	aksatéex'	's/he twists it'	+	+	$\sqrt[1]{tix'}$	'twist'	activity (-μH)	Ø
	awsit'áa	's/he heated it'	+	+	$\sqrt[1]{t'a^h}$	'heat'	achievement	Ø
	aswáat	's/he raises him/her/it'	+	+	$\sqrt[1]{wa't}$	'grow'	activity (-μH)	Ø
	asxook	's/he dries it'	+	+	$\sqrt[1]{xuk}$	'dry'	activity (-μ)	Ø
	asixán	's/he loves him/her'	+	+	$\sqrt[1]{xan}$	'near'	state (-H)	*g*
	awsixík	's/he kept him/her awake'	+	+	$\sqrt[1]{xik}$	'stay up'	achievement	Ø
	awlichún	's/he injured him/her/it'	+	+	$\sqrt[1]{chun}$	'wound'	achievement	Ø
	awlidúl'	'it gave him an erection'	+	+	$\sqrt[1]{dul'}$	'erection'	achievement	Ø
	akawlidzás	's/he tired him/her out'	+	+	$\sqrt[1]{dzas}$	'tire out'	achievement	Ø
	awligwáatl	's/he rolled it'	+	+	$\sqrt[1]{gwa'tl}$	'roll'	motion	–
	awligás'	's/he scratched it (itch)'	+	+	$\sqrt[1]{gas'}$	'itch'	achievement	Ø
	awlihás'	's/he nauseated him/her'	+	+	$\sqrt[1]{has'}$	'nausea'	achievement	Ø
	akawliheish	's/he disgraced him/her'	+	+	$\sqrt[1]{hesh}$	'disgrace'	achievement	*n*
l^s-	*awlikích*	's/he made him/her gasp'	+	+	$\sqrt[1]{kich}$	'gasp, sob'	achievement	Ø
	awliláxw	's/he starved him/her/it'	+	+	$\sqrt[1]{laxw}$	'starve'	achievement	Ø
	akawlisék'w	's/he stained/dyed it'	+	+	$\sqrt[1]{sek'w}$	'stain'	achievement	Ø
	akawlishoo	's/he intoxicated him/her'	+	+	$\sqrt[1]{shu^h}$	'intoxicate'	achievement	*n*
	awlis'éex'	'it gave him/her diarrhea'	+	+	$\sqrt[1]{s'ix'}$	'diarrhea'	achievement	*g*
	awlis'úk	's/he crisped it'	+	+	$\sqrt[1]{s'uk}$	'crisp'	achievement	Ø
	awlitool	's/he spun it'	+	+	$\sqrt[1]{tul}$	'spin'	achievement	*n*
	alitsáakw	's/he saves, stores it'	+	+	$\sqrt[1]{tsa'kw}$	'last long'	state (-μH)	*g*
	awlik'éi	's/he improved it'	+	+	$\sqrt[1]{k'e}$	'good'	achievement	*g*
l-	*ashawlihík*	's/he filled it'	+	+	$\sqrt[1]{hik}$	'full'	achievement	Ø
	alinéek'	's/he keeps it tidy'	+	+	$\sqrt[1]{nik'}$	'tidy'	state (-μH)	*g*
	akulidéix'	'it shames him/her'	+	+	$\sqrt[1]{dex'}$	'shame'	state (-μH)	*g*

Table 4.6: Some causative verbs derived with *s-* or *l-*

(79) a. *Xat yeek'éi. **transitive*
xat= wu-i- i- $\sqrt[1]{}$k'e -μH
1SG·O=PFV-2SG·S- STV-$\sqrt[1]{}$good-VAR
intended: 'You have made me become good.', 'You have improved me.'

b. Xat yilik'éi. *causative*
xat= wu-i- l- i- $\sqrt[1]{}$k'e -μH
1SG·O=PFV-2SG·S-CSV-STV-$\sqrt[1]{}$good-VAR
'You have made me become good.', 'You have improved me.'

Another root showing the same relationship between unaccusative and causative is $\sqrt[1]{}$*.i* 'cook'. The data in (80) show that this root gives rise to an unaccusative intransitive, and the data in (81) show that it can form a causative but not a basic transitive.

(80) a. Xat uwa.ée. *unaccusative intransitive*
xat= u- i- $\sqrt[1]{}$.i -μH
1SG·O=ZPFV-STV-$\sqrt[1]{}$cook-VAR
'I got cooked.'

b. *Xwaa.ée. **unergative intransitive*
u- x- i- $\sqrt[1]{}$.i -μH
ZPFV-1SG·S-STV-$\sqrt[1]{}$cook-VAR
intended: 'I got cooked.'

(81) a. *Xat eeya.ée. **transitive*
xat= u- i- i- $\sqrt[1]{}$.i -μH
1SG·O=ZPFV-2SG·S- STV-$\sqrt[1]{}$cook-VAR
intended: 'You have cooked me.'

b. Xat yisi.ée. *causative*
xat= wu-i- s- i- $\sqrt[1]{}$.i -μH
1SG·O=PFV-2SG·S-CSV-STV-$\sqrt[1]{}$cook-VAR
'You have cooked me.'

The structure in figure 4.7 sketches the derivation of a causative from a monovalent root that supports an unaccusative, specifically the $\sqrt[1]{}$*k'e* 'good' root of (79b). The root introduces its argument matching the [θ_1] feature in VP. Then the *v* introduces the causative subject in *v*P which matches the [θ_2] feature. The argument in VP later undergoes raising to AspP as is usual for any argument first merged in VP. There is no competition for argument positions because the argument introduced in VP would never land in *v*P and so never conflicts with the argument introduced in *v*P.

3.2.2. Causatives of unergatives

Only a few causatives are formed from monovalent roots that give rise to unergative intransitives. As discussed in section 2.2.2 and documented in table 4.3, unergative intransitive verbs are mostly motion verbs, with a few exceptional activities and achievements. Monovalent roots that support unergatives can be causativized, in which case the sole argument of the unergative corresponds to the object of the causative. This means that causativization works the same for unergatives as

Figure 4.7: Tree for causative of unaccusative in (79b)

for unaccusatives: the added argument is always the subject regardless of whether the intransitive would have a subject or an object.

One typical example of a monovalent root that supports an unergative is $^{1}\sqrt{}$*xex'w* 'pl. sleep'. This can form an unergative as shown in (82a) with the first person plural subject *tu-* 'we', but it cannot form an unaccusative in (82b) with the first person plural object *haa=* 'us'.

(82) a. Wutuwaxéix'w. *unergative intransitive*
wu-tu- i- $^{1}\sqrt{}$x'ex'w -μH
PFV-1PL·S-STV-$^{1}\sqrt{}$sleep·PL-VAR
'We slept.'

b. *Haa wooxéix'w. **unaccusative intransitive*
haa= wu-i- $^{1}\sqrt{}$x'ex'w -μH
1PL·O=PFV-STV-$^{1}\sqrt{}$sleep·PL-VAR
intended: 'We slept.'

The root $^{1}\sqrt{}$*xex'w* 'pl. sleep' is monovalent: it forms an intransitive in (82a) but not a transitive as shown by the ungrammatical form below in (83a). The same root can form a causative in (83b) with the addition of *s-* in *v*.

(83) a. *Haa yeeyx̱éix'w. **transitive*
haa= wu-ÿi- i- $^{1}\sqrt{}$x̱'ex'w -μH
1PL·O=PFV-2PL·S- STV-$^{1}\sqrt{}$sleep·PL-VAR
intended: 'You (pl.) made us sleep.', 'You (pl.) slept us.'

b. Haa yeeysix̱éix'w. *causative*
haa= wu-ÿi- s- i- $^{1}\sqrt{}$x̱'ex'w -μH
1PL·O=PFV-2PL·S-CSV-STV-$^{1}\sqrt{}$sleep·PL-VAR
'You (pl.) made us sleep.'

The data in (83) has two plural arguments, the object *haa=* 'us' and the subject *ÿi-* 'you pl.'. The root $^{1}\sqrt{}$*x̱ex'w* 'pl. sleep' can only be used with a plural argument in an unergative intransitive as shown in (84). The first person singular subject *x̱-* 'I' in (84a) is ungrammatical whereas the first person plural subject *tu-* 'we' in (84b) is grammatical.

(84) a. *X̱waax̱éix'w. *singular subject of unergative*
wu-x̱- i- $^{1}\sqrt{}$x̱'ex'w -μH
PFV-1SG·S-STV-$^{1}\sqrt{}$sleep·PL-VAR
intended: 'I slept.'

b. Wutuwax̱éix'w. *plural subject of unergative*
wu-tu- i- $^{1}\sqrt{}$x̱'ex'w -μH
PFV-1PL·S-STV-$^{1}\sqrt{}$sleep·PL-VAR
'We slept.'

The root is lexically specified for the plurality of its argument and there is no particular reason that this should change under causativization. Since causativization does not normally restrict the plurality of an added argument, we can predict that only one of the two arguments of a causative with $^{1}\sqrt{}$*x̱ex'w* 'pl. sleep' should necessarily be plural. And in fact a singular subject is possible as shown in (85a), but a singular object is not possible as shown in (85b).

(85) a. Haa yisix̱éix'w. *singular subject, plural object*
haa= wu-i- s- i- $^{1}\sqrt{}$x̱'ex'w -μH
1PL·O=PFV-2SG·S-CSV-STV-$^{1}\sqrt{}$sleep·PL-VAR
intended: 'You (sg.) made us sleep.'

b. *X̱at yisix̱éix'w. **singular subject, singular object*
x̱at= wu-i- s- i- $^{1}\sqrt{}$x̱'ex'w -μH
1SG·O=PFV-2SG·S-CSV-STV-$^{1}\sqrt{}$sleep·PL-VAR
intended: 'You (sg.) made me sleep.'

Since the added subject is insensitive to the lexical specification of the root, we can conclude that this subject is licensed by *v* and not by the root. And since the object is sensitive to the lexical specification of the root, we can further conclude that this object is licensed by the root and not by *v*. We thus have a clear argument assymetry between subjects and objects. This is reflected by the structure in figure 4.8 which represents the form in (85a). The root checks the object corresponding to [θ_2] that is introduced in VP, at the same time requiring that this be plural with the qualificational

Figure 4.8: Tree for causative of unergative in (85a)

ϰ-feature [PL$_{ϰ}$]. This object is later raised to AspP as usual for any object. The overt *s-* in *v* projects *v*P where the subject is introduced with the [θ_2] feature, checking this against *v*. The *v* does not specify any restrictions on the subject other than that it must exist, unlike the root with its lexical specification for plurality. The resulting structure of a causativized unergative is almost exactly identical to that of a causativized unaccusative as in figure 4.7.

3.2.3. Change of eventuality class

Causativization of monovalent roots can be associated with changes in eventuality class, where the base verb belongs to one class (state, activity, achievement, motion) but the causative belongs to a different class. The extent of this phenomenon across the lexicon is unknown because it has not been previously described, but there are known instances where it does not occur so it is possibly either lexically specified or dependent on other lexical semantic properties. Likewise, the possible combinations – e.g. activity → achievement, achievement → state, etc. – are also unknown, though as shown below at least achievement → activity and state → achievement are attested. My impression is that motion roots do not change eventuality class when causativized, suggesting that this eventuality class differs somehow from the others, but I have not actually investigated this.

One well-documented instance of the change of eventuality class under causativity is the achievement → activity pattern with the root $^{1}\sqrt{.i}$ 'cook'. The data in (86) demonstrates that the monovalent root $^{1}\sqrt{.i}$ 'cook' must be lexically specified as an achievement because although the perfective in (86a) is grammatical, neither the activity imperfective in (86b) nor the state imperfective in (86c)

are allowed.

(86) a. Xat uwa.ée. *perfective*
xat= u- i- $\sqrt[1]{}$.i -μH
1SG·O=ZPFV-STV-$\sqrt[1]{}$COOK-VAR
'I got cooked.'

b. *Xat ée. **activity imperfective*
xat= $\sqrt[1]{}$.i -μH
1SG·O=$\sqrt[1]{}$COOK-VAR
intended: 'I am getting cooked.', 'I am cooking.'

c. *Xat ya.ée. **state imperfective*
xat= i- $\sqrt[1]{}$.i -μH
1SG·O=STV-$\sqrt[1]{}$COOK-VAR
intended: 'I am cooked.'

The corresponding causative of $\sqrt[1]{}$*.i* 'cook' shows a different distribution in (87). In (87b) the activity imperfective is now available with causativization even though the equivalent unaccusative form in (86b) was ungrammatical.

(87) a. Xat yisi.ée. *perfective*
xat= wu-i- s- i- $\sqrt[1]{}$.i -μH
1SG·O=PFV-2SG·S-CSV-STV-$\sqrt[1]{}$COOK-VAR
'You cooked me.', 'You made me become cooked.'

b. Xat isa.ée. *activity imperfective*
xat= i- s- $\sqrt[1]{}$.i -μH
1SG·O=2SG·S-CSV- $\sqrt[1]{}$COOK-VAR
'You are cooking me.', 'You are making me become cooked.'

c. *Xat isi.ée. **state imperfective*
xat= i- s- i- $\sqrt[1]{}$.i -μH
1SG·O=2SG·S-CSV-STV-$\sqrt[1]{}$COOK-VAR
intended: 'You are cooking me.', 'You are making me become cooked.'

Another well-documented instance of eventuality class change under causativity is the state → achievement pattern with the root $\sqrt[1]{}$*k'e* 'good'. The data in (88) show that this root is lexically specified as a state. The causativized structure in (89) is an achievement however because both the activity imperfective in (89b) and the state imperfective in (89c) are ungrammatical.

(88) a. Xat wook'éi. *perfective*
xat= wu-i- $\sqrt[1]{}$k'e -μH
1SG·O=PFV-STV-$\sqrt[1]{}$GOOD-VAR
'I got good.'

b. *Xat k'éi. **activity imperfective*
xat= $\sqrt[1]{}$k'e -μH
1SG·O=$\sqrt[1]{}$GOOD-VAR
intended: 'I am getting good.'

c. X̱at yak'éi. *state imperfective*
x̱at= i- $\sqrt[1]{}$k'e -μH
1SG·O=STV-$\sqrt[1]{}$good-VAR
'I am good.'

(89) a. X̱at yilik'éi. *perfective*
x̱at= wu-i- l- i- $\sqrt[1]{}$k'e -μH
1SG·O=PFV-2SG·S-CSV-STV-$\sqrt[1]{}$good-VAR
'You made me good.'

b. *X̱at ilak'éi. **activity imperfective*
x̱at= i- l- $\sqrt[1]{}$k'e -μH
1SG·O=2SG·S-CSV- $\sqrt[1]{}$good-VAR
intended: 'You are making me good.'

c. *X̱at ilik'éi. **state imperfective*
x̱at= i- l- i- $\sqrt[1]{}$k'e -μH
1SG·O=2SG·S-CSV-STV-$\sqrt[1]{}$good-VAR
intended: 'You make me good.'

But not all causatives show changes of eventuality class. The root $\sqrt[1]{}$*dut'* 'hiccup' is specified as an achievement as shown by the data in (90). But the causative counterpart in (91) has exactly the same distribution where both imperfective forms are ungrammatical, so that the causative is also an achievement. Thus $\sqrt[1]{}$*dut'* 'hiccup' exhibits an achievement → achievement pattern instead of the achievement → activity pattern of $\sqrt[1]{}$*.i* 'cook'.

(90) a. X̱at uwadút'. *perfective*
x̱at= u- i- $\sqrt[1]{}$dut' -H
1SG·O=ZPFV-STV-$\sqrt[1]{}$hiccup-VAR
'I hiccuped.'

b. *X̱at dút'. **activity imperfective*
x̱at= $\sqrt[1]{}$dut' -H
1SG·O=$\sqrt[1]{}$hiccup-VAR
intended: 'I am hiccupping.', 'I hiccup.'

c. *X̱at yadút'. **state imperfective*
x̱at= i- $\sqrt[1]{}$dut' -H
1SG·O=STV-$\sqrt[1]{}$hiccup-VAR
intended: 'I am hiccupping.'

(91) a. X̱at yisidút'. *perfective*
x̱at= wu-i- s- i- $\sqrt[1]{}$dut' -H
1SG·O=PFV-2SG·S-CSV-STV-$\sqrt[1]{}$hiccup-VAR
'You made me hiccup.'

b. *Xat isadút'. **activity imperfective*
xat= i- s- $\sqrt[1]{}$dut' -H
1SG·O=2SG·S-CSV- $\sqrt[1]{}$hiccup-VAR
'You are making me hiccup.'

c. *Xat isidút'. **state imperfective*
xat= i- s- i- $\sqrt[1]{}$dut' -H
1SG·O=2SG·S-CSV- $\sqrt[1]{}$hiccup-VAR
'You make me hiccup.'

Similarly, there is an unaccusative state imperfective based on the root $\sqrt[1]{}$*nikw* 'sick' in (92). The causative counterpart in (93) remains unchanged since the imperfective form in (93c) with overt *i-* in Ɛ is grammatical. Thus $\sqrt[1]{}$*nikw* 'sick' shows state → state instead of the state → achievement pattern with $\sqrt[1]{}$*k'e* 'good'.

(92) a. Xat woonéekw. *perfective*
xat= wu-i- $\sqrt[1]{}$nikw-μH
1SG·O=PFV-STV-$\sqrt[1]{}$sick -VAR
'I became sick.'

b. *Xat néekw. **activity imperfective*
xat= $\sqrt[1]{}$nikw-μH
1SG·O=$\sqrt[1]{}$sick -VAR
intended: 'I am getting sick.'

c. Xat yanéekw. *state imperfective*
xat= i- $\sqrt[1]{}$nikw-μH
1SG·O=STV-$\sqrt[1]{}$sick -VAR
'I am sick.'

(93) a. Xat yisinéekw. *perfective*
xat= wu-i- s- i- $\sqrt[1]{}$nikw-μH
1SG·O=PFV-2SG·S-CSV-STV-$\sqrt[1]{}$sick -VAR
'You made me sick.'

b. *Xat isanéekw. **activity imperfective*
xat= i- s- $\sqrt[1]{}$nikw
1SG·O=2SG·S-CSV- $\sqrt[1]{}$sick
intended: 'You are making me sick.'

c. Xat isinéekw. *state imperfective*
xat= i- s- i- $\sqrt[1]{}$nikw-μH
1SG·O=2SG·S-CSV-STV-$\sqrt[1]{}$sick -VAR
'You make me sick.'

As noted above, the phenomenon where eventuality class changes between intransitive and causative forms has not been previously reported in Tlingit. The lexical documentation (Story & Naish 1973; Leer 1973a, 1976a, 1978c; Eggleston 2017) contains quite a few examples of intransitive/causative alternations which show signs of eventuality class change, so further investigation should start by collecting patterns from the existing documentation of the verbs listed in table 4.6.

3.3. Applicatives: Derivation from bivalent roots

Bivalent roots are roots with two θ-features in their lexical specification. Bivalent roots form transitive verbs with a covert *v* (sec. 2.2.2), and this specific formation is the primary diagnostic for bivalency of a root. When an overt *v* is added to a bivalent root the resulting structure can be applicative with an argument PP supplied by the overt *v*. Thus an overt *v* that adds an overt argument is specifically an applicative morpheme with a bivalent root, though its underlying function of adding an argument is identical to that of intransitives (sec. 3.1) and causatives (sec. 3.2).

The data in (94) illustrate a typical applicative based on the bivalent root $\sqrt[2]{sa}$ 'name'. The form in (94a) is a transitive structure with an object *x̲at*= 'me' and a subject *i*- 'you sg.', and with a covert *v* as seen by the lack of *s*-, *l*-, or *sh*-. The applicative in (94b) shows the addition of the *l*^{s}- applicative prefix in *v* and the applicative instrument PP *ax̲ léelk'uch* 'for my grandparent' (i.e. 'with (the name of) my grandparent').

(94) a. X̲at eeyasáa. *transitive*
x̲at= u- i- i- $\sqrt[2]{}$sa -μH
1SG·O=ZPFV-2SG·S-STV-$\sqrt[2]{}$name-VAR
'You (sg.) named me.'

b. Ax̲ léelk'uch x̲at yilisáa. *applicative*
ax̲ léelk'w-ch x̲at= wu-i- l^{s}- i- $\sqrt[2]{}$sa -μH
[PP 1SG·PSS g'parent-INSTR] 1SG·O=PFV-2SG·S-APPL-STV-$\sqrt[2]{}$name-VAR
'You (sg.) named me for my grandparent.'

The applicative in (94b) can be analyzed as in figure 4.9. The applicative *l*^{s}- appears in *v*, introducing the PP *ax̲ léelk'w-ch* in *v*P. This PP must be evacuated from its initial position in *v*P for the same reason that other phrasal material is moved out of the verb word, i.e. so that the AspP can spell out properly in the phonology. We do not yet know the particular landing place for PPs evacuated from the verb word; the landing site in figure 4.9 is adjoined to AspP but it could plausibly instead be TP or some other functional phrase above AspP. It seems unlikely to be CP however given that argument PPs are fixed in their preverbal positions, unlike argument DPs which can be freely moved to the left or right peripheries. Whatever the position of the applicative argument PP, we expect it to be the same as other argument PPs that are lexically selected, contributed by motion derivations, or otherwise introduced by argument adding mechanisms.

There is a potential analysis of applicatives where instead of a single *v*P containing both subject and applicative argument PP, there are instead separate *v*Ps for each argument. An applicative like (94b) would then have two *v* heads, one covert that projects a vP_1 containing the subject, and another overt that projects a vP_2 containing the applicative argument PP. Unless the applicative is introduced before the subject there is a conflict with surface ordering. Specifically, the linearization of $[_{vP_2}$ PP v_2 $[_{vP_1}$ D v_1 ...]] would put the overt applicative v_2 before the overt subject D pronoun as e.g. *l*^{s}- > *x̲*- which is impossible as shown in (95). I return to this *v*P stacking approach and its associated problems in section 5.

(95) * Ax̲ léelk'uch x̲at wuleesáa. **applicative with l*^{s}- > *x̲*-
ax̲ léelk'w-ch x̲at= wu-l^{s}- i- i- $\sqrt[2]{}$sa -μH
[PP 1SG·PSS g'parent-INSTR] 1SG·O=PFV-APPL-2SG·S-STV-$\sqrt[2]{}$name-VAR
intended: 'You (sg.) named me for my grandparent.'

Figure 4.9: Tree for applicative of transitive in (94b)

Table 4.7 lists a few applicatives that are attested in the lexical documentation. Applicatives have not been systematically investigated in Tlingit, so the attestation of applicatives is more or less accidental. The data in table 4.7 was compiled by hunting through long lists of verbs (Leer 1973a, 1976a; Story & Naish 1973; Eggleston 2017) looking for transitives with covert *v* that have counterpart forms with overt *v* and an otherwise unexpected additional PP. There are four kinds of PPs attested in table 4.7: ergative/instrumental *-ch*, locative *-x'* (with the common preverbal allomorph *-μ*), punctual *-t*, and pertingent *-<u>x</u>*. I address each of these in sections 3.3.1–3.3.4.

All of the attested applicatives in table 4.7 are lexically specified as members of the *∅*- or *n*-conjugation classes. It is unclear if this is significant, an accident of documentation, or if it reflects a paucity of *<u>g</u>*- and *g*-conjugation transitives from which applicatives could be formed. Most attested applicatives are achievements along with a few activities. The lack of states is certainly due to the rarity of intransitive states in general, but the possibility of an applicative transitive state should be investigated. The lack of motions might be explained by the alternative argument-adding mechanism of motion derivations as blocking applicativization.

Applicatives have not previously been recognized as a coherent phenomenon in Tlingit. The structures with *-t* and *-<u>x</u>* have never been characterized or investigated. Story describes *-ch* with *s-*/*l-*

v	*(Im)perfective*	*Translation*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	ách awsihee	's/he paid him/her with it'	$\sqrt[2]{hi^h}$	'pay shaman'	achievement	*n*
	du ée awsikís	's/he informed it to him/her'	$\sqrt[2]{kis}$	'inform'	achievement?	*∅*
	du ée awsikóo	's/he made him/her know it'	$\sqrt[2]{ku^h}$	'know'	achievement	*∅*
	ách awsik'éx'	's/he hooked it with it'	$\sqrt[2]{k'ex'}$	'hook'	achievement	*∅/n*
	ách awsik̲éi	's/he paid him/her with it'	$\sqrt[2]{k̲e}$	'pay'	achievement	*∅*
s-	*áx̲ aksanéek*	's/he says that it is (of) it'	$\sqrt[2]{nik}$	'tell'	activity (*-μH*)	*n*
	ách awsi.oo	's/he traded him/her with it'	$\sqrt[2]{.u}$	'own'	achievement	*n*
	ách asxwéin	's/he shoveled it with it'	$\sqrt[2]{xwe'n}$	'ladle'	activity (*-μH*)	*∅/n*
	du ée asx̲á	's/he feeds it to him/her'	$\sqrt[2]{x̲a}$	'eat'	activity (*-H*)	*∅*
	ách awsix̲oox̲	's/he called him/her with it'	$\sqrt[2]{x̲ux̲}$	'summon'	achievement	*n*
	ách ax̲'ayawsi.aa	's/he delayed him/her with it'	$\sqrt[2]{.a}$	'delay'	achievement?	*n*
	du ée ayawlidlaak̲	's/he presented it to him/her'	$\sqrt[2]{dlak̲}$	'win'	achievement	*n*
	ách awlidzóo	's/he hit him/her it with it'	$\sqrt[2]{dzu^h}$	'throw'	achievement	*∅*
	ách ayalag̲éel'	's/he sharpened it with it'	$\sqrt[2]{gil'}$	'grind'	activity (*-μH*)	*∅*
	át akawlig̲wál'	's/he farted there'	$\sqrt[2]{g̲wal'}$	'fart'	achievement?	*∅*
	ách awliják̲	's/he killed him/her/it with it'	$\sqrt[2]{jak̲}$	'kill'	achievement	*∅*
l^s-	*át akawlilúx'*	's/he urinated there'	$\sqrt[2]{lux'}$	'urine'	achievement?	*∅*
	du ée allóox'	's/he makes him/her pee'	$\sqrt[2]{lux'}$	'urine'	activity (*-μH*)	*∅*
	du ée all'eix̲	's/he makes him/her dance'	$\sqrt[2]{l'ex̲}$	'dance'	activity (*-μ*)	*n*
	ách awlisáa	's/he named him/her for it'	$\sqrt[2]{sa}$	'name'	achievement	*∅*
	du ée alshook̲	's/he made him/her laugh at it'	$\sqrt[2]{shuk̲}$	'laugh'	activity (*-μ*)	*n*
	du éex̲ oolshook̲	's/he ridicules him/her'	$\sqrt[2]{shuk̲}$	'laugh'	activity (*-μ*)	*n*
	ách akawliwús'	's/he made it murky with it'	$\sqrt[2]{wus'}$	'murky'	achievement	*∅*
	du ée akawligóok	's/he showed it to him/her'	$\sqrt[2]{gu'k}$	'know how'	achievement	*n*
	át akawlik̲áa	's/he sewed it there'	$\sqrt[2]{k̲a}$	'stitch'	achievement	*∅*
	du ée awlinaa	's/he bequeathed it to him/her	$\sqrt[2]{na}$	'inherit'	achievement	*∅*
l-	*du ée awlitáw*	's/he had it stolen by him/her'	$\sqrt[2]{ta'w}$	'steal'	achievement ?	*∅*
	du ée altéew	's/he taught it to him/her'	$\sqrt[2]{ti'w}$	'read'	activity (*-μH*)	*∅*
	áx' awlixaach	's/he gave up on it'	$\sqrt[2]{xach}$	'give up'	achievement	*n*
	ách alxwéi	's/he teases him/her with it'	$\sqrt[2]{xwe}$	'tease'	activity (*-μH*)	*n*

Table 4.7: Some applicative verbs derived with *s-* or *l-*

as an "instrumental use" of *s-* (Story 1966: 72). Leer describes the combination of *-x'* and *s-/l-* as a "causative string" and the combination of *-ch* and *s-/l-* as an "instrumental string" (Leer 1991: 52–53); he also refers to the *NP-ch* as an "instrumental argument" and the *NP-x'* as an "embedded agent argument" (Leer 1991: 60). Leer's descriptions imply that the *-ch* and *-x'* applicatives are productive, but he does not give any explicit evidence. The productivity of the other patterns is entirely unknown. Because there has been so little investigation of applicatives in Tlingit, our understanding of them is still in its infancy.

Four applicatives in table 4.7 feature an apparently expletive argument marking *a-* prefix that saturates the object position. They are based on the roots $\sqrt[2]{lux'}$ 'urinate', $\sqrt[2]{\underline{g}wal'}$ 'fart', and $\sqrt[2]{l'e\underline{x}}$ 'dance'. The *a-* in these verbs is expletive because it can occur with overt subject D pronouns which would be impossible for the regular argument marking *a-* that codes for a third person object with a third person subject. This expletive *a-* may be a kind of cognate object, for which see the discussion in chapter 7 section 1.2.2. Since the *a-* is apparently uninterpreted, the resulting structures have the flavour of causatives: 'make urinate', 'make fart', and 'make dance'.

One verb shows a structure similar to the applicatives with expletive *a-*, but the expletive only occurs in the applicative and not in the transitive. The root $\sqrt[2]{wu}$ 'order, send' is apparently bivalent based on the data in (96). The translations in (96) differ between 'send' and 'order' (perhaps 'send for'?), there are no overt subjects or objects, and both forms include adjunct PPs, but the translations generally support transitive interpretations and hence a bivalent root.

(96) a. Du jeède aàwawoo. (*Tongass*) *transitive with adjunct PP*
du jee -dé a- wu-i- $\sqrt[2]{}$wu -μ
3H·PSS poss'n-ALL ARG-PFV-STV-$\sqrt[2]{}$send-VAR
'He sent it to him.' (Leer 1973a: 03/295)

b. X'úx' ká<u>x</u> awéis'. *transitive with adjunct PP*
x'úx' ká -<u>x</u> a- $\sqrt[2]{}$wu -eH-s'
book HSFC-PERT ARG-$\sqrt[2]{}$order-VAR-REP
'He is ordering it from the book (catalogue).' (Story & Naish 1973: 143.1941)

The same root $\sqrt[2]{wu}$ 'order, send' also occurs in a structure where there is an overt PP *ách* with the ergative instrumental *-ch*, and where the argument marking *a-* is expletive since it occurs with overt subject D pronouns. The data in (97) demonstrate a variety of attested forms of this 'send' structure. The forms in (97a)–(97e) all show a subject D pronoun along with *a-*, confirming that *a-* is expletive. The forms in (97d) and (97f) include an overt DP in the *-ch* PP, and (97e) shows the DP *tsaa dleeyí* being focused out of the *-ch* PP leaving behind a resumptive third person nonhuman pronoun *á* 'it'.

(97) a. Du jeedé ách a<u>x</u>wsiwóo.
du jee -dé á -ch a- wu-<u>x</u>- s- i- $\sqrt[2]{}$wu -μH
[PP 3H·PSS poss'n-ALL] [PP 3N-INSTR] XPL-PFV-1SG·S-APPL-STV-$\sqrt[2]{}$send-VAR
'I sent it to him.' (Leer 1973a: 03/296)

b. Tléil aadé ách oo<u>k</u>asiwóowu yé
tléil á -dé á -ch a- u- <u>g</u>- <u>x</u>- s- i- $\sqrt[2]{}$wu -μH-i yé
NEG [CP [PP 3N$_i$-ALL] [PP 3N-INSTR] XPL-IRR-ZCNJ-MOD-1SG·S-APPL-STV-$\sqrt[2]{}$send-VAR-REL] way$_i$
'(There is) no way that I can send it.' (Leer 1973a: 03/295)

c. Ách axlawéis'
á -ch a- x- l- $^{2}\sqrt{}$wu -eH-s'
[PP 3N-INSTR] XPL-1SG·S-APPL-$^{2}\sqrt{}$send-VAR-REP
'I send it.' (Leer 1973a: 03/295)

d. Yee eech ágé aduswéix?
ÿee ee -ch á- gé a- du- s- $^{2}\sqrt{}$wu -eH-x
[PP 2PL BASE-INSTR] FOC-YN XPL-4H·S-APPL-$^{2}\sqrt{}$send-VAR-REP
'Did somebody send you (pl.)?' (Story & Naish 1973: 183)

e. Tsaa dleeyí áwé i x'éide ách
tsaa dleeÿ-í á -wé i x'é -dé á -ch
seal meat$_i$ -PSS FOC-MDST [PP 2SG·PSS mouth-ALL] [PP 3N$_i$-INSTR]
aa akkwasawóo
aa= a- w- g- g- x- s- $^{2}\sqrt{}$wu -μH
PART=XPL-IRR-GCNJ-MOD-1SG·S-APPL-$^{2}\sqrt{}$send-VAR
'It's seal meat that I'm going to send you some of.' (Story & Naish 1973: 183)

f. Laak'áskch du yéet jeex' awsiwóo.
laak'ásk -ch du ÿéet jee -x' a- wu-s- i- $^{2}\sqrt{}$wu -μH
[PP bl·seaweed-INSTR] [PP 3H·PSS son poss'n-LOC] ARG-PFV-APPL-STV-$^{2}\sqrt{}$send-VAR
'He sent the black seaweed in his son's possession.' (Story & Naish 1973: 183)

The problem with analyzing the data in (97) as a regular applicative structure is because the forms in (96) are transitive but the forms in (97) have an expletive *a-*. This is different from the applicatives of $^{2}\sqrt{}$*lux'* 'urinate', $^{2}\sqrt{}$*gwal'* 'fart', and $^{2}\sqrt{}$*l'ex* 'dance' where both the transitive and the applicative have an expletive *a-*. We need further work on these verbs to better understand their differences and consequent effects on the applicativization process.

Other argument adding operations can give rise to structures that appear to be applicative but are actually causative, qualificational, etc. One prominent example involves the monovalent root $^{1}\sqrt{}$*x'akw* 'die off' illustrated in (98). This root is monovalent given the unaccusative in (98a). The form in (98b) has an added incorporated noun *se-* 'voice' along with a PP *a ká-t* 'at/on the surface of it' which together wiith the root give rise to a meaning 'forget' by way of the metaphor '(mental) voice dies off on it'. The structure in (98c) could be mistaken for an applicative, but it is actually causative with the addition of a subject to the unaccusative in (98b).

(98) a. Haa woox'aakw. *unaccusative intransitive*
haa= wu-i- $^{1}\sqrt{}$x'akw-μ
1PL·O=PFV-STV$^{1}\sqrt{}$die·off -VAR
'We died off.'

b. A kát xat seiwax'ákw. *unaccusative intransitive with PP*
a ká -t xat= se- wu-i- $^{1}\sqrt{}$x'akw-H
[PP 3N HSFC-PNCT] 1SG·O=voice-PFV-STV-$^{1}\sqrt{}$die·off -VAR
'I forgot about it.'

c. A kát xat saylix'ákw. *causative with PP*
a ká -t xat= se- wu-i- l- i- $^{1}\sqrt{}$x'akw-H
[PP 3N HSFC-PNCT] 1SG·O=VOICE-PFV-2SG·S-CSV-STV-$^{1}\sqrt{}$die·off -VAR
'You made me forget about it.'

There is still no explanation for how argument PPs like *a ká-t* in (98b) are added without modification of *v*, though one possibility is with a covert *v* as discussed in section 5 on *v* stacking and another possibility is that they are due to motion derivations (ch. 6 sec. 3.3). Regardless, causative structures with argument PPs like (98c) should not be mistaken for applicatives.

Causativization is known to be associated with changes to eventuality structure (sec. 3.2.3). It is reasonable to expect applicativization to have similar effects on event structure, but there is no data either supporting or denying this expectation. All of the applicatives listed in table 4.7 seem to have the same eventuality class as their transitive counterparts, with one exception: the root $^{2}\sqrt{}$*ta'w* 'steal' supports a transitive activity imperfective as shown in (99a), but the only attested applicative forms in (99b) and (99c) are perfectives which do not confirm whether the applicative is an activity or an achievement.

(99) a. I kooxéedayi xwaatáw. *transitive activity imperfective*
i kooxéedaa-í wu-x- i- $^{2}\sqrt{}$ta'w-H
2SG·PSS pencil -PSS PFV-1SG·S-STV-$^{2}\sqrt{}$steal -VAR
'I stole your pencil.'

b. Du ée awlitáw. *applicative perfective*
du ee -H a- wu-l- i- $^{2}\sqrt{}$ta'w-H
[PP 3H BASE-LOC] ARG-PFV-APPL-STV-$^{2}\sqrt{}$steal -VAR
'S/he had him/her steal it.' (Leer 1976a: 355)

c. Xáa awlitáw. *applicative perfective*
xá -μ a- wu-l- i- $^{2}\sqrt{}$ta'w-H
[PP 1SG-LOC] ARG-PFV-APPL-STV-$^{2}\sqrt{}$steal -VAR
'He had me steal it.' (Leer 1976a: 06/23)

In the following subsections I document specific applicative structures with different postpositions. I present the instrument applicatives with *-ch* in section 3.3.1, followed by the recipient applicatives with *-x'* in section 3.3.2. Then in section 3.3.3 I sketch the little amount known of location appliicatives with *-t*, and in section 3.3.4 I do the same for the applicatives with *-x*. Finally in section 3.3.5 I discuss the possibility of applicativizing unaccusative verbs; these are not causatives because the added argument is a PP rather than a subject and the interpretation of this added argument is not agentive.

3.3.1. Applicatives with *-ch*

Instrument applicatives are characterized by the presence of overt *v* and a PP headed by the ergative/instrumental postposition *-ch*. The data in (100) and (101) illustrate some typical instrumental applicatives. The forms in (100) contrast a basic transitive in (100a) based on the bivalent root $^{2}\sqrt{}$*ke* 'pay' with the applicative in (100b) where the *-ch* PP occurs together with the overt *v* prefix *s-*. The forms in (101) similarly contrast a basic transitive in (101a) based on the bivalent root $^{2}\sqrt{}$*jak* 'kill' with the applicative in (101b) that has *-ch* and *l*^{s}-.

(100) a. Aawak̲éi. *transitive*
a- wu-i- $^{2}\sqrt{}$k̲e -μH
ARG-PFV-STV-$^{2}\sqrt{}$pay-VAR
'S/he paid him/her.' (Story 1966: 73)

b. Dáanaach awsik̲éi. *applicative with -ch and s-*
dáanaa-ch a- wu-s- i- $^{2}\sqrt{}$k̲e -μH
[PP money -INSTR] ARG-PFV-APPL-STV-$^{2}\sqrt{}$pay-VAR
'S/he paid him/her with money.' (Story 1966: 73)

(101) a. Kuts'een x̲waaják̲. *transitive*
kuts'een wu-x̲- i- $^{2}\sqrt{}$jak̲-H
rat PFV-1SG·S-STV-$^{2}\sqrt{}$kill -VAR
'I killed a rat.'

b. Kuts'een téich x̲waliják̲. *applicative with -ch and l^{s}-*
kuts'een té -ch wu-x̲- l^{s}- i- $^{2}\sqrt{}$jak̲-H
rat [PP rock-INSTR] PFV-1SG·S-APPL-STV-$^{2}\sqrt{}$kill -VAR
'I killed a rat with a rock.'

The applicative based on $^{2}\sqrt{}$*jak̲* 'kill' has a metaphoric interpretation with the noun *eesháan* 'pitiful, pathetic; poverty' where it describes suffering by emotional or physical pain. Story & Naish (1973) translate this as 'torment' as shown by the example sentences in (102). A similar metaphoric example with *ánk'w* 'brat' is shown in (103).

(102) a. Du shát eesháanch awliják̲. *applicative with -ch and l^{s}-*
du shát eesháan-ch a- wu-l^{s}- i- $^{2}\sqrt{}$jak̲-H
3H·PSS wife [PP pitiful -INSTR] ARG-PFV-APPL-STV-$^{2}\sqrt{}$kill -VAR
'He tormented his wife.' (lit. 'He killed his wife with pitiful (behaviour).')
(Story & Naish 1973: 232)

b. Keitl eesháanch yaa has analják̲. *applicative with -ch and l^{s}-*
keitl eesháan-ch ÿaa= has=a- n- l^{s}- $^{2}\sqrt{}$jak̲-H
dog [PP pitiiful -INSTR] along=PLH= ARG-NCNJ-APPL-$^{2}\sqrt{}$kill -VAR
'They are tormenting a dog.' (lit. 'They are killing a dog with pitiful (behaviour).')
(Story & Naish 1973: 232)

(103) Ánk'uch yaa analják̲. *applicative with -ch and l^{s}-*
ánk'w-ch ÿaa= a- n- l^{s}- $^{2}\sqrt{}$jak̲-H
[PP brat -INSTR] along=ARG-NCNJ-APPL-$^{2}\sqrt{}$kill -VAR
'He is spoiling it.' (lit. 'He is killing it with brattyness.') (Leer 1976a: 10/128)

Aside from its instrumental function in applicatives, the *-ch* also marks DPs which are subjects of transitive verbs. This duality of an instrumental function in some contexts an ergative function in others is crosslinguistically common (Dixon 1994: 57), but I am unaware of any theoretical analyses of ergativity which attempt to capture this correlation. Because *-ch* can be either ergative or instrumental in an applicative the two functions must be carefully distinguished. There are at least

two different properties that show they are distinct: (i) ergative *-ch* can occur with covert *v* as well as overt *v*, and (ii) instrumental *-ch* does not trigger the disappearance of the argument marker *a-*.

The data in (104) illustrates ergative *-ch* versus applicative instrumental *-ch* with covert versus overt *v*. The grammatical form in (104a) has an ergative-marked DP which is the subject of the transitive verb.[8] The ungrammatical form in (104b) attempts to change the subject to an overt second person singular D pronoun *i-* 'you sg.' which is incompatible with the third person ergative subject DP. Then the grammatical form in (104c) shows that the addition of applicative *l*^{s}- allows the *-ch* PP to coexist with the overt D pronoun since they no longer compete for the same argument: the D pronoun is the subject and the PP is applicative.

(104) a. Táach x̱at uwajáḵ. *covert* v *with DP-ch*
tá -ch x̱at= u- i- $^{2}\sqrt{}$jaḵ-H
sleep-ERG 1SG·O=ZPFV-STV-$^{2}\sqrt{}$kill -VAR
'I fell asleep.' (lit. 'Sleep has killed me.')

b. *Táach x̱at eeyajáḵ. **covert* v *with subject D and DP-ch*
tá -ch x̱at= u- i- i- $^{2}\sqrt{}$jaḵ-H
sleep-ERG 1SG·O=ZPFV-2SG·S-STV-$^{2}\sqrt{}$kill -VAR
intended: 'You put me to sleep.' (lit. 'You killed me with sleep.')

c. Táach x̱at yilijáḵ. *overt* v *with subject D and DP-ch*
tá -ch x̱at= u- i- l^{s}- i- $^{2}\sqrt{}$jaḵ-H
sleep-INSTR 1SG·O=ZPFV-2SG·S-APPL-STV-$^{2}\sqrt{}$kill -VAR
'You put me to sleep.' (lit. 'You killed me with sleep.')

The data in (105) illustrate the interaction between the ergative *-ch* and the argument marking *a-* prefix. The baseline form in (105a) has an object DP between the ergative *-ch* and the verb word. The ungrammatical form in (105b) has the ergative *-ch* immediately preceding the verb word with *a-*, and the grammatical counterpart in (105c) lacks *a-*. This disappearance of *a-* does not occur with the applicative instrumental *-ch* as shown by the forms in (100b), (102a), (106c), and (106c).

(105) a. Dzéiwshch gwéetsaa awsi.ée. *transitive with ergative -ch*
Dzéiwsh-ch gwéetsaa a- wu-s- i- $^{1}\sqrt{}$.i -μH
NAME -ERG pizza ARG-PFV-CSV-STV-$^{1}\sqrt{}$cook-VAR
'Dzéiwsh cooked pizza.'

b. *Dzéiwshch awsi.ée. **ergative -ch before verb with a-*
Dzéiwsh-ch a- wu-s- i- $^{1}\sqrt{}$.i -μH
NAME -ERG ARG-PFV-CSV-STV-$^{1}\sqrt{}$cook-VAR
'Dzéiwsh cooked it.'

8. This is one of a few idiomatic metaphors for being overwhelmed by something. Others include *áat'ch yaa x̱at najáḵ* 'cold is killing me' ('I'm getting very cold'), *ta.aasch yaa x̱at najáḵ* 'loneliness is killing me' ('I am longing for company'), *yaanch yaa x̱at najáḵ* 'hunger is killing me' ('I'm getting very hungry'), *tux'andagáax'ch yaa x̱at najáḵ* 'annoyance is killing me' ('I'm getting very annoyed'), and the sarcastic *ḵu.áx̱jik'ch yaa x̱at najáḵ* 'little-hearing is killing me' ('I'm getting very hard of hearing'). Cf. *ax̱ toowú aawajáḵ* 's/he killed my mind' ('ruined my enthusiasm').

c. Dzéiwshch wusi.ée. *ergative -ch before verb without a-*
Dzéiwsh-ch wu-s- i- $^{1}\sqrt{}$.i -μH
NAME -ERG PFV-CSV-STV-$^{1}\sqrt{}$COOK-VAR
'Dzéiwsh cooked it.'

The instrumental applicative is morphologically distinct from other instrumental PPs which are instead formed with the instrumental postposition *-n* or its allomorphs *een* and *teen*. There are a few documented contrasts between basic transitives with an instrumental adjunct PP and applicatives with an instrumental *-ch* argument PP. The data in (106) and (107) illustrate two such cases. First, the basis form in (106a) shows that the root $^{2}\sqrt{}$*dzu*^{h} 'throw' is transitive, and then (106b) shows that this can be modified by the addition of an adjunct PP headed by the instrumental postposition *teen* 'with, using'. The applicative in (106c) contrasts with (106b) by the use of the instrumental *-ch* together with applicative *l*^{s}- in *v*.

(106) a. Ashakg̱wadzóo. *transitive*
a- sha- w- g- g̱- $^{2}\sqrt{}$dzu^{h}-μH
ARG-head-IRR-GCNJ-MOD-$^{2}\sqrt{}$throw-VAR
'S/he will hit him/her/it on the head by throwing.'

b. Té teen ts'ítskw shagax̱dudzóo. *transitive with instrumental teen*
té teen ts'ítskw sha- w- g- g̱- du- $^{2}\sqrt{}$dzu^{h}-μH
[PP rock INSTR] bird head-IRR-GCNJ-MOD-4H·S-$^{2}\sqrt{}$throw-VAR
'They are going to hit birds with (by throwing) rocks.' (Story & Naish 1973: 109.1421)

c. Gánch ashagux̱ladzóo. *applicative with instrumental -ch*
gán -ch a- sha- w- g- g̱- l^{s}- $^{2}\sqrt{}$dzu^{h}-μH
[PP firewood-INSTR] ARG-head-IRR-GCNJ-MOD-APPL-$^{2}\sqrt{}$throw-VAR
'He is going to hit it with (by throwing) firewood.' (Story & Naish 1973: 109.1422)

The basis form in (107a) shows that $^{2}\sqrt{}$*jak̲* 'kill' forms a basic transitive. The sentence in (107b) shows the addition of an instrumental adjunct PP again headed by *teen* 'with'. Then the applicative form in (107c) features the same instrument *tsaag̱ál'* 'spear'[9] but this time with the instrumental *-ch* and applicative *l*^{s}- in *v*.

(107) a. Xóots aawajáḵ. *transitive*
xóots a- wu-i- $^{2}\sqrt{}$jak̲-H
br·bear ARG-PFV-STV-$^{2}\sqrt{}$kill -VAR
'S/he killed a brown bear.'

b. Tsaag̱ál' teen xóots aawajáḵ. *transitive with instrumental teen*
tsaag̱ál' teen xóots a- wu-i- $^{2}\sqrt{}$jak̲-H
[PP spear INSTR] br·bear ARG-PFV-STV-$^{2}\sqrt{}$kill -VAR
'He killed a brown bear with a spear.' (Story & Naish 1973: 119.1557)

c. Tsaag̱ál'ch awlijáḵ. *applicative with instrumental -ch*
tsaag̱ál'-ch a- wu-l^{s}- i- $^{2}\sqrt{}$jak̲-H
[PP spear -INSTR] ARG-PFV-APPL-STV-$^{2}\sqrt{}$kill -VAR
'He killed it with a spear.' (Story & Naish 1973: 119.1559)

9. The noun *tsaag̱ál'* 'spear' is based on $^{2}\sqrt{}$*tsak̲* 'poke, push' with a *-μ* stem and the epenthesized repetitive suffix *-l'*.

Both instrumental adjunct PPs in (106b) and (107b) show the adjunct in its usual position preceding the object DP. This contrasts with the position of the applicative *-ch* argument PP in (101b), (102a), and (102b) which appears between the object DP and the verb, in the same position as an argument PP introduced by a motion derivation. It is not yet known where the applicative PP is similarly frozen in this immediately preverbal position like a motion argument PP, but if so this would further support the status of the applicative PP as an argument rather than an adjunct.

3.3.2. Applicatives with *-x'*

Some applicatives are characterized by the presence of an overt *v* head and a PP headed by the locative postposition *-x'*.[10] There are eleven attested examples listed in table 4.7, but Leer's brief mention of this structure (Leer 1991: 52–53) implies that they are regular and productive so it is likely that many more are possible beyond the extant documentation.

The data in (108) and (109) illustrate some typical applicatives with the locative *-x'* postposition. The forms in (108) contrast a basic transitive in (108a) based on the bivalent root $\sqrt[2]{\underline{x}a}$ 'eat' with the applicative in (108b) that has the *-H* allomorph of the locative together with *s-* in *v*. Similarly, the forms in (109) contrast a transitive based on $\sqrt[2]{ta'w}$ 'steal' in (109a) with an applicative (109b) that has the locative postposition *-x'* and *l-* in *v*.

(108) a. Gishoo taayí xwaaxáa. *transitive*
gishoo taaÿ-í u- x- i- $\sqrt[2]{\underline{x}a}$-μH
pig fat -PSS ZPFV-1SG·S-STV-$\sqrt[2]{\text{eat}}$-VAR
'I ate bacon.'

b. Gishoo taayí du ée xwasixáa. *applicative with -H and s-*
gishoo taaÿ-í du ee -H wu-x- s- i- $\sqrt[2]{\underline{x}a}$-μH
pig fat -PSS [PP 3H BASE-LOC] PFV-1SG·S-APPL-STV-$\sqrt[2]{\text{eat}}$-VAR
'I fed bacon to him/her.'

(109) a. Wé x'óow eeyatáw. *transitive*
wé x'óow u- i- i- $\sqrt[2]{ta'w}$-H
MDST blanket ZPFV-2SG·S-STV-$\sqrt[2]{\text{steal}}$ -VAR
'You (sg.) stole that blanket.'

b. Wé x'óow i shátx' yilitáw. *applicative with -x' and l-*
wé x'óow i shát-x' wu-i- l- i- $\sqrt[2]{ta'w}$-H
MDST blanket [PP 2SG·PSS wife -LOC] PFV-2SG·S-APPL-STV-$\sqrt[2]{\text{steal}}$ -VAR
'You (sg.) had that blanket stolen by your wife.'

Applicatives with the locative *-x'* are only attested with roots that are not attested with other applicatives like *-ch* or *-t*. As noted later in section 3.3.3, at least one root supports both a *-ch* applicative and a *-t* applicative, so it is certainly possible for some roots to occur with more than one applicative type. But because of the lack of documentation, it is not clear whether the selection of

10. The locative *-x'* postposition has a few different allomorphs whose selection seems to be more or less phonological: lengthening *-μ* of a final /CV́/ syllable, high tone *-H* on a final long low tone /Cìː/ syllable, and glottalization *-ʔ* of a final vowel in Tongass Tlingit. These allomorphs are probably derived from debuccalization of *-x'* to give *-ʔ as in Tongass Tlingit, with subsequent forms arising from tonogenesis and other phonological developments.

the *-x'* applicative is exclusive and thus lexically specified, or if instead *-x'* applicatives can occur with the same root as other applicatives.

The root $\sqrt[2]{kis}$ 'inform' is attested only as a *-x'* applicative and not as a transitive or any other form. There is thus a question of whether it is actually an applicative or if instead it is some other kind of structure, perhaps a lexicalized one. The sole attested form of this root is shown in (110).

(110) Haa ée awsikís.
haa ee -H a- wu-s- i- $\sqrt[2]{}$kis -H
1PL BASE-LOC ARG-PFV-APPL-STV-$\sqrt[2]{}$inform-VAR
'He informed us of it.' (Leer 1973a: f06/103)

There are a couple of problems with the form in (110). One is that it is exceedingly rare; the only attested form is this one (i.e. it is a hapax legomenon) and its origin, dialect, etc. are unknown. Another is that it is attested with *s-* despite the presence of the alveolar fricative [s] that we would instead expect to require the presence of l^s- (sec. 2.1.1). A third problem is that because the form in (110) has a third person subject we cannot say if the *a-* prefix reflects a covert object or if instead the *a-* is expletive. If the root is indeed bivalent and can occur with an overt object, we should expect a form like ※*aawakís* to be possible and to mean something like 's/he reported it' or perhaps 's/he reported to him/her'.

3.3.3. Applicatives with *-t*

A few applicatives are characterized by the presence of an overt *v* head and a PP headed by the punctual postposition *-t*.[11] Déchaine (p.c. 2016) first brought them to my attention by noting a contrast between $\sqrt[2]{ka}$ 'stitch, sew' with covert *v* and with overt *v* and a *-t* PP in example sentences from Edwards (2009). The forms in (111) illustrate this root with a transitive in (111a) and a corresponding applicative in (111b).

(111) a. Ax k'oodás'i xwaakáa. *transitive*
ax k'oodás'-í wu- x- i- $\sqrt[2]{}$ka-μH
1SG·PSS shirt -PSSPFV- 1SG·S-STV-$\sqrt[2]{}$stitch-VAR
'I sewed my shirt.'

b. Yá yaka.óot' ax k'oodás'i kát kaxwlikáa. *applicative with -t and l-*
yá yaka.óot' ax k'oodás'-í ká -t k- wu-x- l- i- $\sqrt[2]{}$ka -μH
PROX button [PP 1SG·PSS shirt -PSS HSFC-PNCT] SRO-PFV-1SG·S-APPL-STV-$\sqrt[2]{}$stitch-VAR
'I sewed this button onto my shirt.'

Table 4.7 lists only three known examples of *-t* applicatives, one with the root $\sqrt[2]{gwal'}$ 'fart', one with the root $\sqrt[2]{lux'}$ 'urine', and one with the root $\sqrt[2]{ka}$ 'stitch, sew' as illustrated above. The two applicatives with $\sqrt[2]{gwal'}$ 'fart' and $\sqrt[2]{lux'}$ 'urine' have an expletive *a-*, so only the applicative with $\sqrt[2]{ka}$ 'stitch, sew' is regular. It is possible that these are not actually applicatives but are instead combinations of extensional *s-*/*l-* and a motion derivation with *-t*, but we lack evidence to confirm this.

11. The punctual *-t* variously denotes 'to a point', 'around a point', or 'at a point' depending on morphosyntactic (e.g. conjugation class) and lexical factors. It seems to indicate a specific point in space in contrast with the locative *-x'* that indicates a larger area.

3.3.4. Applicatives with -x̲

A couple of applicatives are characterized by the presence of overt *v* and a PP headed by the pertingent postposition -x̲.[12] Table 4.7 lists only two, one with $\sqrt[2]{nik}$ 'tell, relate' and one with $\sqrt[2]{shuk}$ 'laugh, mock'. The pair in (112) contrast a transitive and an applicative based on $\sqrt[2]{nik}$ 'tell, relate'. The data in (113) contrast a transitive based on $\sqrt[2]{shuk}$ 'laugh, mock' in (113a) with a relatively common *-x̲'* applicative in (113b)[13] and the only two attested examples of -x̲ applicatives with this root in (113c) and (113d).[14]

(112) a. Ldakát haa k̲usteeyí yánde kakkwanéek. *transitive*
ldakát haa k̲ustee-í ÿán -dé k- w- g- g̲- x̲- $\sqrt[2]{nik}$-μH
all 1PL·PSS culture -PSS TERM-ALL QUAL-IRR-GCNJ-MOD-1SG·S-$\sqrt[2]{tell}$ -VAR
'I will finish telling all of our culture.' (Story & Naish 1973: 225)

b. Kóoshdaa k̲áax̲ áwé aksanéek. *applicative with -x̲ and s-*
kóoshdaa k̲áa -x̲ á -wé a- k- s- $\sqrt[2]{nik}$-μH
land·otter man-PERT FOC-MDST ARG-QUAL-APPL-$\sqrt[2]{tell}$ -VAR
'He says that they are land otter men.' (Dauenhauer & Dauenhauer 1987: 162.201)

(113) a. At shook̲. *transitive*
at= $\sqrt[2]{shuk}$-μ
4N·O=$\sqrt[2]{laugh}$ -VAR
'S/he is laughing at something.'

b. Du yoo x̲'atángi tléil tsu ax̲ ée oolshoog̲ú. *applicative with -x̲' and l^s-*
du yoo=x̲'atánk-í tléil tsu ax̲ ee -H a- u- l^s- $\sqrt[2]{shuk}$-μ -í
3H·PSS ALT= speech -PSS NEG again 1SG BASE-LOC ARG-IRR-APPL-$\sqrt[2]{laugh}$ -VAR-SUB
'So his speeches don't make me laugh anymore.' (Story & Naish 1973: 225)

c. Ash éex̲ oolshook̲. *applicative with -x̲ and l^s-*
ash ee -x̲ a- u- l^s- $\sqrt[2]{shuk}$-μ
3PRXBASE-PERT ARG-IRR-APPL-$\sqrt[2]{laugh}$ -VAR
'He is ridiculing, mocking him for it.' (Leer 1973a: 10/117)

d. Óox̲ ux̲lashook̲. *applicative with -x̲ and l^s-*
ú -x̲ u- x̲- l^s- $\sqrt[2]{shuk}$-μ
3H-PERT IRR-1SG·S-APPL-$\sqrt[2]{laugh}$ -VAR
'I laugh at him for it.' (Leer 1973a: 10/117)

Since -x̲ applicatives are documented with only two roots, it is possible that the correlation between presence of overt *v* and presence of a -x̲ PP is accidental. But the possible occurrence of applicatives of unaccusatives with -x̲ and *s-* discussed in section 3.3.5 suggests that the -x̲ + *l-* structures here are plausibly analyzable as applicatives. Furthermore, if *v*P stacking is possible as discussed in

12. The pertingent -x̲ describes contact with something, being a part of something, or being composed of something. As with other postpositions in Tlingit, its semantics and distribution are still underdescribed.
13. This is an 'insubordinate' clause that is morphologicaly marked as subordinate but appears in a root clause syntactic environment. This faux clausal embedding reflects discourse dependency (Cable 2011).
14. The irrealis in (113c) and (113d) may be pejorative; see chapter 6 section 4.2.4.

section 5 then similar structures like the form in (114b) could be analyzed as morphologically opaque applicatives with the same postposition. Then -x̲ applicatives would account for the *NP-x̲* "copular argument" described by Leer (1991: 60).

(114) a. Hít x̲waliyéx̲. *transitive*
hít wu-x̲- l- i- $\sqrt[2]{}$yex̲ -H
house PFV-1SG·S-XTN-STV-$\sqrt[2]{}$whittle-VAR
'I built a house.'

b. Hít téix̲ x̲waliyéx̲. *applicative with -x̲?*
hít té -x̲ wu-x̲- l- l- i- $\sqrt[2]{}$yex̲ -H
house [PP rock-PERT] PFV-1SG·S-APPL-XTN-STV-$\sqrt[2]{}$whittle-VAR
'I built a house out of rock.'

3.3.5. Applicatives of unaccusatives

All applicatives described so far in this section are based on bivalent roots. There is however some preliminary evidence that applicatives can also be formed from monovalent roots, in the form of applicatives of unaccusative intransitives.[15] The root $\sqrt[1]{ti^h}$ 'be, exist' supports a structure without an overt *v* which is unaccusative, but it also appears in another structure where *s-* is present in *v* along with an obligatory PP headed by the pertingent postposition -x̲. The data in (115) shows that the verb based on $\sqrt[1]{ti^h}$ 'be, exist' without overt *v* can only be unaccusative.

(115) a. Yéi x̲at yatee. *unaccusative state imperfective*
yéi= x̲at= i- $\sqrt[1]{}$ti^h-μ
thus=1SG·O=STV-$\sqrt[1]{}$be -VAR
'I am so.', 'I exist thus.'

b. *Yéi x̲aatee. **unergative state imperfective*
yéi= x̲- i- $\sqrt[1]{}$ti^h-μ
thus=1SG·S- STV-$\sqrt[1]{}$be-VAR
intended: 'I am so.', 'I exist thus.'

c. *Yéi x̲at iyatee. **transitive state imperfective*
yéi= x̲at= i- i- $\sqrt[1]{}$ti^h-μ
thus=1SG·O=2SG·S-STV-$\sqrt[1]{}$be -VAR
intended: 'You have me thus.'

The data in (116) illustrate a verb based on the same root with the addition of *s-* in *v*. This requires the presence of the PP headed by -x̲ as shown by the ungrammatical form without it in (116b). And for the PP to be present the *s-* must also be present as shown in (116c).

(116) a. Lingítx̲ x̲at sitee. *applicative with -x̲ and s-*
Lingít-x̲ x̲at= s- i- $\sqrt[1]{}$ti^h-μ
[PP Tlingit-PERT] 1SG·O=APPL-STV-$\sqrt[1]{}$be -VAR
'I am (of) Tlingit.'

15. Given the terms 'unergative' and 'unaccusative', it is tempting to call an intransitive + PP structure an 'unapplicative'.

Figure 4.10: Tree for applicative of unaccusative in (116a)

b. * Yéi x̱at sitee. *without PP
yéi= x̱at= s- i- ¹√tiʰ-μ
thus= 1SG·O=APPL-STV-¹√be -VAR
intended: 'I am so.'

c. * Lingítx̱ x̱at yatee. *without s-
Lingít-x̱ x̱at= i- ¹√tiʰ-μ
[PP Tlingit-PERT] 1SG·O= STV-¹√be -VAR
intended: 'I am (of) Tlingit.'

The pattern between (115a) and (116a) bears a striking resemblance to the applicative structures discussed in the rest of this section, where the addition of an overt *v* requires the additional presence of an overt PP. This suggests an analysis like that shown in figure 4.10 where the applicative head *v* introduces the PP headed by *-x̱* that is later evacuated to AspP.

There is a wrinkle in this analysis, namely the role of the preverb *yéi=* 'thus, so' in the unaccusative in (115a). This *yéi=* is lacking in (116a) and so it could be argued that there is an alternation between *yéi=* in one form and *NP-x̱* in the other. If the *NP-x̱* is an argument then *yéi=* would be as well. Leer refers to this alternation as a "manner argument" which he says "may have the form of either a postpositional phrase or an adverb (which we may regard as constituting an unanalyzable postpositional phrase in the syntax)" (Leer 1991: 60). The *yéi=* 'thus, so' preverb is a kind of default realization

of the manner argument, regularly alternating with more specific PPs and adverbs (cf. ch. 6 sec. 4.3.1 on comparatives). But in the specific case of $\sqrt[1]{ti^h}$ 'be, exist' the *yéi=* is actually frozen as shown in (117) and so may not actually represent the manner argument. If so, then the alternation between *yéi=* in (115) and *NP-x̲* in (116) may not impinge on the analysis of applicatives of unaccusatives.

(117) a. I katíx̲'ayi nadáakw káx' yéi yatee. *with yéi=*
i katíx̲'aa-í nadáakw ká -x' yéi= i- $\sqrt[1]{ti^h}$-μ
2SG·PSS keys -PSS [PP table HSFC-LOC] thus=STV-$\sqrt[1]{}$be -VAR
'Your keys are on the table.'

b. *I katíx̲'ayi nadáakw káx' yatee. **without yéi=*
i katíx̲'aa-í nadáakw ká -x' i- $\sqrt[1]{ti^h}$-μ
2SG·PSS keys -PSS [PP table HSFC-LOC] STV-$\sqrt[1]{}$be -VAR
intended: 'Your keys are on the table.'

Before we can say that applicatives can be derived from unaccusatives we need further investigation. One task is searching through the lexical documentation for similar pairs of unaccusatives with covert *v* and unaccusatives with overt *v* and an additional PP. Another task is detailing the properties of the manner argument and clarifying its relationship with other kinds of arguments in the syntax.

4. Restricting meanings

The restriction function of *v* is diagnosed by the presence of overt *v* without any overt change to argument structure. This instantiation of *v* modifies the semantic interpretation by the introduction of a restriction on the meaning of an entity involved in the eventuality, or on the meaning of the eventuality itself. There are three cases of restriction with *v*: qualification (sec. 4.1), extension (sec. 4.1), and pejoration (sec. 4.3). Qualification restricts the entity denoted by the $[\theta_1]$ argument so that it must be lengthened in space; typical examples include a broomstick, a rifle, and a curtain rod. Extension restricts the eventuality so that it extends along an unspecified direction in space; typical examples include being blown along, squeezing out, and melting down. Pejoration restricts the evaluation of the eventuality so that it is undesirable, disapproved of, or unfortunate; typical examples include bothering someone, being nosy, and getting muddy. Qualification and extension both occur with either of the *s-* or *l-* prefixes, but pejoration occurs exclusively with the *sh-* prefix.

I suggest that all three of the restricting functions of overt *v* can be modelled syntactically by the introduction of a covert argument. Both the qualificational and extensional *s-* ~ *l-* cases can be thought of as having the same covert argument – presumably a PP like other non-core arguments – that is interpreted as adding a denotational restriction in the semantics. The pejorative *sh-* similarly can introduce a covert PP that hosts something like the *NEG-REL* operator posited by Cable (2017b) in his analysis of negative antonymy. This covert argument approach allows the restriction function of overt *v* to be unified with the argument addition function of overt *v*: both cases add arguments but in the restriction case the argument has only semantic content.

A possible structure for the qualificational *v* is shown in figure 4.11. The covert PP contains the semantics for long(e) which asserts that the entity e is extended in space. This PP binds the DP object. The position of the subject below the covert PP implies that this could alternatively be bound instead of the object. The merge order of subject and PP could be reversed to exclude subject binding, but

Figure 4.11: Qualificational *v* with a covert argument PP binding the object

this would require an unusual stipulation with an unclear mechanism. An alternative is to invoke *v*P stacking (sec. 5) with a covert *v* in a *v*P that contains the subject and then the overt *v* in a higher *v*P that introduces the qualificational PP.

The extensional *v* could be expected to have essentially the same structure as the qualificational *v*. One wrinkle is that the covert PP should not bind the object PP because then the interpretation would be qualificational given the equality of long and extended proposed in section 4.2. The problem for differentiating the extensional from the qualificational rests in how syntax can make reference to eventuality arguments as distinct from event arguments. If the restriction on the eventuality is established by syntactic binding then the PP would need to bind the eventuality introduced by the root (or V) rather than the entity introduced by the object. This cannot be simply achieved by scope; instead the syntax must somehow be sensitive to semantic type. I have no solutions to offer for this problem.

There is an alternative model for the extensional *v* that takes it to be essentially the same as an applicative but with a covert applied argument. The covert argument would be a kind of instrument or location that extends the eventuality across some space. The 'suck' example in (126) could for example have a covert equivalent to *a tóonáx̱ kaduls'íx̱s' át* 'straw' (lit. 'thing through which people suck') inside of a PP headed by the *-ch* applied instrument postposition. This analysis entails that all extensionals should be interpretable as involving a covert instrument or location argument. Furthermore, it suggests that extensionals should plausibly alternate with applicatives that have an overt applied PP.

Cable (2017b) presents an analysis of pejorative negative antonyms where there is a 'degree of badness' operator *NEG-REL* introduced along with *sh-*. Although Cable's analysis is designed for negative environments it seems reasonable to extend this to non-negative environments with a similar operator for non-negative pejorativity. The apparently lexicalized distribution of pejorative *sh-* might then be derivable from the lexical semantics of degree, predicting a variety of unattested pe-

jorative *sh-* instances with verb roots that support similar evaluative degree semantics. This also suggests that the non-negative pejorative *sh-* might support the addition of overt degree phrases.

4.1. Qualification: Restriction of entities

The qualification function of overt *v* is shown by alternation between a covert or absent *v* head and an overt *s-* or *l-* where the overt value indicates that the entity denoted by the VP-internal argument is long or othwerise extended in space. This is typically referred to as a kind of 'noun classification' although it is actually syntactically independent of any lexical noun classes. Instead, qualification reflects the speaker's categorical perception or conceptualization of a noun's referent. Since it is a primarily semantic phenomenon, qualification is much more flexible and generalizable than lexically encoded noun classes like gender or number. See chapter 2 section 1.2 for more discussion of qualification in the context of κ-feature specification and the qualia structure of roots.

Qualificational *v* occurs with both monovalent and bivalent roots. The pair in (119b) illustrate a typical monovalent root $\sqrt[1]{ge}$ 'big' as used for an unqualified object and for a qualified object where the latter is a long thing like a gun, log, person ('tall'), or building ('tall'). The pair in (119) show a similar pattern for a typical bivalent root $\sqrt[2]{xash}$ 'cut'.

(118) a. Yagéi. *monovalent root*
i- $\sqrt[1]{}$ge-μH
STV-$\sqrt[1]{}$big-VAR
'It (unqualified thing) is big.'

b. Ligéi. *monovalent root with qualificational l-*
l- i- $\sqrt[1]{}$ge-μH
XTN-STV-$\sqrt[1]{}$big-VAR
'It (rifle, log, building, person) is big.'

(119) a. Wutuwaxaash. *bivalent root*
wu-tu- i- $\sqrt[2]{}$xash-μ
PFV-1PL·S-STV-$\sqrt[2]{}$cut -VAR
'We cut it (unqualified thing).'

b. Wutulixaash. *bivalent root with qualificational l-*
wu-tu- l^s- i- $\sqrt[2]{}$xash-μ
PFV-1PL·S-XTN-STV-$\sqrt[2]{}$cut -VAR
i. 'We cut it (rope, log).'
ii. #'We (long things) cut it.'

In both (118) and (119) there is an alternation in meaning between an unqualified entity and an entity that is extended or elongated in space. A rifle, a log, a building, and a person are all entities that generally have one of three major axes that is significantly longer than the other two. All are extended in space – hence XTN for 'extension' – and so could be described with the adjective *long* in English.[16] The qualification function of overt *v* in these examples is thus very similar to adjunction with the English adjective *long*, suggesting a semantics of intersective modification.

16. The usual adjective for a building or person is *tall* rather than *long* because of their prototypically vertical rather than horizontal orientation of the extended axis. This orientation is irrelevant for Tlingit.

Crucially, the data in (119) shows that the qualification is on the transitive object and not the transitive subject. The subject in (119b) is the first person plural. The verb does not mean something like #'we were long and we cut it', but rather 'we cut it and it was long'. Symbolically this is e.g. cut(1PL, 3) ∧ long(3) or cut(1PL, long(3)) rather than say #cut(1PL, 3) ∧ long(1PL) or #cut(long(1PL), 3). Thus, although *v* is generally associated with the addition of external arguments generated in *v*P, here we find that the qualificational semantic interpretation of *v* relates only to the internal argument generated in VP.

The qualificational function of *v* in Tlingit is akin to the qualificational function of incorporated nouns. The incorporated nouns (category N) appear as part of the internal argument complex that is generated in VP but spelled out in AspP (ch. 7 sec. 1.3). In some contexts these Ns are saturating so that they constitute the object argument of the verb. But sometimes these Ns are not saturating: instead they restrict the denotation of the argument but do not prevent other elements in the derivation from being coreferential with the argument. This non-saturating qualificational function of incorporated N is illustrated by the pair in (120) which contrast a verb without and with an incorporated *k*- 'small round object'.

(120) a. Ix̲waasháat. *unqualified*
i- wu-x̲- i- ²√sha't-μH
2SG·O- PFV-1SG·S-STV-²√grab -VAR
'I grabbed you (sg.)'

b. Ikax̲waasháat. *small round k-*
i- k- wu-x̲- i- ²√sha't-μH
2SG·O-SRO-PFV-1SG·S-STV-²√grab -VAR
'I grabbed you (sg., small round)'

The semantically restricting function of an incorporated noun like *k*- in (120b) leads to its label as a 'qualifier' in traditional Na-Dene grammatical terminology (Kari 1989: 430). Serendipitously – though probably not accidentally – this label fits with my analysis of semantically specifying qualia of the entity (ch. 2 sec. 1.2). Although qualia can be lexically specified by the root with ϰ-features, qualia can also be derivationally specified by the addition qualifiers. This distribution of qualificational ('classificatory') labour between the root and qualifiers is well attested across the entire Na-Dene family (Henry & Henry 1965; Landar 1967; Basso 1968; Krauss 1968, 2015; Witherspoon 1971; Carter 1976; Cook 1986; Axelrod 2000; Hale 2003; Poser 2005).

The root ²√*tan* 'handle wooden object, empty container' can be combined with *s*- or with *k*- or with both to distinguish subtle differences of qualia. The forms in (121) illustrate all four logically possible combinations of *s*- 'extension' in *v* and *k*- 'small round' in N. The combination *k*- + ²√*tan* also has a common interpretation 'bend' where the object becomes rounded rather than being intrinsically rounded.

(121) a. X̲waataan. *unqualified* ²√*tan*
wu-x̲- i- ²√tan -μ
PFV-1SG·S- STV-²√hdl·w/e-VAR
'I handled it (wooden object, empty container).' (e.g. chunk of wood, empty box)

b. X̱wasitaan. *$^{2}\sqrt{}$tan with s-*
wu-x̱- s- i- $^{2}\sqrt{}$tan -μ
PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$hdl·w/e-VAR
'I handled it (wooden/empty, long).' (e.g. broom, empty rifle case)

c. Kax̱waataan. *$^{2}\sqrt{}$tan with k-*
k- wu-x̱- i- $^{2}\sqrt{}$tan -μ
SRO-PFV-1SG·S- STV-$^{2}\sqrt{}$hdl·w/e-VAR
'I handled it (wooden/empty, round).' (e.g. wooden ball)

d. Kax̱wsitaan. *$^{2}\sqrt{}$tan with k- and s-*
k- wu-x̱- s- i- $^{2}\sqrt{}$tan -μ
SRO-PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$hdl·w/e-VAR
'I handled it (wooden/empty, long, round).' (e.g. pencil, test tube)

The qualificational *v* is extremely common in Tlingit because it is central to verbs of handling, and these are used extensively in conversation with other people for describing the manipulation of the immediate environment. Language learners encounter qualificational *v* as part of the imperative mood used together with handling verbs to make commands. The pair of imperatives in (122) illustrate how the root $^{2}\sqrt{}$*tan* 'handle wooden/empty' is used without overt *v* for manipulation of an empty container. This contrasts with the pair in (123) where the overt *s-* in *v* is added for manipulation of a long object.

(122) a. Wé gúx'aa ax̱ jeet tán! *unqualified $^{2}\sqrt{}$tan*
wé gúx'aa ax̱ jee -t $^{1}\sqrt{}$tan -H
[DP MDST cup] [PP 1SG·PSS pos'n-PNCT] $^{1}\sqrt{}$hdl·w/e-VAR
'Gimme that cup!'

b. # Wé gúx'aa ax̱ jeet satán! *#$^{2}\sqrt{}$tan with* s-
wé gúx'aa ax̱ jee -t s- $^{1}\sqrt{}$tan -H
[DP MDST cup] [PP 1SG·PSS pos'n-PNCT] XTN-$^{1}\sqrt{}$hdl·w/e-VAR
intended: 'Gimme that cup!'

(123) a. # Wé óonaa ax̱ jeet tán! *#unqualified $^{2}\sqrt{}$tan*
wé óonaa ax̱ jee -t $^{1}\sqrt{}$tan -H
[DP MDST rifle] [PP 1SG·PSS pos'n-PNCT] $^{1}\sqrt{}$hdl·w/e-VAR
intended: 'Gimme that rifle!'

b. Wé óonaa ax̱ jeet satán! *$^{2}\sqrt{}$tan with* s-
wé óonaa ax̱ jee -t s- $^{1}\sqrt{}$tan-H
[DP MDST rifle] [PP 1SG·PSS pos'n-PNCT] XTN-$^{1}\sqrt{}$hdl·w/e-VAR
'Gimme that rifle!'

Given the evidence above, the semantic contribution of qualificational *v* must be something like $\mathsf{long}(x_e)$ where x_e is the variable matching the first argument merged in VP, and thus the object. No extensive testing of the qualificational *v* has ever been attempted, so it is not clear what pragmatic or discourse-sensitive constraints might exist on the interpretation of $\mathsf{long}(x_e)$. It seems likely that

	Verb without s-/l-		*Verb with s-/l-*					
v	*(Im)perfective*	*Translation*	*(Im)perfective*	*Translation*	*Root*	*Gloss*	*Event.*	*Conj.*
	a.óow	s/he buys it	*as.óow*	s/he buys it (large)	$\sqrt[2]{.u(w)}$	buy	act. (-μH)	*Ø/n*
	aawagéex'	s/he threw it	*awsigéex'*	s/he threw it (long)	$\sqrt[2]{gix'}$	throw	motion	–
	ahóon	s/he sells it	*as.hóon*	s/he sells it (large)	$\sqrt[2]{hun}$	sell	act. (-μH)	*n*
	aawataan	s/he handled it	*awsitaan*	s/he handled it (long)	$\sqrt[2]{tan}$	handle w/e	motion	–
s-	*aawatáw*	s/he stole it	*awsitáw*	s/he stole it (long)	$\sqrt[2]{ta'w}$	steal	achiev.	*Ø*
	aawatee	s/he handled it	*awsitee*	s/he handled it (long)	$\sqrt[2]{ti}$	handle gen.	motion	–
	aawat'ee	s/he found it	*awsit'ee*	s/he found it (large)	$\sqrt[2]{t'i^h}$	find	achiev.	*g*
	ax'áa	s/he twists it	*asx'áa*	s/he twists it (branch)	$\sqrt[2]{x'a}$	twist	act. (-μH)	*Ø*
	axá	s/he eats it	*asxá*	s/he eats it (meat)	$\sqrt[2]{xa}$	eat	act. (-H)	*Ø*
	ach'éen	s/he ties it (hair)	*alch'éen*	s/he ties it (rope)	$\sqrt[2]{ch'i'n}$	tie	act. (-μH)	*Ø*
	yadál	it is heavy	*lidál*	it (live) is heavy	$\sqrt[1]{dal}$	heavy	state (-H)	*g*
	ahées'	s/he borrows it	*alhées'*	s/he borrows it (large)	$\sqrt[2]{his'}$	borrow	act. (-μH)	*n/g*
	aawal'éex'	s/he broke it	*awlil'éex'*	s/he broke it (long)	$\sqrt[2]{l'ix'}$	break	achiev.	*n*
	yéi koosáa	it is so narrow	*yéi kwlisáa*	it (long) is so narrow	$\sqrt[1]{sa^h}$	narrow	state (-μH)	*g*
	as'éil'	s/he rips it	*als'éil'*	s/he pulls them (roots)	$\sqrt[2]{s'el'}$	tear	act. (-μH)	*Ø/n*
	as'óo	s/he limbers it	*als'óo*	s/he preps them (withe)	$\sqrt[2]{s'u}$	twist	act. (-μH)	*Ø*
	as'óow	s/he chops it	*als'óow*	s/he chops it (tree)	$\sqrt[2]{s'u'w}$	chop	act. (-μH)	*Ø/n*
l^s-	*áx wooshoo*	it extended there	*áx wulishoo*	it (long) extended there	$\sqrt[1]{shu^h}$	extend	motion	–
	ashóoch	s/he bathes it	*alshóoch*	s/he bathes it (foot)	$\sqrt[2]{shuch}$	bathe	act. (-μH)	*Ø*
	yéi kootláa	it is so stout	*yéi kwlitláa*	it (long) is so stout	$\sqrt[1]{tla^h}$	stout	state (-μH)	*g*
	aawawál'	s/he broke it	*awliwál'*	s/he broke it (long)	$\sqrt[2]{wal'}$	break	achiev.	*Ø*
	axáash	s/he cut it	*alxáash*	s/he cut it (long)	$\sqrt[2]{xash}$	cut	act. (-μH)	*n*
	ax'áas'	s/he slices it	*alx'áas'*	s/he slices it (long)	$\sqrt[2]{x'as'}$	slice	act. (-μH)	*Ø/g*
	aawaxaach	s/he towed it	*awlixaach*	s/he towed it (rope)	$\sqrt[2]{xach}$	tow	motion	–
	aawaxeech	s/he threw it	*awlixeech*	s/he threw it (long)	$\sqrt[2]{xich}$	throw	motion	–
	aawaxóot'	s/he dragged it	*awlixóot'*	s/he dragged it (rope)	$\sqrt[2]{xut'}$	drag	motion	–
	át áa	it sits there	*át la.áa*	it (bldg) sits there	$\sqrt[1]{.a}$	sg. sit	pos. (-μH)	–
	yagéi	it is big	*ligéi*	it (long) is big	$\sqrt[1]{ge}$	big	state (-μH)	*g*
l-	*yawóox'*	it is wide	*liwóox'*	it (long) is wide	$\sqrt[1]{wux'}$	wide	state (-μH)	*g*
	yayát'	it is long	*liyát'*	it (large) is long	$\sqrt[1]{ÿat'}$	long	state (-H)	*g*
	yayát'	it is long	*liyát'*	it (large) is long	$\sqrt[1]{ÿat'}$	long	state (-H)	*g*

Table 4.8: Some verbs with qualificational *s-*/*l-*

the referent of long(x_e) must be a concrete entity, although it is within the realm of possibility for an entity to be extended in a metaphorical space.

Qualificational *v* is well attested in the lexicon, but it has frequently been neglected because lexicographers have treated it as predictable. As such, there are many cases where for example the overt *v* is missing in e.g. Leer 1976a but present in e.g. Leer 1973a or Story & Naish 1973. Table 4.8 lists a variety of pairs of verbs that demonstrate the alternation between absent or covert *v* and overt qualificational *v*. These were selected by looking through Story & Naish 1973 for verbs with absent or covert *v* and corresponding verbs with overt *v* of the same transitivity along with a qualificational description like "long" or "large". A few of the descriptors are less than obvious: the 'meat' in *asx̲á* 's/he eats it (meat)' probably refers to strips of dried meat, and the 'roots' in *als'éil'* 's/he pulls them (roots)' describes specifically the tearing of long spruce roots out of the ground. There are both transitives and intransitives in table 4.8 showing that qualificational *v* is independent of argument structure. All four conjugation classes are attested along with all four eventuality classes so qualificational *v* is also independent of both conjugation class and eventuality class. Surprisingly all the verbs with *l-* (not l^s-) are all intransitive states and furthermore none of the verbs with *s-* are states, suggesting that there is a specific relationship between qualificational *l-* and stativity.

4.2. Extension: Restriction of eventualities

The EXTENSION function of overt *v* is shown by an alternation between a covert or absent *v* and an overt *s-* or *l-* where the overt value indicates that the eventuality denoted by the VP is extended along a path in space. This is semantically very similar to the qualification function discussed above in section 4.1. The substantive difference between them is that extension applies to the eventuality whereas qualification applies to an entity. With sufficient abstraction the two functions are semantically identical: long(e) essentially means 'the entity e is extended along some path in space' and extended(ε) likewise means 'the eventuality ε is extended along some path in space' so that long equals extended apart from the type of the argument.

Extensional *v* is shown by the following imperfective states based on the root $\sqrt[1]{satk}$ 'fast, quick'. The data in (124) give the baseline without overt *v* and the data in (125) show the introduction of overt extensional l^s-. Note that, like with qualificational *v*, there is no addition of an overt argument.

(124) a. Wé fan yasátk. *'fast' without extensional l-*
wé fan i- $\sqrt[1]{}$satk-H
[DP MDST fan] STV-$\sqrt[1]{}$fast -VAR
'That fan is fast.' (spinning blades)

b. Wé car yasátk.
wé car i- $\sqrt[1]{}$satk-H
[DP MDST car] STV-$\sqrt[1]{}$fast -VAR
'That car is fast.' (sitting in parking lot)

(125) a. # Wé fan lisátk. *'fast' with extensional l^s-*
wé fan l^s- i- $\sqrt[1]{}$satk-H
[DP MDST fan] XTN-STV-$\sqrt[1]{}$fast -VAR
intended: 'That fan is fast.' (moving along a path)

b. Wé car lisátk.
wé car l^s- i- $^1\sqrt{}$satk-H
[$_{DP}$ MDST car] XTN-STV-$^1\sqrt{}$fast -VAR
'That car is fast.' (moving along road)

The meaning of 'fast, quick' in (124a) is interpreted as applying to the movement of the fan's blades, and in (124b) it is interpreted as applying to the potential movement of the unmoving car. Since the car can also move along a path it is acceptable in (125b) with the addition of l^s-. But fans do not normally change location in normal operation, so it is strange in (125a) to add the extensional l^s- because it entails that the fan can move along a path in space. Since the car can occur without l^s- in (124b), the addition of l^s- is not qualificational; vehicles do not normally require a long interpretation, and so the car can be predicated without length qualification.

Like the qualificational *v*, the extensional *v* is compatible with bivalent roots as well as monovalent roots. The pair in (126) demonstrate the absence and presence of extensional l^s- with the bivalent root $^2\sqrt{}$*l'a*^{h} 'suck'.

(126) a. Wé linúkdzi át x̲waal'áa. *'suck' with covert v*
wé l^s- i- $^1\sqrt{}$nukts-H -i át wu-x̲- i- $^2\sqrt{}$l'a^h -μH
MDST [$_{CP}$ INTR-STV-$^0\sqrt{}$sweet -VAR-REL] thing PFV-1SG·S- STV-$^2\sqrt{}$suck-VAR
'I sucked the candy.'

b. Wé linúkdzi héen x̲walil'áa. *'suck' with extensional l^s-*
wé l^s- i- $^1\sqrt{}$nukts-H -i héen wu-x̲- l^s- i- $^2\sqrt{}$l'a^h -μH
MDST [$_{CP}$ INTR-STV-$^0\sqrt{}$sweet -VAR-REL] water PFV-1SG·S-XTN-STV-$^2\sqrt{}$suck-VAR
'I sucked the soda pop (through a straw).'

The extensional l^s- in (126b) cannot be construed as qualificational: soda pop, like other fluids, is not normally qualified as long. The addition of extensional l^s- entails that the event of sucking is extended along a path in space, thus implying the presence of an instrument like a straw. This suggests the possibility of a covert argument for the instrument, and I return to this in section 5.

The manuscript of verb forms compiled by Leer (1976a) includes interpretive annotations by *K'óox* Johnny Marks. I note one such annotation that reflects the extensional *v* contrast with the root $^2\sqrt{}$*.ut'* 'tweeze, remove splinter'. The pair in (127) are given with my translation followed by Leer's translation and Marks's annotation. Marks's comment "in a particular area" I believe reflects his sense of the difference between the unmarked form in (127a) and the extensional in (127b).[17]

(127) a. Aawa.út. *'tweeze' with covert v*
a- wu- i- $^2\sqrt{}$.u't -H
ARG-PFV- STV-$^2\sqrt{}$tweeze-VAR
'S/he removed it (splinter).'
Leer: "removed splinter, etc. with needle"
Marks: "to squeeze outward, as one would with a splinter" (Leer 1976a: 154–155)

17. Marks also draws a connection to the nearly homophonous root $^2\sqrt{}$*.ut'* 'grasp by suction (e.g. octopus)', saying "as an octopus would place its suckers on a person – suction is involved" (Leer 1976a: 154–155).

b. Awli.út. *'tweeze' with extensional l-*
a- wu-l- i- $\sqrt[2]{}$.u't -H
ARG-PFV-XTN-STV-$\sqrt[2]{}$tweeze-VAR
'S/he squeezed it (splinter) out.'
Leer: (no translation)
Marks: "process of doing above, in a particular area – squeeze" (Leer 1976a: 154–155)

The syntax and semantics of extensional *v* is almost entirely unexplored. It seems likely that it developed from qualificational *v*, with the long(x_e) function of concrete entities having been generalized to abstract events and states. This presumably reflects the fact that the qualificational and extensional appear to be more or less syntactically identical, and a model of one should generalize to the other. But unlike the qualificational *v* which is generally found in alternation with covert or absent *v*, the extensional *v* often appears to be lexicalized. In such cases a verb root appears obligatorily with *s-* or *l-* without an added argument and with a meaning that involves extension of the eventuality along a path in space. A representative selection of lexicalized extensional *v* is given in table 4.9.

Some of the verbs in table 4.9 seem to have alternate forms without overt *v* so that the extensional *v* is more or less regular, although it is prima facie impossible to predict whether a particular root will support an extensional *v*. Other verbs in table 4.9 are only documented with the overt *v* and the extensional semantics is posited on the basis of the documented meaning of the verb. Many of the verbs in table 4.9 are motion verbs which are conceptually compatible with an extensional meaning, but this raises a heretofore unasked question: why don't all motion verbs have extensional *v*?

4.3. Pejoratives: Restriction of evaluations

The PEJORATIVE function of overt *v* indicates a negative evaluation (disapproval, dislike, etc.) of the eventuality denoted by the verb. The pejorative occurs only with the *sh-* value in *v* and never with *s-* or *l-*. The semantics of pejoration with *sh-* is discussed by Cable (2017b) specifically in the context of negative predicates and antonymy, but pejorative *sh-* is also found without negation. I do not have an analysis of pejorative *sh-*; I present some data beyond Cable's material to illustrate this phenomenon and suggest that it may be compatible with the more general idea of adding a covert argument, but further work is needed to actually demonstrate this hypothesis. Complicating the issue is that not all instances of *sh-* are actually pejorative (see sec. 6.2), although most documented occurrences of *sh-* do seem to support a pejorative analysis. The semantic contribution of non-pejorative *sh-* is still unknown.

The pejorative *sh-* unpredictably appears in *v* for some negative antonyms when a lexical state is negated. The canonical example is with the root $\sqrt[1]{}$*k'e* 'good' as illustrated by the data in (128) and (129). The affirmative imperfective state in (128a) is ungrammatical if *sh-* is added to *v* as in (128b). The affirmative has a negative counterpart in (129a) without *sh-* that shows the usual effects of negation (see ch. 6 sec. 4.5.1). But the affirmative also has a negative antonym in (129b) with the appearance of *sh-* in *v* that is unpredictable. This otherwise unexpected *sh-* must somehow be lexically specified for this particular root because, as Cable (2017b) illustrates, it only happens with specific roots like $\sqrt[1]{}$*k'e* 'good', $\sqrt[0]{}$*x̱itl* 'bless, lucky', and $\sqrt[1]{}$*nik'* 'tidy; fastidious' and not with others like $\sqrt[1]{}$*li*^{h} 'far, distant', $\sqrt[1]{}$*hel'-k* 'strong, hale', and $\sqrt[1]{}$*t'a*^{h} 'hot'.

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	awsihaat	's/he carried it (heavy)'	+	+	$\sqrt[2]{hat}$	'lug'	motion	–
	sikaak	'it is thick'	+	–	$\sqrt[1]{kak}$	'thick'	state (-μ)	*n/g*
s-	*awsikóo*	's/he came to know it'	+	+	$\sqrt[2]{ku^h}$	'know'	achievement	*∅*
	awsitáx'	's/he bit it'	+	+	$\sqrt[2]{tax'}$	'chew'	achievement	*∅*
	yasiyéik	's/he is very fast'	+	–	$\sqrt[1]{yek}$	'animate'	state (-μH)	*g*
	kawlidláa	'it (sediment) settled'	+	–	$\sqrt[1]{dla^h}$	'settle'	achievement	*∅*
	yakawli.eis	's/he staggered around'	+	–	$\sqrt[1]{.es}$	'stagger'	motion	–
	awligúts	's/he squeezed it out'	+	+	$\sqrt[2]{guts}$	'mash'	achievement	*∅*
	wulihaash	'it floated'	+	–	$\sqrt[1]{hash}$	'float'	motion	–
	awlijéek'	's/he piggybacked it'	+	+	$\sqrt[2]{jik'}$	'piggyback'	motion	–
	awlijóox'	's/he cast it'	+	+	$\sqrt[2]{jux'}$	'sling'	motion	–
	awlik'étl'	's/he cut it open'	+	+	$\sqrt[2]{k'etl'}$	'cut open'	achievement	*∅*
l^{s}-	*wuliláa*	'it melted'	+	–	$\sqrt[1]{la}$	'melt'	achievement	*∅*
	akawliléel'	's/he stripped it'	+	+	$\sqrt[2]{lil'}$	'slide along'	achievement	*n*
	akawlil'úx'	's/he drank it up'	+	+	$\sqrt[2]{l'ux'}$	'drink up'	achievement	*∅*
	alséen	's/he is hiding it'	+	+	$\sqrt[2]{sin}$	'hide'	activity (-μH)	*∅*
	wulis'ées	'it was blown'	+	–	$\sqrt[1]{s'i's}$	'blown'	motion	–
	altl'éet	's/he is throwing it away'	+	+	$\sqrt[2]{tl'it}$	'discard'	activity (-μH)	*n*
	litseen	's/he is strong'	+	–	$\sqrt[1]{tsin}$	'alive'	state (-μ)	*g*
	aklatsóow	's/he is planting it'	+	+	$\sqrt[2]{tsu'w}$	'poke'	activity (-μH)	*∅*
	li.oos	's/he is playful, hyperactive'	+	–	$\sqrt[1]{.us}$	'lively'	state (-μ)	*g*
	alhóon	's/he goes around selling it'	+	+	$\sqrt[2]{hun}$	'sell'	activity (-μH)	*n*
	alkáa	's/he gambles'	+	+	$\sqrt[2]{ka}$	'gamble'	activity (-μH)	*∅*
l-	*awlinaa*	's/he carried them (bundles)	+	+	$\sqrt[2]{na}$	'hdl bundle'	motion	–
	awli.óon	's/he fired it'	+	+	$\sqrt[2]{.u'n}$	'shoot'	achievement	*∅*
	al.óox	's/he blows on it'	+	+	$\sqrt[2]{.u'x}$	'blow'	activity (-μH)	*n/g*
	liyék	'it is roomy'	+	–	$\sqrt[1]{yek}$	'roomy'	state (-H)	*g*
	yakawliyeik	's/he reeled'	+	–	$\sqrt[1]{yek}$	'reel'	motion	–

Table 4.9: Some verbs with an extensional *s-* or *l-*

(128) a. Yak'éi. *affirmative without pejorative sh-*
i- $^{1}\sqrt{}$k'e -μH
STV-$^{1}\sqrt{}$good-VAR
'It is good.'

b. *Shik'éi. **affirmative with pejorative sh-*
sh- i- $^{1}\sqrt{}$k'e -μH
PEJ-STV-$^{1}\sqrt{}$good-VAR
intended: 'It is bad.'

(129) a. Tléil uk'é. *negative without pejorative sh-*
tléil u- $^{1}\sqrt{}$k'e -H
NEG IRR-STV-$^{1}\sqrt{}$good-VAR
'It is not good.'

b. Tléil ushk'é. *negative with pejorative sh-*
tléil u- sh- $^{1}\sqrt{}$k'e -H
NEG IRR-PEJ-STV-$^{1}\sqrt{}$good-VAR
'It is bad.'

Cable (2017b) goes into extensive detail about the behaviour of *sh-* under negation as exemplified by the patterns in (128) and (129). But he does not address the many instances of *sh-* that appear to be lexically specified without negation. This non-negative pejorative *sh-* is more subtle since it is not always contrastive with other *v* values, and it can only be discovered by careful combing of the lexicon. Nonetheless, the relative frequency of non-negative pejorative *sh-* suggests that there is a unified semantics of pejorative *sh-* in *v* that should be supported by the syntax.

Four typical examples of non-negative pejorative *sh-* are given in (130)–(133), each example illustrating a different verb that is well documented with an unexplained *sh-* value in *v*. The verb in (130) is a transitive achievement, the verb in (131) is an intransitive achievement, the verb in (132) is a transitive state, and the verb in (133) is an intransitive state. Other than a lack of activities – which could plausibly be accidental or due to a sampling bias – there does not seem to be any association between either valency or aspect with non-negative *sh-*.

(130) a. Iwtushikín. *transitive achievement with pejorative sh-*
i- wu-tu- sh- i- $^{2}\sqrt{}$kin -H
2SG·O-PFV-1PL·S-PEJ-STV-$^{2}\sqrt{}$bother-VAR
'We bothered you (sg.).'

b. *Iwtusikín. **with s-*
i- wu-tu- s- i- $^{2}\sqrt{}$kin -H
2SG·O-PFV-1PL·S-??- STV-$^{2}\sqrt{}$bother-VAR
intended: 'We bothered you (sg.).'

c. *Iwtulikín. **with l-*
i- wu-tu- l- i- $^{2}\sqrt{}$kin -H
2SG·O-PFV-1PL·S-??- STV-$^{2}\sqrt{}$bother-VAR
intended: 'We bothered you (sg.).'

d. *Iwtuwakín. **with Ø*
i- wu-tu- i- $^{2}\sqrt{}$kin -H
2SG·O-PFV-1PL·S- STV-$^{2}\sqrt{}$bother-VAR
intended: 'We bothered you (sg.).'

(131) a. Wushixíl'. *intransitive achievement with pejorative sh-*
wu-sh- i- $^{1}\sqrt{}$xil' -H
PFV-PEJ-STV-$^{1}\sqrt{}$slime-VAR
'It got slimy.'

b. *Wusixíl'. **with s-*
wu-s- i- $^{1}\sqrt{}$xil' -H
PFV-??- STV-$^{1}\sqrt{}$slime-VAR
intended: 'It got slimy.'

c. *Wulixíl'. **with l-*
wu-l- i- $^{1}\sqrt{}$xil' -H
PFV-??- STV-$^{1}\sqrt{}$slime-VAR
intended: 'It got slimy.'

d. *Uwaxíl'. **no v*
u- i- $^{1}\sqrt{}$xil' -H
ZPFV- STV-$^{1}\sqrt{}$slime-VAR
intended: 'It got slimy.'

(132) a. Xat ishik'áan. *transitive state with pejorative sh-*
xat= i- sh- i- $^{2}\sqrt{}$k'an-μH
1SG·O=2SG·S-PEJ-STV-$^{2}\sqrt{}$hate -VAR
'You (sg.) hate me.'

b. *Xat isik'áan. **with s-*
xat= i- s- i- $^{2}\sqrt{}$k'an-μH
1SG·O=2SG·S-??- STV-$^{2}\sqrt{}$hate -VAR
intended: 'You (sg.) hate me.'

c. *Xat ilik'áan. **with l-*
xat= i- l- i- $^{2}\sqrt{}$k'an-μH
1SG·O=2SG·S-??- STV-$^{2}\sqrt{}$hate -VAR
intended: 'You (sg.) hate me.'

d. *Xat iyak'áan. **with Ø*
xat= i- i- $^{2}\sqrt{}$k'an-μH
1SG·O=2SG·S- STV-$^{2}\sqrt{}$hate -VAR
intended: 'You (sg.) hate me.'

(133) a. Ishigeik. *intransitive state with pejorative sh-*
i- sh- i- $^{1}\sqrt{}$gek -μ
2SG·O-PEJ-STV-$^{1}\sqrt{}$stingy-VAR
'You (sg.) are stingy, cheap.'

b. * Isigeik. **with s-*
i- s- i- $^{1}\sqrt{}$gek -μ
2SG·O-??- STV-$^{1}\sqrt{}$stingy-VAR
intended: 'You (sg.) are stingy, cheap.'

c. * Iligeik. **with l-*
i- l- i- $^{1}\sqrt{}$gek -μ
2SG·O-??- STV-$^{1}\sqrt{}$stingy-VAR
intended: 'You (sg.) are stingy, cheap.'

d. * Iyageik. **no v*
i- i- $^{1}\sqrt{}$gek -μ
2SG·O- STV-$^{1}\sqrt{}$stingy-VAR
intended: 'You (sg.) are stingy, cheap.'

In each case in (130)–(133) there is no counterpart form without *sh-*, whether *v* has *s-* or *l-* or is just empty. This is not always true, however: the data in (134) illustrate a root that can occur with or without pejorative *sh-*. This particular example is one of the very few attested transitive activities with *sh-*.

(134) a. X'úx' kaxshaxeet. *transitive activity with pejorative sh-*
x'úx' k- x- sh- $^{2}\sqrt{}$xit -μ
book HSFC-1SG·S-PEJ- $^{2}\sqrt{}$mv·end-VAR
'I am writing a book.'

b. X'úx' kaxsaxeet. *with s-*
x'úx' k- x- s- $^{2}\sqrt{}$xit -μ
book HSFC-1SG·S-XTN-$^{2}\sqrt{}$mv·end-VAR
'I am scratching a book.'

c. X'úx' kaxlaxeet. *with l-*
x'úx' k- x- l- $^{2}\sqrt{}$xit -μ
book HSFC-1SG·S-XTN-$^{2}\sqrt{}$mv·end-VAR
'I am pushing, poking a book (with stick, through space?).'

d. X'úx' kaxaxeet. *with Ø*
x'úx' k- x- $^{2}\sqrt{}$xit -μ
book HSFC-1SG·S- $^{2}\sqrt{}$mv·end-VAR
'I am pushing, poking a book (with stick).'

The pattern in (134) is one of a few cases where a single root can occur with multiple overt *v* values; see section 6.1 for further discussion. The meaning 'write, paint, cover surface with markings' with *sh-* in (134a) was probably originally pejorative in contrast with the meaning 'scratch, groove,

furrow' with *s-* in (134b), with both cases achieved by the manipulation of a long thin object (stick, pole, brush, pencil, etc.) as befits the basic meaning encoded by the root $\sqrt[2]{xit}$ 'move end of long thing'. It may be that the pejorative *sh-* was associated with permanent disfiguring of the object in contrast with *s-*, or perhaps that *sh-* was associated with unintentionally or mistakenly scratching a surface. The contrast between the (134d) and (134c) forms without and with *l-* is probably spatial extension of the eventuality (sec. 4.2), but the form without overt *v* can also be used to describe furrowing or plowing (Leer 1973a: f03/62) so the details of this entire set of *v* alternations are still unclear.

The pejorative *sh-* must be distinguished from the pejorative use of the irrealis *u-* that is discussed in chapter 6 section 4.2. The lexical pejorative *sh-* and lexical pejorative *u-* are independent because they only rarely cooccur. The lack of *u-* and *sh-* together in lexical entries could suggest that they are in complementary distribution, but this is not actually the case since there are a couple of verbs that contain both pejorative *u-* and pejorative *sh-* at the same time and without negation. The verb in (135) describes having a habit, typically a bad habit which is hence pejorative.

(135) Ḵaa yat'éi yoo x̱'atánk akwshitán.
ḵaa ÿá- t'éi^{k} -μ yoo=x̱'e- $\sqrt[2]{}$tan -H -k a- k- u- sh- i- $\sqrt[2]{}$tan -H
[CP 4H·PSS face-behind-LOC ALT= mouth-$\sqrt[2]{}$hdl·w/e-VAR-REP] ARG-QUAL-IRR-PEJ-STV-$\sqrt[2]{}$hdl·w/e-VAR
'She has the (bad) habit of talking behind people's backs.' (Eggleston 2017)

For reference I have included an extensive list of verbs in table 4.10 that are lexically specified with *sh-* where the interpretation seems to be pejorative. This list is based on Leer's manuscript of verbs with *sh-* (Leer 1978a), cross-checked and expanded with other lexical documentation (Story & Naish 1973; Leer 1973a, 1976a; Eggleston 2017). Of note is the near but not total absence of activity verbs as mentioned above. But states and achievements are well represented along with one motion verb, implying that pejorative *sh-* is not tied to eventuality class. All of the conjugation classes are represented so that conjugation class is probably also irrelevant for pejorative *sh-*; the preponderance of *∅*-conjugation class verbs is presumably because it is the elsewhere case (ch. 6 sec. 3.4.4).

5. Stacking of *v*P

As sketched earlier in section 2.2.1, a verb form can only have one realization of *v* in the set {*s-*, *l-*, *sh-*}. This is verified below in (136) and (137) with the monovalent root $\sqrt[1]{.i}$ 'cook'. First in (136) the basis case is an unaccusative intransitive and is causativized with the addition of *s-*. Then the data in (137) shows that the causative of (136b) cannot be further applicativized with the addition of any one of *s-*, *l-*, or *sh-*.

(136) a. Wé k'únts' uwa.ée. *unaccusative intransitive*
[wé k'^{w}únts' ʔù.wà.ˈʔí:]
wé k'únts' u- i- $\sqrt[1]{}$.i -μH
MDST potato ZPFV-STV-$\sqrt[1]{}$cook-VAR
'The potato(es) got cooked.'

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	kawshidúk	'it (snow) got slushy'	+	–	$\overset{1}{\sqrt{}}$*duk*	'slush'	achievement	*Ø*
	wushidlúk	'it got gooey'	+	–	$\overset{0}{\sqrt{}}$*dluk*	'goo'	achievement	*Ø*
	wakshigáal'	's/he has a cataract'	+	–	$\overset{0}{\sqrt{}}$*gal'*	'clam'	state (-*μH*)	*g?*
	akawshigúl'	's/he winked'	–	+	$\overset{1}{\sqrt{}}$*gul'*	'one-eye'	achievement	*Ø*
	wakshigóol'	's/he is one-eyed'	+	–	$\overset{1}{\sqrt{}}$*gul'*	'one-eye'	state (-*μH*)	*g*
	yaa ashigéi	's/he is stingy with it'	+	+	$\overset{2}{\sqrt{}}$*ge*	'stingy'	state (-*μH*)	*g*
	shigeik	's/he is stingy, cheap'	+	–	$\overset{1}{\sqrt{}}$*gik*	'stingy'	state (-*μ*)	*g*
	wushigíl'	'it (cloth) got stiff'	+	–	$\overset{1}{\sqrt{}}$*gil'*	'stiff'	achievement	*Ø*
	akawshigín	's/he wrinkled, crumpled it'	+	+	$\overset{2}{\sqrt{}}$*gi'n*	'crumple'	achievement	*Ø*
	awshikín	's/he bothered him/her'	+	+	$\overset{1}{\sqrt{}}$*ki'n*	'bother'	achievement	*Ø*
	shikéenaa	's/he is nosy'	+	–	$\overset{1}{\sqrt{}}$*ki'n*	'bother'	state (-*μH*)	*g*
sh-	*awshikél'*	's/he made ashes of it'	+	+	$\overset{1}{\sqrt{}}$*kel'*	'ash'	achievement	*Ø*
	ashik'áan	's/he hates him/her/it'	+	+	$\overset{2}{\sqrt{}}$*k'an*	'hate'	state (-*μH*)	*g*
	kawshik'úx'	'it got gummy'	+	–	$\overset{1}{\sqrt{}}$*k'ux'*	'pitch'	achievement	*Ø*
	tóo ashikeet	's/he is annoyed by him/her'	+	+	$\overset{2}{\sqrt{}}$*kit*	'suspect'	state (-*μH*)	*g*
	kawshikútl'	'it got muddy'	+	–	$\overset{1}{\sqrt{}}$*kutl'*	'mud'	achievement	*Ø*
	akawshiník'	's/he turned up nose at it'	+	+	$\overset{2}{\sqrt{}}$*nik'*	'fussy'	achievement	*Ø*
	wushinék	'it (snow) got slushy'	+	–	$\overset{1}{\sqrt{}}$*ne'k*	'slush'	achievement	*Ø*
	wushitít'	's/he tensed up'	–	+	$\overset{1}{\sqrt{}}$*tit'*	'tense'	achievement	*Ø*
	awshitúk	's/he exploded it'	+	+	$\overset{1}{\sqrt{}}$*tu'k*	'explode'	achievement	*Ø*
	akawshit'áx'	's/he popped, burst it'	+	+	$\overset{2}{\sqrt{}}$*t'ax'*	'pop'	achievement	*Ø*
	akshaxeet	's/he writes it'	+	+	$\overset{2}{\sqrt{}}$*xit*	'scratch'	activity (-*μ*)	*Ø*
	wushix'éel'	's/he slipped'	–	+	$\overset{1}{\sqrt{}}$*x'il'*	'slip'	achievement	*g*
	ayawshiyék	's/he beat it (drum) too fast'	+	+	$\overset{2}{\sqrt{}}$*yek*	'spirit'	achievement	*Ø*
	yawji.aak	's/he staggered'	–	+	$\sqrt{}$*.a'k*	'stagger'	motion	–
	kawjigít	'it (place) got dark'	+	–	$\sqrt{}$*git*	'dark'	achievement	*Ø*
	sh tukjihée	's/he is evil-minded'	+	+	$\overset{2}{\sqrt{}}$*hi*	'evil'	state (-*μH*)	*g*
d-sh-	*wujitoox*	'it (insect) hopped'	–	+	$\overset{0}{\sqrt{}}$*tux*	'bug'	motion	–
	awjit'ákw	'it slapped tail'	–	+	$\overset{1}{\sqrt{}}$*t'akw*	'slap'	achievement	*Ø*
	wujixén	'it (salmon) got necrotic'	+	–	$\overset{1}{\sqrt{}}$*xen*	'scab'	achievement	*Ø*
	kakashxá	's/he eats berries off bush'	–	+	$\overset{2}{\sqrt{}}$*xa*	'eat'	activity (-*H*)	*Ø*
	yáni awjixákw	'it (octopus) clung on'	–	+	$\overset{0}{\sqrt{}}$*xakw*	'claw'	achievement	*Ø*

Table 4.10: Some verbs with a lexicalized pejorative *sh-*

b. Wé k'únts' wutusi.ée. *causative with s-*
[wé k'ʷúnts' wù.tʰù.sì.ˈʔíː]
wé k'únts' wu-tu- s- i- $^{1}\sqrt{}$.i -μH
MDST potato PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
'We cooked the potato(es).'

(137) a. *Wé k'únts' x̱'aanch wutussi.ée. **applicative s- + causative s-*
[wé k'ʷúnts' χ'àːntʃ wù.tʰùs.sì.ˈʔíː]
wé k'únts' x̱'aan-ch wu-tu- s- s- i- $^{1}\sqrt{}$.i -μH
MDST potato [PP fire -INSTR] PFV-1PL·S-APPL-CSV-$^{1}\sqrt{}$cook-μH
'We cooked the potato(es) with fire.'

b. *Wé k'únts' x̱'aanch wutulsi.ée. **applicative l- + causative s-*
[wé k'ʷúnts' χ'àːntʃ wù.tʰùɬ.sì.ˈʔíː]
wé k'únts' x̱'aan-ch wu-tu- l- s- i- $^{1}\sqrt{}$.i -μH
MDST potato [PP fire -INSTR] PFV-1PL·S-APPL-CSV-$^{1}\sqrt{}$cook-μH
'We cooked the potato(es) with fire.'

c. *Wé k'únts' x̱'aanch wutushsi.ée. **applicative sh- + causative s-*
[wé k'ʷúnts' χ'àːntʃ wù.tʰùʃ.sì.ˈʔíː]
wé k'únts' x̱'aan-ch wu-tu- sh- s- i- $^{1}\sqrt{}$.i -μH
MDST potato [PP fire -INSTR] PFV-1PL·S-APPL-CSV-$^{1}\sqrt{}$cook-μH
'We cooked the potato(es) with fire.'

All of the forms in (137) are phonologically plausible in that they do not violate any general phonotactic constraints in Tlingit. The causative *v* value is realized as an onset consonant and the higher applicative *v* value as a coda consonant in the preceding syllable. There are no complex onsets or codas, and all consonants are parsed into syllables. If there is any phonological prohibition on forms like those in (137), it must be uniquely specific to the phonological domain containing *v*.

A phonological constraint that prohibits the spellout of multiple *v* exponents is plausible given that there seem to be many other constraints that are unique to phonological domains in the verb word (cf. Story 1966: 109–141; Leer 1991: 160–202; Cable 2006; Crippen & Déchaine 2016) ⟦FIXME: add Elfner paper⟧. In particular, the Classifier domain contains the spellout of all phonological material in the Voice, *v*, and Ɛ heads. This domain seems to have a constraint against polysyllabicity given its attested forms. The surface forms of all possible combinations of Voice, *v* and Ɛ are shown in table 4.11. The usual realization of the Classifier domain is a single syllable as in columns (i), (ii), and (ii) of table 4.11, as well as the one form [tà] in row (a) of column (iv). The three exceptional forms in rows (b), (c), and (d) of column (iv) are fricatives realized in the coda of a preceding syllable of the Conjunct domain (see ch. 5 sec. 2.1.4). Notably there are no cases where any phonological material is spread across a syllable boundary.

If there is in fact a constraint against the polysyllabic realization of material in the Classifier domain then this could account for the impossibility of forms like those in (137) where multiple *v* values occur. But a phonological account only rules out the surface appearance of *v* material and does not exclude the possibility of multiple *v* instances where only one *v* has a surface realization.

		no Ɛ	Ɛ = /i/		no Ɛ
		no Voice		Voice = /t/	
a.	no *v*		[jà]	[tì]	[tà]
b.	*v* = /s/	[sà]	[sì]	[tsì]	[Vs]
c.	*v* = /ɬ/	[ɬà]	[ɬì]	[tɬì]	[Vɬ]
d.	*v* = /ʃ/	[ʃà]	[ʃì]	[tʃì]	[Vʃ]
		i.	ii.	iii.	iv.

Table 4.11: Realizations of Voice, *v*, and Ɛ in the Classifier domain

To wit, the model allows for the possibility of multiple *v* heads as long as only one *v* is pronounced. This raises the question: two *v* or not two *v*?

There are four logical possibilities for structures with two *v* heads which are shown in (138). The first possibility in (138a) is where both *v* heads are nonempty, containing phonological material to be spelled out. Only one of the two nonempty heads can be spelled out however, so the other must be deleted. I address this possibility in section 5.1. The second possibility in (138b) is where the lower v_1 head is present but empty as in a transitive built on a bivalent root (sec. 2.2.2), and only the higher v_2 head contains phonological material to be spelled out. I address this possibility in section 5.2. The third possibility in (138c) is where the lower v_1 head has phonological content but the higher v_2 head does not, so again only one head need be realized. I address this possibility in section 5.3. The last possibility in (138d) is where both *v* heads are empty and so there is no material for spellout. I address this possibility in section 5.4.

(138)

	v_2	>	v_1	output
a.	nonempty	+	nonempty	delete one ov v_1 or v_2
b.	nonempty	+	empty	realize v_2
c.	empty	+	nonempty	realize v_1
d.	empty	+	empty	no surface form

At least the deletion case of (138a) and the nonempty *v* + empty *v* case of (138b) have some empirical support from existing data in the lexical documentation as I detail in sections 5.1 and 5.2 respectively. The evidence for the other two is less clear and has yet to be empirically investigated. Nonetheless, if even one or two of the *v* stacking possibilities are correct then it is logically possible for there to be even more stacking of *v* beyond just two heads. Another possible consequence of the model is differing orders of *v* functions: there could be for example an applicative *v* applied to a monovalent root with a causative *v* applied after this. I have yet to explore any of these possibilities.

The structure I propose for multiple *v* heads is one where each *v* projects its own phrase. One such configuration is shown in figure 4.12 which represents the derivation up to AspP for the verb form in (141a) in section 5.1 on page 321. The v_1 head causativizes the monovalent root and introduces the subject D pronoun in vP_1. Then the v_2 head applicativizes the causative and introduces the applicative PP in vP_2. If left in situ the subject D pronoun would spell out to the right of v_2 which is impossible as shown earlier in section 2.2.1. This necessitates raising of the subject from vP_1 to vP_2;

Figure 4.12: Tree for stacked *v*Ps in the applicative of a causative in (141a)

this is more or less the same process as short distance subject raising required for VoiceP as detailed in chapter 5 section 2.2.2. The applicative PP is later raised to AspP after the object D^0 complex has been evacuated from VP as detailed in chapter 7 section 1.1. At spellout one of the two *v* heads must be deleted as I discuss further in section 5.1.

5.1. Deletion of overt *v*

Although verbs with two overt *v* prefixes are impossible, it is logically possible for only one of the two *v* prefixes to spell out. This requires either syntactic removal of the content of one *v* or phonological deletion of the same; I suggest phonological deletion. There is already justification for the phonological deletion of an element in the Classifier domain, namely the forms [Vs], [Vɬ], and [Vʃ] in table 4.11 column (iv) rows (b)–(d) where the /t/ of Voice disappears. This phenomenon is described in chapter 5 section 2.1.4. Basically there seems to be a prohibition on epenthesis for /t-F-/ so that it must appear in the coda of a preceding syllable. Then there is another constraint against affricates in the coda and the solution is to delete the /t/ of Voice so that only the fricative /F/ of *v* spells out. And if the output of Voice can be deleted then it is reasonable to assume that the output of *v* can also be deleted.

If it is possible for a verb to have multiple *v*Ps with one deleted then we should see patterns where there is no change in *v* but additional arguments still appear. First there should be a basic alternation between absent *v* and overt *v* where the latter has an added argument. Then there should be a second alternation between a form with overt *v* and another form with overt *v* and an extra argument. Such patterns do in fact occur.

One relatively well attested example involves the root $\sqrt[1]{}$*tl'it'* 'filled, full (of liquid)' (Story & Naish 1973: 298; Leer 1973a: 09/316–318, 1976a: 531; Edwards 2009: 263). This root must be monovalent given the unaccusative form in (139a) and the ungrammatical transitive form in (139b).[18] The causative in (139c) confirms that the root is monovalent. But the applicative in (139d) is unexpected: according to the analysis in section 3.3 the transitive with covert *v* in (139b) would be the predicted basis for the applicative but this transitive is ungrammatical.

(139) a. Wé gúx'aa shaawatl'ít'. *unaccusative intransitive*
wé gúx'aa sha- wu-i- $\sqrt[1]{}$tl'it' -H
MDST cup head-PFV-STV-$\sqrt[1]{}$full·liq-VAR
'That cup has gotten full.'

b. *Wé gúx'aa shaxwaatl'ít'. **transitive*
wé gúx'aa sha- wu-x- i- $\sqrt[1]{}$tl'it' -H
MDST cup head-PFV-1SG·S-STV-$\sqrt[1]{}$full·liq-VAR
intended: 'I filled that cup.'

c. Wé gúx'aa shaxwlitl'ít'. *causative with l^s-*
wé gúx'aa sha- wu-x- l^s- i- $\sqrt[1]{}$tl'it' -H
MDST cup head-PFV-1SG·S-CSV-STV-$\sqrt[1]{}$full·liq-VAR
'I filled that cup.'

18. Although the qualifier *sha-* /ʃa/ generally means 'head' since it comes from the inalienable noun *shá* /ʃá/ 'head', it does not actually refer to a literal body part in this context. Verbs of being filled regularly have *sha-* where it apparently indicates the upper limit of filling, i.e. the metaphoric 'head' of the container that the contents reach.

d. Wé gúx'aa káaxweich shaxwlitl'ít'. *applicative with l^s-*
wé gúx'aa káaxwei-ch sha- wu-x- l^s- i- $^1\sqrt{}$tl'it' -H
MDST cup [PP coffee -INSTR] head-PFV-1SG·S-APPL-STV-$^1\sqrt{}$full·liq-VAR
'I filled that cup with coffee.'

The example sentences in (140) are taken from Story & Naish (1973) and confirm the data in (139) above. The form in (140a) is a causative with an overt subject. The form in (140b) is an applicative with an overt object and an overt applicative PP; the subject is a covert second person singular because the form is imperative.

(140) a. Shagaxtulatl'éet'. *causative with l^s-*
sha- w- g- g- tu- l^s- $^1\sqrt{}$tl'it' -μH
head-IRR-GCNJ-MOD-1PL·S-CSV-$^1\sqrt{}$full·liq-VAR
'We will fill it.' (Story & Naish 1973: 89.1117)

b. Wé x'eesháa héench shalatl'ít'! *applicative with l^s-*
wé x'eesháa héen-ch sha- l^s- $^1\sqrt{}$tl'it' -H
MDST bucket [PP water-ERG] head-APPL-$^1\sqrt{}$full·liq-VAR
'Fill that bucket with water!' (Story & Naish 1973: 89.1115)

If instead the applicatives of (139d) and (140b) are derived from structures with causative l^s- then they must have the analyses shown in (141). There must be two l^s- prefixes in each underlying form, one for the causative operation that adds a subject to the intransitive and one for the applicative operation that adds a PP to the causative. Only one of the two l^s- prefixes can be present in the surface form, so the other must be deleted.

(141) a. Wé gúx'aa káaxweich shaxwlitl'ít'. *applicative causative with l^s-l^s-*
wé gúx'aa káaxwei-ch sha- wu-x- l^s- l^s- i- $^1\sqrt{}$tl'it' -H
MDST cup [PP coffee -INSTR] head-PFV-1SG·S-APPL-CSV-STV-$^1\sqrt{}$full·liq-VAR
'I filled that cup with coffee.'

b. Wé x'eesháa héench shalatl'ít'! *applicative causative with l^s-l^s-*
wé x'eesháa héen-ch sha- l^s- l^s- $^1\sqrt{}$tl'it' -H
MDST bucket [PP water-ERG] head-APPL-CSV-$^1\sqrt{}$full·liq-VAR
'Fill that bucket with water!' (Story & Naish 1973: 89.1115)

There are a few other roots that are documented with forms suggesting multiple *v* despite a single overt prefix. One such root is $^1\sqrt{}$*jakw* 'fit in a place, be proper'. This root is monovalent as shown by the intransitive in (142a), and it can be causativized as in (142b). There seem to be two different applicatives applied to the causative, one with *-t* in (142c) and another with *-ch* in (142d).

(142) a. Yan uwajákw. *unaccusative intransitive*
ÿán= u- i- $^1\sqrt{}$jakw-H
TERM=ZPFV-STV-$^1\sqrt{}$fit -VAR
'It is fitting, proper.' (Story & Naish 1973: 92.1165)

b. Yan awlijákw *causative*
ÿán= a- wu-l^s- i- $^1\sqrt{}$jakw-H
TERM=ARG-PFV-CSV-STV-$^1\sqrt{}$fit -VAR
'S/he put it firmly in place.' (i.e. 'S/he made it fit.') (Leer 1973a: 10/130)

c. I yát xwalijákw. *-t applicative causative*
i ÿá -t wu-x- l^s- l^s- i- $\sqrt[1]{}$jakw-H
[PP 2SG·PSS face-PNCT] PFV-1SG·S-APPL-CSV-STV-$\sqrt[1]{}$fit -VAR
'I have applied it to you.' (i.e. 'I have made it fit to your face.') (Story & Naish 1973: 20.79)

d. Aadóoch sá i toowúch yan wulijákw? *-ch applicative causative*
aadóo-ch sá i tú -í -ch ÿán= wu-l^s- l^s- i- $\sqrt[1]{}$jakw-H
[PP who -INSTR] Q 2SG·PSS mind-PSS-ERG TERM=PFV-APPL-CSV-STV-$\sqrt[1]{}$fit -VAR
'Who do you think it would be best to be depending on?'
(i.e. 'Your mind makes it fit by whom?') (Story & Naish 1973: 169.2325)

Another logically possible combination of *v* heads is the creation of an intransitive from a nullivalent root and then a causative from the intransitive. This is documented at least for the root $\sqrt[1]{}$*til* 'scar' as shown in (143), which also has an associated noun *teel* 'scar'.[19] The root is nullivalent since the form without *v* in (143a) is ungrammatical. The addition of l^s- in (143b) results in an unaccusative, and then another l^s- produces a causative in (143c).

(143) a. * Uwatíl. **unaccusative intransitive*
u- i- $\sqrt[0]{}$til -H
ZPFV-STV-$\sqrt[0]{}$scar-VAR
'It got scarred.'

b. Wulitíl du keigú. *unaccusative intransitive with l^s-*
wu-l^s- i- $\sqrt[0]{}$til -H du keigú
PFV-INTR-STV-$\sqrt[0]{}$scar-VAR 3H·PSS lungs
'His lungs are scarred.' (Story & Naish 1973: 180.2484)

c. Xwalitíl *causative of intransitive with l^s-l^s-*
wu-x- l^s- l^s- i- $\sqrt[0]{}$til -H
PFV-1SG·S-CSV-INTR-STV-$\sqrt[0]{}$scar-VAR
'I scarred him.' (Story & Naish 1973: 180.2483)

There are several other logically possible combinations of *v* that might already be attested in the lexical documentation. For example, there could be instances of causative *v* + qualificational *v*, applicative *v* + qualificational *v*, and causative *v* + pejorative *v*. If more than two *v* heads are possible then we can conceive of complex structures like applicative *v* + causative *v* + intransitive *v*. There has been no systematic search for these possibilities, but my sense is that some are already attested.

All of the preceding examples have featured l^s-, meaning that the roots have coronal affricates or fricatives and so the presence of *s*- versus *l*- cannot be distinguished (sec. 2.1.1). It should in principle be possible for *s*- to be stacked as well, and I suspect that there are examples of this in the lexical documentation. Another issue is that because the prefixes in *v* are identical, it is empirically impossible to tell which of the two has been deleted when there are two *v*Ps. The discussion in section 6.1 raises the further possibility of stacked *v*Ps with different *s*- and *l*- prefixes. Given a root that allows different *v* values, it might be possible to stack for example a causative with *s*- and an applicative with *l*-. Since one of these two must be deleted to satisfy the spellout constraints of the Classifier

19. There is a homophonous root $\sqrt[0]{}$*til* 'shoe' with a distinct noun *téel* 'shoe' and a verb *wuditíl* 's/he wore/put on shoes'.

domain, we would then be able to identify which of the stacked *v* values is targeted for deletion by the phonology.

5.2. Overt *v* with covert *v*

The preceding section presented structures with multiple *v*Ps where one of the two overt *v* values is deleted by the phonology. If we accept this possibility then it suggests another possibility where there are multiple *v*Ps but only one has an overt value. Since the covert *v* would have no phonological content it would not compete with the overt *v* and thus the phonological constraints on the Classifier domain would be satisfied. This situation could arise from applicatives of bivalent roots, but rather than the single *v* analysis of section 3.3 there would be a covert *v* for the transitive basis and an overt *v* for the applicative.

(144) a. Náts x̲waax̲áa. *transitive with covert* v
náts wu-x̲- i- $\sqrt[2]{}$x̲a-μH
nuts PFV-1SG·S-STV-$\sqrt[2]{}$eat-VAR
'I ate nuts.'

b. Náts i ée x̲wasix̲áa. *applicative with s-*
náts i ee -H wu-x̲- s- i- $\sqrt[2]{}$x̲a-μH
nuts [PP 2SG BASE-LOC] PFV-1SG·S-APPL-STV-$\sqrt[2]{}$eat-VAR
'I fed you nuts.'

If an applicative introduces its own *v* head apart from that required by the transitive subject then the form with bivalent $\sqrt[2]{}$x̲*a* 'eat' in (144b) could have a structure like that shown in figure 4.13. The v_1 takes ƐP as its complement and vP_1 hosts the initial merge site of the subject D pronoun that matches $[\theta_2]$. Then the applicative *s-* is introduced in v_2 taking vP_1 as its complement. The applicative PP is merged in vP_2, and then the subject D pronoun must undergo short distance subject raising so that it spells out to the left of the applicative *s-*. The applicative PP is moved out from below Asp as before, as is the object DP. A consequence of this approach is that the syntax of the applicative is always the same regardless of whether the base form is a basic transitive (bivalent root) or a derived transitive (monovalent or nullivalent root).

There are a few drawbacks to the analysis in figure 4.13. One is that it makes no novel empirical predictions not already covered by the single-head analysis of applicatives in section 3.3, given that the covert *v* has no significant effects on argument structure or semantics. Because of this, there can be no empirical evidence that differentiates the overt+covert *v* analysis of applicatives from the single-head analysis of applicatives. A third drawback is that this analysis introduces an additional head and thus adds complexity to the structure. Finally, a fourth drawback is that the overt+covert *v* analysis of applicatives entails short distance subject raising for D pronouns that are first merged in the lower *v*P with covert *v*.

5.3. Covert *v* with overt *v*

If it is possible to stack a *v*P with overt *v* on top of a *v*P with covert *v* as detailed in section 5.2, then logically the converse structure could also be possible with a covert *v* above an overt *v*. This is sketched by the structure in figure 4.14 where v_1 is overt with *s-* and v_2 is covert with no phonological content.

A structure with covert *v* + overt *v* would be prima facie impossible to distinguish from a structure with overt *v* + overt *v* like that described in section 5.1 because, as shown in that section, only one

Figure 4.13: Tree for stacked *v*Ps in the applicative of a transitive in (144b)

Figure 4.14: Tree with a covert *v* and an overt *v*

of the two *v* values can occur in the surface form and because unlike the overt *v* + covert *v* structure in section 5.2 there would be no base form lacking an overt *v* to show the addition of a second *v*. Another problem with the covert *v* + overt *v* structure in figure 4.14 is that it implies the existence of applicatives without overt *v* since the covert v_2 is the head that introduces the applicative PP. This is an instance of a more general problem involving the existence of covert *v* heads that introduce arguments which I discuss further in section 5.4.

5.4. Covert *v* with covert *v*

Section 5.1 discussed structures with two overt *v* heads where one must be deleted in the surface form. Section 5.2 discussed structures with an overt *v* head merged above a covert *v* head, where naturally only the overt head appears in the surface form. Section 5.3 noted the possibility of structures with a covert *v* head merged above an overt *v* head. This section considers the last logical possibility: structures with two covert *v* heads.

In a structure with two covert *v* heads there can be no surface morpheme realizing either *v*, so we must look elsewhere for support. Given that *v* can introduce a new argument, we need verbs that alternate in their number of arguments but at the same time have no overt *v* value. The addition of an overt *v* value can either add a subject, an object, or a PP as described in section 3. If a covert *v* could have the same argument adding function then there are five logical possibilities for an alternation between argument structures without the appearance of an overt *v*, sketched in (145)–(149). The pair in (145) represents the formation of a causative from an unergative, and the pair in (146) a causative from an unaccusative. The pair in (147) represents the formation of an applicative (i.e. transitive + PP) from a transitive. Finally, the pairs in (148) and (149) represent the formation of intransitives with additional PP arguments from unergatives and unaccusatives respectively.

(145) *unergative intransitive → causative*

	PP	O	S	
a.	–	–	+	*unergative*
b.	–	+	+	*causative*

(146) *unaccusative intransitive → causative*

	PP	O	S	
a.	–	+	–	*unaccusative*
b.	–	+	+	*causative*

(147) *transitive → transitive + PP (applicative)*

	PP	O	S	
a.	–	+	+	*transitive*
b.	+	+	+	*transitive + PP*

(148) *unergative intransitive → unerg. intrans. + PP*

	PP	O	S	
a.	–	–	+	*unergative*
b.	+	–	+	*unergative + PP*

(149) *unaccusative intransitive → unacc. intrans. + PP*

	PP	O	S	
a.	–	+	–	*unaccusative*
b.	+	+	–	*unaccusative + PP*

I do not have evidence for all of the possible patterns in (145)–(149), but I do have evidence for the last three from motion verbs. The data in (150)–(152) illustrate alternations between a base form and a form with an additional argument PP for an unergative, an unaccusative, and a transitive motion verb respectively. In each case the base form either lacks *v* or has covert *v*, and the form with an added argument PP has the same absence of overt *v*.

(150) a. Xwaagoot. *unergative*
wu-x- i- $^{1}\sqrt{}$gut -μ
PFV-1SG·S-STV-$^{1}\sqrt{}$go·SG-VAR
'I went.'

b. Wé héende xwaagoot. *unergative + PP*
wé héen-dé wu-x- i- $^{1}\sqrt{}$gut -μ
[PP MDST river -ALL] PFV-1SG·S-STV-$^{1}\sqrt{}$go·SG-VAR
'I went to the river.'

(151) a. Wé x'óow woowook. *unaccusative*
wé x'óow wu-i- $^{1}\sqrt{}$wuk -μ
[DP MDST blanket] PFV-STV-$^{1}\sqrt{}$fabric·fall-VAR
'The blanket fell.'

b. Wé x'óow tíx' kaax woowook. *unaccusative + PP*
wé x'óow tíx' ká -dáx wu-i- $^{1}\sqrt{}$wuk -μ
[DP MDST blanket] [PP line HSFC-ABL] PFV-STV-$^{1}\sqrt{}$fabric·fall-VAR
'The blanket fell from the (clothes)line.'

(152) a. Wé gúx'aa xwaataan. *transitive*
wé gúx'aa wu-x- i- $^{2}\sqrt{}$tan -μ
[DP MDST cup] PFV-1SG·S-STV-$^{2}\sqrt{}$hdl·w/e-VAR
'I handled the cup.'

b. Wé gúx'aa nadáakw kaadé xwaatán. *transitive + PP*
wé gúx'aa nadáakw ká -dé wu-x- i- $^{2}\sqrt{}$tan -H
[DP MDST cup] [PP table HSFC-ALL] PFV-1SG·S-STV-$^{2}\sqrt{}$hdl·w/e-VAR
'I put the cup on top of the table.'

It could be argued that the forms in (150)–(152) actually have adjunct PPs rather than argument PPs. The evidence countering this argument comes from right dislocation of PPs. The forms in (153) illustrate a transitive verb in (153a) that can have an adjunct PP in (153b), and (153c) shows that this adjunct can be right dislocated.

(153) a. Wé gán x̲waaxaash. *transitive*
wé gán wu-x̲- i- $^{2}\sqrt{}$xash-μ
[DP MDST firewood] PFV-1SG·S-STV-$^{2}\sqrt{}$cut -VAR
'I cut that firewood.'

b. Wé gán xáshaa teen x̲waaxaash. *transitive + adjunct PP*
wé gán xáshaa teen wu-x̲- i- $^{2}\sqrt{}$xash-μ
[DP MDST firewood] [PP saw INSTR] PFV-1SG·S-STV-$^{2}\sqrt{}$cut -VAR
'I cut that firewood with a saw.'

c. Wé gán x̲waaxaash, xáshaa teen *right dislocated adjunct PP*
wé gán wu-x̲- i- $^{2}\sqrt{}$xash-μ xáshaa teen
[DP MDST firewood] PFV-1SG·S-STV-$^{2}\sqrt{}$cut -VAR [PP saw INSTR]
'I cut that firewood, with a saw.'

The argument PP added by an applicative is not an adjunct because it cannot be right dislocated as shown in (154). The basic transitive in (154a) can be applicativized with *s-* in (154b) where an argument PP headed by *-ch* appears. Unlike the adjunct PP in (153c), the argument PP of the applicative cannot be right dislocated in (154c).

(154) a. Wé k̲áa x̲waax̲oox̲. *transitive*
wé k̲áa wu-x̲- i- $^{2}\sqrt{}$x̲ux̲ -μ
[DP MDST man] PFV-1SG·S-STV-$^{2}\sqrt{}$summon-VAR
'I summoned that man.'

b. Wé k̲áa ax̲ tl'eik̲ch x̲wasix̲oox̲. *transitive + argument PP*
wé k̲áa ax̲ tl'eik̲-ch wu-x̲- s- i- $^{2}\sqrt{}$x̲ux̲-μ
[DP MDST firewood] [PP 1SG·PSS finger-INSTR] PFV-1SG·S-APPL-STV-$^{2}\sqrt{}$cut -VAR
'I beckoned that man with my fingers.'

c. * Wé k̲áa x̲wasix̲oox̲, ax̲ tl'eik̲ch **right disloc. arg. PP*
wé k̲áa wu-x̲- s- i- $^{2}\sqrt{}$x̲ux̲ -μ ax̲ tl'eik̲-ch
[DP MDST man] PFV-1SG·S-APPL-STV-$^{2}\sqrt{}$summon-VAR [PP 1SG·PSS finger-INSTR]
intended: 'I beckoned that man, with my fingers.'

If we accept the evidence in (153) and (154) as distinguishing adjunct PPs from argument PPs then the failure of right dislocation can be used as a diagnostic for argumenthood of a PP. Applying this to the unergative motion from (150), the unaccusative motion from (151), and the transitive motion from (152), we see that the PPs associated with these motion verbs behave like arguments rather than adjuncts because none of the PPs can be right dislocated as shown in (155), (156), and (157).

(155) *X̲waagoot, wé héende. **right dislocated argument PP*
wu-x̲- i- $^{1}\sqrt{}$gut -μ wé héen-dé
PFV-1SG·S-STV-$^{1}\sqrt{}$go·SG-VAR [PP MDST river -ALL]
'I went, to the river.'

Figure 4.15: Tree with two covert *v*s for the unergative with argument PP in (150b)

(156) * Wé x'óow woowook, tíx' kaax̲. **right dislocated argument PP*
wé x'óow wu-i- 1√wuk̲ -μ tíx' ká -dáx̲
[DP MDST blanket] PFV-STV-1√fabric·fall-VAR [PP line HSFC-ABL]
intended: 'The blanket fell, from the (clothes)line.'

(157) * Wé gúx'aa x̲waataan, nadáakw kaadé. **right disloc. argument PP*
wé gúx'aa wu-x̲- i- 2√tan -μ nadáakw ká -dé
[DP MDST cup] PFV-1SG·S-STV-2√hdl·w/e-VAR [PP table HSFC-ALL]
intended: 'I put the cup, on top of the table.'

We can unite the analysis of motion verb argument PPs with the analysis of applicative argument PPs by proposing a covert *v* 'motion applicative' which hosts the first merge site of the argument PP in a motion verb construction. This is shown in figure 4.15 which represents the structure of the unergative motion verb with argument PP in (150b). The subject is introduced in vP_1 and the covert v_2 projects a vP_2 that hosts the argument PP. The argument PP is then raised to AspP as usual for phrasal material that cannot stay below Asp. The subject D pronoun need not be raised to vP_2 because there is no phonological content in vP_2 at spellout.

This analysis does not explain why an argument PP cannot be dislocated unlike DPs, but it does unify the model of argument PPs so that both are analyzed as a more or less identical mechanism.

The remaining two cases of multiple covert *v* – i.e. unergative → causative in (145) and unaccusative → causative in (146) – still need to be identified. If they do not occur then there would be a substantive difference between the arguments added by overt *v* (either DPs or PPs) and the arguments added by covert *v* (only PPs), and this would demand an explanation.

There are some significant issues with the covert *v* + covert *v* analysis which need further investigation. One is a distributional issue: why does the covert *v* applicative occur only with motion verbs and not with other kinds of verbs? It may be that covert *v* applicatives do occur with non-motion verbs but that they have not been identified. If so they would need to be distinguished both from structures with adjunct PPs and from the semi-regular application of motion derivations to non-motion verbs. Another issue is associated with complexity: if covert *v* applicatives are possible, why have overt *v* applicatives at all? If the covert *v* applicatives are restricted to motion verbs then there is potentially an explanation involving eventuality class, but if covert *v* applicatives can be found with non-motion verbs then the occurrence of overt *v* applicatives is puzzling. Another issue involves the relationship between *v* and θ-features: so far there is a regular division between covert *v* which does not specify θ-features and overt *v* which does specify θ-features. A covert *v* with an associated argument must specify a θ-feature, but the first covert *v* must not. At present the model offers no obvious explanation for why this asymmetry between covert *v* heads should exist.

6. Exceptional cases of *s*-, *l*-, and *sh*-

The majority of verbs that contain a *s*-, *l*-, or *sh*- prefix can be analyzed according to the framework given in the preceding sections. There the prefix is an instantiation of the *v* head and signals either the syntactic addition of an object or the semantic restriction of meaning for the predicate. There are a minority of verbs in Tlingit that occur with a *s*-, *l*-, or *sh*- prefix which does not neatly fit into either of the two functions of *v*. For these exceptions I maintain the analysis that these prefixes are overt *v* heads, but I lack any coherent explanation of their syntactic or semantic contributions. In many cases there may be an explanation uncoverable with more investigation into the specific root and its behaviour, but in some cases even very well documented roots refuse to fit neatly into the system. I highlight three exceptional patterns in this section, leaving the remainder of exceptional *s*-, *l*-, and *sh*- to future investigation of the root lexicon.

Section 6.1 presents some cases where the same root appears in different verbs with different *s*-, *l*-, or *sh*- prefixes without any phonological justification for the alternation between them. The simplest cases are doublets where for example a root occurs with both *s*- and *l*-, but triplets and quadruplets are also attested. There is no comprehensive inventory of roots with multiple *v* values so I only present what I consider to be a few exemplary cases.

Section 6.2 documents an inventory of verbs with lexically specified *sh*- that do not appear to be pejorative. This is significant because, as discussed earlier in section 4.3, *sh*- is otherwise only associated with the addition of pejorative meaning to the eventuality denoted by the verb. Some of the verbs documented in section 6.2 may have *sh*- due to historical phenomena.

Section 6.3 offers a preview of what I call the *d*-/*l*- alternation where a root alternates between an apparently bivalent form with *d*- and a monovalent form with *l*- or occasionally *s*-. I discuss this issue in greater detail in chapter 5 section 7.2 because it is closely connected to the argument suppression function of *d*- in Voice.

6.1. Roots with multiple different *v*

In all the preceding sections I have described roots that take one or another of the *s*-, *l*-, or *sh*- prefixes. A few alternate between *s*- or *l*- and *sh*- when the latter has a pejorative function (sec. 4.3). I have not addressed any roots that take *s*- in some contexts and *l*- in others, but this does occur in a few cases. I outline a few such roots in this section, discussing their semantic patterns and how the model could be adjusted to fit them.

I suggest that the appearance of roots with multiple different *v* values represents a still ongoing historical process of semantic splitting. The *s*- and *l*- prefixes probably arose from a single form which regularly alternated in pronunciation due to consonant harmony with the verb stem as discussed in section 2.1.1. The two distinct allomorphs were then perceived as distinct morphemes and have begun to develop different semantics. They have thus started to shift from a general argument-adding mechanism to more specialized kinds of modification. At present there is no reliable generalization about how *s*- and *l*- differ, and so their functions must be lexically specified by each root that allows more than one.

There has not been any principled survey of roots that occur with more than one *v* value so the claim about lexical specification above may not need to be so strong. The lexical documentation attests to more than the roots presented in this section, but none of the materials are organized in a way that makes collecting such roots easy. As with many other issues involving roots, we need a comprehensive review of the existing data and then elicitation to explore unattested possibilities. I have the sense that this should make clear some of the patterns in this section, but that a few will continue to resist analysis because they are essentially arbitrary and irregular.

6.1.1. See: covert *v*, *s*-, *l*-, and *sh*-

The root $\sqrt[2]{tin}$ 'see' is probably the most frequently encountered example of multiple *v* values in Tlingit. It occurs with covert *v* where the structure means 'able to see', with overt *s*- in *v* where the structure means 'catch sight of', and with overt *l*- in *v* where it means 'watch'. The contribution of *s*- and *l*- in each of their structures is still unclear. The 'catch sight of' structure with *s*- is an achievement and so *s*- might contribute inchoativity. The 'watch' structure with *l*- is an activity and so *l*- might contribute durativity. But these functions have little or nothing to do with the usual functions of *s*- or *l*-, and furthermore have no obvious parallels with other roots that occur with both *s*- and *l*-. An additional complication is that the 'able to see' verb with covert *v* only occurs in the imperfective aspect as a state with *i*- in Ɛ and in all other aspects it is suppleted by the 'catch sight of' verb with *s*-.

The data in (158) illustrates the root $\sqrt[2]{tin}$ 'see' with a covert *v* that means 'be able to see; can see'. The *v* must be covert rather than absent since there is a subject as discussed in section 2.2.2. Unusually, the only grammatical aspectual category available for $\sqrt[2]{tin}$ 'see' with covert *v* is the imperfective state in (158a). The activity imperfective in (158b) is ungrammatical but this is the norm for roots that admit imperfective states. What is strange is the ungrammaticality of the perfective in (158c); normally all roots can support perfective aspect regardless of their lexical eventuality class specification. Eggleston (2017) indicates that $\sqrt[2]{tin}$ 'see' with covert *v* is similarly ungrammatical in the prospective ('future') aspect, in the progressive aspect, in the imperative and hortative moods, and in the potential modality. She does note its grammaticality in the conditional mood and also gives imperfective + habitual forms. In all such aspectually ungrammatical cases, speakers usually suggest a replacement with the *s*- prefix.

(158) a. Ituwatéen. *imperfective state with covert* v
i- tu- i- $\sqrt[2]{}$tin-μH
2SG·O-1PL·S-STV-$\sqrt[2]{}$see-VAR
'We can see you.', 'We are able to see you.'

b. *Itutéen. **imperfective activity with covert* v
i- tu- $\sqrt[2]{}$tin-μH
2SG·O-1PL·S-$\sqrt[2]{}$see-VAR
intended: 'We see you.', 'We are able to be seeing you.'

c. *Iwtuwateen. **perfective with covert* v
i- wu-tu- i- $\sqrt[2]{}$tin-μH
2SG·O-PFV-1PL·S-STV-$\sqrt[2]{}$see-VAR
intended: 'We could see you.', 'We have been able to see you.'

The combination of $\sqrt[2]{}$*tin* 'see' with *s-* in *v* gives rise to a verb meaning 'catch sight of', although this is typically translated as just 'see'. The data in (159) illustrate this structure. Both flavours of imperfective aspect are ungrammatical in (159a) and (159b), but the perfective aspect in (159c) is grammatical. This shows that the structure denotes an achievement; it describes an instantaneous telic event of vision. Unlike $\sqrt[2]{}$*tin* 'see' with covert *v*, other aspect, mood, and modality classes are possible with *s-* (Eggleston 2017).

(159) a. *Itusiteen. **imperfective state with s-*
i- tu- s- i- $\sqrt[2]{}$tin-μ
2SG·O-1PL·S-??-STV-$\sqrt[2]{}$see-VAR
intended: 'We catch sight of you', 'We see you.'

b. *Itusateen. **imperfective activity with s-*
i- tu- s- $\sqrt[2]{}$tin-μ
2SG·O-1PL·S-??-$\sqrt[2]{}$see-VAR
intended: 'We are seeing you.'

c. Iwtusiteen. *perfective with s-*
i- wu-tu- s- i- $\sqrt[2]{}$tin-μ
2SG·O-PFV-1PL·S-??-STV-$\sqrt[2]{}$see-VAR
'We caught sight of you.', 'We saw you.'

Finally, the root $\sqrt[2]{}$*tin* 'see' can combine with *l-* in *v* to give a verb meaning 'watch' as shown in (160). This structure supports an imperfective activity in (160b), thus rounding out the paradigm of eventualities: a state with covert *v*, an achievement with *s-*, and an activity with *l-*.

(160) a. *Itulitín. **imperfective state with l-*
i- tu- l- i- $\sqrt[2]{}$tin-H
2SG·O-1PL·S-??-STV-$\sqrt[2]{}$see-VAR
intended: 'We are watching you.'

b. Itulatín. *imperfective activity with l-*
i- tu- l- $\sqrt[2]{}$tin-H
2SG·O-1PL·S-??-$\sqrt[2]{}$see-VAR
intended: 'We watch you.', 'We are watching you.'

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
Ø	*ayatéen*	's/he can see it'	+	+	$\sqrt[2]{}$*tin*	'see'	state only (-*μH*)	*g*
	k̲uwatéen	's/he can see'	–	+	$\sqrt[2]{}$*tin*	'see'	state (-*μH*)	*g*
	k̲oowateen	's/he travelled'	–	+	$\sqrt[2]{}$*tin*	'see'	motion	–
	ayaawatín	's/he recognized him/her'	+	+	$\sqrt[2]{}$*tin*	'see'	achievement	Ø
s-	*awsiteen*	's/he caught sight of it'	+	+	$\sqrt[2]{}$*tin*	'see'	achievement	*g̲*
l-	*altín*	's/he watches it'	+	+	$\sqrt[2]{}$*tin*	'see'	activity (-*H*)	Ø/*n*
	aklatín	's/he observes it'	+	+	$\sqrt[2]{}$*tin*	'see'	activity (-*H*)	*n*
	yan akawlitín	's/he studied it'	+	+	$\sqrt[2]{}$*tin*	'see'	achievement	Ø
sh-	*tl. k̲ooshtéen*	's/he cannot see'	–	+	$\sqrt[2]{}$*tin*	'see'	neg. state (-*μH*)	*g*

Table 4.12: Properties of verbs based on $\sqrt[2]{}$*tin* 'see'

c. Iwtulitín. *perfective with l-*
i- wu-tu- l- i- $\sqrt[2]{}$tin-H
2SG·O-PFV-1PL·S-??-STV-$\sqrt[2]{}$see -VAR
'We have watched you.'

The evidence presented so far seems to suggest that *v* modifies the eventuality class and thus the interpretation. But this is not the only parameter that varies between the structures, and there are more than just three verbs derived from the root $\sqrt[2]{}$*tin* 'see'. Table 4.12 lists all of the documented verbs based on this root. All of the verbs are transitive except for those with areal *k̲u-* 'area, extent' which saturates the object like an alienable incorporated noun (ch. 7 sec. 1.3). Two of the verbs with covert *v* are states, but there are also a motion verb and an achievement verb so covert *v* is not specifically associated with stativity. Two of the verbs with *l-* are activities, but a further derivation with added *ÿán=* 'termination, completion' is instead an achievement. The lone verb with *sh-* has this as part of the negative pejorative (sec. 4.3). The conjugation classes are also distinct between the different verbs and not obviously associated with particular *v* values.

Except for the negative pejorative with *sh-*, the overt values of *v* with $\sqrt[2]{}$*tin* 'see' do not seem to match its usual functions of adding arguments or restricting meaning. There is no sign of qualification for either *s-* or *l-* because these verbs are insensitive to the qualia of their objects: one can catch sight of or watch anything. Conceivably both *s-* and *l-* could have an extensional function, but it is not clear how the two would be differentiated from each other. Yet there still seems to be the tantalizing possibility of a generalization in table 4.12; perhaps further study of multiple *v* values in other verbs will clarify the situation with $\sqrt[2]{}$*tin* 'see'.

6.1.2. Angry and hate: absent *v*, *s-*, *l-*, and *sh-*

The root $\sqrt[1]{}$*x'a'n* 'angry' is another relatively common root attested without *v*, with *s-* in *v*, and with *l-* in *v*. This root also supports the noun *x'áan* 'anger; war' (Leer 1976a: 735). It is closely related to the root $\sqrt[2]{}$*k'an* 'hate' (Leer 1976a: 764) that occurs with pejorative *sh-* in *v*, and more remotely to the root $\sqrt[1]{}$*x̲'an* 'smoulder; fire' and its associated noun *x̲'aan* 'fire' (Leer 1976a: 878). This proliferation of

semantically related but phonologically distinct roots reflects historical phoneme splits (Leer 1990c). Similar historical processes probably gave rise to the multiple values of *v*.

The root $\sqrt[1]{x'a'n}$ 'angry' supports an unaccusative construction with no *v* head, establishing the root as monovalent. The data in (161) demonstrate this, showing further that it an achievement verb since it does not have a grammatical form in the imperfective aspect.

(161) a. *Haa yax'áan. **imperfective state without* v
haa= i- $\sqrt[1]{x'a'n}$-μH
1PL·O=STV-$\sqrt[1]{\text{angry}}$-VAR
intended: 'We are angry'

b. *Haa x'áan. **imperfective activity without* v
haa= $\sqrt[1]{x'a'n}$-μH
1PL·O=$\sqrt[1]{\text{angry}}$-VAR
intended: 'We get angry'

c. Haa uwax'án. *perfective without* v
haa= u- i- $\sqrt[1]{x'a'n}$-H
1PL·O=ZPFV-STV-$\sqrt[1]{\text{angry}}$-VAR
'We have gotten angry.'

The addition of *s-* to the root $\sqrt[1]{x'a'n}$ does not produce a causative as might be expected. Instead, the data in (162) show that it forms an unaccusative. The form in (162a) further shows that this unaccusative can be a state imperfective.

(162) a. Haa six'áan. *imperfective state with s-*
haa= s- i- $\sqrt[1]{x'a'n}$-H
1PL·O=XTN-STV-$\sqrt[1]{\text{angry}}$-VAR
'We are irascible, grouchy.'

b. *Haa sax'áan. **imperfective activity with s-*
haa= s- $\sqrt[1]{x'a'n}$-μH
1PL·O=XTN-$\sqrt[1]{\text{angry}}$-VAR
intended: 'We are being irascible, grouchy.'

c. Haa wsix'áan. *perfective with s-*
haa= wu-s- i- $\sqrt[1]{x'a'n}$-μH
1PL·O=PFV-XTN-STV-$\sqrt[1]{\text{angry}}$-VAR
'We have become irascible, grouchy.'

The combination of *l-* with $\sqrt[1]{x'a'n}$ 'angry' gives rise to a causative as shown in (163). This is an achievement just like the unaccusative in (161) previously, so this is presumably the causative of that unaccusative.

(163) a. *Itulix'áan. **imperfective state with l-*
i- tu- l- i- $\sqrt[1]{x'a'n}$-μH
2SG·O-1PL·S-CSV-STV-$\sqrt[1]{\text{angry}}$-VAR
intended: 'We make you angry.'

b. *Itulax'áan. *imperfective state with l-*
i- tu- l- $\sqrt[1]{}$x'a'n-μH
2SG·O-1PL·S-CSV-$\sqrt[1]{}$angry-VAR
intended: 'We are making you angry.'

c. Iwtulix'án. *perfective with l-*
i- wu-tu- l- i- $\sqrt[1]{}$x'a'n-H
2SG·O-PFV-1PL·S-CSV-STV-$\sqrt[1]{}$angry-VAR
'We made you angry.'

There is another verb shown in (164) which has *k-* along with causative *l-*. This verb apparently has the thematic roles reversed, with the subject as the experiencer of anger rather than the object.

(164) Ikakx̱walax'áan.
i- k- w- g- g̱- x̱- l- $\sqrt[1]{}$x'a'n-μH
2SG·O-HSFC-IRR-GCNJ-MOD-1SG·S-CSV-$\sqrt[1]{}$angry-VAR
'I am going to be angry with you.' (Story & Naish 1973: 19.60)

There is no attested verb based the root $\sqrt[1]{}$*x'a'n* 'angry' with *sh-* in *v*. The historically and semantically related root $\sqrt[2]{}$*k'an* 'hate' does however occur with *sh-* as shown in (165) where it denotes a transitive state.

(165) a. Itushik'áan. *imperfective state with sh-*
i- tu- sh- i- $\sqrt[2]{}$k'an-μH
2SG·O-1PL·S-PEJ-STV-$\sqrt[2]{}$hate -VAR
'We hate you (sg.).'

b. *Itushak'áan. *imperfective state with sh-*
i- tu- sh- $\sqrt[2]{}$k'an-μH
2SG·O-1PL·S-PEJ-$\sqrt[2]{}$hate -VAR
intended: 'We are hating you (sg.).'

c. Iwtushik'aan. *perfective with sh-*
i- wu-tu- sh- i- $\sqrt[2]{}$k'an-μ
2SG·O-PFV-1PL·S-PEJ-STV-$\sqrt[2]{}$hate -VAR
'We have come to hate you (sg.).'

The root $\sqrt[2]{}$*k'an* 'hate' is also attested in a verb with *k-* + *sh-* where it means 'drive away; reject' but it is not documented in any forms without *sh-* in *v* (Leer 1976a: 764). The semantic contribution of *sh-* is probably pejorative as discussed in section 4.3. We lack evidence for $\sqrt[2]{}$*k'an* 'hate' in a transitive with covert *v* or in an unaccusative without *v*. Given the *v*P stacking analysis in section 5, it could be possible that there is a covert causativizing *s-* or *l-* along with the surface *sh-*. As such we cannot firmly say whether the root is monovalent or bivalent, but I have tentatively represented it as bivalent pending further elicitation.

Table 4.13 summarizes the covarying properties of the combinations of *v* and the root $\sqrt[1]{}$*x'a'n* 'anger', as well as the related root $\sqrt[2]{}$*k'an* 'hate'. The pair of *uwax'án* 's/he got angry' and *awlix'án* 's/he made him/her angry' is more or less regular aside from the use of *l-* rather than *s-*. One potential explanation for *six'áan* 's/he is grouchy' is that it is actually based on the noun *x'áan* 'anger', predicting

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
–	*uwax'án*	's/he got angry'	+	–	$\sqrt[1]{x'a'n}$	'angry'	achievement	*Ø*
	dix'ánkw	's/he is bad-tempered'	+	–	$\sqrt[1]{x'a'n}$	'angry'	repet. state	*g*
s-	*six'áan*	's/he is grouchy'	+	–	$\sqrt[1]{x'a'n}$	'angry'	state (*-μH*)	*g*
l-	*awlix'án*	's/he made him/her angry'	+	+	$\sqrt[1]{x'a'n}$	'angry'	achievement	*Ø*
	akawlix'án	's/he got angry at him/her'	+	+	$\sqrt[1]{x'a'n}$	'angry'	achievement	*Ø*
sh-	*ashik'áan*	's/he hates him/her/it'	+	+	$\sqrt[2]{k'an}$	'hate'	state (*-μH*)	*g*
	akawshik'án	's/he rejected him/her/it'	+	+	$\sqrt[2]{k'an}$	'hate'	achievement	*Ø*

Table 4.13: Properties of verbs based on $\sqrt[1]{x'a'n}$ 'anger' and $\sqrt[2]{k'an}$ 'hate'

that its stem should always be *-μH* rather than agreeing with functional heads like Asp and Neg. The verb is not documented well enough to verify this however. Also unexpected is the lack of a $\sqrt[2]{k'an}$ 'hate' verb with covert *v* or without *v*. It is not clear to me how either $\sqrt[1]{x'a'n}$ 'anger' or $\sqrt[2]{k'an}$ 'hate' fit into the general model of roots and *v* in Tlingit. I leave these problems unsolved for now, hoping that they will fall out of more general principles with further research on *v*.

6.1.3. Hard: absent *v*, *s-*, *l-*, and *sh-*

The root $\sqrt[1]{t'ix'}$ 'hard, frozen' is particularly important for the investigation of multiple *v* values because it is one of few that form verbs with all three overt values of *v*: *s-*, *l-*, and *sh-* combine with $\sqrt[1]{t'ix'}$ 'hard, frozen' to give unique interpretations. An unusual wrinkle in this is that the *sh-* value is apparently not pejorative, nor does it show any signs of having evolved from a pejorative function with this root in the past. This is not the only root with a non-pejorative *sh-* (see sec. 6.2 for several others), but it is one of a few that has a non-pejorative *sh-* in alternation with other *v* values. The various combinations of *v* values with $\sqrt[1]{t'ix'}$ 'hard, frozen' also show some interactions with conjugation class, eventuality structure, and noun classification.

The data in (166) illustrate the root $\sqrt[1]{t'ix'}$ 'hard, frozen' forming an unaccusative state verb. Like many states, this belongs to the *g*-conjugation class and hence the perfective in (166c) has *-μH* rather than *-H* (*-μ* cannot occur because of the coda ejective). The data in (167) illustrates a similar unaccusative verb, but this is an achievement rather than a state since the imperfective aspect is ungrammatical. Since the perfective aspect form in (167c) has *u-* and *-H* this verb belongs to the *Ø*-conjugation class. Thus although both (166) and (167) are unaccusative and so lack *v*, they are actually distinct verbs based on the same root.

(166) a. Wé dleey yat'éex'. *imperfective state without* v
wé dleey i- $\sqrt[1]{t'ix'}$-μH
MDST meat STV-$\sqrt[1]{\text{hard}}$-VAR
'The meat is hard, frozen.'

b. *Wé dleey t'éex'. **imperfective activity without* v
wé dleey $\sqrt[1]{t'ix'}$-μH
MDST meat $\sqrt[1]{\text{hard}}$-VAR
intended: 'The meat is hardening, freezing.'

c. Wé dleey woot'éex'. *g-conj. perfective without* v
wé dleey wu-i- $\sqrt[1]{}$t'ix'-μH
MDST meat PFV-STV-$\sqrt[1]{}$hard-VAR
'The meat became hard, frozen.'

(167) a. *Wé dleey yat'íx'. **imperfective state without* v
wé dleey i- $\sqrt[1]{}$t'ix'-H
MDST meat STV-$\sqrt[1]{}$hard-VAR
'The meat gets hard, frozen.'

b. *Wé dleey t'íx'. **imperfective activity without* v
wé dleey $\sqrt[1]{}$t'ix'-H
MDST meat $\sqrt[1]{}$hard-VAR
intended: 'The meat is getting hard, frozen.'

c. Wé dleey uwat'íx'. *Ø-conj. perfective without* v
wé dleey u- i- $\sqrt[1]{}$t'ix'-H
MDST meat ZPFV-STV-$\sqrt[1]{}$hard-VAR
'The meat got hard, frozen.'

The data in (168) show that $\sqrt[1]{}$*t'ix'* 'hard' can occur with *s-* in an unaccusative state verb. This differs from the unaccusative state in (166a) because it refers to a long object such as a stick of meat. Thus the *s-* in this context is qualificational (sec. 4.1), indicating that the entity is extended in space. This verb is then straightforwardly analyzed as being derived with qualificational *s-* from the unaccusative state verb in (166).

The lexical documentation (Story & Naish 1973: 106, 164; Leer 1973a: 07/144–147, 1976a: 433) attests to verbs featuring *s-* in *v* with $\sqrt[1]{}$*t'ix'* 'hard, frozen', as shown in (168) and (169) below. The verb in (168) denotes a state with *s-* in *v* exhibiting its extensional role (sec. 4.2). This verb is presumably derived from the one in (166) by the addition of extensional *s-*. The verb in (169) denotes a transitive achievement and features *s-* in its causative role, probably based on the unaccusative achievement in (167) above. The two verbs with *s-* in *v* also differ in conjugation class, again showing the same distribution of *g*-conjugation for a state and *Ø*-conjugation for an achievement. I conclude that both are derived from the previous two constructions by regular but different functions of *s-* in *v*.

(168) a. Wé dleey sit'éex'. *imperfective state with s-*
wé dleey s- i- $\sqrt[1]{}$t'ix'-μH
MDST meat XTN-STV-$\sqrt[1]{}$hard-VAR
'The stick of meat is hard, frozen.'

b. *Wé dleey sat'éex'. **imperfective activity with s-*
wé dleey s- $\sqrt[1]{}$t'ix'-μH
MDST meat XTN-$\sqrt[1]{}$hard-VAR
intended: 'The stick of meat is hardening, freezing.'

c. Wé dleey wusit'éex'. *perfective with s-*
wé dleey wu-s- i- $\sqrt[1]{}$t'ix'-μH
MDST meat PFV-XTN-STV-$\sqrt[1]{}$hard-VAR
'The stick of meat became hard, frozen.'

The data in (169) demonstrates a verb with incorporated *x̲'e-* 'mouth' and *s-*. The interpretation seems to be somewhat idiomatic: *x̲'e-* refers metaphorically to speech, and presumably the *s-* is causative, and with $\sqrt[1]{t'ix'}$ 'hard' the resulting meaning seems to be something like '*x* speak hard words to *y*'. This verb is an achievement since both imperfective possibilities in (169a) and (169b) are ungrammatical.

(169) a. *Ix̲'atusit'íx'. **imperfective state with s-*
i- x̲'e- tu- s- i- $\sqrt[1]{t'ix'}$-H
2SG·O-mouth-1PL·S-CSV-STV-$\sqrt[1]{\text{hard}}$-VAR
intended: 'We interrogate, cross-examine you.'

b. *Ix̲'atusat'íx'. **imperfective activity with s-*
i- x̲'e- tu- s- $\sqrt[1]{t'ix'}$-H
2SG·O-mouth-1PL·S-CSV-$\sqrt[1]{\text{hard}}$-VAR
intended: 'We are interrogating, cross-examining you.'

c. Ix̲'awtusit'íx'. *perfective with s-*
i- x̲'e- wu-tu- s- i- $\sqrt[1]{t'ix'}$-H
2SG·O-mouth-PFV-1PL·S-CSV-STV-$\sqrt[1]{\text{hard}}$-VAR
'We interrogated, cross-examined you.'

The verbs in (170) and (171) illustrate *l-* in *v* with the same verb root $\sqrt[1]{t'ix'}$ 'hard, frozen'. The verb in (170) denotes an achievement and is *∅*-conjugation. It is documented with a lexically specified *-s'* repetitive imperfective as well as a conjugation class–specified *-x̲* repetitive imperfective (Leer 1976a: 433), but there is no imperfective activity or state form available so it must be an achievement. In this verb the *l-* in *v* seems to be causative, but it is unclear how this should be different from the *s-* of (169). It may be that the *-s'* originally triggered the *s-* → *l-* alternation (sec. 2.1.1) only in the *-s'* repetitive imperfective, and then the *l-* became lexicalized.

The forms in (170) show that $\sqrt[1]{t'ix'}$ can occur together with *l-*. This instance of *l-* is straightforwardly causative, and since the verb is an achievement and belongs to the *∅*-conjugation class it appears to be the causative counterpart of the unaccusative in (167).

(170) a. *Alit'íx'. **imperfective state with l-*
a- l- i- $\sqrt[1]{t'ix'}$-H
ARG-CSV-STV-$\sqrt[1]{\text{hard}}$-VAR
intended: 'He/she hardens, freezes it.'

b. *Alt'íx'. **imperfective activity with l-*
a- l- $\sqrt[1]{t'ix'}$-H
ARG-CSV-$\sqrt[1]{\text{hard}}$-VAR
intended: 'He/she hardens, freezes it.'

c. Awlit'íx'. *perfective with l-*
a- wu-l- i- $\sqrt[1]{t'ix'}$-H
ARG-PFV-CSV-STV-$\sqrt[1]{\text{hard}}$-VAR
'He/she hardened, froze it.'

But there is a problem with analyzing (170) with *l-* as the causative of (167). There is another causative shown in (171) which instead has *s-* along with an additional *k-*. It is unclear if there is a form like ※*awsit'íx'* 's/he hardened, froze it' without the qualifier *k-*; if one does exist then there would be two different causatives of $\sqrt[1]{t'ix'}$ 'hard'. We would expect these to have different interpretations, but the documentation for (171) does not suggest that this *s-* has any semantic differences from the *l-* in (170). This verb surfaces with *l* in (171d) but this is the phonologically conditioned *s-* → *l-* alternation triggered by the fricative suffix *-s'* (sec. 2.1.1).

(171) a. * Aksit'íx'. **imperfective state with s-*
a- k- s- i- $\sqrt[1]{t'ix'}$-H
ARG-SRO-CSV-STV-$\sqrt[1]{\text{hard}}$-VAR
'He/she hardens, freezes it (round).'

b. * Aksat'íx'. **imperfective activity with s-*
a- k- s- i- $\sqrt[1]{t'ix'}$-H
ARG-SRO-CSV-STV-$\sqrt[1]{\text{hard}}$-VAR
'He/she is hardening, freezing it (round).'

c. Akawsit'íx'. *perfective with s-*
a- k- wu-s- i- $\sqrt[1]{t'ix'}$-H
ARG-SRO-PFV-CSV-STV-$\sqrt[1]{\text{hard}}$-VAR
'He/she hardened, froze it (round).'

d. Aklat'íx's'. *-s' repetitive imperfective with l-*
a- k- s- $\sqrt[1]{t'ix'}$-H -s'
ARG-SRO-CSV-$\sqrt[1]{\text{hard}}$-VAR-REP
'He/she repeatedly hardens, freezes it (round).'

Finally, the verb in (172) has *sh-*. This instance of *sh-* does not appear to be pejorative, and it is a typical example of the non-pejorative instances of *sh-* which have unclear meanings. This verb must also be causativized since $\sqrt[1]{t'ix'}$ is monovalent and the verb is transitive, but this does not explain why *v* is *sh-* rather than *s-* or *l-*. The meaning 'steady' suggests that *sh-* may contribute an extensional meaning or something similarly spatial, but again this does not explain the appearance of *sh-* rather than *s-* or *l-*. The presence of *sh-* in this verb remains a puzzle.

(172) a. * Ashit'íx'. **imperfective state*
a- sh- i- $\sqrt[1]{t'ix'}$-H
ARG-CSV-STV-$\sqrt[1]{\text{hard}}$-VAR
intended: 'He/she steadies it.'

b. * Asht'íx'. **imperfective activity*
a- sh- $\sqrt[1]{t'ix'}$-H
ARG-CSV-$\sqrt[1]{\text{hard}}$-VAR
intended: 'He/she is steadying it.'

c. Awshit'íx'. *perfective*
a- wu-sh- i- $\sqrt[1]{t'ix'}$-H
ARG-PFV-CSV-STV-$\sqrt[1]{\text{hard}}$-VAR
'He/she steadied it.'

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
–	*yat'éex'*	'it is hard'	+	–	$\sqrt[1]{t'ix'}$	'hard'	state (-μH)	*g*
	tuwat'éex'	's/he is stubborn'	+	–	$\sqrt[1]{t'ix'}$	'hard'	state (-μH)	*g*
	x̲'ayat'éex'	's/he has hard words'	+	–	$\sqrt[1]{t'ix'}$	'hard'	state (-μH)	*g*
	x̲'ayat'éex'	'it (oil, mud) is thick'	+	–	$\sqrt[1]{t'ix'}$	'hard'	state (-μH)	*g*
	uwat'íx'	'it got hard'	+	–	$\sqrt[1]{t'ix'}$	'hard'	achievement	*∅*
	kaawat'íx'	'it caked up, solidified'	+	–	$\sqrt[1]{t'ix'}$	'hard'	achievement	*∅*
s-	*sit'éex'*	'it (long) is hard'	+	–	$\sqrt[1]{t'ix'}$	'hard'	state (-μH)	*g*
	ax̲'eiwsit'íx'	's/he interrogated him/her'	+	+	$\sqrt[1]{t'ix'}$	'hard'	achievement	*∅*
	akawsit'íx'	's/he hardened/froze it (round)'	+	+	$\sqrt[1]{t'ix'}$	'hard'	achievement	*∅*
l-	*awlit'íx'*	's/he hardened/froze it'	+	+	$\sqrt[1]{t'ix'}$	'hard'	achievement	*∅*
	wudlit'íx'	'it was frozen'	+	+	$\sqrt[1]{t'ix'}$	'hard'	achievement	*∅*
	sh wudlit'íx'	's/he froze to death'	+	+	$\sqrt[1]{t'ix'}$	'hard'	achievement	*∅*
	akawlit'íx'	's/he froze it (in container)'	+	+	$\sqrt[1]{t'ix'}$	'hard'	achievement	*∅*
sh-	*awshit'íx'*	's/he steadied it'	+	+	$\sqrt[1]{t'ix'}$	'hard'	achievement	*∅*
	akawshit'íx'	's/he held it (container) steady'	+	+	$\sqrt[1]{t'ix'}$	'hard'	achievement	*∅*

Table 4.14: Properties of verbs based on $\sqrt[1]{t'ix'}$ 'hard'

Table 4.14 summarizes the verbs documented with $\sqrt[1]{t'ix'}$ 'hard, frozen'. Nearly all are achievements and members of the *∅*-conjugation class, and only the states belong to the *g*-conjugation class instead. The *s-*, *l-*, and *sh-* all exhibit causativity since the forms without overt *v* are unaccusative, but it is still unclear what their other semantic contributions are for their structures.

6.2. Lexically specified *sh-*

The *sh-* prefix is uniquely associated with pejoration as discussed in section 4.3. Pejorative *sh-* can be part of a semi-regular grammatical alternation involving negation or it can be lexically specified. In the latter case there are a moderate number of roots that appear with an otherwise unexpected *sh-* which describe phenomena for which the speaker or the society has a negative evaluation: disapproval, dislike, etc.

Beyond the pejorative *sh-*, there are a small number of roots which occur with an unpredictable *sh* but which do not have any obvious pejorative interpretation. Table 4.15 lists most if not all of these verbs as attested in the lexical documentation. Some of these could potentially have a pejorative interpretation if one squints at them. For example, *kawshik̲útl'* 'it got muddy' with the root $\sqrt[1]{k̲utl'}$ 'mud' (cf. noun *k̲útl'kw* 'mud') could be an undesirable situation since mud is slippery and difficult to remove from clothing, and similarly *wushix̲íl'* 'it got slimy' with the root $\sqrt[1]{x̲il'}$ 'slime' (cf. noun *x̲éel'* 'slime, mucus, snot') could be undesirable for similar reasons. Given the decision that these verbs are actually pejorative, they would be moved to table 4.10 on page 316 which lists lexically specified pejorative *sh-*.

But there are other verbs in table 4.15 that do not so easily admit a pejorative interpretation. Thus *ashigóok* 's/he knows how to do it' with the root $\sqrt[2]{gu'k}$ 'know how' (cf. noun *góok* 'expert', nominal-

(Im)perfective	Translation	O	S	Root	Gloss	Eventuality	Conj.
ashigóok	's/he knows how to do it'	+	+	$\sqrt[2]{gu'k}$	'know how'	state (-μH)	*g/g̲*
kashigootl	'it has a hill'	+	–	$\sqrt[1]{gutl}$	'bump'	state (-μ)	*g*
awshig̲aak̲	'it (dog) bayed at it'	+	+	$\sqrt[2]{ga\underline{k}}$	'bay'	achievement	*n*
wushig̲áax̲'	'it got lean'	+	–	$\sqrt[1]{ga\underline{x}'}$	'lean'	achievement?	*g*
akawshig̲íl'	's/he polished it'	+	+	$\sqrt[2]{gil'}$	'rub'	achievement	*∅*
wushig̲íx̲'	'it creaked'	+	–	$\sqrt[1]{gi\underline{x}'}$	'rub'	achievement	*∅/n*
kawshig̲oo	'it (spirit) is calm'	+	–	$\sqrt[1]{gu}$	'settle'	achievement	*g*
awshikél'	's/he made ashes of it'	+	+	$\sqrt[1]{kel'}$	'ash'	achievement	*∅*
kawshik̲útl'	'it got muddy'	+	–	$\sqrt[1]{\underline{k}utl'}$	'mud'	achievement	*∅*
awshit'íx'	's/he steadied it'	+	+	$\sqrt[1]{t'ix'}$	'hard'	achievement	*∅*
awshi.útl	's/he boiled it (fish)'	+	+	$\sqrt[2]{.u'tl}$	'boil fish'	achievement	*∅*
wushix̲íl	'it got foamy'	+	–	$\sqrt[1]{\underline{x}il}$	'foam'	achievement	*∅*
wushix̲íl'	'it got slimy'	+	–	$\sqrt[1]{\underline{x}il'}$	'slime'	achievement	*∅*
yéi kakwshiyáat'	'it is oval-shaped'	+	–	$\sqrt[1]{ÿat'}$	'long'	state (-μH)	*g?*
kashix̲'wáal'shán	'it is soft, downy'	+	–	$\sqrt[1]{\underline{x}'wal'}$	'down'	state (-μH)	*g?*
sh kawjig̲éiy	's/he fancied up self'	+	+	$\sqrt[1]{ge}$	'bright'	achievement?	*?*
wujik'éin	's/he jumped'	–	+	$\sqrt[1]{k'e'n}$	'jump'	motion	–
sh kawjileet	'it (animal) slid self'	+	+	$\sqrt[1]{lit}$	'slide'	motion	–
wujixeex	's/he ran'	–	+	$\sqrt[1]{xix}$	'fall'	motion	–
wujix̲een	'it (container) fell'	+	–	$\sqrt[1]{\underline{x}in}$	'cont. fall'	motion	–
shakawjix̲'áal'	's/he greased own hair'	–	+	$\sqrt[1]{\underline{x}'al'}$	'salve'	achievement	*n*

Table 4.15: Some verbs with a lexicalized non-pejorative *sh-*

ization *atgóok* 'expertise, skill')[20] is difficult to analyze as pejorative because skill and knowledge are valued very highly in Tlingit culture. The verb *awshit'íx'* 's/he steadied it' with $\sqrt[1]{t'ix'}$ 'hard' is part of a larger set of verbs including *s-* and *l-* forms (sec. 6.1.3); it is strange to consider steadying or holding something still as pejorative.

Since the *sh-* prefix probably developed via historical fricative diversification from *s-* and/or *l-* (Leer 1990c, 2008), it is likely that most of the non-pejorative *sh-* in table 4.15 arose from variation and sound change that became irregularly associated with specific roots. Synchronically the non-pejorative *sh-* must simply be memorized as an exceptional value since there it has no clear unifying syntax or semantics. Since there are other lexical entries with apparently arbitrary *s-* or *l-*, this fits in with the larger set of irregular, memorized instances of overt *v* in Tlingit. Given that lexically specified properties are stored as part of the lexical entry of the root, the roots in table 4.15 must be lexically specified for *sh-* in *v*.

6.3. The *d-*/*l-* alternation

The *d-*/*l-* alternation is a pattern of specific verb roots that are attested on the one hand with an unaccusative intransitive containing *d-* in Voice and a transitive containing *l-* (or sometimes *s-*) in *v*.

20. There is a homophonous but unrelated root $\sqrt[2]{gu'k}$ 'peck' found in e.g. *gandaadagóogu* 'woodpecker'.

I only summarize this pattern here, documenting and analyzing it more fully in chapter 5 section 7.2. The essential pattern is that roots which exhibit the *d-*/*l-* alternation seem to be either multivalent with both monovalent and bivalent forms, or alternatively that they represent a different system where the roots are not specified for valency and the argument structure is instead indicated by the Voice and *v* heads rather than being modified by them.

The root √*chu'n* 'wound' is a typical example of the *d-*/*l-* alternation. The data in (173) show that this root cannot form an unaccusative without *v* in (173a), but that it can form an unaccusative in (173b) with overt *d-* in Voice.

(173) a. *Xat uwachún. **unaccusative without d-*
xat= u- i- √chu'n-H
1SG·O=ZPFV-STV-√WOUND-VAR
intended: 'I have gotten wounded.'

b. Xat wudichún. *unaccusative with d-*
xat= wu-d- i- √chu'n-H
1SG·O=PFV-MID?-STV-√WOUND-VAR
'I have gotten wounded.'

The facts in (173) suggest that √*chu'n* should be bivalent with covert *v*. But (174a) shows that this is not the case. Instead the transitive in (174b) has overt l^s- in *v*.

(174) a. *Xat iyachún. **transitive without l-*
xat= u- i- i- √chu'n-H
1SG·O=ZPFV-2SG·S-STV-√WOUND-VAR
intended: 'You have wounded me.'

b. Xat yilichún. *transitive with l^s-*
xat= wu-i- l^s- i- √chu'n-H
1SG·O=PFV-2SG·S-CSV?-STV-√WOUND-VAR
'You have wounded me.'

The transitive form in (174b) would seem to be causative, suggesting that the root should be monovalent. But (173a) above shows that it is not monovalent. In chapter 5 section 7.2 I outline four different approaches to analyzing this phenomenon within the model, finding none to be fully congruent with the rest of the system, and leaving it as an unresolved issue for future research.

7. *v* in the Na-Dene family

My analysis of *s-*, *l-*, and *sh-* as the *v* head has immediate consequences for the analysis of all other Na-Dene languages because there is a cognate prefix in every other language in the family. The usual reconstruction of Proto-Na-Dene posits a **ɬ-* prefix which immediately precedes the verb root and which is associated with causativity (Krauss 1969, 1979; Leer 1990c, 2008). Kibrik (1993) identified this **ɬ-* with a more general function of adding arguments and it is his approach that inspired my analysis of *v* in Tlingit. I expect that all of the phenomena described by Kibrik should be accounted for by the analysis of Dene *ɬ-* as *v* in the same way as for Tlingit, and further predict that many lexically specified instances of *ɬ-* in the Dene languages will be captured by this more abstract analysis of the syntax and semantics of *v*.

The traditional Na-Dene grammatical term **classifier** for the phonological realization of the Voice + *v* + Ɛ complex in Na-Dene languages was directly inspired by the qualification function of overt *v* in Tlingit as detailed in section 4.1. Boas says "it is fairly clear that the primary function of these elements is a classificatory one" (Boas 1917: 28), and that the "original function seems to have been to indicate the form of the subject or object of the verb" (Boas 1917: 23). Boas was incorrect about the primary functions of Voice and *v* – they suppress and add arguments respectively – but he was impressed by the qualification function because it stands out in the paradigms of handling verbs in Tlingit. Sapir seems to have generalized Boas's 'classifier' label to Navajo and the other Na-Dene languages (cf. Whorf 1932: 13; Hoijer 1945b: 196; Krauss 1968: 200–201), replacing the earlier 'third modal prefix' established by Goddard (e.g. Goddard 1911; Swanton 1911; Sapir 1923). Sapir's generalization from Tlingit to Dene was particularly misleading because there is scant evidence for overt *v* qualification in Dene languages (Krauss 1968, 1969), but Leer (2008: 23–24) points out some cases where it can be detected in Proto-Dene and Proto-Dene-Eyak. This suggests that there may be more evidence for qualificational *v* in Dene languages than has been described to date, probably to be found among lexically specified instances of *ɬ-*.

Story (1966: 63) and Naish (1966: 85) used the term **extensor** as an equivalent to the traditional term 'classifier' in their description of Tlingit (also e.g. Story 1972: 27; Story & Naish 1973: 350). Although they meant it in an abstract sense of 'extending' the verb stem to form a kind of base to which other morphology is attached, their label also captures the meaning of 'extension in space' described in section 4.2. Krauss ruefully notes that "Naish and Story have given the Tlingit classifiers the new name of 'extensors', so that the term 'classifier' goes out of use where it was at least in part appropriate, and remains in use by students of Athapaskan and Eyak, where it is a complete misnomer, except as it corresponds to what in Tlingit were once (1917–1965) called classifiers" (Krauss 1968: 201). Fortunately for Krauss, and perhaps also for the rest of us, Story and Naish's innovation never caught on so that both the Dauenhauers and Leer continue to use the term 'classifier' (e.g. Dauenhauer & Dauenhauer 1971; Leer 1975d).

The traditional approach to Na-Dene languages assumes a binary contrast between *ɬ-* and *∅*: a given verb may have *ɬ-* but if it does not then it must have *∅*. This approach is maintained in formal analyses: Hale (2001) assumes the existence of *∅* in Voice in all forms without *ɬ-* and/or *d-* and Rice (2000a) assumes the existence of *∅* in V in similar contexts. In Tlingit this traditional approach supposes a contrast between *s-*, *l-*, and *sh-* on the one hand and *∅* on the other, so that all verbs are supposed to have one of these four values. I accept that *v* can be present but covert, equivalent to the traditional *∅*. This covert *v* occurs in transitives and unergatives (sec. 2.2.2). But in unaccusatives I do not analyze a covert *v* and thus lack an equivalent to the traditional *∅*; instead, I analyze unaccusatives as lacking *v* entirely (sec. 2.2.3). Unaccusatives have no empirical evidence for the presence of *v* nor for the presence of a subject which would be first merged in *v*P. Theoretically no *v* is necessary if there is neither a subject nor something overt in *v*, so I conclude that *v* simply does not exist in unaccusatives. This absence of *v* rather than a covert *v* with *∅* may or may not have consequences for the analysis of Eyak and the Dene languages, depending on whether parallel structures can be identified in them. Dene languages are generally described as having a single intransitive structure similar to English, but I have not investigated the literature in enough detail to determine whether there are any analogues to the unaccusative intransitive in Tlingit.

Part II

The second phase

5 *VoiceP: Suppression and restriction*

Verbum sapienti sat est.
'A verb to the wise is enough.'

Saturio, act 4 scene 7 in *Persa*
(Plautus, ca. 190 BCE)

1 Basic functions of *d-* . . . 347
1.1 Antipassive contexts with *d-* . . . 347
1.2 Passive contexts with *d-* . . . 349
1.3 Middle contexts with *d-* . . . 351
2 The Voice head is *d-* . . . 358
2.1 Phonology of *d-* . . . 359
2.2 Syntax of *d-* . . . 368
3 Object suppression: Deriving antipassive voice . . . 379
3.1 Object suppressing syntax . . . 380
3.2 Object suppressing semantics . . . 390
3.3 What antipassive *d-* doesn't do . . . 391
4 Subject suppression: Deriving passive voice . . . 402
4.1 Subject suppressing syntax . . . 404
4.2 Subject suppressing semantics . . . 411
4.3 What passive *d-* doesn't do . . . 412
5 Argument restriction: Deriving middle voice . . . 415
5.1 Pronouns are bound . . . 415
5.2 Other arguments are restricting . . . 428
5.3 What middle *d-* doesn't do . . . 434
6 Fourth subject *du-* interacts with *d-* . . . 435
6.1 Requirement for *d-* with *du-* . . . 436
6.2 Prohibition of *d-* with *du-* . . . 439
6.3 What about intransitives? . . . 441
6.4 Less common *du-* functions . . . 442
7 Exceptional cases of *d-* . . . 448
7.1 Self-affecting predicates . . . 448
7.2 The *d-*/*l-* alternation . . . 453
7.3 Other exceptional *d-* . . . 457
8 Voice in the Na-Dene family . . . 471

This chapter analyzes the *d-* prefix that is traditionally analyzed as an abstract morphological feature of the 'classifier' in Tlingit. I instead analyze *d-* as a distinct prefix that is the surface realization of the Voice head. It is separate from the *v* head of chapter 4 that features one of the *s-*, *l-*, or *sh-* prefixes. The *d-* prefix is also separate from the Ɛ head of chapter 3 that features the *i-* prefix. These three prefixes spell out phonologically as a single unit in the Classifier domain, but they are syntactically and semantically independent: a given verb may have one, two, or three of these prefixes in any possible combination. This approach departs not only from the traditional analysis of Tlingit, but also from Hale's analysis of both *d-* and *ɬ-* in Voice (Hale 2001, 2003) and from Rice & Saxon's analysis of both *d-* and *ɬ-* in V (Rice 2000a; Rice & Saxon 2005).

The *v* and Voice heads have more or less complementary functions. I showed in the preceding chapter that the *v* head may add an argument (e.g. causative, applicative), or it may instead restrict the meaning of an argument (e.g. classification, spatial extension). Likewise, the Voice head may suppress an argument (antipassive, passive) or instead it may restrict the meaning of an argument (middle). Both *v* and Voice can restrict arguments, but the nature of this restriction is different. Where the *v* head can restrict the meaning of an argument by qualifying its shape in space or time, the Voice head instead restricts the meaning of an argument by equating it to some other argument that is already (perhaps implicitly) present. This means that *v* head restricts an argument by adding extra information whereas the Voice head restricts an argument without the addition of more information. The argument suppressing functions of Voice can be viewed as special cases of saturation where the saturated argument disappears rather than being filled by material. Then the Voice head is effectively either saturating or restricting just like other argument-oriented heads.

Throughout this chapter I consider antipassivization before passivization. This is the reverse of the norm in syntactic studies as reflected by the morphological derivation of *antipassive* from *passive*. My reason for reversing this trend is because of the logic of Tlingit: objects are merged before subjects. Antipassivization targets the D argument merged in VP whereas passivization targets the D argument merged in *v*P, and the lower argument in VP comes first in every derivation, so antipassivization comes first in consideration.

The argument suppressing functions of *d-* in Voice are not symmetric. Each verb root is documented with at most one of these two functions. This could be an accident of the documentary process because the lexicography of Tlingit mostly lacks ungrammatical forms. But it could also reflect a preference for subject or object suppression for each root, possibly depending on θ-roles. All conjugation classes and eventuality classes are attested for both antipassives and passives, so other properties of roots seem to be irrelevant.

The middle voice function of *d-* is split between what I analyze as grammatical operations and lexical specifications. The grammatical operations that involve middle voice are reflexives, reciprocals, self-benefactives, and revertive motion (linear and perambulative). The first three are semantic structures that refer to entities in the interpretation whereas the last refers to locations instead of entities. All are instantiated by regular syntactic operations that can be applied to a wide variety of verbal structures. In contrast, the lexical specifications of middle voice are apparently unpredictable and so must be encoded in the lexical entry of the root.

In section 1 I describe the basic functions of *d-*: antipassives (subsec. 1.1), passives (subsec. 1.2), and middles (subsec. 1.3). The basic contrasts and labels presented in this section are taken as given

in the rest of this chapter. This section is thus a synopsis of the regular behaviour of *d-*, setting the stage for the analysis and exploration of the following sections.

I move to the analysis of *d-* in section 2. Here I argue that *d-* is the manifestation of the Voice head in Tlingit, thus projecting a VoiceP that can take any of *v*P, ƐP, or VP as its complement. I outline the significant phonological properties of *d-* in subsection 2.1, suggesting avenues for future phonological analysis. Then in subsection 2.2 I detail some significant syntactic properties of *d-* in Voice such as its selectional behaviour and its interaction with subject D pronouns.

The suppression functions of *d-* are addressed in section 3 on antipassivization and section 4 on passivization. In each of these sections I illustrate the disappearance of one or the other of the arguments in a transitive structure (subsecs. 3.1 & 4.1) and then sketch what is known about their semantics (subsecs. 3.2 & 4.2). At the end of each section (subsecs. 3.3 & 4.3) I take pains to show what phenomena are crucially not associated with *d-* such as the lack of promotion or demotion phenomena (e.g. lack of object → subject shift and lack of *by*-phrases), incompatibility with intransitive structures, and the inapplicability to argument PPs.

The regular restriction function of *d-* is addressed in section 5 on grammatical middle voice. This begins with a subsection on the binding of pronouns (subsec. 5.1) for reflexives and reciprocals (including oblique arguments), and follows with a section on middle voice associated with self-benefactives and revertive motion (subsec. 5.2). The final subsection details phenomena that do not occur with middle voice *d-* (subsec. 5.3) such as its absence with reflexives or reciprocals in adjuncts.

Section 6 investigates the relationship between *d-* and the fourth person human subject D pronoun *du-* 'one, someone, people; they'. On the one hand, when *du-* is present with an overt *v* the presence of *d-* is mandatory when it would otherwise not occur. On the other hand, when *du-* is present with a covert *v* the presence of *d-* is prohibited even where it would otherwise be required. This at first seems like a phonological constraint, but it is difficult to justify. Reviewing the various functions of *du-*, there is a still unexplained connection between it and *d-* that is partly reflected by their puzzling interaction.

Section 7 is a review of the variety of lexical middle voice phenomena and other unexplained and more or less unproductive instances of *d-* with specific roots. Self-affecting predicates (subsec. 7.1) are transitives with a lexically specified *d-* which indicates that the eventuality results in change to the subject. These are a generalization of the purportedly unique appearance of *d-* with verbs for 'drink' in Na-Dene languages, but Tlingit shows that this is an extension of middle voice semantics rather than an arbitrary phenomenon. The *d-*/*l-* alternation (subsec. 7.2) is an unpredicted alternation between intransitives with *d-* and without overt *v* versus transitives with *l-*. This alternation is relatively widespread and so is probably not irregular; I suggest some possible solutions but leave the phenomenon unresolved. Finally, subsection 7.3 reviews several sets of roots that appear exclusively with *d-* where at first glance it must be lexically specified, but I suggest that these may either reflect underdocumented instances of (anti)passivization or other middle voice phenomena that have yet to be explored.

Section 8 reviews some comparative relationships between Tlingit's *d-* in Voice and other languages in the Na-Dene family. I suspect that my analysis of *d-* for Tlingit will readily generalize to all Na-Dene languages, and that many supposedly arbitrary instances of *d-* in other languages can be explained as either suppression or restriction phenomena in the same way as for Tlingit.

1. Basic functions of *d-*

The *d-* prefix in Tlingit is multifunctional. It regularly appears in three syntactic contexts: antipassive voice, passive voice, and middle voice. It is also lexically specified in some verbs where it shows signs of having originally been introduced by middle voice. In this section I sketch the three regular, syntactically conditioned contexts for the *d-* prefix, setting the stage for a detailed analysis of *d-* in later sections.

The antipassive is described in section 1.1. Antipassives feature the suppression of the object in an otherwise transitive verbal structure. The passive is described in section 1.2. Passives are the logical opposite of antipassives, where the subject of an otherwise transitive structure is suppressed. These two functions of *d-* are abstractly the same: suppression of an argument.

Middle voice is described in section 1.3. The middle voice function of *d-* is distinct from the antipassive and passive because it does not involve the suppression of an argument. Instead, middle voice restricts the meaning of an argument so that it has the same referent as some other argument. For example, given one argument *x* and another argument *y*, middle voice *d-* asserts that $x = y$. Regular middle voice contexts in Tlingit include the crosslinguistically typical reflexive and reciprocal (sec. 1.3.1), but also the self-benefactive (sec. 1.3.2) and revertive motion (sec. 1.3.3).

1.1. Antipassive contexts with *D-*

Antipassives[1] are a syntactic structure where "the logical object of a transitive verb is demoted: either suppressed or represented by an expression lower on the grammatical hierarchy" (Polinsky 2017: 309). In Tlingit antipassives are formed by the suppression of the object and the presence of the *d-* prefix. This is shown schematically by the pair in (1).

(1)	a.	Obj	Subj		√root	*transitive without d-*
	b.	——	Subj	*d-*	√root	*antipassive with d-*

The data in (2) illustrate an antipassive based on the bivalent verb root $\sqrt[2]{}$*hun* 'sell'. The transitive in (2a) is the basis case with overt subject *tu-* 'we' and object *i-* 'you sg.', as well as perfective aspect *wu-* separating the two D pronouns. The *d-* is absent and there is no overt content in *v*, but *i-* appears in Ɛ as required by the perfective aspect. The antipassive in (2b) exhibits overt *d-* as well as the absence of the object D pronoun *i-* 'you sg.'. The ungrammatical form in (2c) shows that the object cannot be present in the antipassive.

(2) a. Iwtuwahoon. *transitive without d-*

i-	wu-tu-	i-	$\sqrt[2]{}$hun-μ
2SG·O-PFV-1PL·S-		STV-	$\sqrt[2]{}$sell -VAR

'We sold you (sg.).'

b. Wutudihoon. *antipassive with d-*

	wu-tu-	d-	i-	$\sqrt[2]{}$hun-μ
	PFV-1PL·S-APSV-		STV-	$\sqrt[2]{}$sell -VAR

'We sold.'

1. The term **antipassive** is due to Silverstein who identified it in Lower Chinook and other Chinookan Languages (Silverstein 1972; Dixon 1994: 149 fn. 9).

c. * Iwtudihoon. **transitive with d-*
i- wu-tu- d- i- $\sqrt[2]{}$hun-μ
2SG·O-PFV-1PL·S-APSV-STV-$\sqrt[2]{}$sell -VAR
intended: 'We sold you (sg.).'

The data in (3) illustrate an antipassive based on the root $\sqrt[2]{}$*ÿa* 'lower, spread'; here *v* contains *s-* rather than being covert, and the object is a DP rather than a D pronoun. The transitive in (3a) has the incorporated noun *sha-* 'head' (from inalienable *shá* 'head') along with the extensional *s-* in *v* that together with the root derive a meaning of 'anchor'. The antipassive in (3b) shows the appearance of *d-* as well as the loss of the object. The lack of an object in (3b) is confirmed by the ungrammatical combination of *d-* and the object DP *ax̲ yaagú* 'my boat' in (3c).

(3) a. Ax̲ yaagú shax̲wsiyaa. *transitive without d-*
ax̲ yaakw-í sha- wu-x̲- s- i- $\sqrt[2]{}$ÿa -μ
1SG·PSS boat -PSS head-PFV-1SG·S-XTN-STV-$\sqrt[2]{}$lower-VAR
'I anchored my boat.' (Story & Naish 1973: 19)

b. Shax̲wdziyaa. *antipassive with d-*
sha- wu-x̲- d- s- i- $\sqrt[2]{}$ÿa -μ
head-PFV-1SG·S-APSV-XTN-STV-$\sqrt[2]{}$lower-VAR
'I anchored.' (Eggleston 2017)

c. * Ax̲ yaagú shax̲wdziyaa. **transitive with d-*
ax̲ yaakw-í sha- wu-x̲- d- s- i- $\sqrt[2]{}$ÿa -μ
1SG·PSS boat -PSS head-PFV-1SG·S-APSV-XTN-STV-$\sqrt[2]{}$lower-VAR
intended: 'I anchored my boat.'

The data in (4) illustrate an antipassive based on the root $\sqrt[2]{}$*x̲ut'* 'drag, lead'; here the *v* head has *l-*. The transitive in (4a) has the incorporated noun *sha-* 'head' and the extensional *l-* in *v*, together with this root 'drag' deriving a verb that describes fishing with a rod with a compositional meaning of something like 'drag the head of it via a line'. The antipassive in (4b) has *d-* and no object. The ungrammatical transitive in (4c) shows that an object is not allowed when *d-* is present.

(4) a. T'á shawtulix̲óot'. *transitive without d-*
t'á sha- wu-tu- l- i- $\sqrt[2]{}$x̲ut'-μH
k·salmon head-PFV-1PL·S-XTN-STV-$\sqrt[2]{}$drag-VAR
'We rod-fished for king salmon.'

b. Shawtudlix̲óot'. *antipassive d-*
sha- wu-tu- d- l- i- $\sqrt[2]{}$x̲ut'-μH
head-PFV-1PL·S-APSV-XTN-STV-$\sqrt[2]{}$drag-VAR
'We rod-fished.'

c. * T'á shawtudlix̲óot'. **transitive with d-*
t'á sha- wu-tu- d- l- i- $\sqrt[2]{}$x̲ut'-μH
k·salmon head-PFV-1PL·S-APSV-XTN-STV-$\sqrt[2]{}$drag-VAR
intended: 'We rod-fished for king salmon.'

The data in (5) illustrate an antipassive based on the root $\sqrt[2]{xit}$ 'scratch'; here the *v* head contains *sh-*. The transitive in (5a) contains the qualifier *k-* 'horizontal surface' as well as a lexical *sh-* in *v*, together deriving a verb 'write' when combined with the root 'scratch'.[2] The antipassive in (5b) contains *d-* and lacks an object. The ungrammatical form in (5c) shows that the antipassive cannot occur with an object DP.

(5) a. X'úx' kawtushixít. *transitive without d-*
x'úx' k- wu-tu- sh-i- $\sqrt[2]{}$xit -H
book HSFC-PFV-1PL·S- PEJ-STV-$\sqrt[2]{}$scratch-VAR
'We wrote a book.'

b. Kawtujixít. *antipassive with d-*
k- wu-tu- d- sh-i- $\sqrt[2]{}$xit -H
HSFC-PFV-1PL·S-APSV-PEJ-STV-$\sqrt[2]{}$scratch-VAR
'We wrote.'

c. *X'úx' kawtujixít. **transitive with d-*
x'úx' k- wu-tu- d- sh-i- $\sqrt[2]{}$xit -H
book HSFC-PFV-1PL·S-APSV-PEJ-STV-$\sqrt[2]{}$scratch-VAR
intended: 'We wrote a book.'

1.2. Passive contexts with *d-*

Passive voice is the logical inverse of antipassive voice, where the subject is demoted or suppressed instead of the object. In Tlingit passives are formed by the suppression of the subject and the presence of the *d-* prefix. This is shown schematically by the pair in (6).

(6) a. Obj Subj √root *transitive without d-*
b. Obj —— *d-* √root *passive with d-*

Passives in Tlingit were unreported until their first mention by Crippen & Déchaine (2016). Boas (1917: 44) refers to verbs with covert third person objects as "passive" but this is erroneous. He interprets the use of ergative *-ch* as indicating the actor "in passive sentences" (Boas 1917: 99–100), a perspective common to early attempts to describe ergativity. He also describes the use of the fourth person human subject *du-* as "passive" (Boas 1917: 52–53), but this actually a pseudopassive as discussed in section 6. Story (1966: 96) does not mention any kind of passive other than *du-*. Likewise, Leer (1991: 104) says that verbs with *du-* "frequently translate as passives in English" but makes no mention of passives with *d-*. Consequently, the passive in Tlingit is even less well understood than the antipassive.

The passive can occur with covert or overt *v*. The pair of sentences in (7) illustrate a passive with covert *v*. The pair in (8) illustrate a passive with overt *s-* in *v*, those in (9) the same with *l-*, and those in (10) the same with *sh-*. Passives occur with overt causative *v* as shown by (8) and (9).

2. The *sh-* in 'write' is probably originally a pejorative, indicating the undesirability of permanently scratching a surface. Today with the meaning 'write' the pejorative interpretation seems to be completely absent. The older meaning 'scratch surface' might still be accessible, in which case the pejorative could still apply.

(7) a. Xwaat'ús'. *transitive with covert v*
wu-x- i- $^{2}\sqrt{}$t'us'-H
PFV-1SG·S-STV-$^{2}\sqrt{}$toast-VAR
'I toasted it.'

b. Wudit'ús'. *passive with d- and covert v*
wu-d- i- $^{2}\sqrt{}$t'us'-H
PFV-PASV-STV-$^{2}\sqrt{}$toast-VAR
'It got toasted.' (Leer 1976a: 435)

c. *Xwadit'ús'. **transitive with d- and covert v*
wu-x- d- i- $^{2}\sqrt{}$t'us'-H
PFV-1SG·S-PASV-STV-$^{2}\sqrt{}$toast-VAR
intended: 'S/he toasted it.'

(8) a. Héen xwasi.át'. *causative with s-*
héen wu-x- s- i- $^{1}\sqrt{}$.at' -H
water PFV-1SG·S-CSV-STV-$^{1}\sqrt{}$cold-VAR
'I cooled the water.' (lit. 'I made the water become cold.')

b. Wudzi.át'. *passive with d- and s-*
wu-d- s- i- $^{1}\sqrt{}$.at' -H
PFV-PASV-CSV-STV-$^{1}\sqrt{}$cold-VAR
'It (jello) cooled off.' (lit. 'It (jello) was made to become cold.') (Leer 1976a: 100)

c. *Xwadzi.át'. **causative with d- and s-*
wu-x- d- s- i- $^{1}\sqrt{}$.at' -H
PFV-1SG·S-PASV-CSV-STV-$^{1}\sqrt{}$cold-VAR
intended: 'I cooled it.', 'I made it become cold.'

(9) a. Guwakaan shaayí xwalihíts. *causative with l-*
guwakaan shá -í wu-x- l^{s}- i- $^{1}\sqrt{}$hits -H
deer head-PSS PFV-1SG·S-CSV-STV-$^{1}\sqrt{}$singe-VAR
'I singed the deer head.' (lit. 'I made the deer head become singed.') (Story & Naish 1973: 192)

b. Wudlihíts. *passive with d- and l-*
wu-d- l^{s}- i- $^{1}\sqrt{}$hits -H
PFV-PASV-CSV-STV-$^{1}\sqrt{}$singe-VAR
'It got singed.' (lit. 'It was made to become singed.') (Leer 1976a: 59)

c. *Xwadlihíts. **causative with d- and l-*
wu-x- d- l^{s}- i- $^{1}\sqrt{}$hits -H
PFV-1SG·S-PASV-CSV-STV-$^{1}\sqrt{}$singe-VAR
intended: 'I singed it.', 'I made it become singed.'

(10) a. Xwashitóok. *transitive with lexical sh-*
wu-x- sh- i- $^{2}\sqrt{}$tu'k -μH
PFV-1SG·S-PEJ-STV-$^{2}\sqrt{}$explode-VAR
'I blew it up.', 'I exploded it.'

b. Wujitóok. *passive with d- and sh-*
wu-d- sh- i- $^{2}\sqrt{}$tu'k -μH
PFV-PASV-PEJ-STV-$^{2}\sqrt{}$explode-VAR
'It was exploded (by someone).' (Leer 1973a: 07/33)

c. *Xwajitóok. **causative with d- and sh-*
wu-x- d- sh- i- $^{2}\sqrt{}$tu'k -H
PFV-1SG·S-PASV-CSV-STV-$^{2}\sqrt{}$explode-VAR
intended: 'I blew it up.', 'I exploded it.'

In all of the passive structures in (7b)–(10b), the object argument is covert. Nonetheless, the ungrammatical forms with the first person singular subject *x-* 'I' in (7c)–(9c) show that the passives are truly intransitive with only a single argument. The presence of *a-* is ungrammatical because it entails the presence of a third person subject and a third person object (see ch. 7 sec. 1.2.2), but this is impossible with passive voice because the subject is suppressed.

There is a common belief that ergative-absolutive languages only have antipassive voice whereas nominative-accusative languages only have passive voice. This is incorrect since there are ergative-absolutive languages that exhibit both passives and antipassives (Polinsky 2017). Likewise, some researchers suggest that antipassives can only occur in ergative-absolutive languages, but they are also attested in nominative-accusative languages (Lazard 1989; Polinsky 2017). Thus it is not particularly remarkable that Tlingit has both antipassives and passives, even if it seems to be an ergative-absolutive language given the use of *-ch* in marking subjects (Leer 1991; Crippen 2016).

1.3. Middle contexts with *d-*

Like antipassive and passive voice, middle voice in Tlingit is also indicated by the presence of *d-*. Unlike antipassive and passive voice, middle voice does not suppress an argument. Thus transitive structures continue to be transitive with the appearance of *d-*. Furthermore, the middle voice *d-* can also occur in some intransitive structures which would be impossible for antipassive or passive *d-*. In this section I sketch the typical contexts of middle voice where it is syntactically conditioned, specifically in reflexives and reciprocals (1.3.1), in self-benefactives (1.3.2), and in revertive motion (1.3.3). I address a number of cases where the middle *d-* seems to be more or less lexicalized in section 5.

1.3.1. Reflexives and reciprocals trigger *d-*

Reflexives and reciprocals are indicated in Tlingit by distinct morphemes. The complete inventory of reflexive and reciprocal morphemes is given in table 5.1. The 'Object' column lists the forms documented as the direct object of a transitive verb, the 'Possessor' column lists forms that occur as the possessor of a noun, and the 'Postpositional' column gives forms that occur as the complement of a postposition. Reflexives and reciprocals cannot occur as the subject of a verb whether it is transitive or unergative. Neither reflexives nor reciprocals are documented as independent pronouns in e.g. a focus structure with *áwé*, but it is not known whether they are ungrammatical in this context.

	Object	*Subject*	*Possessor*	*Postpositional*	*Independent*
Reflexive	sh	*	sh	sh ee	?
	chush	*	chush	chush ee	?
	ash	*	*	*	*
	ach	*	*	*	*
Reciprocal	woosh	*	woosh	woosh	?
	wooch	*	wooch	wooch	?

Table 5.1: Reflexive and reciprocal pronoun forms

The *sh* [ʃ] allomorph of the reflexive is the minimal form and is generally the most common. It seems to be syntactically and semantically interchangeable with the *chush* [tʃʰùʃ] allomorph; the selection of one or the other form is probably conditioned by phonological factors such as metrical structure and cluster complexity, although dialect and personal preferences also contribute. Similarly the *woosh* [wùːʃ] allomorph is the most common form of the reciprocal, with choice of the *wooch* [wùːtʃ] allomorph also probably conditioned by phonology. Either of *chush* and *wooch* may be more or less common per dialect, but the details of this variation are unknown.

The *ash* [ʔàʃ] and *ach* [ʔàtʃ] forms of the reflexive are restricted. As discussed further in section 7, they occur only in certain derivations in the object position of a verb but their syntactic status and semantic contributions in these contexts are still unclear. In other contexts the *ash* form is only interpreted as the third person proximate, for which see chapter 7 section 1.2.1.6. The *ach* form does not otherwise occur. The *ash* and *ach* forms probably derive from third person *á* with *sh* as an emphatic; this presumably led to the proximate interpretation on the one hand and left behind the now unproductive reflexive interpretation in its less common derivational contexts.

The *woosh* reciprocal appears to be constructed from the reflexive *sh* but the *woo* element has no independent existence. The *ach* reflexive and *wooch* reciprocal might be thought of as containing ergative/applicative *-ch* but they do not have any reliable syntactic behaviour or semantic interpretations that match the ergative/applicative; instead they probably reflect a historical /ʃ/ ~ /tʃ/ alternation that also involves the ergative/applicative *-ch* (Leer 1990c).

See chapter 7 sections 1.2.1.10–1.2.1.12 for further discussion of the forms of the reflexive and reciprocal pronouns and their relationships with the rest of the pronoun system.

1.3.1.1. Reflexive and reciprocal objects trigger *d-*

In Tlingit the presence of a reflexive or reciprocal object pronoun requires the presence of *d-*. This is shown schematically in (11).

(11)	a.	Obj	Subj		√root	*transitive without d-*
	b.	Reflexive	Subj	*d-*	√root	*reflexive transitive with d-*
	c.	Reciprocal	Subj	*d-*	√root	*reciprocal transitive with d-*

The data in (12) shows a basis case where an ordinary transitive verb based on a bivalent root cannot occur with *d-* when there is no reflexive or reciprocal. The other basis case in (13) is a transitive structure derived by causativization from a monovalent root.

(12) a. Iwtuwahoon. *non-reflexive transitive without d-*
i- wu-tu- i- $^{2}\sqrt{}$hun-μ
2SG·O-PFV-1PL·S-STV-$^{2}\sqrt{}$sell -VAR
'We sold you (sg.).'

b. *Iwtudihoon. **non-reflexive transitive with d-*
i- wu-tu- d- i- $^{2}\sqrt{}$hun-μ
2SG·O-PFV-MID-1PL·S-STV-$^{2}\sqrt{}$sell -VAR
intended: 'We sold you (sg.).'

(13) a. Iwtusi.ée. *non-reflexive causative without d-*
i- wu-tu- s- i- $^{1}\sqrt{}$.i -μH
2SG·O-PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
'We cooked you (sg.).'

b. *Iwtudzi.ée. **non-reflexive causative with d-*
i- wu-tu- d- s- i- $^{1}\sqrt{}$.i -μH
2SG·O-PFV-1PL·S-MID-CSV-STV-$^{1}\sqrt{}$cook-VAR
intended: 'We cooked you (sg.).'

The replacement of the object with reflexive *sh=* requires the presence of *d-* as shown in (14) and (15) for both transitives and causatives.

(14) a. *Sh wutuwahoon. **reflexive transitive without d-*
sh= wu-tu- i- $^{2}\sqrt{}$hun-μ
RFLX·O=PFV-1PL·S- STV-$^{2}\sqrt{}$sell -VAR
intended: 'We sold ourselves.'

b. Sh wutudihoon. *reflexive transitive with d-*
sh= wu-tu- d- i- $^{2}\sqrt{}$hun-μ
RFLX·O=PFV-1PL·S-MID-STV-$^{2}\sqrt{}$sell -VAR
'We sold ourselves.'

(15) a. *Sh wutusi.ée. **reflexive causative without d-*
sh= wu-tu- s- di- $^{1}\sqrt{}$.i -μH
RFLX·O=PFV-1PL·S- CSV-STV-$^{1}\sqrt{}$cook-VAR
intended: 'We cooked ourselves.'

b. Sh wutudzi.ée. *reflexive causative with d-*
sh= wu-tu- d- s- i- $^{2}\sqrt{}$.i -μH
RFLX·O=PFV-1PL·S-MID-CSV-STV-$^{1}\sqrt{}$cook-VAR
'We cooked ourselves.'

The *chush=* allmorph of the reflexive in (16) and (17) has the same properties and interpretation as *sh=* for transitives and causatives.

(16) a. *Chush wutuwahoon. *reflexive transitive without d-*
chush=wu-tu- i- $^{2}\sqrt{}$hun-μ
RFLX·O= PFV-1PL·S- STV-$^{2}\sqrt{}$sell -VAR
intended: 'We sold ourselves.'

b. Chush wutudihoon. *reflexive transitive with d-*
chush=wu-tu- d- i- $^{2}\sqrt{}$hun-μ
RFLX·O= PFV-1PL·S-MID-STV-$^{2}\sqrt{}$sell -VAR
'We sold ourselves.'

(17) a. *Chush wutusi.ée. *reflexive causative without d-*
chush=wu-tu- s- i- $^{1}\sqrt{}$.i -μH
RFLX·O= PFV-1PL·S- CSV-STV-$^{1}\sqrt{}$cook-VAR
intended: 'We cooked ourselves.'

b. Chush wutudzi.ée. *reflexive causative with d-*
chush=wu-tu- d- s- i- $^{1}\sqrt{}$.i
RFLX·O= PFV-1PL·S-MID-CSV-STV-$^{1}\sqrt{}$cook
'We cooked ourselves.'

The reciprocal also requires *d-* when it appears as the object of either a transitive as in (18) or a causative as in (19).

(18) a. *Woosh wutuwahoon. *reciprocal transitive without d-*
woosh=wu-tu- i- $^{2}\sqrt{}$hun-μ
RECIP·O=PFV-1PL·S- STV-$^{2}\sqrt{}$sell -VAR
intended: 'We sold each other.'

b. Woosh wutudihoon. *reciprocal transitive with d-*
woosh=wu-tu- d- i- $^{2}\sqrt{}$hun-μ
RECIP·O=PFV-1PL·S-MID-STV-$^{2}\sqrt{}$sell -VAR
'We sold each other.'

(19) a. *Woosh wutusi.ée. *reciprocal transitive without d-*
woosh=wu-tu- s- i- $^{2}\sqrt{}$hun
RECIP·O=PFV-1PL·S- CSV-STV-$^{1}\sqrt{}$cook
intended: 'We cooked each other.'

b. Woosh wutudzi.ée. *reciprocal transitive with d-*
woosh=wu-tu- d- s- i- $^{2}\sqrt{}$hun
RECIP·O=PFV-1PL·S-MID-CSV-STV-$^{1}\sqrt{}$cook
'We cooked each other.'

Just like the *woosh=* reciprocal, the *wooch=* allomorph shown in (20) and (21) also requires the presence of *d-*.

(20) a. *Wooch wutuwahoon. *reciprocal transitive without d-*
wooch=wu-tu- i- $\sqrt[2]{}$hun-μ
RECIP·O= PFV-1PL·S- STV-$\sqrt[2]{}$sell -VAR
intended: 'We sold each other.'

b. Wooch wutudihoon. *reciprocal transitive with d-*
wooch=wu-tu- d- i- $\sqrt[2]{}$hun-μ
RECIP·O= PFV-1PL·S-MID-STV-$\sqrt[2]{}$sell -VAR
'We sold each other.'

(21) a. *Wooch wutusi.ée. *reciprocal transitive without d-*
wooch=wu-tu- s- i- $\sqrt[2]{}$hun
RECIP·O= PFV-1PL·S- CSV-STV-$\sqrt[1]{}$cook
intended: 'We cooked each other.'

b. Wooch wutudzi.ée. *reciprocal transitive with d-*
wooch=wu-tu- d- s- i- $\sqrt[2]{}$hun
RECIP·O= PFV-1PL·S-MID-CSV-STV-$\sqrt[1]{}$cook
'We cooked each other.'

The facts in (12)–(21) are summarized by the table in (22). Forms of the transitives based on $\sqrt[2]{}$*hun* 'sell' and $\sqrt[1]{}$*.i* 'cook' with a reflexive or reciprocal object are only grammatical when *d-* is present. Other objects are ungrammatical when *d-* is present.

(22)

	with *d-*	without *d-*	example no.
reflexive object *sh=*	✓	*	(14), (15)
reflexive object *chush=*	✓	*	(16), (17)
reciprocal object *woosh=*	✓	*	(18), (19)
reciprocal object *wooch=*	✓	*	(20), (21)
other object	*	✓	(12), (13)

1.3.1.2. Reflexive and reciprocal obliques trigger *d-*

Reflexive and reciprocal pronouns also trigger *d-* when they occur inside of argument PPs (obliques). There are two configurations where they can trigger *d-* inside of a PP: (i) when the reflexive or reciprocal pronoun is the complement of the postposition, and (ii) when the reflexive or reciprocal pronoun is a possessor within the complement of the postposition. The sketch in (23) represents the configuration where the reflexive or reciprocal pronoun is the complement of the postposition. The sketch in (24) represents the configuration where the reflexive or reciprocal is the possessor inside of the noun phrase that is the complement of the postposition.

(23) a. [$_{PP}$ Pronoun -P] Obj Subj √root *oblique argument PP without d-*
b. [$_{PP}$ Reflexive -P] Obj Subj *d-* √root *reflexive oblique with d-*
c. [$_{PP}$ Reciprocal-P] Obj Subj *d-* √root *reciprocal oblique with d-*

(24) a. [PP [Possessor N]-P] Obj Subj √root *oblique argument PP without d-*

b. [PP [Reflexive N]-P] Obj Subj *d-* √root *reflexive possessor oblique with d-*

c. [PP [Reciprocal N]-P] Obj Subj *d-* √root *reciprocal possessor oblique with d-*

This phenomenon is traditionally known as **indirect middle voice** in the description of Na-Dene languages (Thompson 1996: 371; Rice 2000a: 146), perhaps by analogy with the misleading label of 'indirect object' for an argument PP. These structures are more generally known as **oblique reflexive**s and **oblique reciprocal**s; I refer to them by the term **oblique middle voice**.

The typical context of a reflexive or reciprocal oblique is within the path argument of a motion verb. The data in (25) illustrates an ordinary possessive pronoun in (25a) that contrasts with a reciprocal possessive pronoun in (25b) and a reflexive possessive pronoun in (25c).

(25) a. X'ooõ a<u>x</u> káa yan has aawa.á<u>x</u>. *first person singular possessor*
x'ooõ a<u>x</u> ká -μ ÿán= has=a- wu- i- $^{2}\sqrt{}$.a<u>x</u> -H
blanket [PP 1SG·PSS HSFC-LOC] TERM=PL·H=ARG-PFV-3·S-STV-$^{2}\sqrt{}$hdl·fabric-VAR
'They put a blanket on me.' (*Keiyishí* Bessie Cooley)

b. Wé <u>k</u>áa x'ooõ wooch káa yan has amdli.át. *reciprocal possessor*
wé <u>k</u>áa x'ooõ wooch ká -μ ÿán= has=a- wu- d- l- i- $^{1}\sqrt{}$.at -H
MDST man blanket [PP RECIP·PSS HSFC-LOC] TERM=PL·H=ARG-PFV-3·S-MID-CSV-STV-$^{1}\sqrt{}$go·PL-VAR
'The men put blankets on each other.' (*Keiyishí* Bessie Cooley)

c. Ldakát <u>k</u>áax'w x'ooõ chush káa yan amdli.át. *reflexive possessor*
ldakát <u>k</u>áa-x' x'ooõ chush ká -μ ÿán= a- wu- d- l- i- $^{1}\sqrt{}$.at -H
all man-PL blanket [PP RFLX·PSS HSFC-LOC] TERM=ARG-PFV-3·S-MID-CSV-STV-$^{1}\sqrt{}$go·PL-VAR
'All the men put blankets on himself.' (*Keiyishí* Bessie Cooley)

Note that the data in (25) reflect the case in (24) where the reflexive or reciprocal trigger for *d-* is a possessive pronoun. The cases in (23) are remarkably rare, probably because the direct attachment of a postposition to a pronoun is generally dispreferred over the use of a relational noun. Thus the vast majority of oblique reflexives and oblique reciprocals are those with a possessive pronoun.

1.3.2. Self-benefactive triggers *d-*

The self-benefactive *g-* is another trigger for middle voice marking with *d-* (Story 1966: 101–102; Leer 1991: 53). As its name implies, the self-benefactive *g-* indicates that the subject performs or causes the eventuality for the subject's own benefit. The self-benefactive is shown schematically in (26).

(26) a. Obj Subj √root *transitive without d-*

b. Obj *g-* Subj *d-* √root *self-benefactive transitive with d-*

The data in (27) illustrate a typical self-benefactive. The form in (27a) is the transitive basis case. The form in (27b) adds the self-benefactive *g-*, but this is ungrammatical without the concomitant addition of *d-* as in (27c).

(27) a. Kóox xwasi.ée. *without self-benefactive*
kóox wu-x- s- i- $^{1}\sqrt{}$.i -μH
rice PFV-1SG·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
'I cooked rice.'

b. *Kóox gaxwsi.ée. *with self-benefactive but not d-*
kóox g- wu-x- s- i- $^{1}\sqrt{}$.i -μH
rice SBEN-PFV-1SG·S- CSV-STV-$^{1}\sqrt{}$cook-VAR
intended: 'I cooked rice for myself.'

c. Kóox gaxwdzi.ée. *with self-benefactive and d-*
kóox g- wu-x- d- s- i- $^{1}\sqrt{}$.i -μH
rice SBEN-PFV-1SG·S-MID-CSV-STV-$^{1}\sqrt{}$cook-VAR
'I cooked rice for myself.'

1.3.3. Revertive motion triggers *d-*

Revertive motion is a kind of motion where the destination location is the same as the start location of some previous motion. It is typically translated into English with the adverb 'back'. There are two kinds of revertive motion in Tlingit: linear and perambulative. The linear revertive motion features the preverb *kúx=* and describes a motion event that retraces the previous path. The perambulative revertive motion includes the prefixes *a-* (ch. 7 sec. 1.2.2.3) and *ÿ-* (ch. 7 sec. 1.3.4.2) and describes a motion event that circles back to the previous source location along a path that is not identical to the previous path. The two kinds of revertive motion structures are shown schematically in (28).

(28)	a.				Subj	*d-*	√root	*motion without d-*
	b.	*kúx*			Subj	*d-*	√root	*linear revertive motion with d-*
	c.		*a-*	*ÿ-*	Subj	*d-*	√root	*perambulative revertive motion with d-*

The sentences in (29) demonstrate the basis case of a perfective unergative motion based on the root $^{1}\sqrt{}$*gut* 'sg. go'. This verb is grammatical only when it lacks *d-*.

(29) a. Xwaagoot. *plain motion*
wu-x- i- $^{1}\sqrt{}$gut -μ
PFV-1SG·S- STV-$^{1}\sqrt{}$go·SG-VAR
'I went.'

b. Xwadigoot. *plain motion with d-*
wu-x- d- i- $^{1}\sqrt{}$gut -μ
PFV-1SG·S-MID-STV-$^{1}\sqrt{}$go·SG-VAR
'I went.'

Linear revertive motion is shown in (30). The revertive *kúx=* preverb is added in (30a) but this alone is ungrammatical, and the grammatical form in (30b) has both *kúx=* and *d-*.

(30) a. *Kux̱ x̱waagút. *linear revertive motion without d-*
kúx̱=wu-x̱- i- $^{1}\sqrt{}$gut -H
REV= PFV-1SG·S- STV-$^{1}\sqrt{}$go·SG-VAR
intended: 'I went back.'

b. Kux̱ x̱wadigút. *linear revertive motion with d-*
kúx̱=wu-x̱- d- i- $^{1}\sqrt{}$gut -H
REV= PFV-1SG·S-MID-STV-$^{1}\sqrt{}$go·SG-VAR
'I went back.'

Perambulative revertive motion is shown in (31). The perambulative *a-* and *ÿ-* prefixes are added in (31a) but these alone are ungrammatical. The grammatical form in (31b) has *d-* as well.

(31) a. *Ayax̱waagút. *perambulative revertive motion without d-*
a- ÿ- wu-x̱- i- $^{1}\sqrt{}$gut -H
XPL-QUAL-PFV-1SG·S- STV-$^{1}\sqrt{}$go·SG-VAR
intended: 'I went back around.'

b. Ayax̱wdigút. *perambulative revertive motion with d-*
a- ÿ- wu-x̱- d- i- $^{1}\sqrt{}$gut -H
XPL-QUAL-PFV-1SG·S-MID-STV-$^{1}\sqrt{}$go·SG-VAR
'I went back around.'

Both revertive motion derivations require the *∅*-conjugation class as discussed later in chapter 6 section 3.4.4. The change of conjugation class from the *n*-conjugation in (29) to the *∅*-conjugation in (30) and (31) is the source of the switch from the *-μ* stem to the *-H* stem in the perfective aspect.

2. The Voice head is *D-*

As I asserted in the introduction to this chapter, I identify the *d-* prefix as the realization of the Voice head. This Voice head may select *v*P, ƐP, or VP depending on the structure, and it projects a phrase VoiceP. If VoiceP is present it is selected by Asp. The possible linearizations of structures that include Voice are shown in (32), ignoring the subject D pronoun that could appear immediately after Asp.

(32) a. Asp > Voice > *v* > Ɛ > VP
b. Asp > Voice > *v* > VP
c. Asp > Voice > Ɛ > VP
d. Asp > Voice > VP

The Voice head spells out as part of the phonological Classifier domain together with the *v* and Ɛ heads if they are present and have phonological content. The Classifier domain is a phonological reality because it behaves uniquely in the language with phonological properties that occur nowhere else. But from a syntactic perspective there is no such entity as a 'classifier'; each of the Voice, *v*, and Ɛ heads has an independent existence and there are no regular interactions between them other than subcategorization.

2.1. Phonology of *d-*

The *d-* prefix in Voice is spelled out as part of the Classifier domain which is a subdomain of the Conjunct domain that immediately precedes the Stem. The phonological realization of *d-* is twofold in Tlingit: it may be spelled out as a lone onset consonant [t] as part of the syllables *di* [tì] and *da* [tà], or it may be spelled out as the stop component of an onset affricate as part of the syllables *dzi* [tsì], *dli* [tɬì], and *ji* [tʃì]. A third possibility is that *d-* may be unrealized, i.e. phonologically deleted. This latter case only happens when *v* is overt, containing one of *s-*, *l-*, or *sh-* and at the same time there is no *i-* present in Ɛ. All three possibilities can be seen in (33) which represents all of the surface forms that can arise from the various combinations of *i-* in Ɛ, *s-*, *l-*, or *sh-* in *v*, and *d-* in Voice.

(33) *Classifier domain outputs with d-*

	Voice +	*v* +	Ɛ →	*orth.*	*IPA*
a.	*d-*			*da*	[tà]
b.	*d-*		*i-*	*di*	[tì]
c.	*d-*	*s-*	*i-*	*dzi*	[tsì]
d.	*d-*	*l-*	*i-*	*dli*	[tɬì]
e.	*d-*	*sh-*	*i-*	*ji*	[tʃì]
f.	*d-*	*s-*		*s*	[Vs]
g.	*d-*	*l-*		*l*	[Vɬ]
h.	*d-*	*sh-*		*sh*	[Vʃ]

The representation in (33a) shows the minimal phonological realization of *d-* in Voice, spelling out as the onset of a syllable *da* [tà]. The same onset appears in (33b) together with *i-* in Ɛ realized as the syllable *di* [tì]. Together with overt *v* the *d-* can be identified as the stop gesture in the affricates of (33c–d). The last three realizations in (33e–h) are anomalous because there is no segment or gesture that corresponds to *d-* in the syllables [Vs], [Vɬ], or [Vʃ]. Below in subsections 2.1.1–2.1.4 I present data that attest the patterns in (33), and then in section 2.1.6 I outline a plausible direction for formalization of Voice phonology in Tlingit.

2.1.1. Realization of lone *d-*

The data in (34) illustrate the *d-* in Voice without anything else in the Classifier domain: no *v* and no Ɛ. The transitive in (34a) shows a form without *d-*, and the reflexive in (34b) shows the contrasting form with *d-* that spells out as a CV syllable of onset *d* [t] and the epenthetic vowel *a* [à]. The *d-* cannot be realized as a coda consonant in (34c), nor can it be deleted in (34d).

(34) a. *without d-*

At tooxá.
[ʔàt tʰùː.ˈχá]
at= tu- ²√xa-H
4N·O= 1PL·S- ²√eat-VAR
'We're eating something.'

b. *with d- as onset*

Sh tudaxá.
[ʃ tʰù.tà.ˈχá]
sh= tu- d- ²√xa-H
RFLX·O=1PL·S-MID-²√eat-VAR
'We're eating ourselves.'

c. *Sh tutxá. *with d- as coda
[ʃ tʰùt.ˈχá]
sh= x- d- ²√xa-H
RFLX·O=1PL·S-MID-²√eat-VAR
intended: 'We're eating ourselves.'

d. *Sh tooxá. *with d- deleted
[ʃ tʰùː.ˈχá]
sh= tu- d- ²√xa-H
RFLX·O=1PL·S-MID-²√eat-VAR
intended: 'We're eating ourselves.'

2.1.2. Realization of *d-* with *i-*

The data in (35) illustrate the *d-* together with *i-*, using perfective aspect to force the presence of *i-* in Ɛ. The transitive in (35a) shows the lone *i-* realized as the syllable *wa* [wà], and the reflexive in (35b) shows the *d-* and *i-* together realized as the syllable *di* [tì]; this *di* is a straightforward concatenation of *d-* and *i-*. The *d-* cannot be spelled out as the coda of the preceding syllable as in (35c) and it cannot be deleted as in (35d).

(35) a. At wutuwaxáa. *without d-*
[ʔàt wù.tʰù.wà.ˈχáː]
at= wu-tu- i- ²√xa-μH
RFLX·O= PFV-1PL·S- STV-²√eat-VAR
'We ate something.'

b. Sh wutudixáa. *with d- in onset*
[ʃ wù.tʰù.tì.ˈχáː]
sh= wu-tu- d- i- ²√xa-μH
RFLX·O= PFV-1PL·S-MID-STV-²√eat-VAR
'We ate ourselves.'

c. *Sh wututyaxáa. *with d- in coda*
[ʃ wù.tʰùt.jà.ˈχáː]
at= wu-tu- d- i- ²√xa-μH
RFLX·O= PFV-1PL·S-MID-STV-²√eat-VAR
intended: 'We ate ourselves.'

d. *Sh wutuwaxáa. *with d- deleted*
[ʃ wù.tʰù.wà.ˈχáː]
at= wu-tu- d- i- ²√xa-μH
RFLX·O= PFV-1PL·S-MID-STV-²√eat-VAR
intended: 'We ate ourselves.'

2.1.3. Realization of *d-* with a fricative and *i-*

The data in (36) illustrate the *d-* together with *s-* in *v* and *i-* in Ɛ. The causative in (36a) shows the *s-* and *i-* spelled out as the syllable *si* [sì], and the reflexive in (36a) shows the sequence *d-s-i-* realized

as the syllable *dzi* [tsì]; again this is a straightforward concatenation of the prefixes. As before, the *d-* cannot be realized in the coda of the preceding syllable in (36c) and it cannot be deleted in (36d).

(36) a. At wutusi.ée. *without d-*
[ʔàt wù.tʰù.sì.ˈʔíː]
at= wu-tu- s- i- $^{1}\sqrt{}$.i -μH
4N·O= PFV-1PL·S- CSV-STV-$^{1}\sqrt{}$cook-VAR
'We cooked something.' (lit. 'We made something become cooked.')

b. Sh wutudzi.ée. *with d- in onset*
[ʃ wù.tʰù.tsì.ˈʔíː]
sh= wu-tu- d- s- i- $^{1}\sqrt{}$.i -μH
RFLX·O=PFV-1PL·S-MID-CSV-STV-$^{1}\sqrt{}$cook-VAR
'We cooked ourselves.' (lit. 'We made ourselves become cooked.')

c. *Sh wutut.si.ée. **with d- in coda*
[ʃ wù.tʰùt.sì.ˈʔíː]
sh= wu-tu- d- s- i- $^{1}\sqrt{}$.i -μH
RFLX·O=PFV-1PL·S-MID-CSV-STV-$^{1}\sqrt{}$cook-VAR
intended: 'We cooked ourselves.'

d. *Sh wutusi.ée. **with d- deleted*
[ʃ wù.tʰù.sì.ˈʔíː]
sh= wu-tu- d- s- i- $^{1}\sqrt{}$.i -μH
RFLX·O=PFV-1PL·S-MID-CSV-STV-$^{1}\sqrt{}$cook-VAR
intended: 'We cooked ourselves.'

The data in (37) and (38) below illustrate the same facts as in (36) above, but with *l-* [ɬ] and *sh-* [ʃ] in *v*, respectively.

(37) a. At wutulich'éx̱'w. *without d-*
[ʔàt wù.tʰù.ɬì.ˈtʃ'éχ'ʷ]
at= wu-tu- lˢ- i- $^{1}\sqrt{}$ch'ex̱'w-H
4N·O= PFV-1PL·S- CSV-STV-$^{1}\sqrt{}$dirty -VAR
'We dirtied something.' (lit. 'We made something become dirty.')

b. Sh wutudlich'éx̱'w. *with d- in onset*
[ʃ wù.tʰù.tɬì.ˈtʃ'éχ'ʷ]
sh= wu-tu- d- lˢ- i- $^{1}\sqrt{}$ch'ex̱'w-H
RFLX·O=PFV-1PL·S-MID-CSV-STV-$^{1}\sqrt{}$dirty -VAR
'We dirtied ourselves.' (lit. 'We made ourselves become dirtied.')

c. *Sh wutut.lich'éx̱'w. **with d- in coda*
[ʃ wù.tʰùt.ɬì.ˈtʃ'éχ'ʷ]
sh= wu-tu- d- lˢ- i- $^{1}\sqrt{}$ch'ex̱'w-H
RFLX·O=PFV-1PL·S-MID-CSV-STV-$^{1}\sqrt{}$dirty -VAR
intended: 'We dirtied ourselves.'

d. *Sh wutulich'éx̲'w. *with d- deleted
[ʃ wù.tʰù.ɬì.ˈtʃ'éχ'ʷ]
sh= wu-tu- d- lˢ- i- ¹√ch'ex̲'w-H
RFLX·O=PFV-1PL·S-MID-CSV-STV-¹√dirty -VAR
intended: 'We dirtied ourselves.'

(38) a. At wutushikín. *without d-
[ʔàt wù.tʰù.ʃì.ˈkʰín]
at= wu-tu- sh- i- ²√kin -H
4N·O= PFV-1PL·S- PEJ-STV-²√bother-VAR
'We bothered something.'

b. Sh wutujikín. *with d- in onset*
[ʃ wù.tʰù.tʃì.ˈkʰín]
sh= wu-tu- d- sh- i- ²√kin -H
RFLX·O=PFV-1PL·S-MID-PEJ-STV-²√bother-VAR
'We bothered ourselves.'

c. *Sh wutut.shikín. *with d- in coda*
[ʃ wù.tʰùt.ʃì.ˈkʰín]
sh= wu-tu- d- sh- i- ²√kin -H
RFLX·O=PFV-1PL·S-MID-PEJ-STV-²√bother-VAR
intended: 'We bothered ourselves.'

d. *Sh wutushikín. *with d- deleted*
[ʃ wù.tʰù.ʃì.ˈkʰín]
sh= wu-tu- d- sh- i- ²√kin -H
RFLX·O=PFV-1PL·S-MID-PEJ-STV-²√bother-VAR
intended: 'We bothered ourselves.'

2.1.4. Disappearance of *d-* with a fricative

The data in (39) illustrate the *d-* together with *s-* in *v*, switching to the imperfective aspect so that *i-* in Ɛ is absent. The transitive in (39a) shows the lone *s-* realized as the syllable *sa* [sà] with the epenthetic vowel *a* [a] and default low tone. The reflexive in (39b) shows that, unlike the preceding instances of *d-*, this prefix must be deleted in the output so that only the *s-* of *v* is realized as the coda of the preceding syllable. The *d-* cannot be spelled out in the onset of the syllable *dza* [tsà] in (39c), nor can it appear within the coda of the preceding syllable as in (39d) or (39e).

(39) a. At tusa.ée. *without d-*
[ʔàt tʰù.sà.ˈʔíː]
at= tu- s- ¹√.i -μH
4N·O= 1PL·S- CSV-¹√cook-VAR
'We are cooking something.' (lit. 'We are making something become cooked.')

b. Sh toos.ée. *with d- deleted*
[ʃ tʰùːs.ˈʔíː]
sh= tu- d- s- ¹√.i -μH
RFLX·O=1PL·S-MID-CSV-¹√cook-VAR
'We are cooking ourselves.' (lit. 'We are making ourselves become cooked.')

c. *Sh tudza.ée. *with d- in onset
[ʃ tʰù.tsà.ˈʔíː]
sh= tu- d- s- $\sqrt[1]{}$.i -μH
RFLX·O=1PL·S-MID-CSV-$\sqrt[1]{}$cook-VAR
intended: 'We are cooking ourselves.'

d. *Sh tut.sa.ée. *with d- in coda
[ʃ tʰùt.sà.ˈʔíː]
sh= tu- d- s- $\sqrt[1]{}$.i -μH
RFLX·O=1PL·S-MID-CSV-$\sqrt[1]{}$cook-VAR
intended: 'We are cooking ourselves.'

e. *Sh tuts.ée. *with d- and s- in coda
[ʃ tʰùts.ˈʔíː]
sh= tu- d- s- $\sqrt[1]{}$.i -μH
RFLX·O=1PL·S-MID-CSV-$\sqrt[1]{}$cook-VAR
intended: 'We are cooking ourselves.'

The forms in (39) above all have an overt subject D pronoun *tu-* 'we'. This provides a CV syllable which takes the lone fricative of the Classifier domain as its coda. The data in (40) illustrate the result when there is no preceding syllable to host the fricative. First, the form in (40a) without *d-* shows the *s-* epenthesized as a syllable [sà] just as in (39a) previously. But in (40b) when *d-* is added the result shows a prothetic syllable [ʔì] that hosts the fricative as its coda. The forms in (40c)–(40e) show that just as before the *d-* prefix cannot be realized with this epenthetic syllable.

(40) a. At sa.ée. *without d-*
[ʔàt sà.ˈʔíː]
at= tu- s- $\sqrt[1]{}$.i -μH
4N·O= 1PL·S- CSV-$\sqrt[1]{}$cook-VAR
'S/he is cooking something.' (lit. 'S/he is making something become cooked.')

b. Sh is.ée. *with d- deleted*
[ʃ ʔìs.ˈʔíː]
sh= tu- d- s- $\sqrt[1]{}$.i -μH
RFLX·O=1PL·S-MID-CSV-$\sqrt[1]{}$cook-VAR
'S/he is cooking themself.' (lit. 'S/he is making themself become cooked.')

c. *Sh dza.ée. *with d- in onset
[ʃ tsà.ˈʔíː]
sh= tu- d- s- $\sqrt[1]{}$.i -μH
RFLX·O=1PL·S-MID-CSV-$\sqrt[1]{}$cook-VAR
intended: 'S/he is cooking themself.'

d. *Sh it.sa.ée. *with d- in coda
[ʃ ʔìt.sà.ˈʔíː]
sh= tu- d- s- $\sqrt[1]{}$.i -μH
RFLX·O=1PL·S-MID-CSV-$\sqrt[1]{}$cook-VAR
intended: 'S/he is cooking themself.'

e. *Sh its.ée. *with d- and s- in coda
[ʃ ʔìts.ˈʔíː]
sh= tu- d- s- $^{1}\sqrt{}$.i -μH
RFLX·O=1PL·S-MID-CSV-$^{1}\sqrt{}$COOK-VAR
intended: 'S/he is cooking themself.'

2.1.5. Forms without *d-* that overlap with *d-* forms

The [Vs], [Vɬ], and [Vʃ] realizations of the Classifier domain with *d-* that were described in section 2.1.4 overlap with some surface forms that lack *d-*. This means that a realization of the Classifier domain consisting of a lone fricative in the coda of a Conjunct domain syllable may or may not reflect an underlying *d-*. Usually other morphology distinguishes forms with underlying *d-* from forms without, e.g. a *d-* trigger like the reflexive object *sh=*, but there are some contexts where the surface form is ambiguous and only paradigmatic comparison can identify an underlying *d-*.

When there is only *s-*, *l-*, or *sh-* in *v* and there is neither *d-* in Voice nor *i-* in Ɛ the phonology normally spells out the Classifier domain in a syllable with the fricative as the onset and an epenthetic [à], i.e. [sà], [ɬà], or [ʃà]. This is illustrated by the imperative forms in (41).

(41) a. Sa.í! *epenthesized s-*
[sà.ˈʔí]
s- $^{1}\sqrt{}$.i -H
ZCNJ-2SG·S-CSV-$^{1}\sqrt{}$COOK-VAR
'Cook it!'

b. Layéx̱! *epenthesized l-*
[ɬà.ˈjéχ]
l- $^{1}\sqrt{}$yex̱ -H
ZCNJ-2SG·S-CSV-$^{1}\sqrt{}$MAKE-VAR
'Make it!'

c. Shakín! *epenthesized sh-*
[ʃà.ˈkʰín]
sh- $^{2}\sqrt{}$kin -H
ZCNJ-2SG·S-PEJ-$^{2}\sqrt{}$BOTHER-VAR
'Bother him/her!'

According to Leer's classifier "A-deletion" rule (Leer 1991: 175–176 no. 2), when the Classifier domain contains only *s-*, *l-*, or *sh-* and is preceded by a Conjunct domain[3] that contains only one of the prefixes in (42) then the Classifier domain is instead spelled out as [VC] just like a Classifier domain that contains *d-* and *s-*, *l-*, or *sh-*. Note that, as implied by his rule name, Leer models this as deletion of an underlying /a/ rather than lack of epenthesis.

3. Technically the object *a-* prefix (ch. 7 sec. 1.2.2) is in the Disjunct domain rather than the Conjunct domain.

(42) a. object *a-*
b. irrealis *u-* (or perfective *u-*?)
c. conjugation *n-*
d. conjugation *g̱-* when word initial
e. modal *g̱-* when word initial
f. perfective *wu-*
g. distributive *dag̱a-*

The effect of Leer's "A-deletion" is shown in (43)–(48) by pairs of grammatical and ungrammatical forms for each prefix in (42); I have omitted the distributive *dag̱a-* because I have had some difficulty eliciting it. There are many more possible phonological contexts than those shown below, including additional prefixes preceding each of the ones listed, but the forms shown here are the minimal cases.

(43) a. As.ée *a- object prefix without epenthesis*
[ʔàs.ˈʔíː]
a- s- $^{1}\sqrt{}$.i -μH
ARG-CSV-$^{1}\sqrt{}$cook-VAR
'S/he is cooking it.'

b. *Asa.ée **with epenthesis*
[ʔà.sà.ˈʔíː]
a- s- $^{1}\sqrt{}$.i -μH
ARG-CSV-$^{1}\sqrt{}$cook-VAR
intended: 'S/he is cooking it.'

(44) a. Tléil ushk'é *u- irrealis prefix without epenthesis*
[tɬʰéːɬ ʔùʃ.ˈk'é]
tléil u- sh-$^{1}\sqrt{}$k'e -μH
NEG IRR-PEJ-$^{1}\sqrt{}$good-VAR
'It isn't good.'

b. *Tléil ushak'é **with epenthesis*
[tɬʰéːɬ ʔù.ʃà.ˈk'é]
tléil u- sh-$^{1}\sqrt{}$k'e -μH
NEG IRR-PEJ-$^{1}\sqrt{}$good-VAR
intended: 'It isn't good.'

(45) a. Nasxaát'! *n- conjugation prefix without epenthesis*
[nàs.ˈxáːt']
n- s- $^{1}\sqrt{}$xat'-μH
NCNJ-CSV-$^{1}\sqrt{}$drag-VAR
'Drag it!'

b. *Nasaxáat'! *with epenthesis
[nà.sà.ˈxá:t']
n- s- $^{1}\sqrt{}$xat'-μH
NCNJ-CSV-$^{1}\sqrt{}$drag-VAR
intended: 'Drag it!'

(46) a. G̱asneex̱! g̱- conjugation prefix without epenthesis
[qàs.ˈnì:χ]
g̱- s- $^{1}\sqrt{}$nix̱-μ
G̱CNJ-CSV-$^{1}\sqrt{}$save-VAR
'Save him/her/it!'

b. *G̱asaneex̱! *with epenthesis
[qà.sà.ˈnì:χ]
g̱- s- $^{1}\sqrt{}$nix̱-μ
G̱CNJ-CSV-$^{1}\sqrt{}$save-VAR
intended: 'Save him/her/it!'

(47) a. G̱as.ee. g̱- modal prefix without epenthesis
[qàs.ˈʔì:]
g̱- s- $^{1}\sqrt{}$.i -μ
ZCNJ-MOD-CSV-$^{1}\sqrt{}$cook-VAR
'Let him/her cook it.'

b. *G̱asa.ee. *with epenthesis
[qà.sà.ˈʔì:]
g̱- s- $^{1}\sqrt{}$.i -μ
ZCNJ-MOD-CSV-$^{1}\sqrt{}$cook-VAR
intended: 'Let him/her cook it.'

(48) a. Áx̱ wusteeyín. wu- perfective prefix without epenthesis
[ʔáχ wùs.ˈtʰì:.jín]
á -x̱ wu-s- $^{1}\sqrt{}$tiʰ-μ -ín
3N-PERT PFV-APPL-$^{1}\sqrt{}$be -VAR-PAST
'S/he/it had become it.'

b. *Áx̱ wusateeyín. *with epenthesis
[ʔáχ wù.sà.ˈtʰì:.jín]
á -x̱ wu-s- $^{1}\sqrt{}$tiʰ-μ -ín
3N-PERT PFV-APPL-$^{1}\sqrt{}$be -VAR-PAST
intended: 'S/he/it had become it.'

I believe that the lack of epenthesis in the Classifier domain is not dependent on particular morphemes or segments, but rather on the metrical constraints on the Conjunct and Classifier domains together with constraints on syllable structure (coda consonants, etc.). The details have yet to be

worked out, and there are a large number of cases to consider, but fortunately this phenomenon occurs very frequently and so is extremely well documented. Further work on the phonology of verbal prefixation should clarify the specific constraints that conspire to block epenthesis.

The lack of epenthesis gives rise to some forms that are ambiguous between underlying *d-* and no *d-* at all. This is shown in (49) and (50) with the verb root $\sqrt[2]{nix'}$ 'smell'. This particular root can form verbs with a lexicalized *d-* depending on the speaker (see sec. 7.1 for this lexicalized self-affecting *d-*). The data in (49) show forms without *d-* and the data in (50) show forms with *d-*.

(49) a. Asnéex'. *imperfective activity without d-*
[ʔàs.ˈníːx']
a- s- $\sqrt[2]{nix'}$ -μH
ARG-XTN-$\sqrt[2]{\text{smell}}$-VAR
'S/he is smelling it.'

b. Saníx'! *imperative without d-*
[sà.ˈníx']
s- $\sqrt[2]{nix'}$ -H
XTN-$\sqrt[2]{\text{smell}}$-VAR
'Smell it!'

c. Awsiníx'. *perfective without d-*
[ʔàw.sì.ˈníx']
a- wu-s- $\sqrt[2]{nix'}$ -H
ARG-PFV-XTN-$\sqrt[2]{\text{smell}}$-VAR
'S/he smelled it.'

(50) a. Asnéex'. *imperfective activity with d-*
[ʔàs.ˈníːx']
a- d- s- $\sqrt[2]{nix'}$ -μH
ARG-MID-XTN-$\sqrt[2]{\text{smell}}$-VAR
'S/he is smelling it.'

b. Isníx'! *imperative with d-*
[ʔìs.ˈníx']
d- s- $\sqrt[2]{nix'}$ -H
MID-XTN-$\sqrt[2]{\text{smell}}$-VAR
'Smell it!'

c. Awdziníx'. *perfective with d-*
[ʔàw.tsì.ˈníx']
a- wu-d- s- i- $\sqrt[2]{nix'}$ -H
ARG-PFV-MID-XTN-STV-$\sqrt[2]{\text{smell}}$-VAR
'S/he smelled it.'

The forms in (49a) and (50a) are identical even though the former lacks *d-* because of the failure to epenthesize the *s-* prefix. In contrast, the form in (49b) has the regularly epenthesized [sà] whereas (50b) has the unique prothetic [ʔì] that only occurs with *d-* (sec. 2.1.4). Finally the form in

(49c) unambiguously lacks *d-* in the syllable [sì] whereas in (50c) the syllable [tsì] clearly shows *d-*. Thus although the two forms in (49a) and (50a) are ambiguous, paradigmatic information distinguishes the two structures.

2.1.6. Prolegomena for a phonological analysis of *d-*

The *d-* spells out normally as either an apical postalveolar stop [t] or a similar gesture with one of the anterior fricatives in the affricates [ts], [tɬ], and [tʃ]. This suggests that *d-* has the underlying form /t/, in keeping with the traditional analysis. Its appearance as [tà] (sec. 2.1.1) can then be explained as epenthesis with the vowel [à] that is the typical epenthetic vowel of the Conjunct domain that contains the Classifier domain. Cases like *d-i-* → [tì] and *d-s-i-* → *dzi* [tsì] are simply the results of concatenating /t/, with the caveat that the sequence of [t] and a fricative is realized as a monosegmental affricate. Sequences of stop and fricative elsewhere are realized as separate segments, so that only polymorphemic affricates only occur in the Classifier domain.

The disappearance of *d-* is phonological rather than syntactic. Whenever the Voice head is syntactically absent the result is always a full syllable such as *s-i-* → *si* [sì], *s-* → *sa* [sà], or *i-* → *ya* [jà]. There is also a regular contrast between e.g. *s-* → *sa* [sà] and *d-s-* → *s* [Vs] so that the underlying presence of *d-* in Voice results in contrastive forms even when *d-* is not directly exposed on the surface. Furthermore, all forms with predicted but absent surface *d-* have identical semantics to forms with predicted and present *d-*. For the semantics to provide matching interpretations there must be the same underlying element present in both cases, so given a regular syntax → semantics mapping the *d-* must be present in Voice even when it fails to appear in surface forms.

Crippen & Déchaine (2016) suggest that the loss of *d* [t] in the Classifier domain is a kind of underparsing that is necessary to fit severe constraints on the spellout of this domain, but they do not say what these constraints should be. There is probably a constraint against coda affricates in the Conjunct and Classifier domain in Tlingit, given the lack of attested affricates in the documentation of these domains (Leer 1991: 185–202). Such a constraint would rule out *[VtF] forms like (39e). There is probably a similar constraint against coda coronal stops in both domains, thus ruling out [Vt] forms like (39d). But it is still unclear why CV syllables like *dza* [tsà] in (39c) are not possible because forms like *dzi* [tsì] in (36b) are acceptable. Given that the [à] vowel is epenthetic, I suggest that metrical constraints against epenthesis conspire with the constraints on codas to force underparsing of *d-*, and I expect this to be clarified with further work on the phonology of verb prefixation.

2.2. Syntax of *D-*

In this section I detail the basic syntactic properties of *d-* as Voice. In section 2.2.2 I show that Voice can only be overt, i.e. that the head cannot be present but lack *d-* in the syntactic structure. Then in section 2.2.2 I show that Voice triggers the movement of a subject D pronoun so that the pronoun raises from its initial merge location in *v*P to its spellout position in VoiceP. Finally in section 2.2.3 I discuss the subcategorization properties of Voice, specifically showing that it can occur without *v*. This latter fact means that Voice and *v* are structurally independent and thus that Voice is not a kind of 'elaboration' or stacking of *v*.

The Voice head obviously has many other syntactic properties since it marks antipassive, passive, and middle voice. Each of these topics is too large to fit within this section, so I address them in separate sections later in this chapter.

2.2.1. Voice must be overt

Voice operations do not occur in Tlingit without overt *d-* in Voice, setting aside cases when *d-* is phonologically deleted (secs. 2.1.4 & 2.1.6). This means that there are no contexts where a verb form is interpreted as antipassive, passive, or middle without the existence of a Voice head containing *d-*.

English translations of Tlingit verbs can be misleading with the use of English passives where no such phenomena exist in the Tlingit form. These can suggest passives without *d-* but they must be discounted as artifacts of translation. I stress this point because translation-based analysis of Na-Dene languages is unfortunately common and has led to pervasive misunderstandings of argument and event structure in these languages. An example of this is the form in (51) which is given three potential English translations. Translations (i) and (ii) use non-passive structures where the subject is a theme or experiencer. Translation (iii) uses a passive which implies the presence of a suppressed agent, but there is no such implication in Tlingit so this translation is actually incorrect.

(51) Wé x'áax' uwa.ée. *unaccusative*
wé x'áax' u- i- $^{1}\sqrt{}$.i -μH
MDST apple ZPFV-STV-$^{1}\sqrt{}$COOK-VAR
i. 'The apple got cooked.' *non-passive translation*
ii. 'The apple became cooked.' *non-passive translation*
iii. #'The apple was cooked.' *#passive translation*

Similarly, the passive structure in (52) can be misleadingly translated with a non-passive sentence in English. In this case only translation (iii) is correct because the other two suggest the lack of a suppressed agent.

(52) Wé x'áax' wudzi.ée. *passive of causative*
wé x'áax' u- d- s- i- $^{1}\sqrt{}$.i -μH
MDST apple ZPFV-PASV-CSV-STV-$^{1}\sqrt{}$COOK-VAR
i. #'The apple got cooked.' *#non-passive translation*
ii. #'The apple became cooked.' *#non-passive translation*
iii. 'The apple was cooked.' *passive translation*

Translation issues aside, there are no structures that receive a passive, antipassive, or middle interpretation without *d-* in Voice. But what about empty Voice? There are two possible contexts where we might propose an empty Voice head: when *d-* is absent in the surface form, and in non-passive, non-antipassive, and non-middle structures. The former context is effectively that in section 2.1.4 which I argued is due entirely to phonology. In this context there is a Voice head that contains *d-* but the phonology prevents this from surfacing because affricates are not permitted in the coda.

The latter context, where Voice is present but empty, would be syntactically and semantically indistinguishable from a structure where Voice is entirely absent. The presence of Voice triggers raising of a subject D pronoun from *v*P to VoiceP (sec. 2.2.2), but without an overt representation of Voice there is no way to distinguish a subject D pronoun in *v*P from one raised to VP. The only other diagnostics for Voice depend either on the presence of *d-* or the effects of Voice on argument structure, and none of these would distinguish between empty Voice and absent Voice.

The existence of an invisible and quiescent element is necessarily more complex than the absence of such an element. I therefore exclude the empty Voice head in Tlingit on the grounds of

simplicity. This is a purely theoretical concern, but it has an interesting consequence for the description. Specifically, the traditional description of voice phenomena crosslinguistically depends on a contrast between 'active voice' and 'passive voice', along with a 'middle voice' for languages like Ancient Greek (Matthews 2014: 245). The analysis of Tlingit voice phenomena as the presence of a Voice head with overt content that contrasts with the complete absence of a Voice head suggests instead that there is no 'active voice' in this language, merely the absence of voice phenomena.

2.2.2. Voice triggers short distance subject raising

Voice takes *v*P as its complement. Since *v*P is the first merge site of the subject, we should naively predict a linear ordering Voice > D > *v* where *d-* in Voice linearly precedes a subject D pronoun which precedes an overt *F-* prefix in *v*. But this prediction turns out to be incorrect; the actual ordering is instead D > Voice > *v*. There must be a mechanism that reorders the Voice and subject D pronoun, and I argue in this section that the mechanism is movement of the D pronoun from *v*P to VoiceP which I call **short distance subject raising**.

The data in (53) illustrates this state of affairs. First the basis case in (53a) shows that the first person plural subject D pronoun *tu-* 'we' linearly precedes the overt causativizing *s-* in *v*. Then (53b) shows that the ordering of $d\text{-}_{\text{Voice}} > tu\text{-}_{\text{D}} > s\text{-}_{v}$ is ungrammatical. The grammatical counterpart form in (53c) demonstrates the actual surface ordering of $tu\text{-}_{\text{D}} > d\text{-}_{\text{Voice}} > s\text{-}_{v}$.

(53) a. Sdóo wutusi.ée. *transitive without d-*
sdóo wu-tu- s- i- $^{1}\sqrt{}$.i -μH
stew PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
'We cooked stew.'

b. *Sh wuttusi.ée. **reflexive with d- > subject*
sh= wu-d- tu- s- i- $^{1}\sqrt{}$.i -μH
RFLX·O=PFV-MID-1PL·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
'We cooked ourselves.'

c. Sh wutudzi.ée. *reflexive with subject > d-*
sh= wu-tu- d- s- i- $^{1}\sqrt{}$.i -μH
RFLX·O=PFV-1PL·S-MID-CSV-STV-$^{1}\sqrt{}$cook-VAR
'We cooked ourselves.'

The linear ordering problem can be solved in several different ways. The approach I suggest is that the subject D pronoun moves upward from *v*P to VoiceP. Given a phase-based analysis of movement there must then be a phase at Voice for the movement to occur. The incorrect order of (53b) is represented by the simplistic structure in (54). The correct order of (53c) is represented by the structure in (55) where the subject D pronoun raises from *v*P to VoiceP, landing above Voice and thus spelling out to the left of *d-*.

(54) *VoiceP *Voice > D > v

(55) VoiceP *short distance subject raising*

Head movement of either *v* or Voice cannot account for the linear order of D, Voice, and *v* as seen in (53c). If *v* moved upward to Voice the resulting structure in (57) would exhibit an ungrammatical ordering shown in (56).

(56) *Sh wutstuwa.ée.
sh= wu-d- s- tu- i- $\sqrt[1]{}$.i -μH
RFLX·O=PFV-MID-CSV-1PL·S-STV-$\sqrt[1]{}$cook-VAR
'We cooked ourselves.'

(57) *VoiceP **head mvt. v → Voice*

There is an alternative head movement approach which would result in the correct output of D > Voice > *v*, namely head movement of Voice to *v*. This configuration is represented in (58). Since Voice takes *v*P as a complement, the movement Voice → *v* would necessarily be downward movement which is prohibited in many Minimalist implementations. I have so far avoided both head movement and downward movement, so I reject this approach because it introduces unnecessary complexity.

(58) *VoiceP **downward head movement Voice → v*

One other alternative is to consider Voice to actually be a kind of *v*, either with a single *v*P containing two *v* elements, or a stack of two *v*Ps. In either case the *d-* node would be merged within the *v*P and then the subject D pronoun would be merged above *d-*, thus achieving the D > *d-* > *v* linear order without movement. This alternative rests on the assumption that Voice is an elaboration of *v* and hence that there is no syntactic difference between the *d-* node and the *s-*/*l-*/*sh-* nodes; effectively *d-* becomes an 'extended *v*'. The structure with multiple *v* heads is represented in (59) and the structure with distinct *v*Ps is represented in (60).

(59) **d- as doubled v*

(60) **d- as another v*

I reject the analyses in (59) and (60) – and also (58) – on the bases of selection and argument structure. As discussed in section 2.2.3, there is evidence from at least oblique middle voice with intransitives and possibly from other phenomena that the Voice head does not require *v* at all, even covert *v*. This implies that Voice is fundamentally independent of *v* because its selection of *v* is optional, and hence the two should not be unified. Furthermore, the semantic operations of Voice are completely different from those of *v*: the Voice head suppresses or restricts arguments whereas the *v* head adds or restricts arguments. Although both may have restrictive semantics, the difference between suppressing and adding arguments suggests that they are not syntactically identical. Indeed, in a sense they are opposites: Voice is argument-subtracting where *v* is argument adding.

Imperatives offer more data supporting the analysis of short distance subject raising. As in many languages, Tlingit has an imperative where there is no overt subject. Specifically, the second person singular subject – but not the plural – is covert in certain imperatives as shown by the data in (61). The data in (62) shows for reference that the second person plural subject cannot be covert.

(61) a. Tsíx̲! *imperative with covert 2sg subject*
$^{2}\sqrt{}$tsix̲-H
ZCNJ 2SG·S $^{2}\sqrt{}$kick-VAR
'Kick him/her/it!'

b. *Itsíx̲! **imperative with overt 2sg subject*
i- $^{2}\sqrt{}$tsix̲-H
ZCNJ 2SG·S-$^{2}\sqrt{}$kick-VAR
'You kick him/her/it!'

(62) a. *Tsíx̱! *imperative with covert 2pl subject
$^{2}\sqrt{}$tsix̱-H
ZCNJ 2PL·S $^{2}\sqrt{}$kick-VAR
'(You guys) kick him/her/it!'

b. Yitsíx̱! *imperative with overt 2pl subject
ÿi- $^{2}\sqrt{}$tsix̱-H
ZCNJ 2PL·S-$^{2}\sqrt{}$kick-VAR
'You guys kick him/her/it!'

The data in (61) and (62) crucially have no Voice head. If we introduce one by changing the object to be reflexive *sh*= then the pattern changes: both the singular in (63) and the plural in (64) require an overt second person subject.

(63) a. *Sh datsíx̱! *imperative with covert 2sg subject
sh= d- $^{2}\sqrt{}$tsix̱-H
RFLX·O=ZCNJ 2SG·S MID-$^{2}\sqrt{}$kick-VAR
'Kick yourself!'

b. Sh idatsíx̱! *imperative with overt 2sg subject
sh= i- d- $^{2}\sqrt{}$tsix̱-H
RFLX·O=ZCNJ 2SG·S-MID-$^{2}\sqrt{}$kick-VAR
'You kick yourself!'

(64) a. *Sh datsíx̱! *imperative with covert 2pl subject
sh= d- $^{2}\sqrt{}$tsix̱-H
RFLX·O=ZCNJ 2PL·S MID-$^{2}\sqrt{}$kick-VAR
'(You guys) kick yourselves!'

b. Sh yidatsíx̱! *imperative with overt 2pl subject
sh= ÿi- d- $^{2}\sqrt{}$tsix̱-H
RFLX·O=ZCNJ 2PL·S-MID-$^{2}\sqrt{}$kick-VAR
'You guys kick yourselves!'

The table in (65) summarizes the patterns in (61)–(64). When the Voice head is absent the second person singular subject of an imperative can be covert, but when the Voice head is present it must be overt just like the second person plural subject in both contexts.

(65) *second person subjects in imperatives*

	no Voice		*d-* in Voice	
	covert	overt	covert	overt
second singular subject	✓	*	*	✓
second plural subject	*	✓	*	✓

There is no particular phonological reason why the form in (61a) is grammatical but the form in (63a) is ungrammatical. Likewise, there is no phonological explanation for the ungrammaticality of (61b) versus the grammaticality of (63b). For example, the imperfective activity *ix̱á* [ʔì.ˈχá] 'you sg. are eating it' is phonologically similar to (61b), and the imperfective activity *sh dagwáal* [ʃtà.ˈkʷáːɬ]

'it (bell, clock) is ringing itself' is similar to the grammatical form in (63a). Given that *pro* and *i-* 'you sg.' are interpreted the same way in (61a) and (63b), there is also no semantic reason for (63a) to be ungrammatical. This suggests that the ungrammaticality of covert second person singular subjects with overt Voice is not due to phonology or semantics, leaving only syntax as an explanation.

If we propose a constraint on the movement operation we can capture the distribution in (65) as a syntactic phenomenon. Given that the presence of Voice requires raising of a subject D pronoun from *v*P to VoiceP, a case such as (63a) requires moving *pro* from *v*P to VoiceP as in (66).

(66) **VoiceP* — **raising of 2sg pro*

But this movement would target a covert element: *pro* has no phonological content. Banning movement of covert elements would ban structures like (66) that correspond to ungrammatical forms like (63a). Since an overt pronoun *i-* 'you sg.' is available instead of *pro*, the constraint on movement of a covert element forces an overt pronoun so that the D can move from *v*P to VoiceP.

Although the ban on movement of a covert element works for this imperative subject problem, it is not an ideal solution. A *pro* argument also occurs for third person subjects, but unlike the second person singular there is no overt third person pronoun that can stand in for the covert pronoun when Voice is present. Two structures are possible but both are paradoxically ruled out: the structure in (67) where third person *pro* raises from *v*P to VoiceP would violate the constraint on movement of a covert element, but then the structure in (68) would violate the requirement that subject D pronouns move from *v*P to VoiceP when Voice is present.

(67) **VoiceP* — *raising of 3 pro*

(68) **VoiceP* — *in situ 3 pro*

We could again appeal to Last Resort to admit one of the two possible structures, but it still is unclear which of the two should be preferred. Lack of movement is conceptually simpler than movement, suggesting that (68) should win. But every other subject D pronoun undergoes movement so that (67) is more consistent and hence it should win. I leave this issue unresolved for now, hoping that further work on covert arguments in Tlingit will help clarify the situation.

Although I earlier ruled out segmental phonology as a motivation for short distance subject raising, this does not rule out other possible phonological motivations. It is plausible that there are domain-specific constraints on the spellout of particular morphemes. Specifically, it could be that *d-* must be spelled out in the Classifier domain and not in the Conjunct domain. This would rule out ungrammatical surface forms with **d-* > *tu-* > *s-* like **sh wuttusi.ée* (53c), as well as forms with **d-* > *s-* > *tu-* like **sh wutstuwa.ée* in (56). This analysis might also mesh with the phonological deletion of *d-* when it appears in the coda of a preceding Conjunct domain syllable as discussed in section 2.1.4.

But this phonological approach to short distance subject raising raises another question: why does the same constraint not apply to *s-*, *l-*, or *sh-* since as seen in section 2.1.4 they can surface in the coda of a Conjunct domain syllable? Changing the constraint target could supply a solution. Rather than prohibiting *d-* in the Conjuct domain, there could either be a constraint against the realization of segments or syllables of D pronouns in the Classifier domain. This could help explain why *i-* in Ɛ is realized as *ya* [jà] or *wa* [wà] rather than coalescing with a preceding vowel. Unfortunately this avenue leads to a problem in differentiating the second person singular subject D pronoun *i-* 'you sg.' from the state indicator *i-* in Ɛ because aside from their positions they are phonologically identical. Any constraint against the D pronoun but not the Ɛ head would have to somehow know the positional (i.e. syntactic) difference between them. I thus maintain my doubt that phonology is the explanation for short distance subject raising, but perhaps further work on prefix phonology will prove me wrong.

2.2.3. Voice need not select *v*P

If we think of Voice as essentially a detransitivizing head then we expect it to operate only on transitive structures. By definition a detransitivizer operates on a transitive structure, targeting one of its arguments for suppression. Transitives in Tlingit always have *v*P because a transitive structure must have a subject and subjects are merged in *v*P, so we might conclude that Voice subcategorizes only for *v*P. But the Voice head is not simply a detransitivizer; middle voice phenomena are exclusively associated with the appearance *d-* in Voice, and none of the middle voice phenomena suppress arguments (sec. 1.3). If middle voice can occur in intransitive structures then it should be possible to have Voice without *v*.

In this section I highlight data suggesting that overt *d-* in Voice can appear in intransitive structures that are not derived from a transitive counterpart, and hence that Voice can appear in structures lacking *v*P. This then implies that Voice can subcategorize for ƐP and/or VP instead of *v*P. This has significant consequences for theoretical models of Voice because it would not just be an elaboration of *v*, instead being structurally independent.

In table 5.2 I identify a number of intransitive verbs which always contain *d-* and never overt *s-*, *l-*, or *sh-* in any of their documented forms. These could be analyzed as lacking *v* since they are all intransitive. Among the identified intransitives with *d-*, most are achievements but there are a couple of states; the achievements are represented by perfective forms in table 5.2 and the states by

(Im)perfective	Translation	Root	Stem	Eventuality	Conj.
diyáshk	'it is scarce'	$\sqrt[1]{}$*ÿash*	*-H*	state	*g*
tléil udagaa	'it is inactive, unmoving'	$\sqrt[1]{}$*ga*	*-μ*	state	*g*
wudi.ék	's/he got paralyzed'	$\sqrt[1]{}$*.ek*	*-H*	achievement	*∅*
wudiwútl	's/he got troubled'	$\sqrt[1]{}$*wutl*	*-H*	achievement	*∅*
wudiwúx	'tide became neap'	$\sqrt[1]{}$*wutl*	*-H*	achievement	*∅*
wudinákw	'it (wood) got punky'	$\sqrt[1]{}$*nakw*	*-H*	achievement	*∅*
wudix'ís	'it got infected'	$\sqrt[1]{}$*x'is*	*-H*	achievement	*∅*
wudixáx'	'it got dewy'	$\sqrt[1]{}$*xax'*	*-H*	achievement	*∅*
kawdich'ách'	'it got spotty'	$\sqrt[1]{}$*ch'ach'*	*-H*	achievement	*∅*
wudixeetl	'it got newly born'	$\sqrt[1]{}$*xitl*	*-μ*	achievement	*g*
wudikóosh	'it fell in a heap/blob'	$\sqrt[1]{}$*ku'sh*	*-μH*	achievement	*g*
wudix'óol'	'they fell in a heap/blob'	$\sqrt[1]{}$*x'ul'*	*-μH*	achievement	*g*
kawdixáat'	'it bent under pressure'	$\sqrt[1]{}$*xat'*	*-μH*	achievement	*g*

Table 5.2: Some intransitive verbs with *d-* and no transitive counterparts

imperfectives. Both states are *g*-conjugation which is typical for states generally (ch. 6 sec. 3.4.1), and most of the achievements are *∅*-conjugation which is the elsewhere case of conjugation classes (ch. 6 sec. 3.4.4). The remainder are *g*-conjugation which at least for singular and plural 'fall in heap/blob' and 'bend under pressure' are probably connected to spatial orientation (ch. 6 sec. 3.4.2). All the roots except $\sqrt[1]{}$*ga* 'be active, moving' are closed syllables, but this is probably accidental. The state *diyáshk* 'it is scarce' might reflect a frozen deprivative with the *-k* suffix, but it is unclear if deprivatives require *d-* (sec. 7.3.2).

It is entirely possible that all of the roots in table 5.2 are just underdocumented, and that their apparently lexicalized *d-* is belied by unattested forms that would show the roots to be bivalent or perhaps instances of the *d-*/*l-* alternation. Elicitation or searching through existing documentation could confirm these possibilities. But if in fact any of these roots can be shown to not be bivalent nor occur with overt *v* then it is possible that they reflect structures without *v*. If so then they would have structures like that shown in (69).

(69) *Voice without v?*

Monovalent roots are known to form intransitives with *v*, namely the many different unergative motion verbs and the three unergative activity verbs based on $\sqrt[1]{ta}$ 'sg. sleep', $\sqrt[1]{\underline{x}ex'w}$ 'pl. sleep', and $\sqrt[1]{ga\underline{x}}$ 'sg. cry'. The verbs in table 5.2 might reflect a similar situation where monovalent roots may have their lone argument realized in *v*P. But unlike the other unergatives, the verbs with *d-* instead have this Voice head suppressing the subject position with a PRO just like passives (see sec. 4), and thus forcing them to surface as unaccusatives. This possibility is sketched in (70), effectively representing the passivization of an unergative ('anti-unergative'?). I leave the issue of monovalent roots with apparently lexical *d-* unresolved for now, expecting further work on Voice to clarify the structural possibilities suggested here.

(70) *Voice suppressing unergative?*

One other possibility of Voice without *v* arises from unaccusatives. Most unaccusatives in Tlingit can be straightforwardly analyzed as a monovalent root with a lone argument corresponding to the object, appearing in AspP when the object is a D pronoun.

(71) a. Xat woonaa. *unaccusative with object*
xat= wu-i- $\sqrt[1]{\text{na}}$-μ
1SG·O=PFV-STV-$\sqrt[1]{\text{die}}$-VAR
'I died.'

b. *Xwaanaa. **unaccusative with subject*
wu-x- i- $\sqrt[1]{\text{na}}$-μ
PFV-1SG·S-STV-$\sqrt[1]{\text{die}}$-VAR
intended: 'I died.'

Reflexives and reciprocals trigger middle voice marking with *d-* and hence the presence of Voice, but a reflexive or reciprocal pronoun must bind some other argument in the structure for it to be interpretable. This means that a reflexive or reciprocal object D pronoun would be ungrammatical in an unaccusative because there would be no other argument to bind. This is indeed the case as shown in (72), and so a structure like (73) cannot be formed with an unaccusative.

(72) a. *Sh wudinaa. *reflexive unaccusative*
sh= wu-d- i- $^{1}\sqrt{}$na-μ
RFLX·O=PFV-MID-STV-$^{1}\sqrt{}$die-VAR
intended: 'Self died.'

b. *Woosh wudinaa. *reciprocal unaccusative*
woosh=wu-d- i- $^{1}\sqrt{}$na-μ
RECIP·O=PFV-MID-STV-$^{1}\sqrt{}$die-VAR
intended: 'Each other died.'

(73) *AspP *reflexive unaccusative*

But reflexives and reciprocals can also trigger the presence of *d-* when they appear in non-core arguments: location PPs, path PPs, and other oblique PPs; this is the 'oblique middle voice' detailed in sections 5.1.2 and 5.1.4. It is logically possible for non-core arguments to occur with unaccusatives, and thus logically possible that reflexives or reciprocals could occur as possessors within these non-core arguments. Following this line of possibility, there could then be unaccusative structures lacking *v* that nonetheless have Voice triggered by the reflexive or reciprocal possessor in a non-core argument. These would be unaccusatives with oblique middle voice.

Unaccusatives with oblique middle voice are indeed attested. The three sentences in (74) illustrate an unaccusative based on the monovalent root $^{1}\sqrt{}$*tiʰ* 'be, exist'. The PP *sh tóogaa* literally means 'near/obtaining/suiting self's mind', and the reflexive possessor *sh* 'self's' is coreferential with the overt first person singular object D pronoun *xat=* 'me'.

(74) a. Sh tóogaa xat ditee.
sh tú -gáa xat= d- i- $^{1}\sqrt{}$tiʰ-μ
[PP RFLX·PSS mind-ADES] 1SG·O=MID-STV-$^{1}\sqrt{}$be -VAR
'I am thankful/grateful.' (lit. 'I exist suitably for self's mind.') (Eggleston 2017)

b. Ax̲ t'áakx'i yís sh tóog̲aa x̲at ditee.
ax̲ t'áa^{k}-x'-í yís sh tú -g̲áa x̲at= d- i- $^{1}\sqrt{}$ti^{h}-μ
[PP 1SG·PSS back-PL-PSS BEN] [PP RFLX·PSS mind-ADES] 1SG·O=MID-STV-$^{1}\sqrt{}$be -VAR
'I am thankful/grateful for my family (lit. 'landward, back, behind').' (Eggleston 2017)

c. I eedáx̲ sh tóog̲aa x̲at ditee.
i ee -dáx̲ sh tú -g̲áa x̲at= d- i- $^{1}\sqrt{}$ti^{h}-μ
[PP 2SG BASE-ABL] [PP RFLX·PSS mind-ADES] 1SG·O=MID-STV-$^{1}\sqrt{}$be -VAR
'I am thankful/grateful because of you.' (Story & Naish 1973: 102.1305)

Further confirming the facts in (74), the form in (75a) with a subject D pronoun rather than an object is ungrammatical. Similarly, the forms in (75b) without a reflexive and (75c) and (75d) with a reflexive object are also ungrammatical.

(75) a. * Sh tóog̲aa x̲aditee. **subject instead of object*
sh tú -g̲áa x̲- d- i- $^{1}\sqrt{}$ti^{h}-μ
[PP RFLX·PSS mind-ADES] 1SG·S=MID-STV-$^{1}\sqrt{}$be -VAR
intended: 'I am thankful/grateful.'

b. * Ax̲ tóog̲aa x̲at yatee. **no reflexive*
ax̲ tú -g̲áa x̲at= i- $^{1}\sqrt{}$ti^{h}-μ
[PP 1SG·PSS mind-ADES] 1SG·O=STV-$^{1}\sqrt{}$be -VAR
intended: 'I am thankful/grateful.'

c. * Ax̲ tóog̲aa sh yatee. **reflexive object*
ax̲ tú -g̲áa sh= d- i- $^{1}\sqrt{}$ti^{h}-μ
[PP 1SG·PSS mind-ADES] RFLX·O=MID-STV-$^{1}\sqrt{}$be -VAR
intended: 'I am thankful/grateful.'

d. * Sh tóog̲aa sh ditee. **reflexive object*
sh tú -g̲áa sh= d- i- $^{1}\sqrt{}$ti^{h}-μ
[PP RFLX·PSS mind-ADES] RFLX·O=MID-STV-$^{1}\sqrt{}$be -VAR
intended: 'I am thankful/grateful.'

If we accept that (i) non-core arguments are not merged in *v*P and (ii) that unaccusatives lack *v*P, then the unaccusatives with oblique middle voice in (74) must be analyzed as structures that have Voice but not *v*, and should therefore be something like the tree in (69). I conclude that Voice does not necessarily subcategorize for *v*P and can instead subcategorize for ƐP and/or VP. This means that Voice is structurally independent of *v* and so is not simply an elaboration of *v*. The independence of Voice and *v* conceptually matches their distinct functions: *v* adds argments and Voice suppresses or constrains arguments, and Voice can operate on an argument introduced in VP (by √) just as well as it can operate on an argument introduced by *v*.

3. Object suppression: Deriving antipassive voice

Antipassives in Tlingit are structures where *d-* appears along with suppression of the object (sec. 1.1). This phenomenon was first labeled as 'antipassive' by Leer (1991: 52, 98, 124–125), but Story describes it as a kind of "detransitivization" or "depersonalization" (Story 1966: 91). Boas apparently

missed antipassivization because he does not explicitly mention any examples of it even though it clearly occurs in his data. Note that my definition of antipassive is more restricted than Leer's; I only consider structures with *d-* as antipassive whereas he includes instances of the fourth person nonhuman object D pronoun *at=* 'something; stuff' (ch. 7 sec. 1.2.1.9) and instances of apparently expletive *a-* (ch. 7 sec. 1.2.2) that both occur without *d-*.

Antipassives are attested in the lexical documentation and they seem to occur with some frequency in everyday speech as well as in narrative, oratory, and songs. Like causatives, applicatives, and passives, antipassives are listed only sporadically in lexical materials depending on whether the individual lexicographer encountered them with a particular root, though Leer (1976a) occasionally includes questioned antipassive forms with a note to check their existence. Since the lexical documentation does not explicitly indicate antipassives or indeed any regular argument structure modifications, they must be collected the hard way by reading through the material and noting minimal pairs.

Table 5.3 offers a short list of transitive/antipassive pairs that I have sifted from existing documentation. The transitive forms (including causatives) are given on the left with the corresponding antipassives on the right. The 'Eventuality' column indicates the eventuality class of both verbs; antipassivization does not seem to modify eventuality class unlike e.g. causatives (ch. 4 sec. 3.2). The 'Conj.' column gives the lexically specified conjugation class of the pair if it exists; there is no evidence that conjugation class is ever modified by antipassivization. The data in table 5.3 is organized vertically into five sets based on the value of *v* in the transitive form.[4]

Although table 5.3 is by no means exhaustive, it is a representative search of the lexical documentation. Antipassives seem to be less common than other instances of *d-* in the documentation. Even though passives were not clearly identified by previous authors, my impression is that they are more common than antipassives. I am hesitant to conclude anything about their prevalence at the moment, but if antipassives are as uncommon as they seem then this bias suggests that there are still unexplored properties of roots that influence argument structure.

3.1. Object suppressing syntax

Antipassivization is essentially object suppression together with *d-*. Object suppression is the regular disappearance of an object argument where one would otherwise be expected. I model object suppression with a PRO that is first merged in the object position, blocking the appearance of an overt object D pronoun, an overt object DP, or a covert *pro* object. The PRO in the object position is probed for by the Voice head. This configuration is sketched by the tree in 5.1, ignoring the contents of terminal nodes other than Voice and the object D.

There are three syntactic possibilities for object suppression, two with a *v*P and one without. The first case discussed in section 3.1.1 is a *v*P that contains a covert *v*, thus arising from a bivalent root. The second case discussed in section 3.1.2 is a *v*P that contains an overt *v*, arising from either the causative of a monovalent root or a bivalent root with a non-core argument (covert or overt) added the overt *v*. The third case is where a Voice head selects something other than *v*P – either ƐP or VP – as its complement, a context which arises from monovalent roots that form unaccusatives. This

4. The symbol l^s- stands for an overt *l-* value for *v* in all forms of a verb that is indeterminate between *s-* and *l-* because of the presence of a coronal fricative or affricate in the stem in all forms of the verb (ch. 4 sec. 2.1.1).

	Transitive		*Antipassive*					
v	*Perfective*	*Translation*	*Perfective*	*Translation*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	aawahoon	s/he sold it	*wudihoon*	s/he sold	$\sqrt[2]{hun}$	sell	act. (-μH)	*n*
	aawahées'	s/he borrowed it	*wudihées'*	s/he borrowed	$\sqrt[2]{his'}$	borrow	act. (-μH)	*g*
	aawa.oo	s/he bought it	*wudi.oo*	s/he bought	$\sqrt[2]{.u}$	buy	act. (-μH-*w*)	*n*
	aawa.ák	s/he wove it	*wudi.ák*	s/he wove	$\sqrt[2]{.ak}$	weave	act. (-μH)	Ø
	aawaxaash	s/he cut it	*wudixaash*	s/he cut	$\sqrt[2]{xash}$	cut	act. (-μH)	*n*
Ø	*aawatáw*	s/he stole it	*wuditáw*	s/he stole	$\sqrt[2]{taw}$	steal	act. (-μH)	Ø
	aawatéew	s/he read/counted it	*wuditéew*	s/he read	$\sqrt[2]{tiw}$	count	act. (-μH)	*n*
	aawashúch	s/he bathed him/her	*wudishúch*	s/he bathed	$\sqrt[2]{shuch}$	bathe	act. (-μH)	Ø
	aawaxéet'	s/he swept it	*wudixéet'*	s/he swept	$\sqrt[2]{xit'}$	sweep	achiev.	*g*
	aawagéex'	s/he tossed it	*wudigéex'*	s/he voted	$\sqrt[2]{gix'}$	toss	motion	–
	aawayaa	s/he packed it	*wudiyáa*	s/he packed	$\sqrt[2]{ya}$	pack	act. (-μH)	*n*
	awsinix'	s/he smelled it	*wudzinix'*	s/he smelled	$\sqrt[2]{nix'}$	smell	act. (-μH)	Ø
s-	*ashawsiyaa*	s/he anchored it	*shawdziyaa*	s/he anchored	$\sqrt[2]{ya}$	lower	achiev.	*n*
	akawsinei	s/he knit it	*kawdzinei*	s/he knit	$\sqrt[1]{ne}$	work	act. (-*H*)	*n*
	awlihoon	s/he peddled it	*wudlihoon*	s/he peddled	$\sqrt[2]{hun}$	sell	achiev.	*n*
l-	*kei awlikóo*	s/he regurgitated it	*kei wdlikóo*	s/he vomited	$\sqrt[?]{ku}$	vomit	act. (-*H*)	*n*
	ashawlixóot'	s/he rod-fished it	*shawdlixóot'*	s/he rod-fished	$\sqrt[2]{xut'}$	drag	act. (-μH)	*n*
	awlisík	s/he put it on (belt)	*wudlisík*	s/he wore a belt	$\sqrt[?]{sik}$	belt	act. (-μ)	Ø
	awlitsóow	s/he poked it (long)	*wudlitsóow*	s/he moved house	$\sqrt[2]{tsu'w}$	poke	motion	–
l^{s}-	*ajiwlisáa*	s/he rested him/her	*wudlisáa*	s/he rested	$\sqrt[?]{sa^{h}}$	rest	achiev.	Ø
	akawlit'átl	s/he splashed it	*kawdlit'átl*	s/he splashed	$\sqrt[2]{t'atl}$	splash	act. (-μ)	Ø
	akawligwách'	s/he wrapped it	*kawdligwách'*	s/he wrapped	$\sqrt[2]{gwach'}$	wrap	achiev.	Ø
	akawliyés'	s/he dyed it	*kawdliyés'*	s/he dyed	$\sqrt[1]{yes'}$	dye	act. (-μH)	Ø
sh-	*akawshixít*	s/he wrote it	*kawjixít*	s/he wrote	$\sqrt[2]{xit}$	scratch	act. (-μH)	Ø

Table 5.3: Some transitive/antipassive pairs of verbs

third case of antipassive unaccusatives without *v*P is ungrammatical and I discuss it later in section 3.3.1.

There is an alternative analysis for passives and antipassives where, rather than the argument being instantiated by PRO, the suppressed argument simply does not exist. I exclude this analysis because it would conflict with the valency features of √: since antipassives only occur with bivalent roots, there will be a $[\theta_1]$ feature present on the root which needs to be discharged. If θ-features could be left unprobed in a derivation without crashing then it could be possible to model the antipassive – and the passive, since both suppress arguments – as having the suppressed argument completely absent in the derivation. But I have already assumed that they must be probed for in chapter 2, so this would be incompatible with the model I have developed.

Figure 5.1: Sketch of an antipassive structure

3.1.1. Selecting covert *v*: Lexical transitives

An antipassive can be formed from a transitive with a covert *v* that arises from a bivalent root. The form in (76a) illustrates this kind of transitive based on the bivalent root $\sqrt[2]{}$*hun* 'sell', with an overt object D pronoun *ÿee=* 'you pl.'. The form in (76b) with both *d-* and the object pronoun is ungrammatical. The form in (76c) is the antipassive with only *d-* and no object pronoun.

(76) a. Yee wutuwahoon. *bivalent transitive*
ÿee= wu-tu- i- $\sqrt[2]{}$hun-μ
2PL·O=PFV-1PL·S-STV-$\sqrt[2]{}$sell -VAR
'We sold you (pl.).'

b. *Yee wututdihoon. **antipassive with object D pronoun*
ÿee= wu-tu- d- i- $\sqrt[2]{}$hun-μ
2PL·O=PFV-1PL·S-APSV-STV-$\sqrt[2]{}$sell -VAR
intended: 'We sold you (pl.).'

c. Wututdihoon. *antipassive with suppressed object*
wu-tu- d- i- $\sqrt[2]{}$hun-μ
PFV-1PL·S-APSV-STV-$\sqrt[2]{}$sell -VAR
'We sold.'

The data in (76) uses an object D pronoun, but the facts are the same for an object DP. The same root is used in (77) with a DP *haa gooxú* 'our slave' instead of the object D pronoun.

(77) a. Haa gooxú wutuwahoon. *bivalent transitive*
haa goox-í wu-tu- i- $\sqrt[2]{}$hun-μ
1PL·PSS slave -PSS PFV-1PL·S-STV-$\sqrt[2]{}$sell -VAR
'We sold our slave.'

Figure 5.2: Structure of the antipassive with covert *v* in (76c) and (77c)

b. *Haa gooxʷ́ wutudihoon. **antipassive with object DP*
haa gooxʷ-í wu-tu- d- i- ²√hun-μ
1PL·PSS slave -PSS PFV-1PL·S-APSV-STV-²√sell -VAR
intended: 'We sold our slave.'

c. Wutudihoon. *antipassive with suppressed object*
wu-tu- d- i- ²√hun-μ
PFV-1PL·S-APSV-STV-²√sell -VAR
'We sold.'

The structure of the antipassives in (76c) and (77c) is represented by the tree in figure 5.2. The Voice head probes the object position in VP for the presence of a PRO, and this PRO suppresses the appearance of an object D pronoun or DP. If the PRO were not present in VP then the probe would fail and the derivation would crash, giving rise to phenomena like (76b) and (77b).

3.1.1.1. Antipassives of handling (transitive motion) verbs

Handling verbs are transitive verbs that describe the motion or change of location of an object as effected by the subject; they are the transitive counterparts of intransitive motion verbs. Some handling verbs are causativized from a monovalent verb root that is otherwise used for an intransitive motion verb ('motion roots'), but there are also several bivalent roots that form transitive handling verbs without a causative ('handling roots'). These are handling verbs either have a covert *v* or an

overt *v* that is qualificational; I address only the former here. Handling verbs should logically be antipassivizable since they are transitive and select a D or DP object. This possibility has never been explored to my knowledge, and furthermore I have found no unambiguous evidence of an antipassivized handling verb, so I am uncertain if antipassivized handling verbs are grammatical or not.

The primary handling roots are $\sqrt[2]{ti}$ 'handle generic object' $\sqrt[2]{tan}$ 'handle wooden object or empty container', $\sqrt[2]{.a\underline{x}}$ 'handle fabric object', and $\sqrt[2]{.in}$ 'handle filled container'. Taking $\sqrt[2]{tan}$ as an exemplar, there are basic transitives with covert *v* in (78) both with and without path arguments.

(78) a. Gúx'aa aadé xwaataan. *handling with argument PP*
gúx'aa á -dé wu-x- i- $\sqrt[2]{}$tan -μ
cup [PP there-ALL] PFV-1SG·S-STV-$\sqrt[2]{}$handle·w/e-VAR
'I moved the (empty) cup there.'

b. Gúx'aa xwaataan. *handling without argument PP*
gúx'aa wu-x- i- $\sqrt[2]{}$tan -H
cup PFV-1SG·S-STV-$\sqrt[2]{}$handle·w/e-VAR
'I handled the (empty) cup.'

If antipassivization can apply to handling verbs then we expect the corresponding forms in (79) which match those in (78) above. Note that the forms in (79) are hypothetical and have not been tested (hence '※').

(79) a. ※ Aadé xwaditaan. ※*antipassivized handling with argument PP*
á -dé wu-x- d- i- $\sqrt[2]{}$tan -μ
[PP there-ALL] PFV-APSV-1SG·S-STV-$\sqrt[2]{}$handle·w/e-VAR
'I moved (something, not self) there.'

b. ※Xwaditaan. ※*antipassivized handling without argument PP*
wu-x- d- i- $\sqrt[2]{}$tan -H
PFV-1SG·S-APSV-STV-$\sqrt[2]{}$handle·w/e-VAR
'I handled.'

We do not know if antipassivization of a handling verb is possible, but I have a gut feeling that it is not. If my gut feeling is correct then we need an explanation for their ungrammaticality. I suggest one avenue of explanation depending on the fact that handling verbs, like motion verbs, are specialized for the qualia of their objects (ch. 2 sec. 1.2). This is reflected in the model by the agreement of ϰ-features that represent the grammatically significant qualia. The PRO object in VP that is required by antipassivization is probably unspecified for ϰ-features and will presumably not match those specified by the root. Given that undischarged ϰ-features are like other features, this would cause the derivation to crash, and thus antipassives of all handling roots would be ungrammatical. If however antipassives of handling verbs are possible then this suggests that the qualia-restricting semantics of handling roots are not actually syntactically active. Consequently, ϰ-features might not exist because the computation of compatibility between arguments and roots is handled entirely by the semantics. The presence or absence of antipassives of handling verbs could thus be used as a diagnostic for the syntactic representation of qualification.

3.1.2. Selecting overt *v*: Derived or modified transitives

An antipassive can be formed from a transitive with an overt *v* as shown by the data in table 5.3. In chapter 4 I showed that an overt *v* can be an event or argument modifier, a causative, or an applicative. Only the causative is a derived transitive because the other two structures are based on bivalent roots. I address the antipassivization of each of these structures in the following subsections, finding that although they are possible for the modifier case but unattested for the other two cases.

The event or argument modifier kind of overt *v* includes qualification, spatial extension, and pejoratives according to the proposal in chapter 4. These modificational functions do not overtly affect the argument structure; even if they are analyzed as adding arguments, there are no surface effects on the distribution of other arguments. As such, antipassivization with an overt event/argument modificational *v* does not differ practically from antipassivization of a transitive with covert *v* (sec. 3.1.2.1). Most attested forms of antipassives with overt *v* are specifically these modification cases.

The syntactic model of antipassives with covert *v* should readily generalize to antipassives with overt *v*. The antipassive of a verb with an overt event/modificational *v* has basically the same structure as the antipassive of a verb with covert *v* that was described in section 3.1.1. The only substantive differences are the presence of overt material in *v* and the hidden argument introduced by this *v* if one exists. If there is a hidden argument then the syntax must be sure to correctly target the object in VP and not the hidden argument in *v*P. Since antipassivization probably cannot target argument PPs (sec. 3.3.4), modelling the hidden argument as a PP ensures this avoidance with no added stipulations.

The causative *v* adds a DP or D pronoun argument to a structure built on a monovalent root. It turns out that none of the antipassives with an overt *v* in table 5.3 can be straightforwardly analyzed as a causative (sec. 3.1.2.2). Even the one form *kawdzinei* 's/he knit, crocheted' that seems to be based on a monovalent root is ambiguous. The lexical documentation does not provide any conclusive answers, so further elicitation is necessary. It may be that causatives cannot be antipassivized which would have interesting consequences for the analysis of Voice.

The model must account for whether antipassives of causatives are possible or not. If they are possible, they would not differ substantially from the antipassives of transitives. One potential area of difficulty is where a causative shifts a subject to an object – e.g. subject *x̲waataa* 'I slept' versus object *x̲at yisitaa* 'you made me sleep' – which specifically occurs with monovalent roots that derive unergatives. If however antipassives of causatives are impossible then the model needs a principled mechanism for their ungrammaticality. Since causatives are only derived from monovalent roots, Voice would presumably need to identify the valency of the root. One solution might be probing √ for $[\theta_2]$ which corresponds to a subject, and then crashing if it does not exist. Alternatively, Voice could probe *v* for $[\theta_2]$, crashing if it does exist in that head. Lacking any unequivocal evidence for or against antipassivization of causatives, I set this modeling problem aside for now.

The applicative *v* adds a PP argument to a structure that may be built on a monovalent or bivalent root. As discussed later in section 3.3.4, antipassivization does not target PPs so the applicative argument is not affected by antipassivization. It should however be logically possible for an antipassive to target the object argument of an applicative while leaving the PP unmolested (sec. 3.1.2.2). This possibility is unattested and unexplored, so it also needs elicitation.

3.1.2.1. Antipassives with modificational *v*

The antipassives in table 5.3 that have overt *v* and bivalent roots by definition do not have causative *v* because the causative *v* only operates on monovalent roots. In these cases the overt *v* must have some other function. The lone antipassive of a verb with *sh-* has this element as a pejorative; the remaining forms with overt *v* are mostly qualificational or extensional. I illustrate this for the three antipassives *kawjixít* 's/he wrote', *wudlitsóow* 's/he moved house', and *shawdziyaa* 's/he anchored' by elaborating the paradigms of their three corresponding roots $\sqrt[2]{xit}$ 'scratch', $\sqrt[2]{tsu'w}$ 'poke', and $\sqrt[2]{ÿa}$ 'lower'.

The lone example of an antipassive with *sh-* in table 5.3 is *kawjixít* 's/he wrote'. This is based on a bivalent root as shown by the transitive forms in (80a) and (80b). The *sh-* in the transitive in (81a) is therefore not a causativizer. As discussed in chapter 4 section 4.3, this is an instance of the pejorative *sh-* that probably reflects the undesirability (*sh-*) of scratching ($\sqrt[2]{xit}$) a surface (*k-*). The verb has lost its pejorative interpretation with the increased use of writing and drawing, but it could still be accessible (consider graffiti or a child scrawling on a wall).

(80) a. Axeet. *transitive activity with covert v*
a- $\sqrt[2]{}$xit -μ
ARG-$\sqrt[2]{}$scratch-VAR
'S/he plows it, makes grooves, furrows in it.' (Leer 1976a: 620)

b. Akaawaxeet. *transitive with k- and covert v*
a- k- wu-i- $\sqrt[2]{}$xit -μ
ARG-HSFC-PFV-STV-$\sqrt[2]{}$scratch-VAR
'S/he pushed it with a stick.' (Leer 1976a: 620)

(81) a. Akawshixít. *pejorative transitive with k- and sh-*
a- k- wu-sh- i- $\sqrt[2]{}$xit -H
ARG-HSFC-PFV-PEJ-STV-$\sqrt[2]{}$scratch-VAR
'S/he drew, wrote it.', 'S/he took its picture.' (Leer 1976a: 621)

b. Kawjixít. *pejorative antipassive with k-, d-, and sh-*
k- wu-d- sh- i- $\sqrt[2]{}$xit -H
HSFC-PFV-APSV-PEJ-STV-$\sqrt[2]{}$scratch-VAR
'S/he drew, wrote.' (Leer 1976a: 621)

The antipassive *wudlitsóow* 's/he moved house' in table 5.3 features overt *l*^{s}- in *v*. The transitive activity in (82a) shows that this is based on a bivalent root $\sqrt[2]{tsu'w}$ 'poke, prod, push, stick'; there is also a related noun *katsóowaa* 'planting/dibbling stick'. Since this root is bivalent, the form with *l*^{s}- is not a causative. The transitive with covert *v* can be antipassivized as shown by the imperative in (82b) with an additional *k-* 'horizontal surface' which has an idiomatic interpretation of 'deal, hand out (playing cards)'. The *l*^{s}- is added to the basic transitive in (83a) yielding a verb that describes poking a long, complex, or wooden object into something, and thus the *l*^{s}- is qualificational. The antipassive with the same *l*^{s}- in (83b) has gained an idiomatic meaning of 'move house', probably referring to the movement of houseposts (compare English 'pick up sticks').

(82) a. Atsóow. *transitive activity with covert v*
a- $\sqrt[2]{}$tsu'w-μH
ARG-$\sqrt[2]{}$poke -VAR
'S/he pushes, pokes, sticks it (in).' (Leer 1976a: 513)

b. Keedatsóow! *antipassive with k- and covert v*
k- i- d- $\sqrt[2]{}$tsu'w-μH
HSFC-ZCNJ 2SG·S-APSV-$\sqrt[2]{}$poke -VAR
'Deal (playing cards)!' (Leer 1973a: 09/178)

(83) a. Awlitsóow. *qualificational with l-*
a- wu-l^{s}- i- $\sqrt[2]{}$tsu'w-μH
ARG-PFV-XTN-STV-$\sqrt[2]{}$poke -VAR
'S/he poked it (long) (in).' (Leer 1976a: 513)

b. Wudlitsóow. *antipassive qualificational with d- and l-*
wu-d- l^{s}- i- $\sqrt[2]{}$tsu'w-μH
PFV-APSV-XTN-STV-$\sqrt[2]{}$poke -VAR
'S/he moved house, moved away from home.' (Leer 1976a: 515)

The antipassive *wudlihoon* 's/he peddled' in table 5.3 has an overt *l-* in *v*. The transitive in (84a) shows that the root $\sqrt[2]{}$*hun* 'sell' is bivalent, and (84b) shows that this transitive with covert *v* supports antipassivization; there is a nominalization *dahooní* 'seller, salesman, storekeeper' derived from the antipassive (Leer 1973a: 01/184). The transitive in (85a) exemplifies the extensional, describing the transitive event of selling as taking place over some extended path in space which corresponds roughly with the English verb *peddle*. This extensional is antipassivized in (85a).

(84) a. Aawahoon. *transitive with covert v*
a- wu-i- $\sqrt[2]{}$hun-μ
ARG-PFV-STV-$\sqrt[2]{}$sell -VAR
'S/he sold it.' (Leer 1976a: 67)

b. Wudihoon. *antipassive with covert v*
wu-d- i- $\sqrt[2]{}$hun-μ
PFV-APSV-STV-$\sqrt[2]{}$sell -VAR
'S/he sold.' (Leer 1976a: 67)

(85) a. Awlihoon. *transitive with extensional l-*
a- wu-l- i- $\sqrt[2]{}$hun-μ
ARG-PFV-XTN-STV-$\sqrt[2]{}$sell -VAR
'S/he went selling it, peddled it.'

b. Wudlihoon. *antipassive with extensional l-*
wu-d- l- i- $\sqrt[2]{}$hun-μ
PFV-APSV-XTN-STV-$\sqrt[2]{}$sell -VAR
'S/he went selling, peddled.'

Based on my review of the lexical documentation, I claim that all of the antipassives of verbs with overt *v* and bivalent roots in table 5.3 represent one of the three kinds of modifier *v*: qualificational, extensional, or pejorative. This leaves only four antipassives with overt *v* to be accounted for, to which I turn in the next subsection.

3.1.2.2. Antipassives with causative *v*

Causatives only arise from monovalent roots (ch. 4 sec. 3.2). The vast majority of roots in table 5.3 are bivalent. There are four remaining roots that might be analyzed as supporting causatives, only one of which – $\overset{1}{\sqrt{}}$*ne* 'work' – appears to be monovalent. The other three roots have questionable valency – represented as $\overset{?}{\sqrt{}}\alpha$ – primarily because they are not well documented. These three roots are $\overset{?}{\sqrt{}}$*ku* 'vomit; flood', $\overset{?}{\sqrt{}}$*sik* 'belt', and $\overset{?}{\sqrt{}}$*sa* 'rest'. I first review the three roots of questionable valency, then look at the one that seems to be monovalent. I suggest that none of the four roots noted here actually represent antipassives of causatives, but this cannot be taken as conclusive without further investigation.

The root $\overset{?}{\sqrt{}}$*ku* 'vomit, disgorge; flood' is only attested in forms that contain *l-* in *v* (Leer 1973a: f01/95–98, 1976a: 873). Aside from the transitive and antipassive forms in table 5.3, it occurs in an apparently intransitive *aan wulikoo* 'the town became flooded' (Story & Naish 1973: 94.1191) as well as another intransitive *awlikoo* 'it became flooded' (Leer 1976a: 873) with an expletive *a-* (see ch. 7 sec. 1.2.2). If the intransitive without *a-* has an extensional *l-* then it may be that there are two roots, one monovalent $\overset{1}{\sqrt{}}$*ku* 'flood' and one bivalent $\overset{2}{\sqrt{}}$*ku* 'vomit, disgorge'. Alternatively, there might be only one monovalent root and the transitive forms have a causative *l-*, in which case this would show that antipassives can be formed from causatives.

The root $\overset{?}{\sqrt{}}$*sik* 'belt' is obscure as a verb, but it is well known in the alienable noun *séek* 'belt'. It is only attested in forms with *l-* in *v* (Leer 1973a: 09/76–77, 1976a: 494). It is possible that the root is underlyingly monovalent and *l-* is causative, but this predicts the unattested possibility of a form like ※*uwasík* or ※*wooseek* meaning 'it became belted' or 'it has a belt'. These forms must be tested to verify if this root is monovalent and hence that the antipassive *wudlisík* 's/he wore a belt' in table 5.3 is based on a causative.

The root $\overset{?}{\sqrt{}}$*sa*ʰ 'breathe; rest' is the most problematic of the three roots with questionable valency in table 5.3. It is well attested in verbs like *wudisaa* 's/he breathed, was alive; it (pipe) let off steam' (Leer 1973a: 09/3–6, 1976a: 486–487). Forms with only *d-* refer to breathing and by metaphoric extension to being alive; forms with *l-* refer to resting akin to English *catch one's breath*. There are no verbs based on this root that lack both of *d-* and *l-*, suggesting that it is an example of the *d-*/*l-* alternation (sec. 7.2). But the root $\overset{2}{\sqrt{}}$*sa* 'call, name' (Leer 1973a: 09/7–11, 1976a: 487–488) is probably related at least historically, and it is most often encountered in transitive verbs with covert *v* such as *yéi aawasáa* 's/he called/named it thus' and *ax'eiyasáakw* 's/he calls upon it (spirit)'. This root has one documented form that suggests a monovalent root: *a yáa uwasáa* 's/he gave it a name', literally 's/he named on its face' (Leer 1973a: 487). Also probably related is the root $\overset{?}{\sqrt{}}$*saÿ* 'radiate heat; flush, perspire' (09/15–17 Leer 1976a: 488), which is attested with a covert *v* and a lexically specified *du-* (sec. 6) as in *xat kawduwasáy* 'I'm hot/sweaty' (Story & Naish 1973: 112.1461), and otherwise with *l-* in *v* as *yá neilyee akawlisáy* 'it heats this room' (Story & Naish 1973: 112.1463). Determining the valency of $\overset{?}{\sqrt{}}$*sa*ʰ 'breathe; rest' is thus complicated not only by a lack of documentation but also its relationship with other documented roots.

Returning to the pair of transitive *akawsinei* 's/he knit, crocheted it' and antipassive *kawdzinei* 's/he knit, crocheted' in table 5.3, although this might appear to be a causative the lexical documentation suggests a more complicated state of affairs. The root conventionally analyzed for 'knit' is $\sqrt[1]{ne}$ 'work' as in the activity *yéi jiné* 's/he is working'. But the same root is also reported in transitives like *yéi adaané* 's/he is working on it' where there is no overt *v*, and furthermore it is never attested in any verbs without an incorporated noun. The incorporated noun *ji-* (from *jín* 'hand') in *yéi jiné* 's/he is working' could conceivably be saturating an argument, in which case the apparently intransitive form is underlyingly transitive, and thus the root would actually be bivalent. If so then the *s-* in *v* of *akawsinei* 's/he knit, crocheted it' would presumably be an event or argument modifier. Other than 'knit' there is only one verb based on $\sqrt[1]{ne}$ 'work' with an overt *v*, namely *ash ée yéi jisané* 's/he is making him/her work' (Leer 1973a: 04/86) where the *s-* is an applicative that adds the *NP-x'* 'at/to NP' argument.

The root $\sqrt[1]{ne}$ 'work' is also related to the root $\sqrt[1]{ni^h} \sim \sqrt[1]{ne^h}$ 'occur, happen' (Leer 1973a: 04/120–129, 1976a: 272–278). This root is prolific with a large number verbs based upon it, and thus it has an unusually broad and abstract meaning. The simplest examples are probably *at woonee* 'something happened', *yéi woonee* 'it happened thus', and *yan uwanée* 'it is done, completed, finished', as well as the euphemism *woonee* 's/he died'. There is an unambiguous causative *yéi awsinee* 's/he did thus to it' or more literally 's/he made the event happen thus to it'. If $\sqrt[1]{ne}$ 'work' and $\sqrt[1]{ni^h} \sim \sqrt[1]{ne^h}$ 'occur, happen' are synchronically connected then there is a bewildering forest of verbs to be considered and tested before the root valency can be established conclusively. At this point it is difficult to say whether the antipassive *kawdzinei* 's/he knit' is really built upon a causative or if the *s-* in *v* has some other function.

3.1.2.3. Antipassives with applicative *v*

Applicatives are formed bivalent roots (ch. 4 sec. 3.3) with an overt *v*. They are differentiated from bivalent roots with a modificational *v* by the overt presence of an added argument PP which is either an instrument (with *-ch*), a locative (with *-t*), or a manner/class (with *-x̲*). Thus in an applicative the overt *v* adds an overt argument. In this section I consider antipassivization of applicatives where the antipassive operation targets the object; for the targeting of argument PPs see section 3.3.4.

Logically it should be possible for the object of an applicative to be targeted for antipassivization in just the same way as the object of a transitive because they are syntactically identical with transitives that have a covert *v*. But there are no documented instances of antipassivized applicatives and I have never elicited any. The basis cases in (86) show a transitive and its corresponding instrumental applicative. The form in (87a) is the documented antipassive of the transitive, and then (87b) is the expected antipassive of the applicative. Note that (87b) is undocumented (hence '※').

(86) a. X̲waaxéet'. *transitive*
wu-x̲- i- $\sqrt[2]{}$xit' -μH
PFV-1SG·S-STV-$\sqrt[2]{}$sweep-VAR
'I brushed/swept it.'

b. Jig̲wéinaach x̲wasixéet'. *instrumental applicative*
jig̲wéinaa-ch wu-x̲- s- i- $\sqrt[2]{}$xit' -μH
hand·wiper-INSTR PFV-1SG·S-APPL-STV-$\sqrt[2]{}$sweep-VAR
'I brushed/swept it with a hand towel.'

(87) a. Xwadixéet'. *antipassive*
wu-x- d- i- $\sqrt[2]{}$xit' -μH
PFV-1SG·S-APSV-STV-$\sqrt[2]{}$sweep-VAR
'I brushed/swept.'

b. ※Jigwéinaach xwadzixéet'. ※*antipassive instrumental applicative*
jigwéinaa-ch wu-x- d- s- i- $\sqrt[2]{}$xit' -μH
hand·wiper-INSTR PFV-1SG·S-APSV-APPL-STV-$\sqrt[2]{}$sweep-VAR
'I brushed/swept with a hand towel.'

To be certain of this we must carefully distinguish applicatives from other instances of overt *v*. There is for example an attested *k-s-* with $\sqrt[2]{}$*xit'* meaning 'brush clothes' (Story & Naish 1973: 37.343) that is apparently not applicative, and Leer (1973a: f03/72) documents forms with *l-* meaning scrape. Either of these could be extensional or qualificational even when they appear with a PP because the PP could be an adjunct. And the handful of verbs documented with applicatives are curiously not documented with antipassives, so they could be incompatible for some reason. So although I have a hunch that antipassives of applicatives are probably grammatical, I am still uncertain.

3.2. Object suppressing semantics

The semantics of Tlingit antipassives is largely unknown, with the only substantial evidence of their meaning coming from English translations. When asked about their meaning, consultants generally describe antipassives as "not saying what it is" for the suppressed object. Thus for the antipassive in (88) my consultants generally note that the literal English translation is ungrammatical and then explain the meaning as something like "you guys sold something, but you're not saying what it is".

(88) Wutudihoon.
wu-tu- d- i- $\sqrt[2]{}$hun-H
PFV-1PL·S-APSV-STV-$\sqrt[2]{}$sell -VAR
'We sold.' (*Keiyishí* Bessie Cooley)

The impressionistic description given by my consultants suggests an analysis where the suppressed object has a referent that exists but is unspecified or undefined. This should translate into an existential closure over the variable that codes the referent as well as an assertion of nonspecificity or undefinedness. Thus, given an eventuality ε and the thematic role function $\Theta_1(\varepsilon, x)$ establishing x as a proto-patient in ε, an antipassive operator $\pi_a(x)$ should be interpreted as something like $\exists x \in$ Entity : UNSPEC(x). This predicts that an antipassive should be infelicitous in a context where the existence presupposition is violated, such as the untested sentence in (89).

(89) ※#Tléil daa sá haa jee ka wutudihoon.
tléil daa sá haa jee -Ø ka wu-tu- d- i- $\sqrt[2]{}$hun-H
NEG what Q 1PL·PSS poss'n-LOCP and PFV-1PL·S-APSV-STV-$\sqrt[2]{}$sell -VAR
'We have nothing and we sold.'

Aside from this interpretive question, there is another issue that involves the referent of the suppressed object. Specifically, how is the referent of the suppressed object in (88) semantically distinguished from an overt fourth person object like *at=* in (90a) or *ku-* in (90b)?

(90) a. At wutuwahoon. *fourth person nonhuman object*
at= wu-tu- i- $\sqrt[2]{}$hun-H
4N·O=PFV-1PL·S-STV-$\sqrt[2]{}$sell -VAR
'We sold something.', 'We sold stuff.', 'We sold things.' (*Keiyishí* Bessie Cooley)

b. K̲uwtuwahoon. *fourth person human object*
k̲u- wu-tu- i- $\sqrt[2]{}$hun-H
4N·O-PFV-1PL·S-STV-$\sqrt[2]{}$sell -VAR
'We sold someone.', 'We sold people.' (*Keiyishí* Bessie Cooley)

I address this issue further in section 3.3.3 where I argue that suppressed objects are not indefinite or impersonal, but that is certainly not the end of the story. We expect there to be some semantic difference between the interpretation of a suppressed object and the interpretation of a fourth person object, but the semantics of fourth person in Tlingit is completely unexplored. The received view is that fourth person has some kind of indefinite, nonspecific, or impersonal interpretation, but what exactly is this interpretation and how is it different from an unspecified interpretation? Furthermore, Tlingit allows the expression of objects with no overt form – i.e. *pro* – and we expect this to also be interpreted differently from a suppressed object. McFadden & Sundaresan (2018) argue that *pro* and PRO are the same syntactic element with different semantic interpretations depending on their contexts, thus suggesting an interpretation for our PRO as suppressed object. But actually they only address PRO in the context of control and not where PRO is an invisible argument blocker like in Tlingit antipassives. All I can say at present is that we need more study of the semantics of argument suppression (antipassives and passives), covert third person arguments, fourth person arguments, and the semantics of middle voice.

Denniss (2017) presents a compositional semantics for antipassives in Australian languages that might be applicable to Tlingit. But her data present many functions beyond object suppression that do not obviously occur in Tlingit so more investigation is needed. I expect that Tlingit's antipassive semantics should be broadly similar to other antipassives crosslinguistically, but there is remarkably little research on the semantics of antipassives in general; most formalizations simply do not address antipassives, and the few that mention them seem to assume they are more or less identical to passives.

3.3. What antipassive *d-* doesn't do

There are a number of possible phenomena that could be associated with antipassivization but which do not occur in Tlingit. In this section I catalogue the facts supporting the nonexistence of some of these phenomena, thus showing what *d-* in Voice does not do to objects and other arguments. I show in section 3.3.2 that Tlingit does not allow 'demotion' of the object to an oblique and that there is no 'promotion' of the subject to the object. Then in section 3.3.3 I show that the antipassive is not the same as an indefinite or impersonal object.

3.3.1. Antipassive *d-* doesn't select unaccusatives

As outlined in section 2.2.3, it is possible for Voice to select ƐP or VP directly so that no *v*P exists in the derivation. This lack of *v*P can only occur with intransitives, and specifically only with unaccusatives because unergatives have a subject that can surface in *v*P as an overt D pronoun (ch. 4 sec. 2.2.2).

This leads to the possibility of an unaccusative structure with antipassive *d-* in Voice. I argue that this combination is ungrammatical: there are no antipassives of unaccusatives.

The contextual pattern of an antipassive unaccusative is sketched in (91). The basis case is an unaccusative in (91a) which lacks *d-* and has only an object argument and the corresponding antipassive in (91b) has overt *d-* and lacks an argument.

(91) a. Obj √root *unaccusative without d-*
b. *—— *d-* √root **antipassive with d-*

Unaccusatives can be lexically specified as either states or achievements; unaccusative activities are not documented. Given this, I show that antipassives cannot be constructed from an unaccusative state in (92) nor from an unaccusative achievement in (93), both of which lack *v*.

(92) a. X̲at yanéekw. *state unaccusative*
x̲at= i- ^{1}√nikw-μH
1SG·O=STV-^{1}√sick -VAR
'I am sick.'

b. *Dinéekw. **antipassive state unaccusative*
d- i- ^{1}√nikw-μH
APSV-STV-^{1}√sick -VAR
intended: 'It is sick.', 'There is sickness.'

(93) a. X̲at woowáat. *achievement unaccusative*
x̲at= wu-i- ^{1}√wa't -μH
1SG·O=PFV-STV-^{1}√grow·up-VAR
'I grew up.'

b. *Wudiwáat. **antipassive achievement unaccusative*
wu-d- i- ^{1}√wa't -μH
PFV-APSV-STV-^{1}√grow·up-VAR
intended: 'Grew up.', 'There was growing up.'

There are a few verbs which prohibit any DP arguments that are traditionally called 'impersonal' (Story 1966: 66; Naish 1966: 45; Story & Naish 1973: 367; Leer 1991: 49). Three classic examples of impersonal verbs are shown in (94)–(96). Some of these impersonal verbs might be identified as antipassives of unaccusatives (or passives of unergatives) because they appear to lack arguments altogether.

(94) a. Awdigaan. *impersonal with a-*
a- wu-d- i- ^{1}√gan -μ
XPL-PFV-MID-STV-^{1}√burn-VAR
'The sun is shining.'

b. *G̲agaan awdigaan. **impersonal with a- and with argument DP*
g̲agaan a- wu-d- i- ^{1}√gan -μ
sun XPL-PFV-MID-STV-^{1}√burn-VAR
intended: 'The sun is shining.'

c. *Ǵagaan wudigaan. **impersonal without a- and without argument DP*
ǵagaan wu-d- i- $^{1}\sqrt{}$gan -μ
sun PFV-MID-STV-$^{1}\sqrt{}$burn-VAR
intended: 'The sun is shining.'

(95) a. K̲uwat'aa. *impersonal with k̲u-*
k̲u- i- $^{1}\sqrt{}$t'a^{h}-μ
AREAL-STV-$^{1}\sqrt{}$hot -VAR
'It is hot weather.'

b. *Yá k̲utí k̲uwat'aa. **impersonal with k̲u- and with argument DP*
yá k̲utí k̲u- i- $^{1}\sqrt{}$t'a^{h}-μ
PROX weather AREAL-STV-$^{1}\sqrt{}$hot -VAR
intended: 'This weather is hot.'

c. ?Yá k̲utí yat'aa. *?impersonal without k̲u- and with argument DP*
yá k̲utí i- $^{1}\sqrt{}$t'a^{h}-μ
PROX weather STV-$^{1}\sqrt{}$hot -VAR
intended: 'This weather is hot.'

(96) a. Wuduwas'ík̲. *impersonal with du-*
wu-du- i- $^{1}\sqrt{}$s'ik̲ -H
PFV-XPL-STV-$^{1}\sqrt{}$smoke-VAR
'It (area) is smoky.'

b. *Yá hít wuduwas'ík̲. **impersonal with du- and with argument DP*
yá hít wu-du- i- $^{1}\sqrt{}$s'ik̲ -H
PROX house PFV-XPL-STV-$^{1}\sqrt{}$smoke-VAR
intended: 'This house is smoky.'

c. *Yá hít uwas'ík̲. **impersonal without du- and with argument DP*
yá hít u- i- $^{1}\sqrt{}$s'ik̲ -H
PROX house ZPFV-STV-$^{1}\sqrt{}$smoke-VAR
intended: 'This house is smoky.'

d. Yá hít yeex' wuduwas'ík̲. *impersonal with du- and with adjunct PP*
yá hít ÿee -x' wu-du- i- $^{1}\sqrt{}$s'ik̲ -H
PROX house below-LOC PFV-XPL-STV-$^{1}\sqrt{}$smoke-VAR
'It is smoky inside this house.'

There is a crucial grammatical difference between the impersonal verbs and antipassives: impersonal verbs always occur with an expletive D pronoun that is one of *a-* (ch. 7 sec. 1.2.2), *k̲u-* (ch. 7 sec. 1.2.3.2), or *du-* (this ch. sec. 6.4.2), but antipassives never occur with an expletive pronoun. Even though (94a) has *d-* this must be interpreted as a kind of middle voice rather than an antipassive because antipassivization would eliminate the position where *a-* occurs. Earlier descriptions of Tlingit include impersonals that have an incorporated inalienable noun, but I argue in chapter 7 section 1.3.2 that the incorporate saturates an argument and so the structure is actually a normal unaccusative.

3.3.2. Antipassive *d-* doesn't demote or promote

Antipassivization and passivization are often crosslinguistically described as either suppressing an argument or instead 'demoting' it. The concept of **demotion** comes from Relational Grammar (Perlmutter 1978; Johnson 1979; Blake 1990) and describes the shifting of an argument like subject → object or object → oblique down what is known as the Relational Hierarchy (also Accessibility Hierarchy). An opposing concept of **promotion** describes the shifting of an argument up the relational hierarchy (Givón 1994: 14), e.g. oblique → object. These concepts have no theoretical meaning in Minimalism because there is no transformational mapping between sentences and no abstraction like the Relational Hierarchy. Nonetheless, they are still useful descriptive labels for the patterns of arguments across different structures. In this section I illustrate the differences between suppression, promotion, and demotion. I then show that Tlingit does not demote objects to obliques in antipassives, nor does it promote subjects to objects; the same is true for passives, for which see section 4.3.2. So regardless of the utility of demotion and promotion as concepts for describing a language like English, they are irrelevant for the analysis of Tlingit.

The sketches in (97) and (98) illustrate the idea of argument suppression without promotion or demotion, using a notional syntax with basic SVO order. The passive pair in (97) show how the subject is suppressed, and the antipassive pair in (98) show how the object is suppressed.

(97) a. subject verb object *transitive*

b. ~~subject~~ PASV+verb object *suppression: passive*

(98) a. subject verb object *transitive*

b. subject APSV+verb ~~object~~ *suppression: antipassive*

Promotion and demotion are additional operations beyond the argument suppression in (97) and (98). The sketch in (99) shows a passive structure where the original subject is suppresed and the original object is promoted to become the new subject. This is exemplified in English by the pair *Alfred baked bread* : *Bread was baked*; note the absence (suppression) of the original subject *Alfred*.

(99) a. subject verb object *transitive*

b. ~~subject~~ subject PASV+verb *suppression + promotion: passive*

The equivalent antipassive with suppression and promotion is sketched in (100). Here the original object is suppressed and the original subject is promoted to become the new object.

(100) a. subject verb object *transitive*

b. APSV+verb object ~~object~~ *suppression + promotion: passive*

Describing the subject → object phenomenon as 'promotion' for the antipassive in (100) might seem counterintuitive. This label is used because antipassivization was conceived of in Relational

Grammar as basically the same operation as the passive, but with a change to the Relational Hierarchy. Where a language with passives is supposed to have a hierarchy of subject > object > oblique, a language with antipassives would instead have a different hierarchy of object > subject > oblique. Since the language with antipassives would have the subject and object in the reverse order in the hierarchy, the shift of subject → object is still a kind of promotion.[5]

In both hierarchies the obliques (indirect objects or other non-core argument PPs) are always ranked below the subject and object. Demotion is then a shift of either the subject or the object to an oblique. The sketch in (101) shows a passive structure where the original subject is demoted to become the new oblique and the original object is promoted to become the new subject. Note that demotion has now replaced suppression. This is exemplified in English by the pair *Alfred baked bread* : *Bread was baked by Alfred* where the preposition phrase *by Alfred* is the new oblique.

(101) a. subject verb object *transitive*

b. subject PASV+verb oblique *demotion + promotion: passive*

The equivalent antipassive with demotion and promotion is sketched in (102). The original object is demoted to become an oblique and the original subject is promoted to become the new object.

(102) a. subject verb object *transitive*

b. APSV+verb object oblique *demotion + promotion: antipassive*

Tlingit exhibits only suppression and never either demotion or promotion in its antipassives; the same is shown for passives later in section 4.3.2. The data in (103) show that the sole argument of an antipassive must be a subject as in (103b) and cannot be promoted to an object in (103c).

(103) a. X'úx' kawtushixít. *transitive*
x'úx' k- wu-tu- sh-i- $\sqrt[2]{}$xit -H
book QUAL-PFV-1PL·S-PEJ-STV-$\sqrt[2]{}$scratch-VAR
'We wrote a book.'

b. Kawtujixít. *antipassive with only subject*
k- wu-tu- d- sh-i- $\sqrt[2]{}$xit -H
HSFC-PFV-1PL·S-APSV-PEJ-STV-$\sqrt[2]{}$scratch-VAR
'We wrote.'

c. *Haa kawjixít. **antipassive with promoted subject*
haa= k- wu-d- sh-i- $\sqrt[2]{}$xit -H
1PL·O=HSFC-PFV-APSV-PEJ-STV-$\sqrt[2]{}$scratch-VAR
intended: 'We wrote.'

The data in (104) show that the suppressed argument of an antipassive cannot be demoted to become a PP. Compare these forms to the grammatical transitive and antipassive in (103) above. I

5. Note that this system implies the nonexistence of languages with both passives and antipassives.

have selected three semantically plausible postpositions that could be heads of an oblique PP and I show that all three are ungrammatical as obliques for demoted objects. I conclude that demotion does not occur for antipassives in Tlingit, and since it also does not occur for passives (sec. 4.3.2) we can say that demotion is not a grammatical operation in Tlingit.

(104) a. * X'úx' teen kawtujixít. **antipassive with demoted object*
x'úx' teen k- wu-tu- d- sh-i- $\sqrt[2]{}$xit -H
[PP book INSTR] HSFC-PFV-1PL·S-APSV-PEJ-STV-$\sqrt[2]{}$scratch-VAR
intended: 'We wrote (by) a book.'

b. * X'úx'dáx̱ kawtujixít. **antipassive with demoted object*
x'úx'-dáx̱ k- wu-tu- d- sh-i- $\sqrt[2]{}$xit -H
[PP book-ABL] HSFC-PFV-1PL·S-APSV-PEJ-STV-$\sqrt[2]{}$scratch-VAR
intended: 'We wrote (out) a book.'

c. * X'úx'de kawtujixít. **antipassive with demoted object*
x'úx'-dé k- wu-tu- d- sh-i- $\sqrt[2]{}$xit -H
[PP book-ALL] HSFC-PFV-1PL·S-APSV-PEJ-STV-$\sqrt[2]{}$scratch-VAR
intended: 'We wrote (into) a book.'

There are conceivable interpretations for the sentences in (104) where they are the result of motion derivations (ch. 6 sec. 3.3) and so might actually be grammatical. In such an interpretation the event is conceived of as unergative motion along a path anchored by a book. But this requires an elaborate metaphorical interpretation and a consequently complex interpretive context together with a relatively complex derivational operation extending well beyond the addition of *d-*. So even if (104) might be grammatical they cannot represent the demotion of an otherwise suppressed object of an antipassive. I conclude that neither promotion nor demotion occur with antipassivization in Tlingit, and thus the Voice head with *d-* is a trigger of only object suppression in antipassives.

3.3.3. Antipassive *d-* isn't impersonal or indefinite

Antipassivization with *d-* is not a reflection of an invisible impersonal or indefinite object. Earlier analyses have confused antipassivization with overt indefinite arguments, but I argue in this section that the two concepts are syntactically and semantically distinct and that Tlingit has distinct grammatical structures to express them.

Tlingit has two indefinite object D pronouns: the fourth person nonhuman *at=* 'something, stuff' (ch. 7 sec. 1.2.1.9) and the fourth person human *k̲u-* ~ *k̲aa=* 'someone, people' (ch. 7 secs. 1.2.1.7 & 1.2.1.8).[6] As shown below, these two object D pronouns can appear in any context where other objects are appropriate given a suitable context for an indefinite or impersonal referent. They are incompatible with other objects, implying that they are objects themselves. Furthermore, these fourth person object D pronouns are incompatible with antipassivization in exactly the same way that all other objects are incompatible with antipassivization; this also implies that they are objects rather than argument suppression elements.

6. The term 'indefinite' might be insufficient, hence the vague term 'fourth person'. We still lack evidence of whether Tlingit distinguishes between indefinite, impersonal, nonspecific, or nonreferential with these pronouns. But this has no bearing on their argument status; I treat them as indefinite and/or impersonal here for convenience.

It is bizarre to claim that the second person singular object D pronoun *i-* 'you sg.' is an antipassivizer, meaning that it suppresses the object; instead *i-* is itself the object. Similarly, it is strange to suggest that an English pronoun like *something* in *Something broke the window* or *someone* in *Someone spilled coffee* is a passivizer, meaning that it suppresses the subject argument; instead *something* and *someone* are themselves the subjects. Conversely, nobody argues that *was* in *Edith was kicked* indicates the presence of a covert impersonal subject (not agent!) because *was* is instead analyzed as a passivizer, meaning that it modifies the argument structure. Likewise, the Tlingit *d-* is an antipassivizer that modifies the argument structure, not the indicator of an indefinite subject.

The conclusion above is strongly supported by the fact that Tlingit already has separate elements for indefinite objects, so that an invisible indefinite object indicated by *d-* would be superflous. In the rest of this section I illustrate Tlingit's indefinite object D pronouns in contrast with antipassives. I show that the indefinite object D pronouns are (i) incompatible with other objects and (ii) incompatible with antipassivization. Both facts confirm that these elements are objects and not argument suppressors. I first look at the fourth person nonhuman *at=* 'something, stuff' and then the fourth person human *k̲u-* ~ *k̲aa=* 'someone, people'.

The behaviour of *at=* with respect to other kinds of objects is demonstrated in (105)–(106). The basis cases in (105) demonstrate a transitive verb based on the bivalent root $\sqrt[2]{hun}$ 'sell'. The second person singular object D pronoun *i-* 'you sg.' is shown in (105a), then the DP *gwéetsaa* 'pizza' in (105b), and then a wh-indefinite DP *ch'a daa sá* 'whatever' in (105c). Finally the fourth person *at=* 'something, stuff' object D pronoun is shown in (105d).

(105) a. Iwtuwahoon. *object D pronoun*
i- wu-tu- i- $\sqrt[2]{}$hun-μH
2SG·O-PFV-1PL·S-STV-$\sqrt[2]{}$sell -VAR
'We sold you (sg.).'

b. Gwéetsaa wutuwahoon. *object DP*
gwéetsaa wu-tu- i- $\sqrt[2]{}$hun-μH
pizza PFV-1PL·S-STV-$\sqrt[2]{}$sell -VAR
'We sold pizza.'

c. Ch'a daa sá wutuwahoon. *wh-indefinite object DP*
ch'a daa sá wu-tu- i- $\sqrt[2]{}$x̲a -μH
just what Q PFV-1PL·S-STV-$\sqrt[2]{}$sell-VAR
'We sold whatever.'

d. At wutuwahoon. *indefinite object D pronoun*
at= wu-tu- i- $\sqrt[2]{}$hun-μH
4N·O=PFV-1PL·S-STV-$\sqrt[2]{}$sell -VAR
'We sold something, stuff.'

The facts in (106) show that *at=* is incompatible with the other three kinds of object. First in (106a) the combination of the object D pronoun *at=* 'something' and the object D pronoun *i-* 'you sg.' is ungrammatical, so that *at=* cannot occur with other object D pronouns. Then in (106b) *at=* cannot occur with the object DP *gwéetsaa* 'pizza', and finally in (106c) *at=* cannot occur with the wh-indefinite DP *ch'a daa sá* 'whatever'.

(106) a. *At iwtuwahoon. **object D pronoun with indef. obj. D pronoun*
at= i- wu-tu- i- $\overset{2}{\sqrt{}}$hun-μH
4N·O=2SG·O-PFV-1PL·S-STV-$\overset{2}{\sqrt{}}$sell -VAR
intended: 'We sold you (sg.).'

b. *Gwéetsaa at wutuwahoon. **object DP with indef. obj. D pronoun*
gwéetsaa at= wu-tu- i- $\overset{2}{\sqrt{}}$hun-μH
pizza 4N·O=PFV-1PL·S-STV-$\overset{2}{\sqrt{}}$sell -VAR
intended: 'We sold pizza.'

c. *Ch'a daa sá at wutuwahoon. **wh-indefinite object DP with indef. obj. D pronoun*
ch'a daa sá at= wu-tu- i- $\overset{2}{\sqrt{}}$hun-μH
just what Q 4N·O=PFV-1PL·S-STV-$\overset{2}{\sqrt{}}$sell -VAR
intended: 'We sold whatever.'

The form in (107) is another basis case, this time showing the antipassive of the same transitive verb. This contrasts with the four forms in (108) that show that the antipassive with *d-* is ungrammatical in combination with all of the different objects above in (105), including the *at=* D pronoun in (108d). This confirms that *at=* is the same as other objects: it is incompatible with antipassivization because antipassivization suppresses the object.

(107) Wutudihoon. *antipassive*
wu-tu- d- i- $\overset{2}{\sqrt{}}$hun-μH
PFV-1PL·S-APSV-STV-$\overset{2}{\sqrt{}}$sell -VAR
'We sold.'

(108) a. *Iwtudihoon. **object D pronoun with antipassive*
i- wu-tu- d- i- $\overset{2}{\sqrt{}}$hun-μH
2SG·O-PFV-1PL·S-APSV-STV-$\overset{2}{\sqrt{}}$sell -VAR
intended: 'We sold you (sg.)'

b. *Gwéetsaa wutudihoon. **object DP with antipassive*
gwéetsaa wu-tu- d- i- $\overset{2}{\sqrt{}}$hun-μH
pizza PFV-1PL·S-APSV-STV-$\overset{2}{\sqrt{}}$sell -VAR
intended: 'We sold pizza.'

c. *Ch'a daa sá wutudihoon. **wh-indefinite object DP with antipassive*
ch'a daa sá wu-tu- d- i- $\overset{2}{\sqrt{}}$hun-μH
just what Q PFV-1PL·S-APSV-STV-$\overset{2}{\sqrt{}}$sell -VAR
intended: 'We sold whatever.'

d. *At wutudihoon. **indefinite object D pronoun with antipassive*
at= wu-tu- d- i- $\overset{2}{\sqrt{}}$hun-μH
4N·O=PFV-1PL·S-APSV-STV-$\overset{2}{\sqrt{}}$sell -VAR
intended: 'We sold something, stuff.'

The same facts as for *at=* above are shown below for the *k̲u-* allomorph of the fourth person human *k̲u-* ~ *k̲aa=* object D pronoun in (109)–(111). The basis cases are the grammatical forms in (109), with *k̲u-* illustrated in (109d).

(109) a. Yee wtuwahoon. *object D pronoun*
ÿee= wu-tu- i- $\sqrt[2]{}$hun-μH
2PL·O-PFV-1PL·S-STV-$\sqrt[2]{}$sell -VAR
'We sold you (pl.).'

b. Haa gooxú wutuwahoon. *object DP*
haa goox-í wu-tu- i- $\sqrt[2]{}$hun-μH
1PL·PSS slave -PSS PFV-1PL·S-STV-$\sqrt[2]{}$sell -VAR
'We sold our slaves.'

c. Ch'a aa sá wutuwahoon. *wh-indefinite object DP*
ch'a aa sá wu-tu- i- $\sqrt[2]{}$xa -μH
just who Q PFV-1PL·S-STV-$\sqrt[2]{}$sell-VAR
'We sold whoever.'

d. Kuwtuwahoon. *indefinite object D pronoun*
ku- wu-tu- i- $\sqrt[2]{}$hun-μH
4H·O=PFV-1PL·S-STV-$\sqrt[2]{}$sell -VAR
'We sold someone, people.'

The data in (110) show that *ku-* cannot be combined with any of the other three kinds of object in (109a)–(109c) above.

(110) a. *Kuyiwtuwahoon. **object D pronoun with indef. obj. D pronoun*
ku- ÿi- wu-tu- i- $\sqrt[2]{}$hun-μH
4H·O-2PL·O-PFV-1PL·S-STV-$\sqrt[2]{}$sell -VAR
intended: 'We sold you (pl.).'

b. *Haa gooxú kuwtuwahoon. **object DP with indef. obj. D pronoun*
haa goox-í ku- wu-tu- i- $\sqrt[2]{}$hun-μH
1PL·PSS slave -PSS 4H·O-PFV-1PL·S-STV-$\sqrt[2]{}$sell -VAR
intended: 'We sold our slaves.'

c. *Ch'a aa sá kuwtuwahoon. **wh-indefinite object DP with indef. obj. D pronoun*
ch'a aa sá ku- wu-tu- i- $\sqrt[2]{}$hun-μH
just who Q 4H·O-PFV-1PL·S-STV-$\sqrt[2]{}$sell -VAR
intended: 'We sold whoever.'

And finally the data in (111) show that the antipassive cannot be combined with any of the four kinds of object in (109) above, including *ku-*.

(111) a. *Yee wtudihoon. **object D pronoun with antipassive*
ÿee= wu-tu- d- i- $\sqrt[2]{}$hun-μH
2PL·O=PFV-1PL·S-APSV-STV-$\sqrt[2]{}$sell -VAR
intended: 'We sold you (sg.)'

b. *Haa gooxú wutudihoon. **object DP with antipassive*
haa goox-í wu-tu- d- i- $\sqrt[2]{}$hun-μH
1PL·PSS slave -PSS PFV-1PL·S-APSV-STV-$\sqrt[2]{}$sell -VAR
intended: 'We sold our slaves.'

c. *Ch'a aa sá wutudihoon. *wh-indefinite object DP with antipassive*
ch'a aa sá wu-tu- d- i- $\sqrt[2]{}$hun-μH
just who Q PFV-1PL·S-APSV-STV-$\sqrt[2]{}$sell -VAR
intended: 'We sold whoever.'

d. *K̲uwtudihoon. *indefinite object D pronoun with antipassive*
k̲u- wu-tu- d- i- $\sqrt[2]{}$hun-μH
4H·O=PFV-1PL·S-APSV-STV-$\sqrt[2]{}$sell -VAR
intended: 'We sold someone, people.'

The facts for *at=* and *k̲u-* in (106)–(111) are summarized by the table in (112). Both *at=* and *k̲u-* can occur alone, but neither can occur together with an object D pronoun, an object DP, or an object wh-indefinite DP. Furthermore, neither *at=* nor *k̲u-* can occur in an antipassive structure. All the other objects are incompatible with both each other and antipassive structures. Since *at=* and *k̲u-* behave exactly like all other objects, I conclude that they are object D pronouns and not argument suppressors.

(112) (*106*)–(*111*)

	alone	obj. D pron.	obj. DP	obj. wh-indef. DP	antipassive
at=	✓	*	*	*	*
k̲u-	✓	*	*	*	*

Since Tlingit expresses indefinite objects with the object D pronouns *at=* and *k̲u-*, if *d-* encoded a covert indefinite or impersonal object it would overlap exactly with the functions of *at=* and *k̲u-*. Furthermore, the presence of *d-* is incompatible with all of Tlingit's different ways of expressing indefinite or impersonal objects. I conclude then that *d-* is not an indicator of an indefinite or impersonal object.

Antipassivization does not affect the thematic role associated with the object, only the object itself. No object occurs in an antipassive structure, but this does not mean that there is no corresponding thematic role such as a patient or theme. A bivalent root like $\sqrt[2]{}$*hun* supplies two thematic roles, modelled syntactically by the $[\theta_1]$ and $[\theta_2]$ features. By representing the suppressed argument as PRO I ensure the existence of a D node that can check the $[\theta_1]$ feature supplied by the root, and thus that there is a locus for the interpretation of the semantics of patients and themes.

3.3.4. Antipassive *d-* doesn't target PPs

Antipassivization does not target argument PPs. Argument PPs arise from two different systems: motion derivations and applicatives. Motion derivations select a PP to indicate a path or location that is known as a 'path argument' (ch. 2 sec. 1.2.1; ch. 6 sec. 3.3). Applicatives select a PP to indicate an instrument or location that is known as an 'applicative argument' (ch. 4 sec. 3.3). Logically the argument PP of these constructions could be targeted by Voice because they are all merged in phrases below VoiceP. But initial attermpts to antipassivize argument PPs are ungrammatical, and the complete lack of attested examples suggests that they are impossible.

Motion derivations select an argument PP – a path argument – that is merged in VP. Since objects are also merged in VP, both objects and path arguments are in the same syntactic position. Voice should then have the same configuration with path arguments as with objects. But antipassivization

cannot suppress a path argument. The unergative motion verb in (113a) cannot be antipassivized with *d-* since the form in (113b) is ungrammatical.[7]

(113) a. Neildé wutuwa.aat. *unergative motion with argument PP*
neil -dé wu-tu- i- $^{1}\sqrt{}$.at -μ
home-ALL PFV-1PL·S-STV-$^{1}\sqrt{}$go·PL-VAR
'We went home.'

b. *Wututdi.aat. **antipassive unergative motion*
wu-tu- d- i- $^{1}\sqrt{}$.at -μ
PFV-1PL·S-PASV-STV-$^{1}\sqrt{}$go·PL-VAR
intended: 'We went.' (*La.oos Tláa* Ida Calmegane, *Shuwuteen* Margaret Bob)

Furthermore, unergative motion verbs are possible without an argument PP and without *d-* in Voice, as illustrated by (114). Thus *d-* is not needed to suppress the argument PP because this PP can simply be absent.

(114) Wutuwa.aat. *unergative motion without argument PP*
wu-tu- i- $^{1}\sqrt{}$.at -μ
PFV-1PL·S-STV-$^{1}\sqrt{}$go·SG-VAR
'We went.'

The data above address an unergative motion verb which by definition lacks an object. Handling verbs are the transitive counterpart of unergative motion verbs, and as such should have an object available for antipassivization. These have not been investigated previously, and the lexical documentation does not provide clear evidence for them. But if the path argument of a motion verb cannot be targeted for antipassivization, it would be surprising for the path argument of a handling verb to be targetable. This is particularly because the same motion derivations apply to handling verbs as to motion verbs, and so handling verbs can be formed without an overt path argument as shown in (115).

(115) a. Gúx'aa aadé xwaataan. *transitive motion (handling) with argument PP*
gúx'aa á -dé wu-x- i- $^{2}\sqrt{}$tan -μ
cup there-ALL PFV-1SG·S-STV-$^{2}\sqrt{}$handle·w/e-VAR
'I moved the (empty) cup there.'

b. Gúx'aa xwaataan. *transitive motion (handling) without argument PP*
gúx'aa wu-x- i- $^{2}\sqrt{}$tan -H
cup PFV-1SG·S-STV-$^{2}\sqrt{}$handle·w/e-VAR
'I handled the (empty) cup.'

The argument PP added by an applicative is similar to the argument PP of a motion verb: both are arguments and both are PPs. This raises the question of whether applicative argument PPs are antipassivizable; this has not been tested to my knowledge, so it is a priority for further work on both applicatives and on voice. My one unsuccessful attempt to antipassivize the PP of an applicative is shown below.

7. *Gunalchéesh yáat'aa teen ax eet yidasheeyí, Shkooyéil* Tim Hall.

(116) a. Téich xwaliják. *instrumental applicative*
té -ch wu-x- l^{s}- i- $\sqrt[2]{}$jak -H
rock-INSTR PFV-1SG·S-APPL-STV-$\sqrt[2]{}$kill·SG-VAR
'I killed it with a rock.' (*Keiyishí* Bessie Cooley)

b. *Xwadliják. **antipassivized instrumental applicative*
wu-x- d- l^{s}- i- $\sqrt[2]{}$jak
PFV-1SG·S-APSV-APPL-STV-$\sqrt[2]{}$kill·SG
'I killed it (with something).' (*Keiyishí* Bessie Cooley)

Although we need more testing to verify this, I conclude for now that argument PPs cannot be targeted for antipassivization regardless of whether they are introduced by applicativity or motion derivation. Since PPs are a category distinct from DPs, we can model this as a restriction either for features unique to DP or against features unique to PP. This further predicts that the an argument PP lexically selected by some verbs outside of applicativity or motion derivation should also not be targetable for antipassivization.

4. Subject suppression: Deriving passive voice

Passives in Tlingit are structures where *d-* appears along with suppression of the subject. This has never been explicitly reported before in Tlingit, but it appears in data from Swanton (1911), Boas (1917), Naish (1966), Story (1966), and Leer (1991) so it is not a novel development. Prior descriptions all seem to have viewed passives as a purely lexical phenomenon, but it is no more or less lexicalized than say antipassives or causatives. Note that previous researchers have described the fourth person human subject D pronoun *du-* 'one, somebody, people; they' as a 'passive' but I argue in sections 4.3.3 and 6 that it is not a voice phenomenon and is instead a regular D pronoun just like the other fourth person D pronouns *at=* 'something, things, stuff' and *ku-* 'one, somebody, people; they' which I argued in section 3.3.3 are not antipassives.

Passives are fairly well attested in the lexical documentation and they are relatively common in everyday speech, narrative, oratory, and songs. Just as with antipassives, the lexical documents list passives sporadically depending on whether the lexicographer encountered them and not from principled testing of each root for passivization. Because the documentation does not explicitly indicate passives they must be gleaned from the materials by looking for forms that contain overt *d-* along with a translation that suggests passivization.

Table 5.4 is a list of some transitive/passive pairs that I have sifted from the lexical documentation. The transitive forms (including causatives) are given on the left side of the table with the corresponding passives on the right. The 'Eventuality' column indicates the eventuality class of both verbs. passivization generally does not seem to modify eventuality class unlike say causatives. The 'Conj.' column similarly indicates the lexically specified conjugation class of the pair if it exists. There is occasional evidence suggesting change of conjugation class between transitive and passive forms for particular verbs, but this could be due to unrelated factors like motion derivation or inherent variation with the root. Passives seem to be more frequent across the root lexicon than antipassives, but this could be accidental bias in the documentation.

	Transitive		*Passive*					
v	*Perfective*	*Translation*	*Perfective*	*Translation*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	aawa.úx	s/he inflated it	*wudi.úx*	it was bloated	$\sqrt[2]{.ux}$	blow	achiev.	*Ø*
	aawas'áxw	s/he stacked them	*wudis'áxw*	they were stacked	$\sqrt[2]{s'axw}$	stack	achiev.	*Ø*
	aawat'ús'	s/he toasted it	*wudit'ús'*	it was toasted	$\sqrt[2]{t'us'}$	toast	act. (-*μH*)	*Ø*
	akaawat'ál'	s/he mashed/rolled it	*kawdit'ál'*	it was mashed/rolled	$\sqrt[2]{t'al'}$	mash	act. (-*μH*)	*Ø*
Ø	*akaawashéet'*	s/he crowded them	*kawdishít'*	they're packed tight	$\sqrt[2]{shit'}$	crowd	achiev.	*Ø/n*
	akaawaxíl'	it troubled him/her	*kawdixíl'*	s/he was troubled	$\sqrt[2]{xil'}$	rub	achiev.	*Ø*
	akaawaxáax'	s/he split it in layers	*kawdixáax'*	it was split in layers	$\sqrt[2]{xax'}$	split	act. (-*μH*)	*g*
	akaawagútl	s/he mashed them	*kawdigútl*	they were mashed	$\sqrt[2]{gutl}$	mash	act. (-*μ*)	*Ø*
	ayaawaléx'w	s/he red-faced him/her	*wudiléx'w*	it turned red	$\sqrt[2]{lex'w}$	redden	act. (-*μH*)	*Ø/n*
	awsi.ée	s/he cooked it	*wudzi.ée*	it was cooked	$\sqrt[1]{.i}$	cook	act. (-*μH*)	*Ø*
	awsi.át'	s/he cooled it	*wudzi.át'*	it was cooled	$\sqrt[1]{.at'}$	cold	achiev.	*Ø*
	awsidík'	it constipated him/her	*wudzidík'*	s/he was constipated	$\sqrt[2]{dik'}$	plug	achiev.	*Ø*
s-	*awsitáa*	s/he boiled it	*wudzitáa*	it was boiled	$\sqrt[1]{ta}$	boil	achiev.	*Ø*
	awsit'ík	s/he stiffened it (joint)	*wudzit'ík*	it (joint) was stiffened	$\sqrt[1]{t'ik}$	stiff	achiev.	*Ø*
	awsixén	it gave him/her scabs	*wudzixén*	s/he got scabs	$\sqrt[1]{xen}$	scab	achiev.	*Ø*
	awsigeet	s/he made him/her fall	*wudzigeet*	s/he was made to fall	$\sqrt[?]{git}$	fall	motion	–
	awsixeet	s/he bred them	*wudzixeet*	they were mutiplied	$\sqrt[1]{xit}$	breed	achiev.	*g*
	awli.úk	s/he boiled it	*wudli.úk*	it was boiled	$\sqrt[?]{.uk}$	boil	achiev.	*Ø*
l-	*awlit'íx'*	s/he froze it	*wudlit'íx'*	it was frozen	$\sqrt[1]{t'ix'}$	freeze	achiev.	*Ø*
	awligeek	s/he swung it	*wudligeek*	it was swung	$\sqrt[?]{gik}$	swing	motion	–
	ashawlihík	s/he filled it	*shawdlihík*	it was filled	$\sqrt[1]{hik}$	full	achiev.	*Ø*
	awlihíts	s/he singed it	*wudlihíts*	it was singed	$\sqrt[1]{hits}$	singe	act. (-*μH*)	*Ø*
	awlidás'	s/he snared it	*wudlidás'*	it was snared	$\sqrt[1]{das'}$	abraded	act. (-*μH*)	*Ø*
l^s-	*awlinítl*	s/he fattened him/her	*wudlinítl*	s/he got fat	$\sqrt[?]{nitl}$	fat (h.)	achiev.	*Ø/g*
	awliwás	s/he roasted it	*wudliwás*	it was roasted	$\sqrt[?]{was}$	roast	act. (-*μH*)	*Ø*
	akawlikúch'	s/he curled it	*kawdlikúch'*	it got curled	$\sqrt[2]{kuch'}$	curl	act. (-*μH*)	*Ø*
	awshitóok	s/he exploded it	*kawjitóok*	it was exploded	$\sqrt[2]{tu'k}$	explode	achiev.	*Ø*
sh-	*akawshit'áx'*	s/he popped it	*kawjit'áx'*	it was popped	$\sqrt[1]{t'ax'}$	burst	achiev.	*n*
	akawshigín	s/he crumpled it	*kawjigín*	it was crumpled	$\sqrt[1]{gin}$	crumple	achiev.	*Ø*

Table 5.4: Some transitive/passive pairs of verbs

Figure 5.3: Sketch of a passive structure

4.1. Subject suppressing syntax

Passivization is suppression of the subject together with *d-*. Subject suppression is the regular disappearance of a subject argument where one would otherwise be expected. I model subject suppression just like object suppression (sec. 3.1) with a PRO that is merged in the initial position of a subject, thus blocking the appearance of an overt subject D pronoun, an overt subject DP, or a covert *pro* subject. This configuration is sketched by the tree in 5.3, ignoring the contents of terminal nodes other than Voice and the subject D.

There are four syntactic possibilities for subject suppression, distributed across two variables of transitivity (transitive, intransitive) and realization of *v* (covert, overt): transitives with covert *v*, transitives with overt *v*, unergatives with covert *v*, and unergatives with overt *v*. Of these only transitives are attested as discussed in sections 4.1.1 and 4.1.2. The lack of passivized unergatives is discussed in section 4.3.1.

4.1.1. Selecting covert *v*: lexical transitives

A passive can be formed from a transitive with a covert *v* that arises from a bivalent root. The form in (117) illustrates this kind of transitive based on the bivalent root $\sqrt[2]{}$*t'al'* 'mash, flatten, roll, smush' with an overt subject D pronoun *tu-* 'we'. The form in (117b) with both *d-* and the subject pronoun *tu-* 'we' is ungrammatical. The form in (117c) is the passive with only *d-* and no subject pronoun.

(117) a. K'únts' kawtuwat'ál'. *bivalent transitive*
k'únts' k- wu-tu- i- $\sqrt[2]{}$t'al' -H
potato HSFC-PFV-1PL·S-STV-$\sqrt[2]{}$mash-VAR
'I mashed potatoes.'

b. *K'únts' kawtudit'ál'. **passive with subject D pronoun*
k'únts' k- wu-tu- d- i-
potato HSFC-PFV-1PL·S-PASV-STV-
intended: 'We mashed the potatoes.', 'The potatoes were mashed by us.'

c. K'únts' kawdit'ál'. *passive with suppressed subject*
k'únts' k- wu-d- i- $\sqrt[2]{}$t'al' -H
potato HSFC-PFV-PASV-STV-$\sqrt[2]{}$mash-VAR
'The potatoes were mashed.'

The data in (117) used a subject D pronoun, but the facts are the same for a subject DP. The same root is used in (118) with a DP *wé shaax'wsáani* 'the girls' instead of the subject D pronoun.[8]

(118) a. Wé shaax'wsáani k'únts' akaawat'ál'. *bivalent transitive*
wé shaax'wsáani k'únts' a- k- wu-i- $\sqrt[2]{}$t'al' -H
MDST girls potato ARG-HSFC-PFV-STV-$\sqrt[2]{}$mash-VAR
'The girls mashed potatoes.'

b. *Wé shaax'wsáani k'únts' akawdit'ál'. **passive with subject DP*
wé shaax'wsáani k'únts' a- k- wu-d- i- $\sqrt[2]{}$t'al' -H
MDST girls potato ARG-HSFC-PFV-PASV-STV-$\sqrt[2]{}$mash-VAR
intended: 'The girls mashed potatoes.', 'The potatoes were mashed by the girls.'

c. K'únts' kawdit'ál'. *passive with suppressed subject*
k'únts' k- wu-d- i- $\sqrt[2]{}$t'al' -H
potato HSFC-PFV-PASV-STV-$\sqrt[2]{}$mash-VAR
'The potatoes were mashed.'

The structure of the passives in (117c) and (118c) is represented by the tree in figure 5.4. The Voice head probes the subject in *v*P for the presence of a PRO, and this PRO suppresses the appearance of a subject D pronoun or DP. If the PRO were not present in *v*P then the probe would fail and the derivation would crash, giving rise the ungrammatical forms like (117b) and (118b).

4.1.2. Selecting overt *v*: derived or modified transitives

A passive can be formed from a transitive verb with an overt *v* as shown by the data for *s-*, *l-*, *l*^{s}*-*, and *sh-* values of *v* in table 5.4. An overt *v* can be an event or argument modifier, a causative, or an applicative as discussed earlier in section 3.1.2 in the context of antipassives. Unlike antipassives, passives are attested with causative *v* as well as modificational *v*. Like antipassives, passives are not attested with applicative *v*.

The event or argument modifying kind of overt *v* includes qualification, spatial extension, and pejoratives. None of these overtly affect the argument structure because they do not show any surface effects on the subject, object, path/location argument, etc. Consequently the passive of a verb with an overt modificational *v* does not differ empirically from the passive of a verb with a covert *v*.

4.1.2.1. Passives with modificational *v*

A passive can be formed from transitive based on a bivalent root with an overt modificational *v*. The overt *v* can be qualificational, extensional, or pejorative. The only attested instances of a passive with a modificational *v* are pejoratives, but this is predicted to be an accidental gap in the documentation rather than any significant distinction between the three kinds of modificational *v*.

8. For brevity the noun *shaax'sáani* is not analyzed in (118). It is composed of *sháa* 'woman', *-x'* plural, *=sáan* diminutive, and *-í* possessive and so is literally something like 'little women'.

Figure 5.4: Structure of the passive with covert *v* in (117c) and (118c)

The only unequivocal example of a passive with a modificational *v* is the transitive/passive pair of *awshitóok* : *kawjitóok* based on the root ∛*tu'k* 'pop, burst, explode'. The *sh-* in these is pejorative, presumably because the bursting or exploding of things is generally undesired. This pejorative *sh-* is lexically specified forms without *sh-* are ungrammatical as shown in (119).

(119) a. *Kaawatóok. **unaccusative without sh-*
k- wu-i- ∛tu'k -μH
SRO-PFV-STV-∛burst-VAR
intended: 'It exploded.'

b. *Akaawatóok. **transitive without sh-*
a- k- wu-i- ∛tu'k -μH
ARG-SRO-PFV-STV-∛burst-VAR
intended: 'S/he/it exploded it.'

The data in (120) show that the verb with *sh-* and without *d-* can only be transitive because the unaccusative in (120a) is ungrammatical.[9]

(120) a. *Kawshitóok. **unaccusative with sh-*
k- wu-sh- i- $\sqrt[2]{}$tu'k -μH
SRO-PFV-PEJ-STV-$\sqrt[2]{}$burst-VAR
intended: 'It exploded.'

b. Akawshitóok. *transitive with sh-*
a- k- wu-sh- i- $\sqrt[2]{}$tu'k -μH
ARG-SRO-PFV-PEJ-STV-$\sqrt[2]{}$burst-VAR
'S/he/it exploded it.', 'S/he/it blew it up.'

Finally, the data in (121) show that the addition of *d-* forms a passive. Only the form in (121a) with a lone object D pronoun is grammatical; the antipassive with a lone subject in (121b) and the transitive with both subject and object in (121c) are bad.

(121) a. X̱at kawjitóok. *passive with d- and sh-*
x̱at= k- wu-d- sh- i- $\sqrt[2]{}$tu'k -μH
1SG·O=SRO-PFV-PASV-PEJ-STV-$\sqrt[2]{}$burst-VAR
'I was exploded.', 'I was made to explode.'

b. *Kax̱wjitóok. **antipassive with d- and sh-*
k- wu-x̱- d- sh- i- $\sqrt[2]{}$tu'k
SRO-PFV-1SG·S-PASV-PEJ-STV-$\sqrt[2]{}$burst
intended: 'I exploded.'

c. *X̱at kayjitóok. **transitive with d- and sh-*
x̱at= k- wu-ÿi- d- sh- i- $\sqrt[2]{}$tu'k -μH
1SG·O=SRO-PFV-2PL·S-PASV-PEJ-STV-$\sqrt[2]{}$burst-VAR
intended: 'You guys made me explode.'

One other potential passive with a modificational *v* in table 5.4 is the pair *awsidík'* 'it constipated him/her' : *wudzidík'* 's/he was constipated'. The root $\sqrt[2]{}$*dik'* appears in the transitive/passive pair shown in (122). The bivalency of the root is suggested by the transitive and passive in (123), so the *s-* in (122) can be analyzed as an extensional *v* that stretches the plugging event along a path in space such as a tube.

(122) a. Awsidík'. *transitive with s-*
a- wu-s- i- $\sqrt[2]{}$dik'-H
ARG-PFV-XTN-STV-$\sqrt[2]{}$plug-VAR
'S/he/it got him/her constipated.' (Leer 1976a: 339)

b. Wudzidík'. *passive with d- and s-*
wu-d- s- i- $\sqrt[2]{}$dik'-H
PFV-PASV-XTN-STV-$\sqrt[2]{}$plug-VAR
'S/he/it was constipated.' (Leer 1976a: 339)

9. The form *k̲usa.áat'ch kashatúkx̱* 'the cold bursts them (eggs)' (Story & Naish 1973: 39.368) is transitive with the *-ch* ergative causing the disappearance of *a-*, for which see chapter 7 section 1.2.2.

(123) a. Aawadíx'. *transitive without s-*
a- wu-i- $\sqrt[2]{}$dik'-H
ARG-PFV-STV-$\sqrt[2]{}$plug-VAR
'S/he/it plugged it up.'

b. Wudidíx'. *passive with d- and without s-*
wu-d- i- $\sqrt[2]{}$dik'-H
PFV-PASV-STV-$\sqrt[2]{}$plug-VAR
'S/he/it got plugged up.'

But the root in (122) is phonologically different from the root in (123): $\sqrt[2]{}$*dik'* ends with an ejective velar stop /k'/ whereas $\sqrt[2]{}$*dix'* ends with an ejective velar fricative /x'/. Since roots do not normally vary in their coda consonant, this suggests one of two things: (i) these are not the same root, or (ii) they are actually a root $\sqrt[2]{}$*di* with a suffix *-k'* or *-x'*. These two suffixes actually exist: *-k'* is diminutive and *-x'* is plural. The documented interpretations of $\sqrt[2]{}$*dik'* and $\sqrt[2]{}$*dix'* do not support either diminutive or plural readings, so either these two suffixes are homophonous but unrelated to the usual *-k'* and *-x'* or else hypothesis (i) is true and the two roots are distinct. Historical variation between stops and fricatives has been reported previously (Leer 1990c; Crippen 2010), so it is almost certain that $\sqrt[2]{}$*dik'* and $\sqrt[2]{}$*dix'* are historical variants of the same root. But this historical explanation does not solve the synchronic problem, and we are left with two nearly homophonous roots in the lexicon. I suggest that this can be analyzed as a case of suppletion conditioned by the selection of *v*. If this approach works then (122b) is additional evidence for passivization of transitives with overt modificational *v*.

The root $\sqrt[2]{}$*kuch'* 'curl' could potentially reflect passivization of a transitive with modificational *v*, specifically an extensional *v* with *l*^{s}-. The data in (124) illustrate the root $\sqrt[2]{}$*kuch'* 'curl' in a transitive and corresponding passive. The data in (125) give a transitive with covert *v* and a phonologically identical root.

(124) a. Akawlikúch'. *transitive with l*^{s}-
a- k- wu-l^{s}- i- $\sqrt[2]{}$kuch'-H
ARG-SRO-PFV-XTN-STV-$\sqrt[2]{}$curl -VAR
'S/he curled it.' (Leer 1976a: 721)

b. Kawdlikúch'. *passive with d- and l*^{s}-
k- wu-d- l^{s}- i- $\sqrt[2]{}$kuch'-H
SRO-PFV-PASV-XTN-STV-$\sqrt[2]{}$curl -VAR
'It was curled.' (Leer 1976a: 721)

(125) Aawakúch'. *verb without l*^{s}-
a- wu-i- $\overset{?}{\sqrt{}}$kuch'-H
XPL-PFV-STV-$\sqrt[2]{}$curl -VAR
'S/he/it farted.' (Leer 1976a: 721)

The problem with (124) and (125) is that the meanings of these two roots appear to be quite different. We could imagine a semantic connection between these two and then argue that *l*^{s}- in (124) is extensional, but then there is one further problem with the valency of (125). Specifically, the *a-* in (125) is expletive thus suggesting that the root could be monovalent. Although Leer (1976a)

does not give enough data to verify this, the verb is unequivocally documented with expletive *a-* in forms from Dauenhauer & Dauenhauer (2009).[10] See chapter 7 section 1.2.2 for further discussion of expletive *a-*.

(126) a. Axakóoch'. *expletive a-*
a- x- $\sqrt[1]{}$kuch'-μH
XPL-1SG·S-$\sqrt[1]{}$fart -VAR
'I am farting.' (Dauenhauer & Dauenhauer 2009: 10)

b. Adukóoch'. *expletive a-*
a- du- $\sqrt[1]{}$kuch'-μH
XPL-4H·S-$\sqrt[1]{}$fart -VAR
'Someone is farting.' (Dauenhauer & Dauenhauer 2009: 10)

I conclude that it is possible to form passives from transitives that contain an overt *v* with a modificational function (qualificational, extensional, or pejorative). They are extremely rare in the documentation however, and some identified cases may not actually be instances of modificational *v*. I see no reason for them to be ungrammatical and I predict that further investigation of the lexicon and elicitation of modificational *v* structures will turn up more examples of passives with overt modificational *v*.

4.1.2.2. Passives with causative *v*

Passives based on monovalent roots with an overt causative *v* are relatively well attested. This is strikingly different from antipassives where these structures are only marginally attested at best (sec. 3.1.2.2). The data in (127) and (128) illustrate a typical passive of a causative. The forms in (127) show that the root $\sqrt[1]{}$*.at'* 'cold' is monovalent and supports an unaccusative intransitive and cannot form a transitive with a covert *v*.[11]

(127) a. Xat seiwa.át'. *unaccusative*
xat= se- wu-i- $\sqrt[1]{}$.at' -H
1SG·O=voice-PFV-STV-$\sqrt[1]{}$cold-VAR
'I have come to feel cold.'

b. *Isawtuwa.át'. **transitive*
i- se- wu-tu- i- $\sqrt[1]{}$.at' -H
2SG·O-voice-PFV-1PL·S-STV-$\sqrt[1]{}$cold-VAR
intended: 'We have made you feel cold.'

The data in (128) shows that the monovalent root $\sqrt[1]{}$*.at'* 'cold' can form a causative with *s-* in *v*. The *d-* cannot be added to this in (128b) without the passive suppression of the subject in (128c).

10. Despite the simple gloss 'fart' used here, Dauenhauer & Dauenhauer (2009) demonstrate a richer lexicon of roots for farting with √*gwal'* 'big and deadly fart', √*kutl'* 'silent but deadly fart', √*kuch'* 'small but deadly fart', and √*tul'* 'big sounding fart'. All appear with expletive *a-* suggesting that they share the same valency; they all can also be used as nouns with the same *-μH* stem variation. They also share coda ejectives which may be onomatopoetic.

11. The presence of the incorporate *se-* 'voice' is idiomatic and difficult to explain, but it may originally have meant 'neck' (Leer 1978c: 37). The form **xat uwa.át'* without *se-* is uniformly rejected.

(128) a. Pie wutusi.át'. *causative*
pie wu-tu- s- i- $^{1}\sqrt{}$.at' -H
pie PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$cold-VAR
'We cooled the pie.'

b. *Pie wutudzi.át'. **passive with subject D pronoun*
pie wu-tu- d- s- i- $^{1}\sqrt{}$.at' -H
pie PFV-1PL·S-PASV-CSV-STV-$^{1}\sqrt{}$cold-VAR
intended: 'We cooled the pie.', 'The pie was cooled by us.'

c. Pie wudzi.át'. *passive with suppressed subject*
pie wu-d- s- i- $^{1}\sqrt{}$.at' -H
pie PFV-PASV-CSV-STV-$^{1}\sqrt{}$cold-VAR
'The pie was cooled.'

Passives formed from causatives should in principle have essentially the same syntax as passives of transitives with covert *v*. Thus *d-* in Voice probes for a PRO in *v*P which blocks the appearance of a subject argument.

4.1.2.3. Passives with applicative *v*

Applicatives are formed from bivalent roots (ch. 4 sec. 3.3) with an overt *v*. They are differentiated from bivalent roots with a modificational *v* by the overt presence of an added argument PP which is either an instrument (with *-ch*), a locative (with *-t*), or a manner/class (with *-x̲*). Thus in an applicative the overt *v* adds an overt argument. In this section I consider passivization of applicatives where the passive operation targets the subject.

Logically an applicative should be compatible with passivization because the subject of an applicative is effectively the same as the subject of the corresponding transitive with covert *v*. I have not found any documented examples of passive applicatives and I have not elicited them so I am not sure if they are actually possible. My hunch is that they should be fine and that their lack of attestation is merely accidental.

(129) a. Tsáax' x̲waa.óos'. *transitive*
tsáax' wu-x̲- i- $^{2}\sqrt{}$.us' -μH
mitten PFV-1SG·S-STV-$^{2}\sqrt{}$wash-VAR
'I washed the mitten.'

b. Tsáax' éil'ch x̲wali.óos'. *applicative*
tsáax' éil' -ch wu-x̲- l^{s}- i- $^{2}\sqrt{}$.us' -μH
mitten s·water-INSTR PFV-1SG·S-APPL-STV-$^{2}\sqrt{}$wash-VAR
'I washed the mitten with salt water.'

c. ※Tsáax' éil'ch wudli.óos'. *※passive applicative*
tsáax' éil' -ch wu-d- l^{s}- i- $^{2}\sqrt{}$.us' -μH
mitten s·water-INSTR PFV-PASV-APPL-STV-$^{2}\sqrt{}$wash-VAR
'The mitten was washed with salt water.'

Passives of applicatives, if they do exist, should fit the same syntactic model as passives of transitives. Thus the Voice head probes below it for a PRO in *v*P. This PRO blocks the merge of a subject

argument, and thus suppresses the subject. But I am unsure how to model the hypothetical prohibition against them if passives of applicatives do not exist because I do not see any straightforward way to make the Voice head sensitive to the properties of *v* in only this context.

4.2. Subject suppressing semantics

There is a voluminous literature on passive structures across languages, and among this literature are many studies of the semantics of passives. But passives in Tlingit are previously unreported, and hence there has been no study of the semantics of passives in Tlingit. I have only touched on passives very briefly in my work with consultants, so I cannot report much more than a vague sense that passives are probably semantically similar to antipassives. One consultant described them as "like in English, you're not saying who did it", akin to the comment about antipassives mentioned in section 3.2.

The translation of passives in Tlingit is often at odds with their semantics, so translations cannot be relied upon for a semantic analysis. Translations often present passives more often as *get* and *become* structures which are not passive but have a passive-like meaning. This leads to confusion between unaccusatives and passives such as the pair in (130) based on the monovalent root $\sqrt[1]{.i}$ 'cook'. The unaccusative in (130a) has only a single argument and is most accurately translated with a non-passive, whereas the passive in (130b) has a suppressed subject and is most accurately translated with a passive.

(130) a. *unaccusative*

De uwa.ée.
de u- i- $\sqrt[1]{.i}$ -μH
already ZPFV-STV-$\sqrt[1]{}$cook-VAR
i. 'It got cooked already.'
ii. 'It became cooked already.'
iii. # 'It has been cooked already.'

b. *passive of causative*

De wudzi.ée.
de wu-d- s- i- $\sqrt[1]{.i}$ -μH
already PFV-PASV-CSV-STV-$\sqrt[1]{}$cook-VAR
i. # 'It got cooked already.'
ii. # 'It became cooked already.'
iii. 'It has been cooked already.'

Despite my argument about accuracy, Tlingit speaking translators nonetheless seem to have generally preferred English non-passive *get* and *become* translations in the literature. This suggests that there may actually be a semantic difference between the Tlingit passive and the English passive, and that translators are – perhaps unconsciously – sensitive to this difference. The English passive can have the suppressed subject recovered by a *by*-phrase which is not possible in Tlingit, so there are certainly structural differences that could contribute to different semantics. But my consultants have reliably differentiated between unaccusatives like (130a) and passives like (130b) when they are explicitly compared, so I believe the passive must have a different interpretation even if it is not homomorphic with the meaning of the English passive.

4.3. What passive *d-* doesn't do

There are a number of possible phenomena that could be associated with passivization but which do not occur in Tlingit. In this section I catalogue the facts supporting the nonexistence of some of these phenomena, thus showing what *d-* in Voice does not do to subjects or other arguments. I show in section 4.3.1 that the passive *d-* does not select unergatives for suppression of their subjects. Then I show in section 4.3.2 that Tlingit does not 'demote' a suppressed subject to an oblique and that there is no 'promotion' of the subject to the object. Then in section 4.3.3 I argue that the passive is not the same as an indefinite or impersonal subject because Tlingit has separate structures to express them.

4.3.1. Passive *d-* doesn't select unergatives

Passivization targets the argument initially merged in *v*P for suppression. The subject of a transitive is merged in *v*P, but so is the subject of an unergative. Logically then it should be possible for passivization to target the subject of an unergative just as it can target the subject of a transitive, but this does not actually occur. This situation is sketched in (131).

(131) a. Subj √root *unergative without d-*
b. *—— *d-* √root **passive with d-*

The sketch in (131) is distinct from unergatives with *d-* such as the forms in (132). Crucially these structures retain a subject which would be suppressed by passive *d-*. Instead, the schema in (131b) represents a verb where *d-* is present and the subject – which is the lone argument of the unergative in (131a) – has been suppressed. I show below that passivization of an unergative is impossible.

(132) a. Ḵaachxan.áak'w kát wutujiḵák.
Ḵaachxan.áak'w ká -t wu-tu- d- sh- i- ¹√ḵak -H
PLACE HSFC-PNCT PFV-1PL·S-MID-XTN-STV-¹√perch-VAR
'We landed in Wrangell.'

b. Yaa ḵuxdzigéi.
ÿaa= ḵu- x- d- s- i- ¹√ge -μH
MENT=AREAL-1SG·S-MID-XTN-STV-¹√wise-VAR
'I am wise/smart.'

There are two kinds of unergatives in Tlingit: activities and motions. Unergative activities are very limited; I have only found three based on ¹√*ta*ʰ 'sg. sleep', ¹√*xex'w* 'pl. sleep', and ¹√*gax* 'sg. cry'. Unergative motions are quite common; the typical example is based on ¹√*gut* 'sg. go'. The data in (133) shows that passives cannot be formed from unergative activities, and the data in (134) show the same for unergative motions. I conclude then that unergatives cannot be passivized.

(133) a. Xatá. *unergative activity*
x- ¹√taʰ -H
1SG·S-¹√sleep·SG-VAR
'I sleep.', 'I'm sleeping.'

b. * Ditá. **passive unergative activity*
d- ¹√taʰ -H
PASV-¹√sleep·SG-VAR
intended: 'There is sleeping.'

(134) a. Xwaagoot *unergative motion*
wu-x- i- $^{1}\sqrt{}$gut -μ
PFV-1SG·S-STV-$^{1}\sqrt{}$go·SG-VAR
'I went.'

b. *Wudigoot **passive unergative motion*
wu-d- i- $^{1}\sqrt{}$gut -μ
PFV-PASV-STV-$^{1}\sqrt{}$go·SG-VAR
intended: 'There was going.'

As addressed earlier in section 3.3.1, there are impersonal verbs that could be identified semantically as passives of unergatives because they appear to lack arguments, but I dismiss this possibility because they occur with expletive subjects (see sec. 6.4.2 on expletive *du-*) but passives do not occur with expletive subjects. Whatever they are, impersonal verbs are neither passives nor antipassives.

4.3.2. Passive *d-* doesn't demote or promote

Tlingit passivization does not 'promote' or 'demote' arguments. I already discussed these notions in section 3.3.2 so I do not detail them here. Instead I simply show that neither promotion nor demotion is possible with passive *d-*, following the same pattern as the argument against promotion and demotion with antipassives in section 3.3.2.

The data in (135) show that the sole argument of a passive can only be an object. The basis case in (135a) is a transitive, and the form in (135b) is the corresponding passive with *d-* and suppression of the subject. The form in (135c) shows that the suppressed subject cannot be promoted to an object. Since promotion does not happen for passives nor for antipassives (sec. 3.3.2), I conclude that promotion is not a grammatical operation in Tlingit. This is not particularly surprising because Tlingit has no regular requirement for a subject; unaccusatives with only an object are abundantly attested.

(135) a. Iwtusi.ée. *transitive*
i- wu-tu- s- i- $^{1}\sqrt{}$.i -μH
2SG·O-PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
'We cooked you (sg.).'

b. Iwdzi.ée. *passive with only object*
i- wu-d- s- i- $^{1}\sqrt{}$.i -μH
2SG·O-PFV-PASV-CSV-STV-$^{1}\sqrt{}$cook-VAR
'You (sg.) have been cooked.' (lit. 'Have been cooked you.')

c. Yidzi.ée. **passive with promoted object*
wu-i- d- s- i- $^{1}\sqrt{}$.i -μH
PFV-2SG·S-PASV-CSV-STV-$^{1}\sqrt{}$cook-VAR
intended: 'You (sg.) have been cooked.'

The data in (136) show that the suppressed subject of a passive cannot be demoted to become a PP. I have selected three postpositions that could plausibly be heads of demoted oblique PPs and I show that all three are ungrammatical. I conclude that demotion does not occur for the passive, and furthermore since demotion also does not occur for antipassives (sec. 3.3.2) that demotion is not a grammatical operation in Tlingit.

(136) a. * Haa een iwdzi.ée. **passive with demoted subject*
haa ee -n i- wu-d- s- i- $^{1}\sqrt{}$.i -μH
[PP 1PL BASE-INSTR] 2SG·O-PFV-PASV-CSV-STV-$^{1}\sqrt{}$COOK-VAR
intended: 'You (sg.) have been cooked by us.'

b. * Haa eedáx̱ iwdzi.ée. **passive with demoted subject*
haa ee -dáx̱ i- wu-d- s- i- $^{1}\sqrt{}$.i -μH
[PP 1PL BASE-ABL] 2SG·O-PFV-PASV-CSV-STV-$^{1}\sqrt{}$COOK-VAR
intended: 'You (sg.) have been cooked by us.'

c. * Haa eenáx̱ iwdzi.ée. **passive with demoted subject*
haa ee -náx̱ i- wu-d- s- i- $^{1}\sqrt{}$.i -μH
[PP 1PL BASE-PERL] 2SG·O-PFV-PASV-CSV-STV-$^{1}\sqrt{}$COOK-VAR
intended: 'You (sg.) have been cooked by us.'

4.3.3. Passive *d-* isn't impersonal or indefinite

Passivization with *d-* is not an impersonal or indefinite subject in just the same way that antipassivization is not an impersonal or indefinite object (sec. 3.3.3). Tlingit has an overt fourth person human subject D pronoun *du-* 'one, somebody, people, they' that denotes an impersonal, nonspecific, or indefinite human referent which is discussed in section 6. This pronoun *du-* is incompatible with other subjects as shown in (137), it is incompatible with DPs as shown in (138), and it is incompatible with passivization just like other subjects as shown in (139), so I conclude that *du-* is itself a subject.

(137) a. Wuduwas'áxw. *subject du-*
wu-du- i- $^{2}\sqrt{}$s'axw-H
PFV-4H·S-STV-$^{2}\sqrt{}$stack -VAR
'People stacked them.'

b. *Wutuduwas'áxw. **subject tu- + subject du-*
wu-tu- du- i- $^{2}\sqrt{}$s'axw-H
PFV-1PL·S-4H·S-STV-$^{2}\sqrt{}$stack -VAR
intended: 'We people stacked them.'

c. *Wudutuwas'áxw. **subject du- + subject tu-*
wu-du- tu- i- $^{2}\sqrt{}$s'axw-H
PFV-4H·S-1PL·S-STV-$^{2}\sqrt{}$stack -VAR
intended: 'We people stacked them.'

(138) a. Wé x'óow aawas'áxw. *DP object*
wé x'óow a- wu-i- $^{2}\sqrt{}$s'axw-H
MDST blanket ARG-PFV-STV-$^{2}\sqrt{}$stack -VAR
'S/he stacked the blankets.'

b. Ch'a aadóo sá wé x'óow aawas'áxw. *DP subject + DP object*
ch'a aadóo sá wé x'óow a- wu-i- $^{2}\sqrt{}$s'axw-H
just who Q MDST blanket ARG-PFV-STV-$^{2}\sqrt{}$stack -VAR
'Somebody stacked the blankets.'

c. *Ch'a aadóo sá wé x'óow wuduwas'áxw. *du- subject + DP subject + DP object
ch'a aadóo sá wé x'óow wu-du- i- $\sqrt[2]{}$s'axw-H
just who Q MDST blanket PFV-4H·S-STV-$\sqrt[2]{}$stack -VAR
intended: 'Somebody stacked the blankets.'

(139) a. Wudis'áxw. passive d-
wu-d- i- $\sqrt[2]{}$s'axw-H
PFV-PASV-STV-$\sqrt[2]{}$stack -VAR
'They were stacked.'

b. *Wududis'áxw. *passive d- + du-
wu-du- d- i- $\sqrt[2]{}$s'axw-H
PFV-4H·S-PASV-STV-$\sqrt[2]{}$stack -VAR
intended: 'They were stacked by people.'

Since Tlingit can express indefinite or impersonal subjects with either the fourth person D pronoun *du-* or with a wh-indefinite DP like *ch'a aadóo sá* 'whoever', if passive *d-* actually encoded a covert indefinite or impersonal subject it would overlap with the existing functions of the D pronoun and the wh-indefinite. Furthermore, the selection of an indefinite or impersonal subject does not require passivization, and (139) shows that they are mutually incompatible. I conclude then that passivization is not the introduction of a covert impersonal or indefinite. The interpretation of a passive may result in a meaning similar to that of an actual indefinite or impersonal, but this cannot entail that the syntactic structures are the same.

5. Argument restriction: Deriving middle voice

Middle voice is the appearance of *d-* in structures that are neither antipassive nor passive, and is thus the elsewhere case of *d-*. Semantically, middle voice indicates that two structurally distinct referents are identical, i.e. for some variables x and y it is the case that $x = y$. I distinguish two kinds of middle voice in Tlingit on the basis of their syntactic behaviours: grammatical middle voice and lexical middle voice. Grammatical middle voice involves local binding of a pronoun and occurs with reflexives, reciprocals, self-benefactives, and revertive motion. Lexical middle voice has no overt syntactic structures that condition the appearance of *d-*, but this kind of middle voice nonetheless features the same equational semantics. In this section I concentrate on grammatical middle voice, returning to lexical middle voice in section 7.

5.1. Pronouns are bound

Pronominal arguments of verbs can be bound by a subject along with syntactically conditioned *d-* in Voice. There are two basic kinds of pronominal arguments that can be bound: reflexives (secs. 5.1.1 & 5.1.2) and reciprocals (secs. 5.1.3 & 5.1.4). Both reflexives and reciprocals may be object D pronouns (secs. 5.1.1 & 5.1.3) or they may be pronouns inside of an argument PP (secs. 5.1.2 & 5.1.4). These latter cases of argument PPs are referred to as **reflexive obliques** and **reciprocal obliques**; the traditional term for this in Na-Dene descriptions is **indirect middle voice** by analogy with 'indirect object' but Tlingit does not have indirect objects. In reflexive and reciprocal obliques the reflexive or reciprocal pronoun is usually the possessor of the complement of the PP, but occasionally with reciprocals the pronoun is instead the direct complement of the postposition. Whether a possessor

of the complement or the complement itself, the pronoun behaves the same for agreement with Voice and binding.

In all cases of middle voice pronouns, only the subject can bind the pronoun. For object D pronouns this is relatively straightforward because the subject is the only DP available to bind the pronoun. But for reflexive and reciprocal obliques the analysis requires that their containing PP be merged above the object D(P) to ensure that the object does not c-command the pronoun leaving only the subject to bind it. This entails an ordering on the internal arguments of a transitive handling verb with a path argument, where the handled object must be merged in VP before the path argument PP is merged.

5.1.1. Reflexive objects

Reflexive objects are characterized by a reflexive object D pronoun in a transitive structure with the concomitant appearance of *d-* in Voice. The reflexive object D pronoun is either *sh=* 'self' or *chush=* 'self', depending on phrasal phonology, dialect, and speaker preference, although it may occasionally be covert (i.e. *pro*) as discussed later in this section. The data in (140) illustrates a typical reflexive with a transitive verb based on a bivalent root. The form in (140a) has reflexive *sh=* but no *d-* and so is ungrammatical, whereas the grammatical form in (140b) has reflexive *sh=* and *d-* together.

(140) a. *Sh wutuwahoon. **reflexive transitive without d-*
sh= wu-tu- i- $\sqrt[2]{}$hun-μ
RFLX·O=PFV-1PL·S- STV-$\sqrt[2]{}$sell -VAR
intended: 'We sold ourselves.'

b. Sh wutudihoon. *reflexive transitive with d-*
sh= wu-tu- d- i- $\sqrt[2]{}$hun-μ
RFLX·O=PFV-1PL·S-MID-STV-$\sqrt[2]{}$sell -VAR
'We sold ourselves.'

The reflexive object D pronoun *sh=* ~ *chush=* must be merged in VP for it to occur below Voice and thus trigger the appearance of *d-*. If we suppose it has an uninterpretable feature like [uMID] then Voice can probe for this feature when *d-* is merged because the D pronoun is within the c-command domain of Voice. This is illustrated by the tree in (141).

(141) *reflexive object with d-*

The reflexive object D pronoun can be covert in some contexts, but the *d-* in Voice remains overt. The factors that determine a covert versus overt reflexive are still unclear, but they only seem to occur with inalienable incorporated nouns (Leer 1991: 59 fn. 15). The data in (142) illustrate a covert reflexive. The form in (142a) illustrates an independent DP object and (142b) shows the equivalent with incorporation; note the absence of an overt reflexive. The form in (142c) without *d-* and without an overt object can only be interpreted as referring to a third person object rather than the addressee. The appearance in (142b) of the overt second person singular subject *i-* was discussed earlier in section 2.2.2.

(142) a. *DP object*

I laká na.óos'!
i laká n- $\sqrt[2]{}$.us' -μH
2SG·PSS mouth·inside NCNJ-2SG·S-$\sqrt[2]{}$wash-VAR
'Wash the inside of your mouth!' (Story 1966: 90)

b. *incorporate with covert reflexive*

Lakanida.óos'!
laka- n- i- d- $\sqrt[2]{}$.us' -μH
RFLX·O mouth·inside-NCNJ-2SG·S-MID-$\sqrt[2]{}$wash-VAR
'Wash the inside of your mouth!' (Story 1966: 90)

c. *incorporate without reflexive*

Lakana.óos'!
laka- n- $\sqrt[2]{}$.us' -μH
3·O mouth·inside-NCNJ-2SG·S- $\sqrt[2]{}$wash-VAR
i. *'Wash the inside of your mouth!'
ii. 'Wash the inside of his/her mouth!'

Leer (1991: 97) implies that the covert reflexive instead of *sh=* is obligatory with incorporated nouns, but there are many documented instances of incorporates with overt reflexives. The examples in (143) and (144) are taken from narratives, with (143) from the early 20th century and (144) from the late 20th century to show that this is not an innovation.

(143) A jiÿeet sh daaÿadak̲aa.
a jín- ÿee -t sh= daa- ÿa- d- $^{2}\sqrt{}$k̲a-μ
3N·PSS hand-below-PNCT RFLX·O=around-face-3·S-MID-$^{2}\sqrt{}$say-VAR
'He is talking to himself about its burden.' (Swanton 1909: 314.69)

(144) yax̲ sh yawdzigoodán
ÿán -x̲= sh= ÿa- wu- d- s- i- $^{1}\sqrt{}$gut -μ -án
TERM-PERT=RFLX·O=face-PFV-3·S-MID-CSV-STV-$^{1}\sqrt{}$go·SG-VAR-REST
'she straightened herself back up' (Dauenhauer & Dauenhauer 1987: 216.458)

We can model a covert reflexive with *pro* and the [uMID] feature, but this does not explain why *pro* should be selected instead of overt *sh=* or *chush=*. At first glance the problem is similar to the selection of *pro* versus an overt second person singular *i-* subject in imperatives (sec. 2.2.2). But second person *pro* is universal unless the subject D pronoun undergoes movement, whereas forms like (143) and (144) have no obvious triggers for movement that would be different from forms like (142b). The motivations for selecting a covert reflexive object remain obscure.

The interpretation of the reflexive object is dependent wholly on the interpretation of the subject. This is shown by the data in (145)–(147). In each case the reflexive is bound by the subject and includes all of its semantic properties: person, plurality, and definiteness.

(145) a. Sh x̲wadziteen. *first person singular reflexive*
sh= wu-x̲- d- s- i- $^{2}\sqrt{}$tin-μ
RFLX·O=PFV-1SG·S-MID-CSV-STV-$^{2}\sqrt{}$see -VAR
'I saw myself.'

b. Sh wutudziteen. *first person plural reflexive*
sh= wu-tu- d- s- i- $^{2}\sqrt{}$tin-μ
RFLX·O=PFV-1PL·S-MID-CSV-STV-$^{2}\sqrt{}$see -VAR
'We saw ourselves.'

(146) a. Sh yidziteen. *second person singular reflexive*
sh= wu-i- d- s- i- $^{2}\sqrt{}$tin-μ
RFLX·O=PFV-2SG·S-MID-CSV-STV-$^{2}\sqrt{}$see -VAR
'You saw yourself.'

b. Sh yeeydziteen. *second person plural reflexive*
sh= wu-ÿi- d- s- i- $^{2}\sqrt{}$tin-μ
RFLX·O=PFV-2PL·S-MID-CSV-STV-$^{2}\sqrt{}$see -VAR
'You saw yourselves.'

(147) a. Sh wudziteen. *third person reflexive*
sh= wu-d- s- i- $^{2}\sqrt{}$tin-μ
RFLX·O=PFV-MID-CSV-STV-$^{2}\sqrt{}$see -VAR
'S/he/it saw him/her/itself.'

b. Sh wududziteen. *fourth person human reflexive*
sh= wu-du- d- s- i- $^{2}\sqrt{}$tin-μ
RFLX·O=PFV-4H·S-MID-CSV-STV-$^{2}\sqrt{}$see -VAR
'Someone saw themself.', 'People saw themselves.'

Figure 5.5: Subject binding a reflexive object in VP

The reflexive object always arises to the left of the overt subject D pronoun; compare *myself me saw* or *myself saw me*. This implies that it is cataphoric, with its antecedent – the subject – looking backwards in the linear order to find it. But cataphora are generally considered to be abnormal whereas the linear order of *sh=* ... *SUBJ-* is perfectly normal for Tlingit. Furthermore, since the reflexive D pronoun surfaces in AspP like all other object D pronouns (ch. 7 sec. 1), this places it above the subject and thus not c-commanded by it. Both of these properties pose difficult syntactic problems for an analysis that takes the surface distribution of the reflexive, subject, and *d-* as basic.

These problems disappear if the reflexive D pronoun is actually merged in VP and bound by the subject in this initially low position. This organization is shown in figure 5.5: the reflexive is initially merged in VP and the subject in *v*P. The subject binds the reflexive in this configuration, and then later the subject undergoes short distance raising to VoiceP and the reflexive undergoes raising to AspP. Binding of the reflexive could alternatively occur after the subject raises to VoiceP, but since this raising cannot be empirically shown to occur with DP subjects it is simpler to calculate the binding immediately after the initial merge of the subject in *v*P. Reflexive objects thus provide two additional arguments for the intial merge of objects in VP: they must be in VP to be probed by Voice with *d-*, and they must be in VP to be bound by the subject in *v*P.

The interpretation of a reflexive includes any additional meaning provided by modifiers of the

subject. For example, the plural human modifier *has*= (ch. 7 sec. 2) can add plurality to the interpretation of a third person subject. This plurality added by *has*= must also be interpreted for the reflexive object as shown in (148).

(148) Has sh wudziteen. *third person plural reflexive*
has=sh= wu-d- s- i- $^{2}\sqrt{}$tin-μ
PLH= RFLX·O=PFV-MID-CSV-STV-$^{2}\sqrt{}$see -VAR
i. 'They saw themselves.'
ii. *'They saw him/herself.'
iii. *'S/he saw themselves.'

Although it could be argued that the plurality interpretation in (148) is because the *has*= appears to the left of and thus scopes over *sh*=, this is cannot work for the reciprocal which instead arises with the order *woosh*= > *has*= where the only possibility is for *woosh*= to have been below *has*= at its initial merge location in VP. I return to this issue in section 5.1.3.

5.1.2. Reflexive obliques

Reflexive obliques are reflexive pronouns inside of an argument PP that trigger middle voice marking with *d-*. The pronoun may be either a possessor of an DP as in (149) or occasionally an DP itself,[12] but in either case it is in the complement of a P that is selected by the verb and is thus an argument.

(149) a. Wé dóosh ax̲ gushkát awsinúk. *ordinary possessor in PP*
wé dóosh ax̲ g̲óosh-ká -t a- wu- s- i- $^{1}\sqrt{}$nuk -H
MDST cat [PP 1SG·PSS lap- HSFC-PNCT] ARG-PFV- CSV-STV-$^{1}\sqrt{}$sit·SG-VAR
'S/he put the cat on my lap.'

b. Wé dóosh chush g̲ushkát awdzinúk. *reflexive possessor in PP*
wé dóosh chush g̲óosh-ká -t a- wu-d- s- i- $^{1}\sqrt{}$nuk -H
MDST cat [PP RFLX·PSS lap- HSFC-PNCT] ARG-PFV-MID-CSV-STV-$^{1}\sqrt{}$sit·SG-VAR
'S/he put the cat on his/her own lap.'

The structure of a reflexive oblique is analogous to a reflexive object except that the reflexive pronoun occurs inside of a PP. Since the PP is an argument it is initially merged in VP just like an object, and thus it is in the c-command domain of Voice. Voice then probes the reflexive for [uMID], just like for a reflexive object, as shown in figure 5.6.

The appearance of middle voice *d-* with an argument PP supports the claim that argument PPs are initially merged in VP. If instead argument PPs were merged in their surface position they would be above AspP, and thus outside of the c-command domain of Voice. If we reversed the relationship so that the reflexive probed Voice rather than the other way around we would still have a problem: the reflexive would be low inside of the PP and would not be able to c-command Voice. As discussed later in section 5.3.1, this exact configuration arises with adjunct PPs that contain reflexive or reciprocal pronouns, and indeed *d-* is absent with reflexive or reciprocal adjuncts.

Just as with reflexive objects, the pronoun of a reflexive oblique can be covert. Examples are numerous among verbs of handling used to describe the manipulation of clothing; a particularly rich

12. Reflexive DP pronouns are rare in general, whether within an argument PP or e.g. focused. Reciprocal DP pronouns are more common, so the rarity of reflexive DP pronouns is probably due to pragmatics.

Figure 5.6: Reflexive possessor oblique where *d-* agrees with the pronoun

set of examples is given by Dauenhauer & Dauenhauer (2002: 64–69). The forms in (150) illustrate one contrastive pair. The basis case in (150a) has a second person singular possessor *i* in the PP along with a covert second person singular subject because the verb is imperative. The form in (150b) has a covert reflexive possessor in the PP; the middle voice *d-* required by the reflexive forces the second person singular subject of the imperative to be overt as discussed in section 2.2.2.

(150) a. I x̲'oosdáx̲ yék̲ i téeli. *second singular possessor*
i x̲'oos-dáx̲ ²√ÿek̲-H i téel-í
[PP 2SG·PSS foot -ABL] 2SG·S- ²√pull-VAR 2SG·PSS shoe-PSS
'Take your shoes off your feet.' (Dauenhauer & Dauenhauer 2002: 66)

b. X̲'oosdáx̲ idayék̲ i téeli. *covert reflexive possessor*
x̲'oos-dáx̲ i- d- ²√ÿek̲-H i téel-í
[PP RFLX·PSS foot -ABL] 2SG·S-MID-²√pull-VAR 2SG·PSS shoe-PSS
'Take off your shoes.' (Dauenhauer & Dauenhauer 2002: 65)

Reflexive obliques provide an opportunity to explore binding. An argument PP can occur together with an object and a subject in a handling verb context. In this case the reflexive can only be bound by the subject and not the object. This is shown in (151) where the reflexive is coreferential with the subject in (151a) but not with the object in (151b).

Figure 5.7: Subject binds reflexive in argument PP and object does not

(151) a. Chush gushkát x̱at yidzinúk. *subject binding reflexive*
chush g̱óosh-ká -t x̱at= wu-i- d- s- i- ^{1}√nuk -H
RFLX·PSS$_i$ lap- HSFC-PNCT 1SG·O$_j$=PFV-2SG·S$_i$-MID-CSV-STV-^{1}√sit·SG-VAR
'You put me on your lap.'

b. * Chush gushkát x̱at yidzinúk. **object binding reflexive*
chush g̱óosh-ká -t x̱at= wu-i- d- s- i- ^{1}√nuk -H
RFLX·PSS$_j$ lap- HSFC-PNCT 1SG·O$_j$=PFV-2SG·S$_i$-MID-CSV-STV-^{1}√sit·SG-VAR
intended: 'You put me on my lap.'

There is a straightforward syntactic solution to blocking reflexive obliques from being bound by objects that is illustrated in figure 5.7. Both objects and argument PPs are merged in VP. If the object is merged first then it will be lower than the PP. Being lower, the object cannot c-command the reflexive pronoun inside of the PP. Note that this works only when binding is calculated early, before the object and PP are evacuated from below Asp. But the subject again could undergo short distance raising to VoiceP without any effect on binding since it would c-command the reflexive pronoun from VoiceP just as well as from *v*P.

Argument PPs are particularly common with motion and handling verbs, and reflexive obliques with *d-* are well attested among these PPs. I have not determined whether reflexives in other kinds of argument PPs – e.g. applicatives – also trigger *d-*, but I expect them to behave identically in triggering *d-* and being bound by the subject. Applicative PPs are merged in *v*P so they are below Voice and thus can be probed to trigger *d-*. But ensuring that the reflexive is bound by the subject is less straightforward. If the subject is merged in *v*P before the applicative PP then, just like the object

and argument PP in VP, the subject would be too low to c-command and thus bind the reflexive pronoun. This can arise where a subject is first merged in the *v*P of a covert *v* for a bivalent root, and then an applicative *v* and its PP are merged above the covert *v*. To avoid this problem, we would have to specify that the subject binds the reflexive only after it has raised to VoiceP. This has no effect on the binding of reflexives in argument PPs or objects, so it is compatible with the foregoing system.

5.1.3. Reciprocal objects

Reciprocal objects are characterized by a reciprocal object D pronoun in a transitive structure with the concomitant appearance of *d-* in Voice. The reciprocal object D pronoun is *woosh=* or *wooch=* 'each other'. Variation between the forms is partly influenced by dialect and speaker preference, but there are probably phonological influences as well. Leer says that *wooch=* "is usual for most speakers before the pluralizer" *has=* (Leer 1991: 59 fn. 16) but there are more attested examples of *woosh=* with *has=* than *wooch=*. See chapter 7 section 1.2.1.12 for more discussion of the reciprocal pronoun.

The data in (152) illustrate a typical reciprocal object with a transitive verb based on a bivalent root. The form in (152a) has reciprocal *woosh=* but lacks *d-* and so is ungrammatical, whereas the grammatical form in (152b) has reciprocal *woosh=* together with *d-*.

(152) a. *Woosh wutuwahoon. **reciprocal transitive without d-*
woosh=wu-tu- i- $\sqrt[2]{}$hun-μ
RECIP·O=PFV-1PL·S- STV-$\sqrt[2]{}$sell -VAR
intended: 'We sold each other.'

b. Woosh wutudihoon. *reciprocal transitive with d-*
woosh=wu-tu- d- i- $\sqrt[2]{}$hun-μ
RECIP·O=PFV-1PL·S-MID-STV-$\sqrt[2]{}$sell -VAR
'We sold each other.'

Just like the reflexive object, the reciprocal object *woosh=* ~ *wooch=* must be merged in VP for it to be c-commanded by Voice and thus probed for to support the appearance of *d-*. This is represented in (153) which is identical to the earlier tree in (141) for the reflexive except for the difference in object.

(153) *reciprocal object with d-*

Unlike the reflexive object, the reciprocal object cannot be covert. This is shown by the data in (154) where only the overt reciprocal *woosh=* is grammatical in (154a) and the covert equivalent in (154b) is bad. Contrast this with the covert reflexive in (155).

(154) a. Woosh x̲'usnayda.óos'! *overt reciprocal object*
woosh=x̲'us-n- ÿi- d- $\sqrt[2]{}$.us' -μH
RECIP·O=foot- NCNJ-2PL·S-MID-$\sqrt[2]{}$wash-VAR
'Wash each other's feet!'

b. * X̲'usnayda.óos'! **covert reciprocal object*
woosh=x̲'us-n- ÿi- d- $\sqrt[2]{}$.us'
RECIP·O=foot- NCNJ-2PL·S-MID-$\sqrt[2]{}$wash-VAR
intended: 'Wash each other's feet!'

(155) X̲'usnayda.óos'! *covert reflexive object*
x̲'us-n- ÿi- d- $\sqrt[2]{}$.us' -μH
RFLX·O=foot- NCNJ-2PL·S-MID-$\sqrt[2]{}$wash-VAR
'Wash your (pl.) feet!' (Dauenhauer & Dauenhauer 2002: 58)

Interpretation of the reciprocal object is, like the reflexive object, dependent on the interpretation of the subject. But the reciprocal has an additional semantic constraint: it is only possible with plural subjects. These facts are shown by the data in (156)–(158) which illustrate first person subjects in (156), second person subjects in (157), and third person subjects in (158).

(156) a. *Woosh x̲wadziteen. **first person singular reciprocal*
woosh=wu-x̲- d- s- i- $\sqrt[2]{}$tin-μ
RECIP·O=PFV-1SG·S-MID-XTN-STV-$\sqrt[2]{}$see -VAR
intended: 'I saw each other.'

b. Woosh wutudziteen. *first person plural reciprocal*
woosh=wu-tu- d- s- i- $\sqrt[2]{}$tin-μ
RECIP·O=PFV-1PL·S-MID-XTN-STV-$\sqrt[2]{}$see -VAR
'We saw each other.'

(157) a. *Woosh yidziteen. **second person singular reciprocal*
woosh=wu-i- d- s- i- $\sqrt[2]{}$tin-μ
RECIP·O=PFV-2SG·S-MID-XTN-STV-$\sqrt[2]{}$see -VAR
intended: 'You (sg.) saw each other.'

b. Woosh yeeydziteen. *second person plural reciprocal*
woosh=wu-ÿi- d- s- i- $\sqrt[2]{}$tin-μ
RECIP·O=PFV-2PL·S-MID-XTN-STV-$\sqrt[2]{}$see -VAR
'You guys saw each other.'

(158) a. *Woosh wudziteen. *third person singular reciprocal*
woosh=wu-d- s- i- $\sqrt[2]{}$tin-μ
RECIP·O=PFV-MID-XTN-STV-$\sqrt[2]{}$see -VAR
intended: 'S/he/it saw each other.'

b. Woosh has wudziteen. *third person plural reciprocal*
woosh=has=wu-d- s- i- $\sqrt[2]{}$tin-μ
RECIP·O=PLH= PFV-MID-XTN-STV-$\sqrt[2]{}$see -VAR
'They saw each other.'

The fourth person *du-* might be expected to require *has=* with *woosh=* because of the restriction against singular subjects. But in fact it is possible to use *du-* without *has=* as shown by the sentences in (159), meaning that *du-* can be unspecified for plurality and thus contextually interpreted as plural. I have not found any examples of *woosh=* + *has=* + *du-* but I have not elicited this possibility either.

(159) a. Woosh shawduwax̱ích. *woosh= + du- without has=*
woosh=sha- wu-du- i- $\sqrt[2]{}$x̱ich-H
RECIP·O=head-PFV-4H·S-STV-$\sqrt[2]{}$club -VAR
'They've been hitting each other (that is, there has been war).' (Story & Naish 1973: 110.1426)

b. Woosh kéek' yáx̱ woosh kawdudziyáa. *woosh= + du- without has=*
woosh kéek' yáx̱ woosh=k- wu-du- d- s- i- $\sqrt[2]{}$ÿa -μH
RECIP·PSS yg·bro SIM RECIP·O=QUAL-PFV-4H·S-MID-CSV-STV-$\sqrt[2]{}$resemble-VAR
'They became like brothers.' (Story & Naish 1973: 126.1668)

The order of the reciprocal and plural modifier is opposite that of the reflexive and plural modifier. This is shown by the data in (160) and (161): only the order *has=* > *sh=* is grammatical for the reflexive in (160a) but only the order *woosh=* > *has=* is grammatical for the reciprocal in (161b).

(160) a. Has sh wudziteen. *reflexive: has > sh*
has=sh= wu-d- s- i- $\sqrt[2]{}$tin-μ
PLH= RFLX·O=PFV-MID-CSV-STV-$\sqrt[2]{}$see -VAR
'They saw themselves.'

b. *Sh has wudziteen. **reflexive: sh > has*
sh= has=wu-d- s- i- $\sqrt[2]{}$tin-μ
RFLX·O=PLH= PFV-MID-CSV-STV-$\sqrt[2]{}$see -VAR
intended: 'They saw themselves.'

(161) a. *Has woosh wudziteen. **reciprocal: has > woosh*
has=woosh=wu-d- s- i- $\sqrt[2]{}$tin-μ
PLH= RECIP·O=PFV-MID-CSV-STV-$\sqrt[2]{}$see -VAR
intended: 'They saw each other.'

b. Woosh has wudziteen. *reciprocal: woosh > has*
woosh=has=wu-d- s- i- $\sqrt[2]{}$tin-μ
RECIP·O=PLH= PFV-MID-CSV-STV-$\sqrt[2]{}$see -VAR
'They saw each other.'

It is unclear why there should be a difference between the orderings of the reflexive and the reciprocal; I suspect phonology plays a role but I have no concrete suggestions for investigation. But the fixed order of *woosh*= > *has*= has a significant consequence for binding of the reciprocal pronoun. The plurality entailed by *has*= for the third person subject must also be interpreted for the reciprocal because reciprocals can only apply to plural referents. If the reciprocal appears above the pluralizer then it cannot have its plural requirement satisfied by binding from the pluralizer because the pluralizer does not c-command it. The only way for the reciprocal to get its plural interpretation from *has*= is for the reciprocal to originally be below *has*=. This is achieved by merging the reciprocal in VP where it is c-commanded by both the subject and the *has*= pluralizer.

5.1.4. Reciprocal obliques

Reciprocal obliques are reciprocal pronouns inside of an argument PP that trigger middle voice marking with *d-*. The pronoun may be either a possessor of a DP as in (162) or a DP itself as in (163). In either case the reciprocal pronoun is within the complement of a P that is selected by the verb and is thus an argument.

(162) a. Du tugéit has x̲'awli.át. *non-reciprocal*
du tú- géi -t has=x̲'e- wu-l- i- $^{1}\sqrt{}$.at -H
[PP 3H·PSS mind-against-PNCT] PLH= mouth-PFV-XTN-STV-$^{1}\sqrt{}$go·PL-VAR
'They insulted him/her.' (lit. 'They spoke to the against of his/her mind.')

b. … wooch tugéit has x̲'awdli.át. *reciprocal*
wooch tú- géi -t has=x̲'e- wu-d- l- i- $^{1}\sqrt{}$.at -H
[PP RECIP·PSS mind-against-PNCT] PLH= mouth-PFV-MID-XTN-STV-$^{1}\sqrt{}$go·PL-VAR
'…they insulted each other.' (Nyman & Leer 1993: 2.4)

(163) a. Neech kát uwadús'. *non-reciprocal*
neech ká -t u- i- $^{1}\sqrt{}$dus' -H
[PP beach HSFC-PNCT] ZPFV-STV-$^{1}\sqrt{}$surge-VAR
'It (water) surged against the beach.'

b. Wóosht wudidús'. *reciprocal*
wóosh-t wu-d- i- $^{1}\sqrt{}$dus' -H
[PP RECIP -PNCT] PFV-MID-STV-$^{1}\sqrt{}$surge-VAR
'They (waters of Red Sea) surged against each other.' (Story & Naish 1973: 136.1835)

Reflexive obliques have basically the same structure as reflexive obliques. The argument is a PP that is initially merged in VP and is thus in the c-command domain of Voice. Voice then probes for the reciprocal pronoun's [uMID] as shown in figure 5.8, which is almost identical to figure 5.6 that represents a reflexive oblique.

Like reciprocal objects and unlike reflexive obliques, reciprocal obliques cannot have a covert pronoun. Middle voice triggering covert pronouns are thus limited solely to reflexives. This is shown by the data in (164) where the overt reciprocal pronoun in (164a) is acceptable but the covert reciprocal pronoun in (164b) is not. As noted earlier, it is unclear why only reflexive pronouns can be covert and not reciprocal pronouns, but there is a parallel in the arguments of imperatives: second person singular subjects can be covert but not second person plural subjects. Plurality might be the

Figure 5.8: Reciprocal possessor oblique where *d-* agrees with the pronoun

conditioning factor: the second person plural subject is inherently plural and the reciprocal entails plurality of the subject.

(164) a. Woosh kát wutudli.át. *overt reciprocal oblique*
woosh ká -t wu-tu- d- l- i- $\sqrt[1]{}$.at -H
RECIP·PSS HSFC-PNCT PFV-1PL·S-MID-XTN-STV-$\sqrt[1]{}$go·PL-VAR
'We put them (blankets) on each other.'

b. * Kát wutudli.át. **covert reciprocal oblique*
ká -t wu-tu- d- l- i- $\sqrt[1]{}$.at -H
RECIP·PSS HSFC-PNCT PFV-1PL·S-MID-XTN-STV-$\sqrt[1]{}$go·PL-VAR
intended: 'We put them (blankets) on each other.'

I expect that reciprocal obliques are like reflexive obliques in that they can only be bound by the subject and not the object. I have not tested this but there is no evidence to the contrary and no principled reason why they should not behave the same. If so this would entail the same analysis where the object must be merged before the argument PP so that the object cannot c-command the reciprocal pronoun within the PP.

As with reflexive obliques, I have only looked at reciprocal obliques in the context of path arguments of motion and handling verbs. I have not encountered any examples of applicative PPs with reciprocal pronouns but I expect them to similarly trigger *d-* and be bound by only the subject, in the same way that I expect these facts to hold for the reflexive obliques.

5.2. Other arguments are restricting

The preceding section discussed grammatical middle voice with reflexives and reciprocals that occur either as objects or as argument PPs. This section addresses three other kinds of arguments that trigger middle voice marking with *d-* but which lack a distinct reflexive or reciprocal pronoun. These are the self-benefactive reflexive (sec. 5.2.1), the linear revertive motion (5.2.2), and the perambulative revertive motion (sec. 5.2.3). Arguably all of these are actually argument PPs; their structures are discussed further in chapter 7. All three include morphology that must be initially merged in VP to trigger *d-* in Voice with a [uMID] feature.

The self-benefactive reflexive is a unique element that indicates the event is done for the benefit of the agent. It is this referential dependency on the agent that leads to its analysis as a kind of reflexive: '*x* does *y* for *x*'s own benefit'. Since the self-benefactive is basically a special kind of reflexive, it is not surprising that it is involved in middle voice and thus triggers the presence of *d-*. The self-benefactive reflexive only ever refers to the subject of a transitive structure so it is presumably bound by the subject and hence c-commanded by it. Since it also triggers *d-* the self-benefactive *g-* is initially merged in VP and later raises to AspP after the merger of Asp.

The revertive motions are less semantically obvious cases of middle voice. Revertive motion is a kind of motion event where the two endpoints of a path are the opposite of a previous motion event, i.e. $\text{source}_1 = \text{destination}_0$ and $\text{source}_0 = \text{destination}_1$. Where other forms of middle voice equate two (sets of) entities – i.e. $x_e = y_e$ for reflexives or $\{x_e, \ldots\} = \{y_e, \ldots\}$ for reciprocals – the revertive motion instead equates locations: $a_\ell = b_\ell$. The underlying semantic mechanism of equating the references of variables remains the same, and thus the apperance of middle voice marking is not predictable. The two different kinds of revertive motion are differentiated by the course of their paths: linear revertive motion traverses the same path as a previous motion whereas perambulative revertive motion traverses a path that is (mostly) disjoint with that of the previous motion. This is explained further and exemplified in sections 5.2.2 and 5.2.3. Given that the revertives are similar to other path arguments, I analyze them as initially merged in VP and hence c-commanded by Voice so it can probe their [uMID] feature to trigger the appearance of *d-*.

The self-benefactive is bound by the subject just like a reflexive or reciprocal. Binding is not so clear for the revertive motions, however. Subjects in Tlingit denote entities but the revertive arguments denote locations, so the types clash and the subjects do not bind the revertives. Instead of binding, it seems that the revertives acquire their denotations from the discourse. I speculate that they are pronouns rather than anaphors, but we know so little about them – and about Tlingit path arguments in general – that I do not offer any firm conclusions.

5.2.1. Self-benefactive reflexive

The self-benefactive reflexive prefix *g-* is an element that appears between the object D pronoun and Asp. When present, the self-benefactive *g-* indicates that the agent performs the event for the agent's own benefit (Story 1966: 101–102; Leer 1991: 53). Its origin probably lies in an incorporated noun or incorporated PP, but its etymon is not recoverable.

The self-benefactive always requires *d-* in Voice as shown by the data in (165). The form in (165a) is the basis case of a causative based on $\sqrt[1]{.i}$ 'cook'; this is the commonly encountered verb with a self-benefactive. The ungrammatical form in (165b) adds the self-benefactive *g-* alone. The grammatical form in (165c) has the self-benefactive along with the middle voice *d-*.

(165) a. Kóox xwasi.ée. *without self-benefactive*
kóox wu-x- s- i- $^{1}\sqrt{}$.i -μH
rice PFV-1SG·S-CSV-STV-$^{1}\sqrt{}$COOK-VAR
'I cooked rice.'

b. *Kóox gaxwsi.ée. **with self-benefactive but not d-*
kóox g- wu-x- s- i- $^{1}\sqrt{}$.i -μH
rice SBEN-PFV-1SG·S- CSV-STV-$^{1}\sqrt{}$COOK-VAR
intended: 'I cooked rice for myself.'

c. Kóox gaxwdzi.ée. *with self-benefactive and d-*
kóox g- wu-x- d- s- i- $^{1}\sqrt{}$.i -μH
rice SBEN-PFV-1SG·S-MID-CSV-STV-$^{1}\sqrt{}$COOK-VAR
'I cooked rice for myself.'

The self-benefactive has not been investigated in any detail. I have confirmed its existence with overt D pronouns as shown in (166) using the second person singular object *i-* 'you (sg.)'. The addition of just self-benefactive *g-* is ungrammatical in (166b) and in (166c) the form with both *g-* and *d-* is grammatical.

(166) a. Ixwsi.ée. *overt object D*
i- wu-x- s- i- $^{1}\sqrt{}$.i -μH
2SG·O-PFV-1SG·S-CSV-STV-$^{1}\sqrt{}$COOK-VAR
'I cooked you (sg.).' (BC)

b. *Igaxwsi.ée. **overt object D and self-benefactive without d-*
i- ga- wu-x- s- i- $^{1}\sqrt{}$.i -μH
2SG·O-SBEN-PFV-1SG·S- CSV-STV-$^{1}\sqrt{}$COOK-VAR
'I cooked you (sg.) for myself.' (BC)

c. Igaxwdzi.ée. *overt object D and self-benefactive with d-*
i- ga- wu-x- d- s- i- $^{1}\sqrt{}$.i -μH
2SG·O-SBEN-PFV-1SG·S-MID-CSV-STV-$^{1}\sqrt{}$COOK-VAR
'I cooked you (sg.) for myself.' (BC)

The self-benefactive *g-* is not very well documented. It appears in the lexical documentation with ten different verbs that are listed in table 5.5. The self-benefactive is only documented with events suggesting that it is not allowed with states, but this is still unclear. Further investigation should test its compatibility with reflexive and reciprocal objects, whether it is possible with plural arguments, and any possible interactions with quantification.

The self-benefactive triggers *d-* and is bound by the subject in essentially the same way as the reflexive. Both facts require that it be merged below Voice: the Voice must c-command it to probe it for *d-* and the subject must c-command it bind it. There are three possible initial merge sites below Voice: *v*P, ƐP, and VP. Given no obvious relationships with stativity I exclude its merger in ƐP. If the self-benefactive were merged in *v*P then it would have to be merged before the subject for the subject to c-command it. But there is no clear mechanism to ensure the order [$_{vP}$ *g-* [$_{vP}$ *SUBJ v* ...]] instead of the order [$_{vP}$ *SUBJ* [$_{vP}$ *g- v* ...]] other than stipulation, so I exclude its merger in *v*P. This leaves only VP

v	*Perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
Ø	*agawditee*	's/he took it (poison)'	+	+	$\sqrt[2]{ti}$	'handle'	motion	–
	át agawdihán	's/he stood there minding self'	–	+	$\sqrt[1]{han}$	'sg. stand'	motion	–
	agawdiwóo	's/he made it lunch for self'	+	+	$\sqrt[2]{wu}$	'lunch'	achievement	Ø
	agawdi.oo	's/he bought it for self'	+	+	$\sqrt[2]{.u^h}$	'buy'	activity (-μH)	*n*
s-	*agawdzi.ée*	's/he cooked it for self'	+	+	$\sqrt[1]{.i}$	'cook'	activity (-μH)	Ø
	agawdzitáa	's/he carried it for self'	+	+	$\sqrt[1]{ta^h}$	'hdl. dead'	motion	–
	agawdzixóo	's/he steamed it for self'	+	+	$\sqrt[1]{xu}$	'steam'	activity (-μH)	Ø/*g*
l-	*sh gawdlihoon*	's/he went job-hunting'	+	+	$\sqrt[2]{hun}$	'sell'	activity (-μ)	*n*
l^s-	*agawdliwás*	's/he roasted it for self'	+	+	$\sqrt[1]{was}$	'roast'	activity (-μH)	Ø
	agawdlisín	's/he hid it for self'	+	+	$\sqrt[1]{sin}$	'hide'	activity (-μH)	Ø

Table 5.5: Some verbs with self-benefactive *g-*

as the initial merge site of self-benefactive *g-*. Presumably it must be merged above the object since there is no evidence that it is ever bound by objects, but we lack evidence to determine whether the self-benefactive is above or below argument PPs.

Because the self-benefactive is more or less optional, and since adjuncts are canonically optional, the self-benefactive could be analyzed as a VP adjunct. But as discussed in section 5.3.1, adjunct PPs do not otherwise trigger *d-* when they contain reflexive or reciprocal pornouns. If we take the triggering of *d-* to be a reliable distinction between arguments and adjuncts, we would then be forced to conclude that the self-benefactive *g-* is a kind of optional argument. This would put it in the same class as obliques: arguments that need not be present. I leave this puzzle to future investigation.

5.2.2. Linear revertive motion: 'back'

Linear revertive motion describes an event of motion where the entity retraces the path of some previous motion event to arrive at the former starting location of the previous motion. It roughly translates as 'going back'. The data in (167) illustrates the linear revertive motion. The basis case in (167a) is 'plain' motion that does not retrace a previous path. The form in (167b) adds the revertive preverb *ḵúx̱=* 'back', but this is ungrammatical unless *d-* is also present as in (167c).[13]

(167) a. X̱waagoot. *plain motion*
wu-x̱- i- $\sqrt[1]{gut}$ -μ
PFV-1SG·S-STV-$\sqrt[1]{go}$·SG-VAR
'I went.'

b. *Ḵux̱ x̱waagút. **linear revertive motion without d-*
ḵúx̱=wu-x̱- i- $\sqrt[1]{gut}$ -H
REV= PFV-1SG·S- STV-$\sqrt[1]{go}$·SG-VAR
intended: 'I went back.'

13. I have encountered exactly one instance of *ḵux̱=* without *d-*, specifically *ḵux̱ awlik'éx̱'* 'he hooked it back in' (Story & Naish 1973: 111.1450). I believe this is a transcription error or typo and should be *ḵux̱ awdlik'éx̱'*.

Figure 5.9: Linear revertive motion with events ε_0 and ε_1

c. Kux̲ x̲wadigút. *linear revertive motion with d-*
k̲úx̲=wu-x̲- d- i- $^{1}\sqrt{}$gut -H
REV= PFV-1SG·S-MID-STV-$^{1}\sqrt{}$go·SG-VAR
'I went back.'

The shift from a *-μ* stem in (167a) to a *-H* stem in (167c) reflects a difference conjugation class that is conditioned by motion derivation as discussed in chapter 6 section 3.3. This is apparently irrelevant to middle voice marking with *d-* but I mention it here for completeness. Specifically, the form in (167a) is *n*-conjugation where the perfective selects *-μ*, but the form in (167c) is *∅*-conjugation where the perfective selects *-H*. This is because the linear revertive motion is part of the large class of motion derivations that specify *∅*-conjugation class.

More specifically the linear revertive motion derivation belongs to the subclass of *∅*-conjugation motion derivations that specify *-ch* for the repetitive imperfective aspect (ch. 6 sec. 3.3.4.2), together with other motion derivations like *kei=* (*∅*; *-ch* rep.) 'upward' and *daak̲=* (*∅*; *-ch* rep.) 'inland, up from shore, back from open'. The *k̲úx̲=* 'back' preverb can appear bare, but like many motion preverbs it may be suffixed by a postposition – here allative *-dé* 'to, toward' – depending on the aspectual context. The preverb is probably itself derived from a PP, being etymologically composed from the areal *kú* (see ch. 7 sec. 1.2.1.7) and the pertingent postposition *-x̲* '(made, part, one) of; contacting'.

The semantics of the linear revertive motion presupposes a previous motion event ε_0 that departs some location *a* and arrives at some other location *b* along some path in space. Then the revertive motion event ε_1 describes the departure from *b* and arrival at *a* along the same path. This is represented by the diagram in figure 5.9. Crucially the perambulative revertive motion (sec. 5.2.3) differs from the linear in that the perambulative describes a path other than the path of event ε_0.

Since *k̲úx̲=* is the trigger of *d-* it must be merged below Voice, and this is compatible with its initial merge in VP like other argument PPs. As a trigger of *d-* the *k̲úx̲=* preverb must host [uMID] that can be probed by Voice. This configuration is illustrated by the tree in figure 5.10. After Asp is merged *k̲úx̲=* must raise to AspP like other argument PP preverbs.

Unlike reflexives, reciprocals, or the self-benefactive, the linear revertive motion involves locations rather than entities. As such, the *k̲úx̲=* preverb is not bound by the subject because the denotation of the subject is an entity and not a location. Since the revertive *k̲úx̲=* is not bound by the subject, is it bound by anything? If it is an anaphor then we would expect it to be bound by something, but usually there are no overt phrases that could bind it. This suggests that *k̲úx̲=* is instead a pronoun for a location, and as a pronoun the semantics would rely on discourse and pragmatics to provide its interpretation. But it is possible for *k̲úx̲=* to occur together with another PP that describes the destination (the previous source) as shown by the narrative example in (168).

Figure 5.10: Linear revertive motion tree

(168) yú atx'aan aanídáx̱, yú táakwx' áa
yú at= ^{2}√x'an -μ aan -í -dáx̱ yú táakw-x' á -μ
[PP DIST 4N·O=^{2}√smoke-VAR town-PSS-ABL] [CP DIST winter -LOC there-LOC
yéi haa teeyí aadé k̲ux̱ tuda.aatch
yéi= haa= ^{1}√ti^{h}-μ -í á -dé k̲úx̱= tu- d- ^{1}√.at -μ -ch
thus=1PL·O=STV-^{1}√be -VAR-SUB] [PP there-ALL] REV= ZPFV-1PL·S-MID-^{1}√go·PL-VAR-REP
haa aaníx'.
haa aan -í -x'
[PP 1PL·PSS town-PSS-LOC]
'from our smoking things village (i.e. fish camp), when we are there in the winter, we always go back to there, to our (winter) village' (Dauenhauer & Dauenhauer 1987: 204.196–197)

In sentences like (168) it is entirely possible that the PP denoting the destination – here either *aadé* 'to there' or its referent *haa aaníx'* 'at our village' could actually bind the *k̲úx̱*= preverb. I leave this issue unexplored for now, hoping that further work on binding and PPs will clarify the situation with revertive *k̲úx̱*=.

5.2.3. Perambulative revertive motion: 'back around to'

Perambulative revertive motion describes an event of motion where the entity returns to the starting location of some previous motion event. It differs from linear revertive motion in that the path of the revertive motion event ε_1 is not the same as the path of the (presupposed) previous motion event ε_0, and roughly translates as 'going back around' or as the verb 'circle'. The data in (169) illustrates the perambulative revertive motion. The basis case in (169a) is not revertive. The ungrammatical form in (169b) adds the revertive *a-* and *ÿ-* elements but lacks *d-* whereas the grammatical form in (169c) has *d-*.

Figure 5.11: Perambulative revertive motion with events ε_0 and ε_1

(169) a. Xwaagoot. *plain motion*
wu-x- i- $\sqrt[1]{}$gut -μ
PFV-1SG·S-STV-$\sqrt[1]{}$go·SG-VAR
'I went.'

b. * Ayaxwaagút. **perambulative revertive motion without d-*
a- ÿ- wu-x- i- $\sqrt[1]{}$gut -μ
XPL-QUAL-PFV-1SG·S-STV-$\sqrt[1]{}$go·SG-VAR
intended: 'I circled back.'

c. Ayaxwdigút. *perambulative revertive motion with d-*
a- ÿ- wu-x- d- i- $\sqrt[1]{}$gut
XPL-QUAL-PFV-1SG·S-MID-STV-$\sqrt[1]{}$go·SG
'I circled back.'

As with the linear revertive motion, the perambulative revertive motion is a motion derivation that specifies the *∅*-conjugation class which selects the *-H* stem in (169c) versus the *-μ* stem for the *n*-conjugation class in (169a). But the perambulative belongs to a different subclass of the *∅*-conjugation motion derivations because it specifies a repetitive imperfective with the *-x* suffix rather than *-ch*. This makes it similar to other *∅*-conjugation motion derivations with *-x* such as *NP-x* (*∅*; *-x* rep.) 'moving in place at NP' and *NP-x'* (*∅*; *-x* rep.) 'nearing, approaching NP'.

The semantics of the perambulative revertive motion presupposes a previous motion event ε_0 that departs from some location *a* and arrives at some other location *b* along some path in space. The revertive motion event ε_1 describes the departure from *b* and subsequent arrival at *a* along a path that is different from that of ε_0. This is represented by the diagram in figure 5.11. Crucially the perambulative revertive motion differs from the linear revertive motion (sec. 5.2.2) in that the perambulative describes a path other than the path of event ε_0.

Modelling the linear revertive motion in section 5.2.2 is relatively straightforward since the revertive preverb *kúx=* is a PP. The perambulative is not as simple because the overt morphology apparently consists of the expletive argument prefix *a-* (ch. 7 sec. 1.2.2.3) and the qualifier *ÿ-* (ch. 7 sec. 1.3.4). It is unclear what the semantic contributions are of these two elements, but somehow they compose with the rest of the verbal structure to provide the perambulative revertive meaning. We could naively analyze *a-* and *ÿ-* together as a kind of D^0 subtree according to their properties in other contexts (see ch. 7 sec. 1). This would naturally be merged below VP and thus be in the c-command domain of Voice to be probed for the [uMID] feature. But being a D^0 subtree is at odds with its function that parallels the *kúx=* PP of the linear revertive. I have elsewhere suggested that *a-* could be an expletive for a missing path argument, perhaps arising because of suppression by *d-* in Voice, but

this leaves *ÿ-* unaccounted for. It could also be that the resemblance to *a-* and *ÿ-* is accidental and that there is instead a preverb *aÿa=* which is syntactically equivalent to *ḵúx̱=*. I leave the syntax of *a-ÿ-* unresolved for now, but expect that whatever eventual model is adopted there must be some element with a [uMID] feature merged below Voice so that *d-* is triggered.

5.3. What middle *d-* doesn't do

5.3.1. Middle *d-* doesn't probe adjuncts

Although middle *d-* is triggered by reflexive or reciprocal pronouns in argument PPs (secs. 5.1.2 & 5.1.4), it is not triggered by the same pronouns in adjuncts. The data in (170) show that adjuncts containing reflexives do not trigger middle voice *d-*. The form in (170a) is grammatical without *d-* despite the presence of the reflexive possessor *chush*. The ungrammatical form in (170b) has *d-* along with the reflexive possessor.

(170) a. Chush jeeyís ix̱wsi.ée. *reflexive possessor in adjunct without d-*
chush jee -ÿís i- wu-x̱- s- i- $^{1}\sqrt{}$.i -μH
[PP RFLX·PSS poss'n-BEN] 2SG·O-PFV-1SG·S- CSV-STV-$^{1}\sqrt{}$cook-VAR
'I cooked you for myself.' (*Keiyishí* Bessie Cooley)

b. * Chush jeeyís ix̱wdzi.ée. **reflexive possessor in adjunct with d-*
chush jee -ÿís i- wu-x̱- d- s- i- $^{1}\sqrt{}$.i -μH
[PP RFLX·PSS poss'n-BEN] 2SG·O-PFV-1SG·S-MID-CSV-STV-$^{1}\sqrt{}$cook-VAR
intended: 'I cooked you for myself.' (*Keiyishí* Bessie Cooley)
(Comment: "It sounds like you cooked yourself.")

Note that (170a) is an alternative to the self-benefactive reflexive described in section 5.2.1. The self-benefactive *g-* triggers middle *d-* and as such is a kind of argument, whereas the PP *chush jeeyís* 'for one's own possession' in (170a) is an adjunct since it does not trigger *d-*.

I do not have elicited data for reciprocal adjuncts, but I offer the form in (171) as an example of one from a narrative. The verb root $^{2}\sqrt{}$*s'el'* is not specified for motion events and so is not expected to subcategorize for an argument PP. Thus the reciprocal *woosh* in the PP is not a trigger for *d-*.

(171) ... wóoshdax̱ akaawas'éil'. *reciprocal in adjunct without d-*
wóosh-dax̱ a- k- wu-i- $^{2}\sqrt{}$s'el'-μH
[PP RECIP -ABL] ARG-QUAL-PFV-STV-$^{2}\sqrt{}$tear -VAR
'... he ripped it in half.' (Dauenhauer & Dauenhauer 1987: 148.189)

The model captures this by merging all adjuncts above VoiceP so that they are not within the c-command domain of Voice. This however presents a binding problem: how does a reflexive or reciprocal become bound by the subject when it is never within the c-command domain of the subject? I do not have an answer to this problem.

5.3.2. Middle *d-* doesn't suppress arguments

The middle *d-* does not suppress arguments unlike antipassive and passive *d-*. The reflexive and reciprocal cases do not differ in their number of arguments from their non-middle counterparts; the reflexive D pronoun *sh=* for example is an overt pronoun saturating the object argument just like other object pronouns. The self-benefactive reflexive *g-* notably occurs in transitives where both

subject and object can be overt, meaning that the *d-* triggered by *g-* cannot have suppressed either the subject or object. The revertive motions can occur with overt argument PPs describing the source and destination locations of the revertive path so they cannot have suppressed any path arguments.

It is specifically this lack of suppression that distinguishes middle *d-* from the antipassive and passive *d-*, and so Tlingit effectively has two kinds of Voice head. It should be logically possible to derive structures with an antipassive *d-* and a grammatical middle voice *d-*, specifically by antipassivization of a transitive handling verb with a reflexive or reciprocal oblique. Since the reflexive and reciprocal must be bound by the subject and given that PRO does not bind it should be impossible to construct a passive with a reflexive or reciprocal oblique, but antipassivization establishes a PRO object which should be irrelevant to binding of the reflexive or reciprocal. If it is possible to combine antipassivization and oblique middle voice then it could be argued that there is more than one underlying Voice head, similar to the potential multiplicity of *v* heads. This possibility is further supported by the fact that *du-* can independently require the presence of *d-* (sec. 6.1), but there is never more than one *d-* in any surface form.

6. Fourth subject *du-* interacts with *d-*

The fourth person human subject *du-* is a D pronoun that indicates an indefinite, nonspecific, or nonreferential human. It is frequently translated as 'someone', 'somebody', 'one', or 'people'. It is also often translated with an English passive structure even though *du-* is not a passivizing morpheme; such translations are formally inaccurate despite perhaps being more idiomatic in English. Though usually nonreferential, *du-* is sometimes used referentially in contexts that appear to involve discourse backgrounding and obviation (e.g. in *K̲aax̲'achgóok* by *Íx̲t'ik' Éesh* A.P. Johnson, Dauenhauer & Dauenhauer 1987: 88.142). The distinction between antipassive *d-* and *du-* is that the latter denotes an actual but unspecified human entity; the minimal pair in (172) illustrates this difference. I gloss the *d-* triggered by *du-* as VCE to avoid connecting it with any of the other functions of *d-*.

(172) a. Shakawdlikúch'. *antipassive with d-*
sha- k- wu-d- l^{s}- i- $^{1}\sqrt{}$kuch'-H
head-QUAL-PFV-APSV-CSV-STV-$^{1}\sqrt{}$curl -VAR
'Her hair is curly.' (lit. 'her hair was made to become curly') (Story & Naish 1973: 61.695)

b. Shakawdudlikúch'. *fourth human subject du-*
sha- k- wu-du- d- l^{s}- i- $^{1}\sqrt{}$kuch'-H
head-QUAL-PFV-4H·S-VCE-CSV-STV-$^{1}\sqrt{}$curl -VAR
'She had a 'permanent'.' (lit. 'someone has made her hair curly') (Story & Naish 1973: 61.695)

As described previously by Leer (1991), Thompson (1996), and others, the *du-* subject pronoun has a complex relationship with *d-*; this relationship poses some interesting problems for a derivational model of Tlingit morphosyntax. On the one hand *du-* may require the unexpected presence of *d-*; on the other hand *du-* may instead prohibit the expected presence of *d-*. More specifically, the *du-* pronoun requires *d-* whenever *v* is overt, containing any of *s-*, *l-*, or *sh-* (sec. 6.1). This pattern can be seen in (172b) above where *d-* is present even though it is neither antipassive, passive, or middle. And the *du-* pronoun prohibits *d-* whenever *v* is covert so that none of *s-*, *l-*, or *sh-* is present (sec. 6.2). In both contexts the structure is transitive; existing descriptions are silent on what happens in intransitive (unergative) structures with either a lexicalized *d-* or an antipassivizing *d-* (sec. 6.3).

Another more puzzling fact is that *du-* and *d-* unpredictably alternate in complementary distribution with certain roots (sec. 6.4.1). Specifically, a verb with a singular subject can have apparently lexicalized *d-* but with a plural the *d-* disappears, *du-* appears in the subject position, and the actual argument is expressed with a plural object pronoun. The disappearance of the lexicalized *d-* is also correlated with the disappearance of overt *v*, suggesting possible involvement of the restriction against *du-* and *d-* together with covert *v*.

Thompson (1996) suggests a historical connection between *du-* and *d-*, and that the *d-* may have originally derived from an impersonal argument like *du-* in Proto-Na-Dene (see sec. 8 for a review of Thompson's Tlingit data). This path of development is certainly possible but it does not shed much light on the synchronic relationship between *d-* and *du-* in Tlingit.

6.1. Requirement for *d-* with *du-*

When *du-* is the subject of a transitive structure that includes overt *s-*, *l-*, or *sh-* then the *d-* prefix must also appear in the structure. The surface patterns are sketched in (173)–(175) for each of the three *s-*, *l-*, and *sh-* prefixes without and with *i-*.

(173) *du- requires d- with s-*

	D_S	Voice	*v*	Ɛ		*orth.*	*IPA*
a.	**du-*		*s-*		→	**dusa*	*[tù.sà]
b.	*du-*	*d-*	*s-*		→	*dus*	[tùs]
c.	**du-*		*s-*	*i-*	→	**dusi*	*[tù.sì]
d.	*du-*	*d-*	*s-*	*i-*	→	*dudzi*	[tù.tsì]

(174) *du- requires d- with l-*

	D_S	Voice	*v*	Ɛ		*orth.*	*IPA*
a.	**du-*		*l-*		→	**dula*	*[tù.ɬà]
b.	*du-*	*d-*	*l-*		→	*dul*	[tùɬ]
c.	**du-*		*l-*	*i-*	→	**duli*	*[tù.ɬì]
d.	*du-*	*d-*	*l-*	*i-*	→	*dudli*	[tù.tɬì]

(175) *du- requires d- with sh-*

	D_S	Voice	*v*	Ɛ		*orth.*	*IPA*
a.	**du-*		*sh-*		→	**dusha*	*[tù.ʃà]
b.	*du-*	*d-*	*sh-*		→	*dush*	[tùʃ]
c.	**du-*		*sh-*	*i-*	→	**dushi*	*[tù.ʃì]
d.	*du-*	*d-*	*sh-*	*i-*	→	*duji*	[tù.tʃì]

The data in (176) and (177) illustrate the requirement for *d-* with *du-* in a causative structure using the monovalent root $\sqrt[1]{.i}$ 'cook' and causative *s-*. The basis case in (176) shows that *d-* is ungrammatical with the first person plural subject D pronoun *tu-* 'we'; other subjects besides *du-* behave the same.

(176) a. *first plural subject without d-*

Kóox wutusi.ée.
kóox wu-tu- s- i- $\sqrt[1]{.i}$ -μH
rice PFV-1PL.S- CSV-STV-$\sqrt[1]{}$cook-VAR
'We made rice become cooked.' (i.e. 'We cooked rice.')

b. *Kóox wutudzi.ée. *first plural subject with d-*
kóox wu-tu- d- s- i- $\sqrt[1]{}$.i -μH
rice PFV-1PL·S-VCE-CSV-STV-$\sqrt[1]{}$cook-VAR
intended: 'We made rice become cooked.'

The forms in (177) show that the presence of *du-* requires the presence of *d-* even though *d-* would not otherwise occur. Crucially (177b) is not a passive structure: the subject is overtly 'someone' or 'people' and is not suppressed (see sec. 4.3.3). It is also not an antipassive since the object is overt *kóox* 'rice'. Furthermore it is not a middle since the subject and object are not coreferential and there are no other arguments (e.g. paths) that could be coreferential.

(177) a. *Kóox wudusi.ée. *fourth subject without d-*
kóox wu-du- s- i- $\sqrt[1]{}$.i -μH
rice PFV-4H·S- CSV-STV-$\sqrt[1]{}$cook-VAR
intended: 'Someone/people made rice become cooked.'

b. Kóox wududzi.ée. *fourth subject with d-*
kóox wu-du- d- s- i- $\sqrt[1]{}$.i -μH
rice PFV-4H·S-VCE-CSV-STV-$\sqrt[1]{}$cook-VAR
'Someone/people made rice become cooked.'

The requirement for *d-* with *du-* is insensitive to other requirements for *d-*. When more than one structural element would require *d-* there is still only one *d-* prefix: it is not doubled in (178b) nor is it 'switched off' in (178c). Thus like *v* there can be only one *d-* prefix in a form and unlike Ɛ its exponence cannot be suppressed.

(178) a. Sh wududzi.ée. *fourth subject + reflexive with d-*
sh= wu-du- d- s- i- $\sqrt[1]{}$.i -μH
RFLX·O=PFV-1PL·S-MID-CSV-STV-$\sqrt[1]{}$cook-VAR
'Someone/people made themselves become cooked.'

b. *Sh wudutdzi.ée. *fourth subject + reflexive with d-d-*
sh= wu-du- d- d- s- i- $\sqrt[1]{}$.i -μH
RFLX·O=PFV-1PL·S-VCE- MID-CSV-STV-$\sqrt[1]{}$cook-VAR
RFLX·O=PFV-1PL·S-MID-VCE- CSV-STV-$\sqrt[1]{}$cook-VAR
intended: 'Someone/people made themselves become cooked.'

c. *Sh wudusi.ée. *fourth subject + reflexive without d-*
sh= wu-du- s- i- $\sqrt[1]{}$.i -μH
RFLX·O=PFV-1PL·S- CSV-STV-$\sqrt[1]{}$cook-VAR
intended: 'Someone/people made themselves become cooked.'

The requirement for *d-* with *du-* is also insensitive to lexically specified *d-*. The basis case in (179) shows that *d-* is required with $\sqrt[1]{}$*ge-μ-í* 'seine'.[14]

14. The *-μ* stem variation and *-í* suffix are lexically specified; cf. *geiwú* 'seine net'. The *s-* might be causative but there is no verb based on this root without *s-*. It is documented as both intransitive with expletive *a-* and transitive.

(179) a. Awtudzigeiwú. *first plural subject with lexical d-*
a- wu-tu- d- s- i- $^{1}\sqrt{}$ge -μH-í
XPL-PFV-1PL·S-LEX-CSV-STV-$^{1}\sqrt{}$seine-VAR-SFX
'We seined.'

b. *Awtusigeiwú. **first plural subject without lexical d-*
a- wu-tu- s- i- $^{1}\sqrt{}$ge -μH-í
XPL-PFV-1PL·S- CSV-STV-$^{1}\sqrt{}$seine-VAR-SFX
intended: 'We seined.'

The data in (180) shows that, just as with the reflexive earlier, the lexical *d-* is not doubled by the *d-* required by *du-* in (180b) and also that the lexical *d-* is not suppressed in (180c).

(180) a. Awtudzigeiwú. *fourth subject with lexical d-*
a- wu-tu- d- s- i- $^{1}\sqrt{}$ge -μH-í
XPL-PFV-1PL·S-LEX-CSV-STV-$^{1}\sqrt{}$seine-VAR-SFX
'We seined.'

b. *Awdutdzigeiwú. *fourth subject with d- and lexical d-*
a- wu-du- d- d- s- i- $^{1}\sqrt{}$ge -μH-í
XPL-PFV-1PL·S-VCE-LEX-CSV-STV-$^{1}\sqrt{}$seine-VAR-SFX
intended: 'We seined.'

c. *Awtusigeiwú. **fourth subject without d-*
a- wu-tu- s- i- $^{1}\sqrt{}$ge -μH-í
XPL-PFV-1PL·S- CSV-STV-$^{1}\sqrt{}$seine-VAR-SFX
intended: 'We seined.'

The preceding data featured *s-* in its causative function. But *du-* requires *d-* when *s-*, *l-*, or *sh-* is present regardless of its function. The data in (181)–(182) shows that *du-* requires *d-* with extensional *l-*, and the data in (183)–(184) shows the same with pejorative *sh-*.

(181) a. Yéil wutulitín. *first plural subject without d-*
yéil wu-tu- l- i- $^{2}\sqrt{}$tin-H
raven PFV-1PL·S- XTN-STV-$^{2}\sqrt{}$see -VAR
'We watched a raven.'

b. *Yéil wutudlitín. **first plural subject with d-*
yéil wu-tu- d- l- i- $^{2}\sqrt{}$tin-H
raven PFV-1PL·S-MID-XTN-STV-$^{2}\sqrt{}$see -VAR
'We watched a raven.'

(182) a. *Xat wudulitín. **fourth subject without d-*
xat= wu-du- l- i- $^{2}\sqrt{}$tin-H
1SG·O=PFV-4H·S- XTN-STV-$^{2}\sqrt{}$see -VAR
intended: 'Someone watched me.'

b. Xat wududlitín. *fourth subject with d-*
xat= wu-du- d- l- i- $^{2}\sqrt{}$tin-H
1SG·O=PFV-4H·S-MID-XTN-STV-$^{2}\sqrt{}$see -VAR
'Someone watched me.'

(183) a. Dzéiwsh wutushikín. *first plural subject without d-*
Dzéiwsh wu-tu- sh-i- $^{2}\sqrt{}$kin -H
NAME PFV-1PL·S- PEJ-STV-$^{2}\sqrt{}$bother-VAR
'We bothered Dzéiwsh.'

b. *Dzéiwsh wutujikín. **first plural subject with d-*
Dzéiwsh wu-tu- d- sh-i- $^{2}\sqrt{}$tin -H
NAME PFV-1PL·S-MID-PEJ-STV-$^{2}\sqrt{}$bother-VAR
'We bothered Dzéiwsh.'

(184) a. *Xat wudushikín. **fourth subject without d-*
xat= wu-du- sh-i- $^{2}\sqrt{}$kin -H
1SG·O=PFV-4H·S- PEJ-STV-$^{2}\sqrt{}$bother-VAR
intended: 'Someone bothered me.'

b. Xat wudujikín. *fourth subject with d-*
xat= wu-du- d- sh-i- $^{2}\sqrt{}$kin -H
1SG·O=PFV-4H·S-MID-PEJ-STV-$^{2}\sqrt{}$bother-VAR
'Someone bothered me.'

6.2. Prohibition of *d-* with *du-*

When *du-* is the subject of a transitive structure that has covert *v* then the *d-* prefix must also appear in the structure. The surface patterns are sketched in (185).

(185) *du- prohibits d- without s-/l-/sh-*

	D_S	Voice	*v*	Ɛ		*orth.*	*IPA*
a.	*du-*		Ø		→	*du*	[tù]
b.	**du-*	*d-*	Ø		→	**duda*	*[tù.tà]
c.	*du-*		Ø	*i-*	→	*duwa*	[tù.wà]
d.	**du-*	*d-*	Ø	*i-*	→	**dudi*	*[tù.tì]

This prohibition of *du-* and *d-* is effectively the logical negation of the requirement of *du-* for *d-* discussed in section 6.1. The data in (186)–(187) show the effect. First in (186) is the basis case using the bivalent root $^{2}\sqrt{}$*hun* 'sell' to form a transitive with the first person plural subject *tu-* 'we'.

(186) a. Kóox wutuwahoon. *first plural subject without d-*
kóox wu-tu- i- $^{2}\sqrt{}$hun-μ
rice PFV-1PL·S- STV-$^{2}\sqrt{}$sell -VAR
'We sold rice.'

b. *Kóox wutudihoon. **first plural subject with d-*
kóox wu-tu- d- i- $^{2}\sqrt{}$hun-μ
rice PFV-1PL·S-MID-STV-$^{2}\sqrt{}$sell -VAR
intended: 'We sold rice.'

The forms in (187) show that, like *tu-* in (186), *du-* does occur with *d-*. In this context with covert *v* the *du-* appears to act like other subject D pronouns, contrasting against its behaviour with overt *v* described in section 6.1.

(187) a. Kóox wuduwahoon. *fourth subject without d-*
kóox wu-du- i- $^{2}\sqrt{}$hun-μH
rice PFV-4H·S- STV-$^{2}\sqrt{}$sell -VAR
'Someone sold rice.', 'People sold rice.'

b. * Kóox wududihoon. **fourth subject with d-*
kóox wu-du- d- i- $^{2}\sqrt{}$hun-μH
rice PFV-4H·S-MID-STV-$^{2}\sqrt{}$hun -VAR
intended: 'Someone sold rice.', 'People sold rice.'

But *du-* does not simply occur without *d-* in contexts where *d-* would not normally occur when *v* is covert. Instead, *du-* actively prohibits *d-* when *v* is covert even when all other subject D pronouns would show overt *d-*. Compare the basis case in (188) where the reflexive *sh=* requires *d-* with the case in (189) where the *du-* blocks *d-* though it would otherwise be present.

(188) a. * Sh wutuwahoon. **first plural subject + reflexive without d-*
sh= wu-tu- i- $^{2}\sqrt{}$hun-μ
RFLX·O=PFV-1PL·S- STV-$^{2}\sqrt{}$sell -VAR
intended: 'We sold ourselves.'

b. Sh wutudihoon. *first plural subject + reflexive with d-*
sh= wu-tu- d- i- $^{2}\sqrt{}$hun-μ
RFLX·O=PFV-1PL·S-MID-STV-$^{2}\sqrt{}$sell -VAR
'We sold ourselves.'

(189) a. Sh wuduwahoon. *fourth subject + reflexive without d-*
sh= wu-du- i- $^{2}\sqrt{}$hun-μH
RFLX·O=PFV-4H·S- STV-$^{2}\sqrt{}$sell -VAR
'Someone sold themself.', 'People sold themselves.'

b. * Sh wududihoon. **fourth subject + reflexive with d-*
sh= wu-du- d- i- $^{2}\sqrt{}$hun-μH
RFLX·O=PFV-4H·S-MID-STV-$^{2}\sqrt{}$hun -VAR
intended: 'Someone sold themself.', 'People sold themselves.'

The presence of *du-* with covert *v* also blocks *d-* when it is lexically specified. The basis case in (190) shows the lexically specified *d-* of 'drink' (see sec. 7.1) appearing with the first person plural subject *tu-* 'we'.

(190) a. * Cháayu wutuwanáa. **first plural subject without lexical d-*
cháayu wu-tu- i- $^{2}\sqrt{}$na -μH
tea PFV-1PL·S- STV-$^{2}\sqrt{}$drink-VAR
intended: 'We drank tea.'

b. Cháayu wutudináa. *first plural subject with lexical d-*
cháayu wu-tu- d- i- $^{2}\sqrt{}$na -μH
tea PFV-1PL·S-MID-STV-$^{2}\sqrt{}$drink-VAR
'We drank tea.'

In (191) the *du-* prohibits the apperance of the lexically specified *d-*, just like it prohibits the regular *d-* of the reflexive in (189).

(191) a. Cháayu wuduwanáa. *fourth subject without lexical d-*
cháayu wu-u- i- $^{2}\sqrt{}$na -μH
tea PFV-4H·S- STV-$^{2}\sqrt{}$drink-VAR
'Someone drank tea.', 'People drank tea.'

b. *Cháayu wududináa. **fourth subject with lexical d-*
cháayu wu-du- d- i- $^{2}\sqrt{}$na -μH
tea PFV-4H·S-MID-STV-$^{2}\sqrt{}$drink-VAR
intended: 'Someone drank tea.', 'People drank tea.'

6.3. What about intransitives?

The extant documentation and description of Tlingit addresses fourth person human subject *du-* and its requirement for or prohibition against *d-* depending on whether there is a classifier *s-*, *l-*, or *sh-* prefix. These documented contexts are always transitive structures where the subject *du-* occurs together with an object. It should be possible however for *du-* to appear in intransitive structures where there is no object, and we expect in these cases that the requirement for or prohibition against *d-* with *du-* should be the same as for transitives, but this has never been tested. Lacking data, I propose some tests here for future research.

There are at least six possible cases shown in (192) for overt *v* and in (193) for covert *v*.[15] The possibilities in (192) are an unergative with overt *v*, an unergative with a lexicalized *d-* and overt *v*, and an antipassive with overt *v*. In all three cases we expect that the addition of *du-* will force the *d-* to appear, i.e. "*(*d-*)". There is a hidden variable in all three possibilities in (192): the overt *v* may or may not add a core argument, hence the symbol $^{0\sim1}\sqrt{}\alpha$ for a nullivalent or monovalent root and the symbol $^{1\sim2}\sqrt{}\alpha$ for a monovalent or bivalent root. For completeness both root valencies should be tested.

(192) requirement of *d-* with *du-* and overt *v*: predict presence of *d-*

a.	*du-*	*(*d-*)	*s-*	$^{0\sim1}\sqrt{}\alpha$	*unergative with overt v*
b.	*du-*	*(*d-*)	*s-*	$^{0\sim1}\sqrt{}\alpha$	*unergative lexicalized d- with overt v*
c.	*du-*	*(*d-*)	*s-*	$^{1\sim2}\sqrt{}\alpha$	*antipassive d- with overt v*

The possibilities in (193) are an unergative with covert *v*, an unergative with a lexicalized *d-* and covert *v*, and an antipassive with covert *v*. In all three cases we expect the addition of *du-* will force the *d-* to disappear, i.e. "(**d-*)". Here since the *v* is covert it will not affect argument structure and hence there should be only one possibility for root valency in each case.

(193) prohibition of *d-* with *du-* and covert *v*: predict absence of *d-*

a.	*du-*	(**d-*)	∅	$^{1}\sqrt{}\alpha$	*unergative with covert v*
b.	*du-*	(**d-*)	∅	$^{1}\sqrt{}\alpha$	*unergative lexicalized d- with covert v*
c.	*du-*	(**d-*)	∅	$^{2}\sqrt{}\alpha$	*antipassive d- with covert v*

15. The *v* head must exist even when it is covert because subjects are first merged in *v*, so it is shown by *∅* in (193). Verbs without *v* entirely would be unaccusative, lacking a subject position for *du-* and hence irrelevant for this issue.

To test the possibilities in (192) and (193) we need unergatives with and without overt *v* as well as transitives with and without overt *v*. The latter are readily available, but unergatives are much less common. The largest category of unergatives in Tlingit are the intransitive motion verbs, so naively we might try testing them. But unergative motion verbs prohibit *du-*, instead occurring with *a-* in the object position to code for a fourth person human subject (see ch. 7 sec. 1.2.2.2). As such, they are unsuitable for exploring the behaviour of *du-* in intransitives.

There are only a very few other unergatives in Tlingit; the only three that come immediately to mind are the activities *x̱atá* (*n*-conj.) 'I sleep, am sleeping', *toox̱éx'w* (*n*-conj.) 'we sleep, are sleeping' and *x̱ag̱áax̱* (*g*-conj.) 'I cry, am crying'. All three of these have covert *v* and no lexicalized *d-*, so they can only be used to test the possibility in (193a). Eggleston (2017) has *ag̱áax̱* 'someone is crying' indicating that it takes *a-* for the fourth person subject like a motion verb; the other two are not documented by her or anyone else with fourth person subjects.

As for unergatives with lexicalized *d-*, there is at least one with covert *v* that can be used to test the possibility in (193b). The verb for 'quarrel' is based on the root $\sqrt[1]{}$*k̲an* 'quarrel' and is attested with an overt subject (hence definitely unergative) in the sentence *i een kuk̲adak̲áan* 'I am going to quarrel with you' (Story & Naish 1973: 164). It should logically be possible to use fourth person human *du-* as the subject; the form predictably lacking *d-* would be like ※*i een gax̱duk̲áan* 'someone is going to quarrel with you', and the form with *d-* that we expect to be ungrammatical would be ※**i een gax̱dudak̲áan*.

I am unaware of any documented unergatives with overt *v*, with or without lexicalized *d-*, that are not motion verbs and so could be used to test the possibilities in (192a) and (192b). The only potential candidates I know of are *k̲uwdzitáakw* (*g*-conj., *-μH* activity) 's/he spent the winter' (Leer 1973a: 06/92, 1976a: 375) that contains *d-s-* and *has wujix'út'* (*∅*-conj., *-t* rep.) 'they link middle fingers and pull (test of strength)' (Leer 1973a: f04/66, 1976a: 756) that contains *d-sh-*. Both of these are only documented with covert third person arguments so it is unclear if they are unergative or unaccusative.

6.4. Less common *du-* functions

The *du-* prefix has a few less common behaviours besides its usual use to express an indefinite or nonspecific human subject. One context is a more or less lexicalized alternation between *du-* in some forms of a verb and *d-* in others (sec. 6.4.1). The selection of *du-* is associated with a plural argument, where *d-* occurs with a singular, but it is unclear why plurality and *du-* should be correlated. Another context is the appearance of *du-* as an unpredictably lexicalized element in certain verbs (sec. 6.4.2). Most such verbs refer to environmental phenomena, where *du-* might be viewed as an indefinite experiencer subject.

The *du-* sometimes acts somewhat like a passivizer in verbs that cannot be passivized by *d-*, such as antipassives that already contain *d-*. The data in (194) show that a transitive normally antipassivized by *d-* cannot have *d-* used to form a passive. Instead the 'pseudopassive' structure in (194d) has *du-* for the subject, expressing the closest Tlingit approximation to the English passive of this verb.

(194) a. X'úx' kawtushixít. *transitive without d-*
x'úx' k- wu-tu- sh-i- $\sqrt[2]{}$xit -H
book HSFC-PFV-1PL·S- PEJ-STV-$\sqrt[2]{}$scratch-VAR
'We wrote a book.'

b. Kawtujixít. *antipassive with d-*
k- wu-tu- d- sh-i- $\sqrt[2]{}$xit -H
HSFC-PFV-1PL·S-APSV-PEJ-STV-$\sqrt[2]{}$scratch-VAR
'We wrote.'

c. *X'úx' kawjixít. **passive with d-*
x'úx' k- wu- d- sh-i- $\sqrt[2]{}$xit -H
book HSFC-PFV- APSV-PEJ-STV-$\sqrt[2]{}$scratch-VAR
Intended: 'A book was written.'

d. X'úx' kawdujixít. *pseudopassive with du-*
x'úx' k- wu-du- d- sh-i- $\sqrt[2]{}$xit -H
book HSFC-PFV-4H·S-APSV-PEJ-STV-$\sqrt[2]{}$scratch-VAR
'Someone wrote a book.' (≈ 'A book was written.')

This function of *du-* falls out regularly from its fourth person subject function. The inverse pattern of a 'pseudoantipassive' can be constructed with the fourth person human object *k̲u-* ~ *k̲aa=* 'someone; people' or nonhuman *at=* 'something; stuff' for verbs that passivize with *d-*, but this is not considered to be a special operation apart from the normal use of object D pronouns. Hence I do not consider the 'pseudopassive' *du-* to be distinct from other regular instances of a fourth person subject, nor do I see 'pseudoantipassive' *k̲u-* ~ *k̲aa=* or *at=* to be distinct from regular fourth person objects.

6.4.1. The *d-*/*du-* alternation

There are a small number of verbs that show an unpredicted alternation between the fourth person human subject D pronoun *du-* 'somebody, people' in some forms and *d-* in others. Table 5.6 lists five verb pairs which might be an exhaustive inventory but further lexicographic review is necessary. All such verbs are intransitive motion verbs where *d-* occurs together with a singular argument and *du-* occurs with a plural argument. One verb is exceptional: *woox'aak* 'it swam (underwater)' lacks *d-* with a singular argument. For singular arguments the value of *v* is apparently irrelevant; although *s-* is unattested this is probably accidental. For plural arguments *v* is never overt, and consequently *d-* does not occur (sec. 6.2). Two of the verb pairs in table 5.6 are only documented with third person arguments so it is unclear whether the argument in the singular form is a subject (unergative) or an object (unaccusative), but in the plural form the object is predicted.

The best documented example of the *d-*/*du-* alternation is with the root $\sqrt[1]{}$*k'e'n* 'jump'. This forms a verb with an overt *d-* when it is used with singular argument, but then appears with *du-* when it is used with a plural argument. The data in (195) illustrates the singular form, showing that both *d-* and *sh-* are required.

	Singular		*Plural*				
v	*Perfective*	*Translation*	*Perfective*	*Translation*	*Root*	*Gloss*	*Eventuality*
	x̲wadit'aach	'I swam'	*haa kawduwat'aach*	'we swam'	$^{2}\sqrt{t'ach}$	'slap'	motion
Ø	*woox'aak*	'it swam'	*kawduwax'aak*	'they swam'	$^{1}\sqrt{x'ak}$	'swim'	motion
	kawdix̲áat'	'it bent'	*kawduwax̲áat'*	'they bent'	$^{?}\sqrt{x̲at'}$	'bend'	motion
l^s-	*wudlitsees*	'it floated'	*kawduwatsees*	'they floated'	$^{?}\sqrt{tsis}$	'float'	motion
	wulis'ées	'it was blown'	*kawduwas'ées*	'they were blown'	$^{1}\sqrt{s'i's}$	'blown'	motion
sh-	*x̲wajik̲aak̲*	'I squatted'	*haa kawduwak̲aak̲*	'we squatted'	$^{1}\sqrt{k̲ak̲}$	'squat'	motion
	x̲wajik'éin	'I jumped'	*haa kawduwak'éin*	'we jumped'	$^{1}\sqrt{k'e'n}$	'jump'	motion

Table 5.6: Some verbs that exhibit the *d-*/*du-* alternation

(195) a. X̲wajik'éin. *singular subject*
wu-x̲- d- sh- i- $^{1}\sqrt{}$k'e'n-μH
PFV-1SG·S-MID-PEJ-STV-$^{1}\sqrt{}$jump -VAR
'I jumped.'

b. *X̲washik'éin. **without d-*
wu-x̲- sh- i- $^{1}\sqrt{}$k'e'n -μH
PFV-1SG·S- PEJ-STV-$^{1}\sqrt{}$jump·SG-VAR
intended: 'I jumped.'

c. *X̲wadik'éin. **without sh-*
wu-x̲- d- i- $^{1}\sqrt{}$k'e'n -μH
PFV-1SG·S-MID-PEJ-STV-$^{1}\sqrt{}$jump·SG-VAR
intended: 'I jumped.'

d. *X̲waak'éin. **without d- or sh-*
wu-x̲- i- $^{1}\sqrt{}$k'e'n -μH
PFV-1SG·S- STV-$^{1}\sqrt{}$jump·SG-VAR
intended: 'I jumped.'

The plural differs from the singular in two significant ways: (i) absence of *d-* and *sh-*, and (ii) presence of a meaningless *du-* in the subject position and coding of the agent as an object. First we look at the absence of *d-* and *sh-*. The form in (196a) is the plural equivalent of (195a) above. The remaining forms in (196) are all the ungrammatical combinations with *d-* and *sh-*.

(196) a. Haa kawduwak'éin. *plural object*
haa= k- wu-du- i- $^{1}\sqrt{}$k'e'n-μH
1PL·O=QUAL-PFV-XPL- STV-$^{1}\sqrt{}$jump -VAR
'We jumped.'

b. *Haa kawdudik'éin. **with d-*
haa= k- wu-du- d- i- $^{1}\sqrt{}$k'e'n-μH
1PL·O=QUAL-PFV-XPL-MID- STV-$^{1}\sqrt{}$jump -VAR
intended: 'We jumped.'

c. *Haa kawdushik'éin. *with sh-
haa= k- wu-du- sh- i- $^{1}\sqrt{}$k'e'n-μH
1PL·O=QUAL-PFV-XPL- PEJ-STV-$^{1}\sqrt{}$jump -VAR
intended: 'We jumped.'

d. *Haa kawdujik'éin. *with d- and sh-
haa= k- wu-du- d- sh- i- $^{1}\sqrt{}$k'e'n-μH
1PL·O=QUAL-PFV-XPL-MID-PEJ-STV-$^{1}\sqrt{}$jump -VAR
intended: 'We jumped.'

The forms in (196b) and (196c) are ungrammatical because of constraints on the combination of *du-* with *d-*. The presence of *du-* with covert *v* requires that *d-* be absent, and the presence of *du-* with overt *v* requires that *d-* be present. These leave (196d) as the only unpredictably bad form corresponding with (195a).

I turn now to the presence of expletive *du-* and the agent as object. The grammatical form in (197a) is repeated from (196a) for reference. The ungrammatical form in (197b) omits the expletive *du-*, showing that this is mandatory. The forms in (197c)–(197f) show that the various combinations of first person plural *tu-* with or without *d-* or *sh-* are all ungrammatical.

(197) a. Haa kawduwak'éin. *plural object* (= 196a)
haa= k- wu-du- i- $^{1}\sqrt{}$k'e'n-μH
1PL·O=QUAL-PFV-XPL-STV-$^{1}\sqrt{}$jump -VAR
'We jumped.'

b. *Haa kaawak'éin. *without du-
haa= k- wu- i- $^{1}\sqrt{}$k'e'n-μH
1PL·O=QUAL-PFV- STV-$^{1}\sqrt{}$jump -VAR
intended: 'We jumped.'

c. *Kawtuwak'éin. *with tu-
k- wu-tu- i- $^{1}\sqrt{}$k'e'n-μH
QUAL-PFV-1PL·S- STV-$^{1}\sqrt{}$jump -VAR
intended: 'We jumped.'

d. *Kawtushik'éin. *with tu- and sh-
k- wu-tu- sh- i- $^{1}\sqrt{}$k'e'n-μH
QUAL-PFV-1PL·S- PEJ-STV-$^{1}\sqrt{}$jump -VAR
intended: 'We jumped.'

e. *Kawtudik'éin. *with tu- and d-
k- wu-tu- d- i- $^{1}\sqrt{}$k'e'n-μH
QUAL-PFV-1PL·S-MID- STV-$^{1}\sqrt{}$jump -VAR
intended: 'We jumped.'

f. *Kawtujik'éin. *with tu- and d- and sh-
k- wu-tu- d- sh- i- $^{1}\sqrt{}$k'e'n-μH
QUAL-PFV-1PL·S-MID-PEJ-STV-$^{1}\sqrt{}$jump -VAR
intended: 'We jumped.'

(Im)perfective	Translation	Root	Gloss	Eventuality	Conj.
kadutl'óok̲	'it is slowly dripping'	$\overset{1}{\sqrt{}}$*tl'uk̲*	'drip'	activity (-μH)	*∅*
kadulóox̲	'it is steadily dripping'	$\overset{1}{\sqrt{}}$*lux̲*	'drip'	activity (-μH)	*n*
wuduwanúk	'it (wind) blew'	$\overset{2}{\sqrt{}}$*nuk*	'feel'	achievement	*∅*
NP-g̲áa wuduwanook	'it is suitable for NP'	$\overset{2}{\sqrt{}}$*nuk*	'feel'	achievement	*n*
wuduwagáa	'it (tide) became slack'	$\overset{1}{\sqrt{}}$*ga*	'still'	achievement	*∅*
wuduwakúk̲	'it bubbled (large)'	$\overset{1}{\sqrt{}}$*kuk̲*	'roil'	achievement	*∅*
wuduwasún	'it bubbled (small)'	$\overset{1}{\sqrt{}}$*su'n*	'bubble'	achievement	*∅*
wuduwax'úk	'it steamed'	$\overset{1}{\sqrt{}}$*x'uk*	'steam'	achievement	*∅*
kawduwak̲wátl'	'it (metal) melted'	$\overset{1}{\sqrt{}}$*k̲watl'*	'metal melt'	achievement	*∅*
kawduwasáy	's/he got hot/sweaty'	$\overset{1}{\sqrt{}}$*sa'ÿ*	'heat'	achievement	*∅/n*
kawduwax'áas	'it cascaded'	$\overset{1}{\sqrt{}}$*x'a's*	'cascade'	achievement	*n*
k̲ukawduwag̲ít	'weather squalled'	$\overset{?}{\sqrt{}}$*g̲it*	'dark'	achievement	*∅*
k̲ukawduwayél'	'weather became calm'	$\overset{1}{\sqrt{}}$*yel'*	'calm'	achievement	*∅*

Table 5.7: Lexicalized *du-* in unaccusative verbs

I have no coherent explanation for the patterns in (195)–(197). The alternation between a singular and a plural agent does not normally involve *d-*, nor does it normally involve changes to argument structure or *v*. At best we might expect suppletion of the root ch. 2 sec. 1.2.1), but that does not happen here. We are forced to conclude that the verb for jumping based on $\overset{1}{\sqrt{}}$*k'e'n* 'jump' is lexically irregular. This irregularity is difficult to reconcile with the derivational logic for the morphosyntax of Tlingit verbs, and so it is a puzzle for any model of the system.

What about *du-* in (197a)? I have described it as an expletive because it does not appear to code for any arguments. Contrasting singular versus plural jumping, we do not expect any additional indefinite human agent to be involved in the jumping of plural entities. Conceivably the *du-* could be a kind of impersonal experiencer (see sec. 6.4.2 below), but then it is unclear why this is necessary only for plural entities and not singular entities. This expletive *du-* seems to be arbitrary with no explanation for its occurrence. But we have seen that there is a complex relationship between *du-* and *d-* in Tlingit, suggesting that the alternation between *d-* and *du-* in these verbs might not be arbitrary.

6.4.2. Expletive or experiencer *du-*

The *du-* subject D pronoun appears as an obligatory, lexically specified element in a handful of verbs listed in table 5.7. All of these verbs are unaccusatives with a covert *v*. Two are activities but the rest are achievements, and although most are lexically specified members of the *∅*-conjugation class there are three of the *n*-conjugation class and one attested with both classes. Most occur with *k-* but six do not. Most of the roots appear to be monovalent, but $\overset{2}{\sqrt{}}$*nikw* ~ $\overset{2}{\sqrt{}}$*nuk* 'feel' is otherwise documented as bivalent. If however all of the roots are actually bivalent then the *du-* could be analyzed as a kind of expletive subject.

The data in (198) illustrates the root $\overset{2}{\sqrt{}}$*nuk* 'feel' in two unexceptional transitive structures. The

form in (198a) demonstrates an overt subject D pronoun and the form in (198b) an overt object DP.[16]

(198) a. Jée xwdinúk.
jín -μ wu-x- d- i- ²√nuk-H
RFLX·PSS hand-LOC PFV-1SG·S-MID-STV-²√feel -VAR
'I felt it with/in/by my hands.' (Eggleston 2017)

b. Du x'ul'daa anúks'.
du x'óol'- daa a- ²√nuk-H -s'
3H·PSS abdomen-around ARG-²√feel -VAR-REP
'S/he is feeling the outside of his/her abdomen.' (Leer 1976a: 295)

The same root appears in the forms in (199) with an expletive *du-*. Both (199a) and (199b) have overt DP objects, and (199b) has an additional PP headed by the adessive *-gáa* 'for, obtaining; near, adjacent; just after' that is probably an adjunct. The *du-* in both apparently contributes nothing to the semantics, so it may serve an expletive function where it fills the syntactic position without any meaning.

(199) a. Xóon wuduwanúk.
xóon wu-du- i- ²√nuk-H
n·wind PFV-XPL-STV-²√feel -VAR
'The north wind is blowing.' (Story & Naish 1973: 32.253)

b. Du shaxáashi du eegáa duwanook.
du shá- xáash-í du ee -gáa du- i- ²√nuk-μ
3H·PSS head-cut -VAR 3H BASE-ADES XPL-STV-²√feel -VAR
'His haircut is suitable for him.' (Story & Naish 1973: 217)

The form in (199a) is always translated into English as 'blow' even though it appears to mean 'one feels'. I have offered a paraphrase 'the north wind can be felt' to a few of my consultants; most reject it but a few have accepted it which suggests that at least for some people the *du-* could be interpretable.

A notable property of the verbs in table 5.7 is that most describe environmental phenomena: things that occur in surrounding space with no agency. If *du-* has a semantic contribution then it might represent an impersonal experiencer for such environmental phenomena. But this is problematic for forms like those in (200) where the root seems to be monovalent and hence no subject should be syntactically required.

(200) a. Xat kawduwasáy aatlein.
xat= k- wu-du- i- ¹√sa'ÿ-H aatlein
1SG·O=QUAL-PFV-XPL-STV-¹√heat-VAR much
'I'm really hot.' (Story & Naish 1973: 112.1461)

b. Yá neilyee akawlisáy.
yá neil- ÿee a- k- wu-l- i- ¹√sa'ÿ-H
PROX home-beneath ARG-QUAL-PFV-CSV-STV-¹√heat-VAR
'It (stove) has heated up the room.' (Story & Naish 1973: 112.1463)

16. Despite its usual English translation, *daa* 'around, surrounding, outside' is a noun and not a postposition. Thus *du x'ul'daa* 'the outside of his/her abdomen' is a DP – the object in (198b) – and not a PP.

I leave the issue of expletive or indefinite experiencer *du-* unresolved for now. The verbs in table 5.7 need more thorough exploration of their derivational possibilities to conclusively determine their valencies and their semantic ranges. Other 'environmental' verbs should also be explored to see whether they might have *du-* added to them, and if so whether any difference in meaning arises.

7. Exceptional cases of *d-*

This section addresses a variety of exceptional cases of *d-* that seem to be unpredictably specified by lexical entries. Further analysis will probably reduce many of these exceptions to either underdocumented cases of (anti)passivization, or to underdocumented cases of middle voice. But for now the phenomena presented in this section are treated as irregularities.

7.1. Self-affecting predicates

Self-affecting predicates are a class of transitive predicates that occur with a lexically specified *d-*. The *d-* may be analyzed as indicating that the subject is the recipient of the event even though the subject is not the patient (i.e. not reflexive or reciprocal). The canonical example of a self-affecting predicate is based on the root $\sqrt[2]{na^h}$ 'drink'. The data in (201) and (202) show that *d-* is obligatory even though the object and subject exist and both are disjoint. The form in (201b) has an object D pronoun whereas (202b) has a DP instead, showing unequivocally that this verb is transitive.

(201) a. *Ixwaanáa. **transitive without d-*
i- wu-x- i- $\sqrt[2]{\text{na}^{\text{h}}}$ -μH
2SG·O-PFV-1SG·S- STV-$\sqrt[2]{\text{drink}}$-VAR
intended: 'I drank you (sg.).'

b. Ixwdináa. *transitive with d-*
i- wu-x- d- i- $\sqrt[2]{\text{na}^{\text{h}}}$ -μH
2SG·O-PFV-1SG·S-MID-STV-$\sqrt[2]{\text{drink}}$-VAR
'I drank you (sg.).'

(202) a. *Héen wutuwanáa. **transitive without d-*
héen wu-tu- i- $\sqrt[2]{\text{na}^{\text{h}}}$ -μH
water PFV-1PL·S- STV-$\sqrt[2]{\text{drink}}$-VAR
intended: 'We drank water.'

b. Héen wutudináa. *transitive with d-*
héen wu-tu- d- i- $\sqrt[2]{\text{na}^{\text{h}}}$ -μH
water PFV-1PL·S-MID-STV-$\sqrt[2]{\text{drink}}$-VAR
'We drank water.'

Even though the *d-* in (201) and (202) has no obvious syntactic reason for its appearance, it is not present in every form based on this root. The same root $\sqrt[2]{na^h}$ 'drink' occurs in the applicative shown in (203a) and adding *d-* is ungrammatical in (203b).[17] This suggests that *d-* is not just included without reason in (201) and (202).

17. See section 2.1.4 for discussion of the epenthetic 'peg vowel' [ʔì] and phonological deletion of *d-* in the coda.

(203) a. Ash x̲'éi at laná. *applicative with l- and without d-*
ash x̲'é -μ at= l- $^{2}\sqrt{}$naʰ -H
3PRX·PSS mouth-LOC 4N·O=APPL-$^{2}\sqrt{}$damp-VAR
'S/he's having him/her drink something.' (Leer 1973a: 04/4)

b. *Ash x̲'éi at ilná. **applicative with l- and with d-*
ash x̲'é -μ at= d- l- $^{2}\sqrt{}$naʰ
3PRX·PSS mouth-LOC 4N·O=MID-APPL-$^{2}\sqrt{}$damp
intended: 'S/hee's having him/her drink something.'

Furthermore, the bivalent root $^{2}\sqrt{}$*naʰ* 'drink' is certainly related to the monovalent root $^{1}\sqrt{}$*naʰ* 'damp' that is illustrated by intransitive and transitive forms in (204). The form in (204a) is intransitive and the form in (204b) is causative, suggesting that the root is actually monovalent rather than bivalent. This implies that there are two distinct roots with shared origins.

(204) a. Kaawanáa. *regular unaccusative intransitive*
k- wu-i- $^{1}\sqrt{}$na -μH
HSFC-PFV-STV-$^{1}\sqrt{}$damp-VAR
'It (fish) has become damp.' (Story & Naish 1973: 63)

b. Naa.át awsináa. *regular causative*
naa.át a- wu-s- i- $^{1}\sqrt{}$naʰ -μH
clothing ARG-PFV-CSV-STV-$^{1}\sqrt{}$damp-VAR
'S/he made the clothes damp.' (Story & Naish 1973: 63)

I suggest that the *d-* with 'drink' as in (201) and (202) actually has a semantic function, indicating that the subject is affected by the event. Probably the original meaning of the root was 'wet', and the transitive 'drink' arose from something like 'S make self (*d-*) wet with O'. The relationship between *d-* and the subject is akin to the binding of subjects in reflexives, and presumably the underlying semantics is more or less identical.

If there were only one transitive verb with *d-* then this effort to explain it might seem strained. But the 'drink' verb is not the only example of lexical *d-* in a transitive structure in Tlingit (contra Leer 1991: 96 & Krauss 2015: 124). There are at least eleven such transitives shown in table 5.8 that occur with *d-* and that may have similar self-affecting semantics. The forms given in table 5.8 are all perfective aspect with third person subject and object; the perfective ensures the presence of *i-* and thus the visibility of *d-* (cf. sec. 2.1.4). Crucially the *a-* in these verbs is not expletive and so will disappear when the subject is first, second, or fourth person. This distinguishes the self-affecting verbs from other verbs withan expletive or lexicalized *a-* that is not transitive (see ch. 7 sec. 1.2.2).

The verb *awdix'óo* 's/he wore it (blanket)' is unique in forming an imperfective state rather than an imperfective activity, as illustrated by the data in (205). The root $^{2}\sqrt{}$*x'u* 'wear blanket' is etymologically connected to the noun *x'óow* 'blanket (for sleeping or wearing)' and the noun can be analyzed as based on this root.[18] The verb describes wearing a blanket around one's shoulders like a cape; although this is no longer common in everyday life it is still practiced in dancing, particularly with Chilkat blankets (*naaxein*), Raven's tail blankets (*Yéil koowú x'óow*), button blankets (*yuka.óot'*

18. The noun retains an allomorph of a now obscure stem variation suffix **-ÿ* < **-ŋ*, i.e. *√x'u-μH-w* < **√x'u-μ-ŋ*.

v	*Perfective*	*Translation*	*Root*	*Gloss*	*Eventuality*	*Conj.*
Ø	*awdináa*	's/he drank it'	$\sqrt[2]{na^h}$	'drink'	activity (-H)	Ø
	awdix'óo	's/he wore it (blanket)'	$\sqrt[2]{x'u}$	'blanket'	state (-μH)	Ø
	awdi.ín	's/he took it (food) home'	$\sqrt[2]{.in}$	'hdl. full cont.'	activity (-μ)	Ø
	awdi.éi	's/he said hey to him/her'	$\sqrt[2]{.e}$	'hey'	achievement	Ø
s-	*awdzinix'*	's/he smelled it'	$\sqrt[2]{nix'}$	'smell'	activity (-μH)	Ø
	awdzixéik'w	's/he slurped it'	$\sqrt[2]{xek'w}$	'slurp'	activity (-μH)	*n*
	awdzigáax̱	's/he asked for it'	$\sqrt[1]{gax̱}$	'cry'	activity (-μH)	*g̱*
	awdzi.éi	's/he wished for it'	$\sqrt[2]{.e^h}$	'wish for'	activity (-μH)	*g̱*
	awdzig̱eiwú	's/he seined for it'	$\sqrt[2]{g̱eiwú}$	'seine'	activity (-μ)	*n*
l^s*-*	*awdlidás'*	's/he snared it'	$\sqrt[2]{das'}$	'snare'	activity (-μH)	Ø
sh-	*awjiḵoox̱*	's/he contributed it (food)'	$\sqrt[2]{ḵux̱}$	'share food'	activity (-μH)	*n*

Table 5.8: Some transitive verbs with self-affecting *d-*

x'óow), and blankets given as gifts in potlatches (*l'ée*). The imperfective activity in (205b) is ungrammatical which confirms this root is stative, and the perfective in (205c) denotes the result state that holds after having put on a blanket.[19]

(205) a. S'ax̱x'óow x̱adix'óo. *imperfective state*
s'aax̱- x'óow x̱- d- i- $\sqrt[2]{x'u}$ -μH
marmot-blanket 1SG·S-MID-STV-$\sqrt[2]{}$blanket-VAR
'I am wearing a marmot blanket.'

b. *S'ax̱x'óow x̱adax'óo. **imperfective activity*
s'aax̱- x'óow x̱- d- $\sqrt[2]{x'u}$ -μH
marmot-blanket 1SG·S-MID- $\sqrt[2]{}$blanket-VAR
intended: 'I am wearing a marmot blanket.'

c. S'ax̱x'óow x̱wadix'óo. *perfective result state*
s'aax̱- x'óow wu-x̱- d- i- $\sqrt[2]{x'u}$
marmot-blanket PFV-1SG·S-MID-STV-$\sqrt[2]{}$blanket
'I have come to be wearing a marmot blanket.'

Unlike with the root $\sqrt{na^h}$ 'drink' above, there is no similar verb based on $\sqrt[2]{x'u}$ without *d-*.[20] This is shown by the ungrammatical forms without *d-* in (206) that contrast with the grammatical forms above in (205a) and (205c).

19. A marmot blanket is made from a quantity of marmot (*Marmota caligata* Eschscholtz 1829) skins sewn fur-outward onto a sheet of soft, finely tanned leather. They are traditional symbols of wealth throughout the Northwest Coast.
20. There is a bivalent root $\sqrt[2]{x'u}$ 'nail, peg' which supports verbs without *d-* but this is unrelated to $\sqrt[2]{x'u}$ 'blanket'.

(206) a. *S'axx'óow xayax'óo. *imperfective state without d-*
s'aax- x'óow x- i- $\sqrt[2]{}$x'u -μH
marmot-blanket 1SG·S-STV-$\sqrt[2]{}$blanket-VAR
intended: 'I am wearing a marmot blanket.'

b. *S'axx'óow xax'óo. *imperfective activity without d-*
s'aax- x'óow x- $\sqrt[2]{}$x'u -μH
marmot-blanket 1SG·S-$\sqrt[2]{}$blanket-VAR
intended: 'I am wearing a marmot blanket.'

c. *S'axx'óow xwaax'óo. *perfective result state without d-*
s'aax- x'óow wu-x- i- $\sqrt[2]{}$x'u
marmot-blanket PFV-1SG·S-STV-$\sqrt[2]{}$blanket
intended: 'I put on a marmot blanket.'

The root $\sqrt[2]{}$*.in* 'handle filled container' also forms verbs that do not contain *d-*, further reinforcing that the self-affecting *d-* is not 'just' a lexically specified element and so should contribute meaning. For example, the transitive in (207a) lacks *d-* and describes collection of things into a container, and the transitive in (207b) has *s-* and describes handling a container of some substance. The transitive in (207c) with *d-* specifically describes taking food home from an event (canonically a potlatch), where the subject is also benefactive.

(207) a. Aatlein kanat'á wutuwa.ín. *transitive without d-*
aatlein kanat'á wu-tu- i- $\sqrt[2]{}$.in -H
much blueberry PFV-1PL·S-STV-$\sqrt[2]{}$hdl·filled-VAR
'We picked lots of blueberries.' (Story & Naish 1973: 149.2013)

b. Gáal' yaa anas.ín. *transitive without d-*
gáal' ÿaa= a- n- s- $\sqrt[2]{}$.in -H
clam along=ARG-NCNJ-XTN-$\sqrt[2]{}$hdl·filled-VAR
'He's carrying clams (in a bucket).' (Story & Naish 1973: 42.431)

c. Yáat'aa kuḵada.éen. *transitive with d-*
yá-t'-aa w- g- ḡ- x- d- $\sqrt[2]{}$.in -μH
PROX-DEM-PART IRR-GCNJ-MOD-1SG·S-MID-$\sqrt[2]{}$hdl·filled-VAR
'I'm going to take this home.' (Story & Naish 1973: 222)

A couple of verbs are known with and without *d-*. Specifically, the verbs *awdzinix'* 's/he smelled it' and *awdzixéik'w* 's/he slurped it' are attested without *d-* (i.e. *awsinix'*, *awsixéik'w*) but with the same reported meaning. This variation seems to be dialectal or idiolectal, where individual speakers have each of these verbs either with or without *d-* but not both. Both verbs are activities and so will have imperfective forms that are ambiguous for *d-* as shown in (208); this ambiguity presumably led some speakers to assume that they lack *d-*. See section 2.1.4 for discussion of the phonological disappearance of [t] in this context.

(208) a. Xasnéex'. *activity imperfective with(out) d-*
x- (d-) s- $^{2}\sqrt{}$nix' -μH
1SG·S-(MID-)XTN-$^{2}\sqrt{}$smell-VAR
'I'm smelling it.'

b. Xasxéik'w *activity imperfective with(out) d-*
x- (d-) s- $^{2}\sqrt{}$xek'w-μH
1SG·S-(MID-)XTN-$^{2}\sqrt{}$slurp -VAR
'I'm slurping it.'

Self-affecting verbs should not be confused with verbs that have an expletive *a-* as well as *d-*. These verbs can be distinguished by the fact that the expletive *a-* is required in all forms regardless of the subject pronoun, whereas the self-affecting verbs have an *a-* only when the subject is third person (see ch. 7 sec. 1.2.2). The forms in (209) show that the *a-* in a verb like 'draw back' must be present with the first person subject *x-*. This contrasts with the self-affecting forms in (210) that show that the agreement *a-* together with *x-* is ungrammatical. The combination of *a-* and *d-* in structures like those in (209) may instead be a lexicalized reflex of revertive motion which was discussed earlier in section 1.3.

(209) a. Axwditl'ékw. *with expletive a-*
a- wu-x- d- i- $^{1}\sqrt{}$tl'ekw-H
XPL-PFV-1SG·S-MID-STV-$^{1}\sqrt{}$dodge -VAR
'I ducked, dodged, drew back.'

b. *Xwaditl'ékw. **without expletive a-*
wu-x- d- i- $^{1}\sqrt{}$tl'ekw-H
PFV-1SG·S-MID-STV-$^{1}\sqrt{}$dodge -VAR
intended: 'I ducked, dodged, drew back.'

(210) a. Ax éenwu xwadi.ín. *without expletive a-*
ax éenwu wu-x- d- i- $^{2}\sqrt{}$.in -H
1SG·PSS leftovers PFV-1SG·S-MID-STV-$^{2}\sqrt{}$hdl·filled-VAR
'I took my leftovers home.'

b. *Ax éenwu axwdi.ín. **with expletive a-*
ax éenwu a- wu-x- d- i- $^{2}\sqrt{}$.in
1SG·PSS leftovers XPL-PFV-1SG·S-MID-STV-$^{2}\sqrt{}$hdl·filled
intended: 'I took my leftovers home.'

I do not yet have a mechanism to fit self-affecting *d-* into the rest of the model of Voice in Tlingit. One potential avenue is to encode a [uMID] feature on the root akin to that of reflexive and reciprocal pronouns. But this would fail to account for roots that can occur both with and without *d-*. Another possibility is to introduce a covert argument that hosts the same feature. Ideally the presence of the covert argument would have other consequences besides the presence of *d-*, but I have not explored this line of reasoning.

7.2. The *d-*/*l-* alternation

The *d-*/*l-* alternation is a pattern where an unaccusative intransitive verb with *d-* has a counterpart transitive with *l-* (or *s-*, but *l-* is more common). This pattern is sketched in (211).

(211) a. Obj *d-* √root *unaccusative intransitive with d-*
b. Obj Subj *l-* √root *transitive with l-*

If this pattern was restricted to only one or two roots then I would analyze it as a lexicalization of *d-*. But it is surprisingly widespread in the lexical documentation despite never having been mentioned before in descriptions of Tlingit. Table 5.9 lists a sizeable number of verbs that exhibit the *d-*/*l-* alternation which I have collected from extant documentation; this list is by no means exhaustive. Most are achievements, but a few are activities and there is at least one state – e.g. *shaydihéin* 'they are many' – based on the root √*ha*^{h} 'many' and one motion based on √*g̲a'*t 'fall scattered; sprinkle'. Nearly all are members of the *∅*-conjugation, though a couple are *n-* or *g̲*-conjugation instead. Crucially all pairs are attested with the same conjugation class which suggests that conjugation class probably does not play a significant role in this alternation.

The *d-*/*l-* alternation is overwhelmingly associated with *l-*. Most instances of *l-* in table 5.9 can potentially be accounted for by the morphophonological *s-* → *l-* alternation triggered by the presence of coronal fricatives or affricates in the stem that is detailed in chapter 4 section 2.1.1. These cases are represented by the symbol *l*^{s}- in the *v* column. The residue are roughly evenly distributed between *s-* and *l-*, so the prevalence of *l-* may best be explained by phonology. There are no verbs with *sh-* that participate in the *d-*/*l-* (or rather *d-*/*sh-*) alternation, but this may not be particularly remarkable given that *sh-* is relatively rare in general.

The data in (212)–(215) illustrate the *d-*/*l-* alternation using the root √*xwetl* 'tired, exhausted'. First, the forms in (212) show that this root does not derive an unaccusative in (212a), nor an unergative in (212b), nor a basic transitive in (212c).

(212) a. *X̲at uwaxwétl. **unaccusative intransitive*
x̲at= u- i- √xwetl-H
1SG·O=ZPFV-STV-√tire -VAR
intended: 'I have gotten tired, exhausted.'

b. *X̲waaxwétl. **unergative intransitive*
u- x̲- i- √xwetl-H
ZPFV-1SG·S-STV-√tire -VAR
intended: 'I have gotten tired, exhausted.'

c. *X̲at yeeyxwétl. **transitive*
x̲at= wu-ÿi- i- √xwetl-H
1SG·O=PFV-1PL·S-STV-√tire -VAR
intended: 'You guys have tired, exhausted me.'

Normally the facts in (212) would imply that the root √*xwetl* 'tire, exhaust' is nullivalent. But the apparent nullivalency of this root is belied by its behaviour with overt *v* as shown in (213). We should expect *l-* to add a single argument to a nullivalent root and thus give rise to an intransitive structure. But the unaccusative in (213a) and the unergative in (213b) are both ungrammatical. Instead the addition of *l-* in (213c) results unexpectedly in a transitive.

	Unaccusative with d-		*Transitive with l-/s-*					
v	*Perfective*	*Translation*	*Perfective*	*Translation*	*Root*	*Gloss*	*Event.*	*Conj.*
	wudidát	it got bruised	*awsidát*	s/he bruised it	√*da't*	bruise	achiev.	*Ø*
	wudigáx'	s/he got tired of noise	*awsigáx'*	it (noise) tired him/her	√*gax'*	pray	achiev.	*Ø*
	wudik̲'ík'	s/he got crowded	*awsik̲'ik'*	s/he/it crowded him/her	√*k̲'ik'*	cram	achiev.	*Ø*
s-	*wudihaan*	s/he stood up	*awsihaan*	s/he stood him/her	√*han*	sg. stand	motion	*g*
	kawdinét	s/he has trembled	*akawsinét*	it made him/her tremble	√*ne't*	tremble	achiev.	*Ø*
	wudixét	s/he was winded	*awsixét*	s/he winded him/her	√*xe't*	winded	achiev.	*Ø*
	wudix̲ék̲	s/he lacks sleep	*awsix̲ék̲*	it woke him/her early	√*x̲ek̲*	wake e.	achiev.	*Ø*
	wudiyít	it got oily	*awsiyít*	s/he oiled it	√*ÿit*	oily	achiev.	*Ø*
	wudichún	s/he got wounded	*awlichún*	s/he wounded it	√*chu'n*	wound	achiev.	*Ø*
	kawdidál'	it got imprinted	*akawlidál'*	s/he imprinted it	√*dal'*	imprint	act. (-*μH*)	*Ø*
	kawdidútl	it got doubled up	*akawlidútl*	s/he doubled it up	√*dutl*	double up	act. (-*μ*)	*Ø*
	wudidús'	it got sooty	*awlidús'*	s/he sootied it	√*dus'*	soot	achiev.	*Ø*
	kawdihútl'	it got wrinkled	*akawlihútl'*	s/he wrinkled it	√*hutl'*	wrinkled	achiev.	*Ø*
	wudilá̲x̲	it (tree) died	*awlilá̲x̲*	s/he killed it (tree)	√*la̲x̲*	tree die	achiev.	*Ø*
	kawdigísh	it got soaked	*akawligísh*	s/he soaked it	√*gish*	soak	act. (-*μ*)	*Ø*
	wudigwál'	it got curled	*awligwál'*	s/he curled it	√*gwal'*	curl	achiev.	*Ø*
	kawdigwás'	it got fogged up	*akawligwás'*	s/he fogged it	√*gwas'*	fog	achiev.	*Ø*
	wudik̲ás'	it got split, cracked	*awlik̲ás'*	s/he split, cracked it	√*k̲as'*	split	achiev.	*Ø*
l^{s}-	*wudik̲ách*	it swelled up	*awlik̲ách*	s/he inflated it	√*k̲ach*	swell	achiev.	*Ø*
	wudix̲wál	it trembled	*awlix̲wál*	s/he shook it	√*x̲wal*	shake	achiev.	*Ø*
	wudisíts'	it got dripping wet	*awlisíts'*	s/he got it dripping wet	√*sits'*	v. wet	achiev.	*Ø*
	wudis'ík̲	it smoked	*awlis'ík̲*	s/he smoked it	√*s'ik̲*	smoke	act. (-*μ*)	*Ø*
	wudishán	s/he got old	*awlishán*	s/he aged him/her	√*shan*	old	achiev.	*Ø*
	wudit'óoch'	it got charred	*awlit'óoch'*	s/he charred it	√*t'uch'*	char	act. (-*μH*)	*n/g*
	kawditsú̲x̲'	they came unstrung	*akawlitsú̲x̲'*	s/he unstrung them	√*tsu̲x̲'*	unstring	act. (-*μH*)	*Ø*
	wudits'én	it stopped, quit	*awlits'én*	s/he stopped it, left it	√*ts'e'n*	stop	achiev.	*Ø*
	kawdiwús'	it got murky	*awliwús'*	s/he made it murky	√*wus'*	murky	act. (-*μH*)	*Ø*
	wudixóosh	it got singed	*awlixóosh*	s/he singed it	√*xu'sh*	singe	achiev.	*n/g*
	wudixwétl	s/he got tired	*awlixwétl*	s/he tired him/her	√*xwe'tl*	tire	achiev.	*Ø*
	wudi.ús	s/he pouted	*awli.ús*	s/he made him/her pout	√*.us*	pout	achiev.	*Ø*
	wudidák	it got steamed	*awlidák*	s/he steamed it	√*dak*	steam	act. (-*μH*)	*Ø*
	wudig̲áat	they fell	*akawlig̲áat*	s/he sprinkled them	√*g̲a't*	scatter	motion	–
l-	*shayawdihaa*	they became many	*ashayawlihaa*	s/he made them many	√*ha*^{h}	many	stv. (-*eHn*)	*n*
	wudi.ít'	it got soaked	*awli.ít'*	s/he soaked it	√*.it'*	soak	achiev.	*Ø*
	kawdit'ák	it got dented	*akawlit'ák*	s/he dented it	√*t'ak*	dent	achiev.	*Ø*
	wudix̲'íx̲'	it got scalded	*awlix̲'íx̲'*	s/he scalded it	√*x̲'ix̲'*	scald	achiev.	*Ø*

Table 5.9: Some verbs with unaccusative *d-* and transitive *l-/s-*

(213) a. *Xat wulixwétl. *unaccusative intransitive with l-*
xat= wu-l^{s}- i- √xwetl-H
1SG·O=PFV-ARG-STV-√tire -VAR
intended: 'I have gotten tired, exhausted.'

b. *Xwalixwétl. *unergative intransitive with l-*
wu-x- l^{s}- i- √xwetl-H
PFV-1SG·S-ARG-STV-√tire -VAR
intended: 'I have gotten tired, exhausted.'

c. Xat yeeylixwétl. *transitive with l-*
xat= wu-ÿi- l^{s}- i- √xwetl-H
1SG·O=PFV-2PL·S-TR-STV-√tire -VAR
'You guys have tired, exhausted me.'

The addition of *d-* to the transitive in (213c) should regularly result in either an antipassive or a passive depending on which of the two arguments is suppressed (secs. 1.1 and 1.2). But in fact both are ungrammatical as shown in (214).

(214) a. *Yeeydlixwétl. *antipassive with d-l-*
wu-ÿi- d- l^{s}- i- √xwetl
PFV-PASV-TR-STV-√tire-VAR
intended: 'You guys have exhausted.'

b. *Xat wudlixwétl. *passive with d-l-*
xat= wu-d- l^{s}- i- √xwetl-H
1SG·O=PFV-PASV-TR-STV-√tire -VAR
intended: 'I have been tired out, exhausted.'

Instead, the intransitive corresponding to the transitive of (213c) has only *d-* and lacks *l-* as shown in (215). Only the unaccusative in (215a) is acceptable; the unergative in (215b) and the transitive in (215c) are both ungrammatical.

(215) a. Xat wudixwétl. *unaccusative intransitive with d-*
xat= wu-d- i- √xwetl-H
1SG·O= PFV-MID?-STV-√tire -VAR
'I have gotten tired, exhausted.'

b. *Xwadixwétl. *unergative intransitive with d-*
wu-x- d- i- √xwetl-H
PFV-1SG·S-MID?-STV-√tire -VAR
intended: 'I have gotten tired, exhausted.'

c. *Xat yeeydixwétl. *transitive with d-*
xat= wu-ÿi- d- i- √xwetl-H
1SG·O=PFV-2PL·S-MID?-STV-√tire -VAR
intended: 'You guys have tired, exhausted me.'

There are a couple of different alternatives for modelling the *d-*/*l-* alternation. One is to posit two homophonous and more or less homosemous roots for each pair. The forms with *d-* would be a bivalent root and the forms with *l-*/*s-* a monovalent root. This is shown in (216) with the two roots $\sqrt[2]{sits'}$ and $\sqrt[1]{sits'}$ that mean 'soaking wet'.

(216) a. Du tsáax'i wudisíts'. *bivalent root with d-*
du tsáax'-í wu-d- i- $\sqrt[2]{}$sits'-H
3H·PSS mitten-PSS PFV-PASV-STV-$\sqrt[2]{}$soak-VAR
'Her mittens have gotten soaking wet.'

b. Sháanaa du tsáax'i awlisíts'. *monovalent root with l^s-*
Sháanaa du tsáax'-í a- wu-l^s- i- $\sqrt[1]{}$sits'-H
NAME 3H·PSS mitten-PSS ARG-PFV-CSV-STV-$\sqrt[1]{}$soak-VAR
'Shauna got her mittens soaking wet.'

The result of this two-root approach is that the bivalent roots always give rise to passives as in (216a) and the monovalent roots always give rise to causatives as in (216b). This fits neatly into the existing *v* and Voice syntax, but it results in massive proliferation of lexical entries: the 35 entries in table 5.9 require 70 distinct roots. It also fails to explain why these particular roots should have doublets and not any other roots in the language.

Another approach is to analyze one of the *l-*/*s-* prefixes as being covert in the forms with *d-*. This entails that all of the roots are monovalent and are causativized with *l-*/*s-*. The analysis in (217) shows how this works using the monovalent root $\sqrt[1]{sits'}$ 'soaking wet'. The intransitive in (217a) has passive *d-* along with a covert causative, and the transitive in (217b) has an overt l^s- causative.

(217) a. Du tsáax'i wudisíts'. *monovalent root with covert v*
du tsáax'-í wu-d- i- $\sqrt[1]{}$sits'-H
3H·PSS mitten-PSS PFV-PASV-CSV-STV-$\sqrt[1]{}$soak-VAR
'Her mittens have gotten soaking wet.'

b. Sháanaa du tsáax'i awlisíts'. *monovalent root with l^s-*
Sháanaa du tsáax'-í a- wu-l^s- i- $\sqrt[1]{}$sits'-H
NAME 3H·PSS mitten-PSS ARG-PFV-CSV-STV-$\sqrt[1]{}$soak-VAR
'Shauna got her mittens soaking wet.'

The primary drawback with this approach is that it posits a covert element purely to solve this valency problem. Since *d-* and *l-* are otherwise well attested in combination, there must be an ad hoc exception to the appearance of both specifically with these roots and not with any others. Phonology provides no justification for prohibiting *d-* and *l-* together here, and the syntax likewise offers no additional support for this approach. It is thus an "engineering solution" (Chomsky 2000: 93) that offers no insight into why the *d-*/*l-* alternation occurs. A second drawback with this approach is that it predicts the occurrence of unaccusative intransitives without *v*, but the absence of these is precisely what makes the *d-*/*l-* alternation puzzling in the first place.

A third approach is the logical reverse of the previous approach: rather than a monovalent root $\sqrt[1]{\alpha}$ with a covert causative there is a bivalent root $\sqrt[2]{\alpha}$ with a covert *d-*. This is illustrated by the analysis in (218), again using the same pair of sentences.

(218) a. Du tsáax'i wudisíts'. *bivalent root with passive d-*
du tsáax'-í wu-d- i- $\sqrt[2]{}$sits'-H
3H·PSS mitten-PSS PFV-PASV-STV-$\sqrt[2]{}$soak-VAR
'Her mittens have gotten soaking wet.'

b. Sháanaa du tsáax'i awlisíts'. *bivalent root with covert d-*
Sháanaa du tsáax'-í a- wu- l^s- i- $\sqrt[2]{}$sits'-H
NAME 3H·PSS mitten-PSS ARG-PFV-PASV?-CSV?-STV-$\sqrt[2]{}$soak-VAR
'Shauna got her mittens soaking wet.'

The transitive in (218b) is bizarre because it has suppressed one of the two arguments required by the bivalent root but then has another argument added by the l^s-. This l^s- is notably not an applicative which would otherwise be expected with a bivalent root. Instead the l^s- must add a core argument and the bivalent root somehow specifies a non-core argument that is suppressed by the covert *d-*. This phenomenon happens nowhere else in the language and predicts structures that do not occur so I reject it out of hand.

A fourth approach is to analyze the roots as being lexically unspecified for valency (symbolized $\sqrt[x]{\alpha}$ to distinguish them from an unknown $\sqrt[?]{\alpha}$ or an undescribed $\sqrt{\alpha}$). In this context the *d-* and the *l-*/*s-* prefixes take on new syntactic functions although their structures do not change. The *d-* with an unspecified valency root is no longer an argument suppressor, but instead an indicator of intransitivity. The *l-*/*s-* prefix likewise is no longer an argument adder, but instead an indicator of transitivity.

(219) a. Du tsáax'i wudisíts'. *monovalent root with covert v*
du tsáax'-í wu-d- i- $\sqrt[x]{}$sits'-H
3H·PSS mitten-PSS PFV-INTR-STV-$\sqrt[x]{}$soak-VAR
'Her mittens have gotten soaking wet.'

b. Sháanaa du tsáax'i awlisíts'. *monovalent root with l^s-*
Sháanaa du tsáax'-í a- wu-l^s- i- $\sqrt[x]{}$sits'-H
NAME 3H·PSS mitten-PSS ARG-PFV-TR-STV-$\sqrt[x]{}$soak-VAR
'Shauna got her mittens soaking wet.'

This approach introduces functions that sit completely outside the existing valency system in Tlingit, although similar mechanisms are reported for other languages (e.g. Déchaine 1999). Interestingly, in this system the *d-* and *l-*/*s-* prefixes fit the label 'transitivity indicator' proposed by Kibrik (1993, 1996) because they no longer operate by adding or suppressing arguments but instead indicate how many arguments should occur. It is unclear how to unify these with the rest of the argument structure system, so I leave the issue unresolved for now.

7.3. Other exceptional *d-*

The remainder of exceptional *d-* instances are detailed in this section. These are set apart from the previous two sections because these cases seem to me to lack any obvious avenue toward explanation of the presence of *d-*. Two such cases are relatively homogeneous, namely the requirement for *d-* in plural forms of verbs that denote dimensions (sec. 7.3.1) and the requirement for *d-* in a handful of more or less regular derivational processes (sec. 7.3.2). The last case is a heterogeneous collection of apparently lexicalized instances of *d-* where this prefix occurs in every verb form based on

a particular root (sec. 7.3.3). Many of these 'lexicalized' *d-* instances are potentially reducible to underdocumented paradigms including antipassives, passives, or middles, but none have yet received any principled investigation.

7.3.1. Required *d-* in plural dimension states

Dimensional state verbs are lexical states (featuring *i-* in the imperfective aspect, see ch. 3 sec. 3.1) that describe physical dimensions such as length and weight. Unlike all other states, dimensional states alternate between an unmarked singular form and a plural form that contains *d-* and the plural suffix *-x'* (Story 1966: 93; Leer 1991: 99). This pattern is shown schematically in (220).

(220)	a.	Obj		*i-*	√root			*singular without d-*
	b.	Obj	*d-*	*i-*	√root	*-x'*		*plural with d-*

Dimensional state verbs regularly form comparatives with the addition of comparative *k-* and irrealis *u-* (see ch. 6 sec. 4.3.1). When a dimensional state is comparative, the plural form continues to feature the *d-* but the *-x'* is absent. This comparative pattern is shown schematically in (221). Effectively *d-* becomes an indicator of plurality.

(221)	a.	Obj	*k-*	*u-*		*i-*	√root	*comparative singular without d-*
	b.	Obj	*k-*	*u-*	*d-*	*i-*	√root	*comparative plural with d-*

Table 5.10 lists most if not all of the dimensional state roots in pairs of singular and plural with the latter forms showing *d-*. Both basic forms and comparatives are given where attested; one root $\sqrt[1]{sa^h}$ 'narrow' is only documented as a comparative. The majority of dimensional state verbs do not have an overt *v* and probably lack *v* altogether since they are unaccusatives, but $\sqrt[1]{kak}$ 'thick' only occurs with *s-* in *v*. The root $\sqrt[1]{tla}$ 'stout' is unusual because the non-comparative forms have a rare *-e* stem; this can also be seen in the augmentative *tlein* 'very; much' that is etymologically from the same root.

The data in (222) and (223) illustrate the alternation between lack of *d-* with a singular argument and presence of *d-* with a plural argument using the root $\sqrt[1]{ge}$ 'big'. First in (222a) the form without *d-* and without *-x'* can only apply to a singular entity, and suffixation with *-x'* in (222b) is ungrammatical.

(222) a. Yagéi. *singular dimension state*
i- $\sqrt[1]{}$ge-μH
STV-$\sqrt[1]{}$big-VAR
i. 'It is big.'
ii. *'They are big.' (*Keixwnéi* Nora Dauenhauer)

b. *Yagéix'. **plural dimension state with -x'*
i- $\sqrt[1]{}$ge-μH-x'
STV-$\sqrt[1]{}$big-VAR-PL
intended: 'They are big.' (*Keixwnéi* Nora Dauenhauer)

In (223a) the addition of *d-* is ungrammatical. But when *d-* occurs together with *-x'* in (223b) the resulting structure is grammatical but can only apply to plural entities.

	Singular without d-		*Plural with d-*					
v	*Imperfective*	*Translation*	*Imperfective*	*Translation*	*Root*	*Gloss*	*Event.*	*Conj.*
	yadál	'it is heavy'	*didálx'*	'they are heavy'	$^{1}\sqrt{dal}$	'heavy'	state (*-H*)	*g*
	yéi koodáal	'it is so heavy'	*yéi kwdidáal*	'they are so heavy'	$^{1}\sqrt{dal}$	'heavy'	state (*-μH*)	*g*
	yagéi	'it is big'	*digéix'*	'they are big'	$^{1}\sqrt{ge}$	'big'	state (*-μH*)	*g*
	yéi koogéi	'it is so big'	*yéi kwdigéi*	'they are so big'	$^{1}\sqrt{ge}$	'big'	state (*-μH*)	*g*
	?yasáa	'it is narrow'	*?disáax'w*	'they are narrow'	$^{1}\sqrt{sa^{h}}$	'narrow'	?state (*-μH*)	*g?*
s-	*yéi koosáa*	'it is so narrow'	*yéi kwdisáa*	'they are so narrow'	$^{1}\sqrt{sa^{h}}$	'narrow'	state (*-μH*)	*g*
	yatlei	'it is stout'	*ditleix'w*	'they are stout'	$^{1}\sqrt{tla}$	'stout'	state (*-e*)	*g*
	yéi kootláa	'it is so stout'	*yéi kwditláa*	'they are so stout'	$^{1}\sqrt{tla}$	'stout'	state (*-μH*)	*g*
	yawúx̱'	'it is wide'	*diwúx̱x'*	'they are wide'	$^{1}\sqrt{wux̱'}$	'wide'	state (*-H*)	*g*
	yéi koowóox̱'	'it is so wide'	*yéi kwdiwóox̱'*	'they are so wide'	$^{1}\sqrt{wux̱'}$	'wide'	state (*-μH*)	*n*
	yayát'	'it is long'	*diyátx'*	'they are long'	$^{1}\sqrt{ÿat'}$	'long'	state (*-H*)	*g*
	yéi koowáat'	'it is so long'	*yéi kwdiyáat'*	'they are so long'	$^{1}\sqrt{ÿat'}$	'long'	state (*-μH*)	*g*
s-	*sikáak*	'it is thick'	*dzikáakx'*	'they are thick'	$^{1}\sqrt{kak}$	'thick'	state (*-μH*)	*g*
	yéi kwsikáak	'it is so thick'	*yéi kwdzikáak*	'they are so thick'	$^{1}\sqrt{kak}$	'thick'	state (*-μH*)	*g*

Table 5.10: Some dimension state verbs with *d-* for plurals

(223) a. *Digéi. **plural dimension state with d-*
d- i- $^{1}\sqrt{ge}$-μH
VCE-STV-$^{1}\sqrt{big}$-VAR
intended: 'They are big.' (*Keix̱wnéi* Nora Dauenhauer)

b. Digéix'. *plural dimension state with d- and -x'*
d- i- $^{1}\sqrt{ge}$-μH-x'
VCE-STV-$^{1}\sqrt{big}$-VAR-PL
i. 'They are big.'
ii. *'It is big.' (*Keix̱wnéi* Nora Dauenhauer)

Dimensional states uniquely support comparative morphology when they are used to compare the dimension of an entity with respect to some basis of comparison that is greater, lesser, or similar. For details on the comparative derivation see chapter 6 section 4.3.1. These comparative dimension states distinguish between singular and plural entities with *d-*, but unexpectedly the *-x'* suffix does not appear (Leer 1991: 99 fn. 17).

(224) a. Ax̱ yáanáx̱ koogéi. *singular comparative dimension state*
ax̱ yáanáx̱ k- u- i- $^{1}\sqrt{ge}$-μH
1SG more·than CMPV-IRR-STV-$^{1}\sqrt{big}$-VAR
i. 'It is bigger than me.'
ii. *'They are bigger than me.' (*Keix̱wnéi* Nora Dauenhauer)

b. *Ax̱ yáanáx̱ koogéix'. **plural comparative dimension state with -x'*
ax̱ yáanáx̱ k- u- i- $^{1}\sqrt{ge}$-μH-x'
1SG more·than CMPV-IRR-STV-$^{1}\sqrt{big}$-VAR-PL
intended: 'They are bigger than me.' (*Keix̱wnéi* Nora Dauenhauer)

(225) a. Ax̲ yáanáx̲ kudigéi. *plural comparative dimension state with d-*
ax̲ yáanáx̲ k- u- d- i- $^{1}\sqrt{}$ge-μH
1SG more·than CMPV-IRR-VCE-STV-$^{1}\sqrt{}$big-VAR
i. 'They are bigger than me.'
ii. *'It is bigger than me.' (*Keix̲wnéi* Nora Dauenhauer)

b. *Ax̲ yáanáx̲ kudigéix̲'. **plural comparative dimension state with d- and -x'*
ax̲ yáanáx̲ k- u- d- i- $^{1}\sqrt{}$ge-μH-x̲'
1SG more·than CMPV-IRR-VCE-STV-$^{1}\sqrt{}$big-VAR-PL
intended: 'They are bigger than me.' (*Keix̲wnéi* Nora Dauenhauer)

Other kinds of states do not distinguish plurals with either *d-* or *-x'*; they also do not take comparative morphology. It is unclear if there is a connection between the *d-* + *-x'* pluralization and comparative morphology, or if instead these are both independent phenomena specifically associated with dimension states. The *d-* is associated with plurality in one other context, specifically in the *d-*/*du-* alternation discussed earlier in section 6.4.1 where *d-* appears for the singular and *du-* for the plural. There could potentially be some kind of connection between these two cases of *d-* interacting with plurality, but I see no obvious avenues for unifying these two phenomena at present.

7.3.2. Required *d-* in derivations

There are at least four semi-productive derivations that feature *d-*, listed in (226) below. The first two derivations describe pretend activities that Leer (1991: 99) calls 'dissimulative'. Both of these have a *d-* that is explained by regular middle voice marking with reflexives: *sh=* is the regular reflexive object D pronoun and *ash=* is probably derived from the reflexive object. The other two derivations are more problematic; although *d-* is reported as part of these derivations it may actually be a detransitivizer that is accidentally present in the attested examples.

(226)	a.	*sh=*	*k̲'e-*		Subj	*d-*	*l-*	√root		*'pretending to do'*
	b.	*ash=*	*k-*	*u-*	Subj	*d-*	*l-*	√root	*-aa*	*'playing at doing'*
	c.		*k-*		Subj	*d-*	*s-*	√root		*'moving while doing'*
	d.	Obj			(Subj)	*d-*		√root	*-ák̲w*	*deprivative 'lacking'*

The first of the two 'pretending' derivations in (226a) is formed by the addition of *sh=k̲'e-d-l-* which is the reflexive object *sh=*, the lexicalized *k̲'e-* allomorph of *x̲'e-* 'mouth',[21] the *d-* prefix, and the *l-* prefix which is probably extensional (see ch. 4 sec. 4.2). This derivation applies only to activities and results in a structure that means 'pretend to engage in' the activity. Table 5.11 gives a list of attested instances of this derivation with a variety of roots. The minimal pair in (227) illustrates the application of this derivation to the verb based on $^{2}\sqrt{}$*x̲a* 'eat'; both forms are hortatives.

21. The *k̲'e-* allomorph of *x̲'e-* 'mouth' appears in a few nouns like *k̲'eikaxétl'k* 'bunchberry', *k̲'eikaxwéin* 'flower', *l yoo k̲'eishtángi* 'mute person', *k̲'eich'eedí* 'packrat', and in several verbs like *k̲'aliyéil* 's/he is a liar'. It is part of a larger historical alternation between /χ'/ and /q'/; see Leer 1990c.

v	*Perfective*	*Translation*	*Root*	*Gloss*	*Eventuality*	*Conj.*
l-	*sh k̲'awdli.ánk'w*	's/he acted like a brat'	$^{1}\sqrt{}$*.ank'w*	'brat'	state (*-H*)	*Ø?*
	sh k̲'akawdli.éikw	's/he whistled guiltlessly'	$^{1}\sqrt{}$*.e'kw*	'whistle'	achievement?	*n*
	sh k̲'awdlinéekw	's/he acted sick'	$^{1}\sqrt{}$*nikw*	'sick'	state (*-μH*)	*g*
	sh k̲'awdlitéew	's/he pretended to read'	$^{2}\sqrt{}$*ti'w*	'read'	achievement	*n*
	sh k̲'awdlixeex	's/he pretended to run'	$^{1}\sqrt{}$*xix*	'run'	achievement	*n*
	sh k̲'awdlix̲áa	's/he pretended to eat'	$^{2}\sqrt{}$*x̲a*	'eat'	achievement	*Ø*
l^{s}*-*	*sh k̲'awdli.eesháan*	's/he acted poor'	$^{0}\sqrt{}$*.eesháan*	'poor'	achievement	*g?*
	sh k̲'awdlits'ík	's/he acted whiny'	$^{1}\sqrt{}$*ts'ik*	'fuss'	achievement	*Ø*
	sh k̲'awdli.úsh	's/he pretended to pout'	$^{1}\sqrt{}$*.u*$^{(')}$*sh*	'pout'	achievement	*Ø*
	sh k̲'awdli.ús	's/he acted cranky'	$^{1}\sqrt{}$*.u's*	'pout'	achievement	*Ø*
	sh k̲'ajiwdli.ús'kw	's/he pretended to wash hands'	$^{2}\sqrt{}$*.us'*	'wash'	achievement	*Ø*
	sh k̲'awdliyél	's/he lied'	$^{1}\sqrt{}$*yel*	'lie'	achievement	*Ø*
sh-	*sh k̲'ayawjiyék*	's/he acted insane'	$^{1}\sqrt{}$*yek*	'animate'	achivement	*Ø*

Table 5.11: Pretending derivation verbs with *sh=k̲'e-d-l-*

(227) a. Dzísk'w g̲atoox̲aa. *basic hortative*
dzísk'w g̲- tu- $^{2}\sqrt{}$x̲a-μ
moose ZCNJ-MOD-1PL·S-$^{2}\sqrt{}$eat-VAR
'Let's eat moose.'

b. Sh k̲'ax̲tool x̲aa. *derived pretending hortative*
sh= k̲'e- g̲- tu- d- l- $^{2}\sqrt{}$x̲a-μ
RFLX·O=mouth-ZCNJ-MOD-1PL·S-MID-XTN-$^{2}\sqrt{}$eat-VAR
'Let's pretend to eat.' (Story & Naish 1973: 78.945)

The form in (227a) is transitive with the object DP *dzísk'w* 'moose'. The form in (227b) instead has the reflexive object D pronoun *sh=* 'self' along with the incorporated noun *k̲'e-* 'mouth'. The reflexive *sh=* is regularly a trigger for *d-* (sec. 1.3) so the presence of *d-* in this structure is syntactically predictable from middle voice phenomena.

The derived form above in (227b) lacks overt *d-* because of phonology (see sec. 2.1.4). The pair of verbs in (228) illustrate a perfective where the *d-* is overt in the surface form. This also shows a state verb first being converted to an activity and then further converted to a motion verb by the addition of the path PP *NP- t* (*n*-conj., no rep.) 'around NP' (ch. 6 sec. 3.3.3).

(228) a. Li.eesháan.
l^{s}- i- $^{0}\sqrt{}$.eesháan
INTR-STV-$^{0}\sqrt{}$poor
'S/he is poor.' (Leer 1976a: 137)

b. Át sh k̲'awdli.eesháan.
á -t sh= k̲'e- wu-d- l^{s}- l- i- $^{0}\sqrt{}$.eesháan
3N-PNCT RFLX·O=mouth-PFV-MID-CSV-INTR-STV-$^{0}\sqrt{}$poor
'S/he went around there acting poor.' (Leer 1976a: 137)

The form in (228b) can be compared to the French *on se fait pauvre* 'we make ourselves appear poor' which contains a reflexive object clitic *se*. Given that (228a) is intransitive and (228b) is causative, there is probably an additional *l-* which converts the intransitive to the causative (ch. 4 sec. 5). The reflexive is then the object of the causation, and the subject makes *l-* herself *sh=* appear *k̲'e-* poor *.eesháan*, with the *d-* predictable from the reflexive. The additional *át* 'around there' entails that the eventuality happens in a manner that circulates around some unspecified location.

The second 'pretend activity' derivation in (226b) is formed by the addition of *ash=k-u-d-s/l-...-a*. This consists of the third person proximate D pronoun *ash=* here probably functioning as a reflexive (ch. 7 sec. 1.2.1.6), the *k-* qualifier (ch. 7 sec. 1.3.4.1), the irrealis *u-* (ch. 6 sec. 4), the *d-* prefix, the *s-*/*l-* prefix probably denoting extension (ch. 4 sec. 4.2), and the suffix *-aa* with unidentified meaning. The data in (229) illustrates a pair of verbs based on the root $^{2}\sqrt{}$*t'ax'* 'snip, clip; flick'.

(229) a. Koot'áax'aa x̲waat'áx'. *basic perfective*
koot'áax'aa wu-x̲- i- $^{2}\sqrt{}$t'ax'-H
marble PFV-1SG·S-STV-$^{2}\sqrt{}$flick -VAR
'I flicked the marble.' (Story & Naish 1973: 93.1180)

b. Ash koolt'áax'aa. *derived pretend activity imperfective*
ash= k- u- d- l- $^{2}\sqrt{}$t'ax'-μH-aa
RFLX·O=QUAL-IRR-MID-XTN-$^{2}\sqrt{}$flick -VAR-SFX
'S/he is playing marbles.' (Leer 1976a: 427)

Although the object D pronoun *ash=* normally represents a proximate third person, in this context it is probably a frozen reflexive. As detailed in chapter 7 section 1.2.1.6, *ash=* is historically from the third person *á* and the reflexive *sh* meaning originally something like 'he himself; she herself'. When used as a proximate third person *ash=* does not trigger *d-*, but if in this derivation it still reflects its reflexive origin then the appearance of *d-* is accounted for by regular middle voice. If instead *ash=* is a kind of expletive then it may be that *d-* is antipassivizing instead. See chapter 6 section 4.3.3 for more discussion of this derivation in the context of irrealis marking.

Leer (1991: 101) says that the locomotive *k-d-s-* 'moving by/while doing' derivation of (226c) applies to activities and produces unergative motion verbs. Unfortunately Leer gives no examples of this derivation. I suspect that it is actually compositional, based on the *s-*/*l-* extensional (ch. 4 sec. 4.2) together with the antipassive *d-* (sec. 1.1). I have not been able to identify any unambiguous examples in the lexical documentation, particularly because the morphology overlaps extensively with many other patterns. But I do not doubt its existence and expect that further lexicographic and elicitation work will help clarify it.

The deprivative *d-...-ák̲w* in (226d) is formed by the addition of the *d-* prefix and the deprivative *-ák̲w* 'lacking' suffix to give rise to an unaccusative meaning roughly 'object lacks entity (or eventuality?) described by the root'. The deprivative *-ák̲w* suffix is has an allomorph *-k̲* in a few adverbs like *kaltéelk̲* 'shoeless' (with *téel* 'shoe') and is related to the *-k̲* of the prohibitive-optative (ch. 6 secs.

4.5.3 & 4.5.4) and more distantly to the Eyak negative *-ɢ* (Leer 2000: 110). There are only a few verbs documented with the deprivative *d-…-áx̱w*, but its semantics seem clear enough to potentially be productive and so it deserves elicitation. The forms in (230) gives all the sentences I have found that show *-áx̱w* with unambiguous *d-*, and the forms in (231) are those where *d-* does not surface.

(230) *deprivatives with overt d-*

a. Ax̱ jín kawdi.éiyáx̱w. *perfective deprivative*
ax̱ jín k- wu-d- i- $^{1}\sqrt{}$.a -eH-áx̱w
1SG·PSS hand QUAL-PFV-VCE-STV-$^{1}\sqrt{}$extend-VAR-DPRV
'My hand was injured.' (Story & Naish 1973: 114)

b. Du eex̱ wudligeiyáx̱w. *perfective deprivative*
du ee -x̱ wu-d- l- i- $^{1}\sqrt{}$geÿ-μ -áx̱w
3H BASE-PERT PFV-PASV-CSV-STV-$^{1}\sqrt{}$paid-VAR-DPRV
'It was claimed as just payment from him' (Leer 1976a: 655)

c. Kawdlix'wánjáx̱w. *perfective deprivative*
k- wu-d- l- i- $^{0}\sqrt{}$x'wan-H -ch -áx̱w
QUAL-PFV-VCE-INTR-STV-$^{0}\sqrt{}$boot -VAR-REP-DPRV
'S/he took his/her boots/shoes off.' (Leer 1976a: 760)

(231) *deprivatives with covert d-*

a. Yaa galx̱aayáx̱wch. *habitual deprivative*
ÿaa= g- d- l- $^{0}\sqrt{}$x̱aÿ-μ -áx̱w-ch
along=GCNJ-VCE-INTR-$^{0}\sqrt{}$fur -VAR-DPRV-REP
'It sheds its hair (habitually each spring).' (Story & Naish 1973: 188)

b. Wé x̱áat naltl'éiláx̱w! *imperative deprivative*
wé x̱áat n- d- l^{s}- $^{1}\sqrt{}$tl'el-μH-áx̱w
MDST salmon NCNJ-2SG·S-VCE-CSV-$^{1}\sqrt{}$guts -VAR-DPRV
'Remove the guts/milt from that salmon!' (Story & Naish 1973: 171)

c. Gáal' nalg̱eiyáx̱w! *imperative deprivative*
gáal' n- d- l- $^{1}\sqrt{}$g̱e -μ -áx̱w
clam NCNJ-2SG·S-VCE-CSV-$^{1}\sqrt{}$between-VAR-DPRV
'Scoop the meat out of the clam!' (Story & Naish 1973: 181)

d. Asnéex'áx̱w. *imperfective deprivative*
a- d- s- $^{2}\sqrt{}$nix' -μH-áx̱w
ARG-VCE-XTN-$^{2}\sqrt{}$smell-VAR-DPRV
'S/he is smelling it over, giving it a smell-over.'[22] (Leer 1976a: 305)

The forms in (231) are particularly questionable because all but (231a) seem plausibly transitive. If the *d-* prefix in the forms in (230) is actually detransitivizing rather than being a syntactically

22. The translation leads me to suspect that this could instead be *asnéex'ákw* with repetitive *-(á)kw* rather than deprivative *-áx̱w*. This verb also may already have a self-affecting *d-* (sec. 7.1) and thus be doubly irrelevant.

inactive element of the deprivative structure then it would not be underlyingly present in any of the (231) forms. This ambiguity arises because the [Vs] and [Vɬ] realizations of the Classifier domain accidentally overlap with the non-epenthesized Classifier domain after a conjugation prefix and no overt subject D pronoun (sec. 2.1.5). If the deprivative derivation does not actually contain *d-* then like the *d-* of the locomotive derivation discussed above it need not be explained in this context.

7.3.3. Lexicalized *d-* elsewhere

The *d-* prefix is found in a number of verbal structures where its function is unknown. No thorough study of the lexicon has been done for unusual instances of *d-*, so the data presented here reflect a first pass across the documentation. All of the verbs considered are documented as intransitives, though in some cases it is not clear if they are unergative or unaccusative. Transitives with *d-* are addressed separately in section 7.1 on self-affecting *d-*.

Nearly all of the roots detailed here are only minimally documented so that they may actually be part of a larger undocumented paradigm that could predict or explain *d-*. Since all are intransitive, it is plausible that many of them are underdocumented cases of antipassives or passives where transitive counterparts have not been recorded. For example, some instances of intransitives with *d-* and without overt *v* might actually be (anti)passivized from an undocumented bivalent root or could be part of an undocumented *d-*/*l-* alternation. Similarly, some instances of *d-* with an overt *v* might be (anti)passivized from a causative of a monovalent root with the plain causative form and the uncausativized intransitive undocumented. On the other hand, many also show signs of middle voice semantics and so could plausibly be analyzed as lexically encoded middle voice.

The following subsections review several different subclasses of roots that are documented as having *d-* in all their verb forms. I have divided them into subclasses according to syntactic properties and eventuality class, but I have not considered their meanings in any detail nor have I looked closely at their distribution of conjugation classes. This means that these subclasses could miss semantic generalizations that would further divide the subclasses or perhaps indicate orthogonal groupings across several of these subclasses.

7.3.3.1. Unergatives with *d-* and expletive *a-*

The unergatives with *d-* and expletive *a-* have, as this description implies, an unpredictable *d-* in Voice and an unpredictable expletive *a-* prefix in the object position (see ch. 7 sec. 1.2.2). This pattern is shown in (232).

(232) *a-* Subj *d-* √root *unergative with d- and expletive a-*

I have found 15 instances of roots that give rise to verbs with this pattern, listed in table 5.12. They cover the gamut of achievements, activities, motions, and states so there is no particular correlation with eventuality class. Additionally they cover all four conjugation classes so this feature is also unrelated. By definition an unergative must have *v* because the subject is realized in *v*P; both covert *v* and all three realizations of overt *v* are attested. The root valency in every case is questionable as detailed below.

A typical example of these *a-* + *d-* verbs is shown in (233) using the root $\overset{?}{\sqrt{}}$*ka* 'gamble'. The form in (233a) shows that this root can form an activity imperfective with covert aspect marking and no stative *i-*. The perfective in (233b) has the *i-* present which makes the *d-* overt. Both forms feature

v	*(Im)perfective*	*Translation*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	awdi.éet	'it changed proportion'	$\sqrt[?]{.it}$	'reshape'	achievement	*n*
	akwdakáa	's/he makes hand signs'	$\sqrt[?]{ka^h}$	'signal'	activity (*-μH*)	*Ø*
	ayakwdakáa	's/he makes faces'	$\sqrt[?]{ka^h}$	'signal'	activity (*-μH*)	*Ø*
Ø	*awdik'áak'w*	's/he prowled'	$\sqrt[?]{k'ak'w}$	'prowl'	motion	–
	awdil'óox̲'	'it spawned'	$\sqrt[?]{l'ux̲'}$	'spawn'	achievement	*n*
	át awdishée	's/he hoped for it'	$\sqrt[?]{shi^h}$	'hope'	achievement	*Ø*
	áx' akwdlix̲éetl'	's/he is afraid of it'	$\sqrt[?]{x̲itl'}$	'fear'	state (*-μH*)	*g*
s-	*oodzikáa*	's/he is lazy'	$\sqrt[?]{ka^h}$	'lazy'	state (*-μH*)	*g*
	awdzik̲úk̲	's/he coughed'	$\sqrt[?]{k̲uk̲}$	'cough'	achievement	*Ø*
l-	*awdlig̲een*	's/he looked'	$\sqrt[?]{g̲in}$	'look'	motion	–
	awdlik̲áa	's/he gambled'	$\sqrt[?]{k̲a}$	'gamble'	activity (*-μH*)	*n*
	awdlidées	'moon shone'	$\sqrt[?]{dis}$	'moon'	achievement	*g*
l^s-	*awdlits'íxwaa*	's/he sneezed'	$\sqrt[?]{ts'ix}$	'sneeze'	achievement	*n*
	áx' oolx̲éis'	's/he wishes for it'	$\sqrt[?]{x̲es'}$	'wish'	activity (*-μH*)	*n*
sh-	*át akawjikéik'w*	's/he blundered around'	$\sqrt[?]{kek'w}$	'blunder'	motion	–

Table 5.12: Some intransitive verbs with *d-* and expletive *a-*

the combination of *a-* and an overt subject D pronoun, confirming that the *a-* is expletive since it would otherwise only be allowed with a third person subject (DP or covert)

(233) a. Ax̲alk̲áa. *activity imperfective*
a- x̲- d- l- $\sqrt[?]{k̲a}$ -μH
XPL-1SG·S-LEX-LEX-$\sqrt[?]{}$gamble-VAR
'I am gambling.'

b. Ax̲wdlik̲aa. *perfective*
a- wu-x̲- d- l- i- $\sqrt[?]{k̲a}$ -μ
XPL-PFV-1SG·S-LEX-LEX-STV-$\sqrt[?]{}$gamble-VAR
'I gambled.'

Nearly all of the roots listed in table 5.12 are known only from a single verb paradigm. In such cases it is impossible to conclusively determine the root's valency, hence the $\sqrt[?]{}$ representation. We can hazard a guess that the forms with covert *v* are actually bivalent roots where the *a-* fills the object position as an expletive. We can similarly suppose that the roots that occur with overt *v* are monovalent, but in this case the overt *v* could have a function that does not add an overt argument (e.g. extensional). None of this can be confirmed without additional data.

There are two exceptions where the root is attested in a different form that lacks *a-*, namely the roots $\sqrt[?]{dis}$ 'moon' and $\sqrt[?]{x̲itl'}$ 'fear'. I look at $\sqrt[?]{dis}$ 'moon' first in (234)–(236). The data in (234) illustrate the noun *dís* 'moon, month', showing that the verbs are constructed from the same root with distinct stem variation and thus that the verbs are not denominal.

(234) a. Yú dís kayaaní yáx̲ kaháakwx̲ sitee. *noun 'moon'*
yú dís kayaaní yáx̲ kaháakw-x̲ s- i- $^{1}\sqrt{\text{ti}^{h}}$-μ
DIST moon leaf SIM cheese -PERT APPL-STV-$^{1}\sqrt{\text{be}}$ -VAR
'The moon is (made) of green cheese.'

b. K̲ach tléix' dís áwé. *noun 'month'*
k̲ach tléix' dís á -wé
actually one moon CPL-MDST
'Actually it's one month.' (Dauenhauer & Dauenhauer 1987: 222.106)

The data in (235) show that this verb prohibits an overt DP argument, at least when that argument is the noun *dís* 'moon'. This suggests that this verb – like the similar *awdigaan* 'the sun shone; it has become sunny' with $^{2}\sqrt{gan}$ 'burn', cf. *g̲agaan* 'sun' – is one of the few 'impersonal' verbs in Tlingit that occur without any arguments (see sec. 3.3.1).

(235) a. Awdlidées. *perfective*
a- wu-d- l^{s}- i- $^{?}\sqrt{\text{dis}}$ -μH
XPL-PFV-LEX-LEX-STV-$^{?}\sqrt{\text{moon}}$-VAR
'It mooned.' (i.e. 'The moon shone.')

b. *Dís awdlidées. **perfective with DP argument*
dís a- wu-d- l^{s}- i- $^{?}\sqrt{\text{dis}}$ -μH
moon XPL-PFV-LEX-LEX-STV-$^{?}\sqrt{\text{moon}}$-VAR
intended: 'The moon shone/mooned.'

Finally, the data in (236) illustrate a rare verb based on the same root $^{?}\sqrt{dis}$ 'moon' that seems to mean something like 'be X months'. It is only attested in Leer's notes as a state imperfective. There is still a *d-* present, but the expletive *a-* does not occur. If this verb is unaccusative then there is no *v*, or if it is unergative then *v* is covert.

(236) a. Nas'gadwooshú kdidís. *state imperfective*
nas'gadooshú k- d- i- $^{?}\sqrt{\text{dis}}$ -H
eight QUAL-LEX-STV-$^{?}\sqrt{\text{moon}}$-VAR
'It is the eighth month.' (Leer 1973a: 05/117)

b. X'oon sá kdidís? *state imperfective*
x'oon sá k- d- i- $^{?}\sqrt{\text{dis}}$ -H
how·many Q QUAL-LEX-STV-$^{?}\sqrt{\text{moon}}$-VAR
'How many months (pregnant) is she?' (Leer 1976a: 334)

The data in (236) might suggest that $^{?}\sqrt{dis}$ 'moon' is monovalent and that the forms with *l-* in (235) are causativized with the expletive *a-* filling the object position. But if the *d-* is considered as a passivizer then the root would be bivalent and the *l-* in (235) would 'retransitivize' the passive. None of this accounts for the lack of an overt DP argument in (235b), however. I leave this issue unresolved for now.

The other root $^{?}\sqrt{x̲itl'}$ 'fear' mentioned above is also attested in other verb forms besides that given in table 5.12. The forms in (237) illustrate the verb listed in table 5.12, showing that this root forms a state imperfective with expletive *a-*. The subject is the experiencer and the locative PP is the source of the fear.

(237) a. Ax̲ keidlíx' ágé akeedlix̲éetl'? *state imperfective*
ax̲ keitl-í -x' á -gí a- k- u- i- d- l^{s}- i- $\sqrt[?]{\text{x̲itl'}}$-μH
1SG·PSS dog -PSS-LOC FOC-YN XPL-QUAL-IRR-2SG·S-LEX-LEX-STV-$\sqrt[?]{\text{fear}}$ -VAR
'Is it my dog that you're afraid of?' (Story & Naish 1973: 18.39)

b. Du x̲'éi akoox̲dlix̲éetl'. *state imperfective*
du x̲'é -μ a- k- u- x̲- d- l^{s}- i- $\sqrt[?]{\text{x̲itl'}}$-μH
3H·PSS mouth-LOC XPL-QUAL-IRR-1SG·S-LEX-LEX-STV-$\sqrt[?]{\text{fear}}$ -VAR
'I'm afraid of his mouth.' (i.e. 'what he will say') (Story & Naish 1973: 18.40)

There is one other verb known to be built from the root $\sqrt[?]{\textit{x̲itl'}}$ 'fear' which is illustrated in (238). This verb is intransitive – probably unaccusative – and is another state imperfective. It lacks *d-* but retains *l-* and also has the intensifying suffix *-shán* (see ch. 6 sec. 4.3.4).

(238) a. Xóots kulix̲éetl'shán. *state imperfective*
xóots k- u- l^{s}- i- $\sqrt[?]{\text{x̲itl'}}$-μH-shán
br·bear QUAL-IRR-LEX-STV-$\sqrt[?]{\text{fear}}$ -VAR-INTNS
'Brown bears are frightening/dangerous.' (Story & Naish 1973: 63.732)

b. Yakulix̲éitl'shán. *state imperfective*
ÿ- k- u- l^{s}- i- $\sqrt[?]{\text{x̲etl'}}$-μH-shán
face-QUAL-IRR-LEX-STV-$\sqrt[?]{\text{fear}}$ -VAR-INTNS
'S/he is ugly, has a scary face.' (Leer 1973a: f02/53)

The forms without *d-* in (238) are intransitive suggesting that the root is either nullivalent or monovalent depending on whether *l-* adds an argument or not. The addition of *d-* in (237) might be expected to suppress an argument but then the appearance of expletive *a-* suggests that the forms in (237) actually have an additional argument beyond the verbs in (238). Thus it seems more likely that the *d-* in (237) reflects middle voice semantics. As with the rest of this section, I leave this issue unresolved for now.

7.3.3.2. Intransitive motion verbs with *d-*

There are a small number of motion verbs that have an unexplained *d-* in all forms. These are listed in table 5.13. Most are analyzed as monovalent roots because they do not occur in transitive structures, but this identification is tentative and needs further confirmation with elicited ungrammatical forms. All of the roots in table 5.13 always occur with *d-* in verbs. Although this *d-* could plausibly reflect argument suppression, I suspect it is more likely to reflect middle semantics, though the details are still unclear.

Although all of the motion verbs in table 5.13 are intransitive, the documentation is insufficient to say whether they are all unergatives or unaccusatives. Some are known to be unergative because they are attested with first or second person subjects like *át x̲wadigwáat'* 'I crawled around there' and *aadé yidik̲een* 'you (sg.) flew there', but others like *wujix̲een* 'it (wooden; empty container)' are only documented with third person arguments so it is unclear if they are unaccusative or unergative.

A couple of the roots in table 5.13 have corresponding nouns that at least shed some light on their meaning if not their other properties. The root $\sqrt[1]{\textit{tux}}$ 'bug hop' is related to the nouns *tóox* 'sand

v	*Perfective*	*Translation*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	wudigwáat'	's/he/it crawled'	$\sqrt[1]{gwat'}$	'crawl'	motion	–
	wudikeen	's/he/it flew'	$\sqrt[1]{kin}$	'sg. fly'	motion	–
Ø	*kawdikéik'w*	's/he strode'	$\sqrt[1]{kek'w}$	'stride'	motion	–
	wudikóosh	'they fell in a heap'	$\sqrt[1]{ku'sh}$	'heap fall'	motion	–
	wudix'óol'	'it (blob) fell'	$\sqrt[1]{x'ul'}$	'blob fall'	motion	–
l-	*wudlixaakw*	'it hung by claws'	$\sqrt[0]{xakw}$	'claw'	motion	–
l^{s}-	*kawdliyeech*	'they flew'	$\sqrt[1]{yich}$	'pl. fly'	motion	–
	wujikaak	'it perched, squatted'	$\sqrt[1]{kak}$	'squat'	motion	–
sh-	*wujitoox*	'it (insect) hopped'	$\sqrt[1]{tux}$	'bug hop'	motion	–
	wujixeen	'it (wood/empty) fell'	$\sqrt[1]{xin}$	'w/e fall'	motion	–

Table 5.13: Some intransitive motion verbs with *d-*

v	*Imperfective*	*Translation*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	(*du een*) *dakáan*	's/he quarrels (with him/her)'	$\sqrt[1]{ka'n}$	'quarrel'	activity (-μH)	*Ø*
Ø	*x'adas'ées'*	's/he/it squirts a stream'	$\sqrt[1]{s'is'}$	'squirt'	activity (-μH)	*Ø*
	x'adatóol	's/he murmurs'	$\sqrt[1]{tu'l}$	'murmur'	activity (-μH)	*n*

Table 5.14: Some unergative activity verbs with *d-*

flea;[23] bedbug' and *aandaatóox* 'ant'; there is a similar root $\sqrt[1]{tix}$ 'flea' in *wudzitíx* 's/he/it got fleas' and *wanatíx* 'ant'. The root $\sqrt[1]{x'ul'}$ 'fall in heap' has a related noun *x'óol'* 'abdomen, stomach', and the root $\sqrt[1]{ku'sh}$ is probably related to the rare noun *koosh* 'cascade' (Leer 1973a: f01/112). And finally the root $\sqrt[0]{xakw}$ 'claw' is transparently connected to the noun *xaakw* 'fingernail, claw'.

7.3.3.3. Unergative activities with *d-*

I have found three roots listed in table 5.14 that form unergative verbs with activity imperfectives and that contain an unexplained *d-*. All have a covert *v* and so could potentially be antipassives of bivalent roots, but their documented interpretations suggest monovalency and so I represent them as $\sqrt[1]{}$ in table 5.14. Note that, since these are all activity roots, the forms given in table 5.14 are imperfective aspect rather than the perfective aspect forms used elsewhere.

The activity based on the $\sqrt[1]{s'is'}$ 'squirt' root is stereotypically used to describe a clam as shown by the example sentence in (239a), but it is also used in an idiom *NP gúk yíkde x'adas'ées'* 's/he squirts into NP's ear' that describes the giving of private advice or instruction or of private commentary or interpretation as shown in (239b). Leer (1973a: 09/240) attests a transitive form with a reflexive object in the Tongass dialect that is exemplified in (239c), but it is unclear if this form can be used in any other dialect. If it is possible then the root might be bivalent and then we would want to know what a form without *d-* would mean.

23. Also known as a 'sandhopper', this refers to any species of *Talitridae* (Rafinesque 1815).

(239) a. Gáal' x̲'adas'ées'. *unergative activity imperfective*
gáal' x̲'e- d- $^{1}\sqrt{}$s'is' -μH
clam mouth-LEX-$^{1}\sqrt{}$squirt-VAR
'Clams are squirting.' (Story & Naish 1973: 208)

b. K̲aa tláa k̲aa gúk yíkde x̲'adas'ées'. *idiom 'squirt into ear'*
k̲aa tláa k̲aa gúk yík -dé x̲'e- d- $^{1}\sqrt{}$s'is' -μH
4H·PSS mother 4H·PSS ear within-ALL mouth-LEX-$^{1}\sqrt{}$squirt-VAR
'One's mother instructs one privately.' (Story & Naish 1973: 115.1504)

c. Sh x̲'adas'eés'. *Tongass dialect transitive*
sh= x̲'e- d- $^{1}\sqrt{}$s'is' -μ?
RFLX·O=mouth-MID-$^{1}\sqrt{}$squirt-VAR
'S/he is whistling under his/her breath.' (Leer 1973a: 09/240)

The root $^{1}\sqrt{}$*k̲a'n* 'quarrel' is attested with and without a PP, with and without a pluralizer, and with and without a reciprocal, but the bare form ?*dak̲áan* is unattested and may not be possible for semantic reasons (it may take two to quarrel). The form in (240a) is a typical example with a PP; it is unknown whether this PP is an adjunct or an oblique argument. The form in (240b) shows that the subject can be pluralized with *has*=. Finally the form (240c) shows the appearance with a reciprocal, known only from Tongass Tlingit.

(240) a. Du een wudik̲án. *unergative activity imperfective with PP*
du ee -n wu-d- i- $^{1}\sqrt{}$k̲an -H
3H BASE-INSTR PFV-LEX-STV-$^{1}\sqrt{}$quarrel-VAR
'S/he quarrelled with him/her.' (Story & Naish 1973: 164)

b. Has dak̲áan *pluralized unergative*
has=d- $^{1}\sqrt{}$k̲a'n -μH
PLH= LEX-$^{1}\sqrt{}$quarrel-VAR
'They are quarrelling.' (Leer 1973a: f01/35)

c. Tleil woòsh has kux̲dak̲aán. *Tongass dialect transitive?*
tleil woòsh=has=w- g- g̲- d- $^{1}\sqrt{}$k̲a'n -μ?
NEG RECIP= PLH= IRR-GCNJ-MOD-MID-$^{1}\sqrt{}$quarrel-VAR
'They won't quarrel with each other.' (Leer 1973a: f01/35)

The form in (240c) is remarkable and suggests that further investigation of this root is necessary. If the reciprocal can only function as an object then the root must be bivalent in (240c), but if the reciprocal is possible as either a subject or a restrictor of a subject – like the pluralizer *has*= – then the root may still be monovalent. Since the combination of $^{1}\sqrt{}$*k̲a'n* 'quarrel' with the reciprocal is only known from Tongass Tlingit, it may also be possible that this dialect has a bivalent root whether other dialects have a monovalent root.

7.3.3.4. Unaccusative states with *d-*

Table 5.15 lists the documented state verbs whose roots occur only in forms with *d-*. Two of these are inherently negative predicates, only occurring along with the negative particle and associated

v	*Imperfective*	*Translation*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	tl. udagaa	'it is unmoving'	$\sqrt[1]{ga}$	'mobile?'	neg. state (-μ)	*g*
	kadigétl	's/he is frail, vulnerable'	$\sqrt[1]{getl}$	'frail'	state (-*H*)	*g*
Ø	*jidik̲áanaatsk'*	's/he is rich'	$\sqrt[1]{k̲áanaatsk'}$	'rich?'	state	*g*
	tl. k̲oodak̲áat	'there isn't anybody'	$\sqrt[1]{k̲a}$	'man'	neg. state (-μ*H*)	?
	diyáshk̲	'they are scarce'	$\sqrt[1]{ÿash}$	'scarce?'	state (-*H*)	*g*
s-	*kadzitéix'*	'it is rocky'	$\sqrt[0]{te}$	'rock'	state (-μ*H*)	?
l-	*dliwóo*	's/he/it is pale, fair'	$\sqrt[?]{wu}$	'pale'	state (-μ*H*)	*g*
	kadlix̲'át'	'they are unripe'	$\sqrt[?]{x̲'at'}$	'unripe'	state (-*H*)	*g*
sh-	*kajikáx'x̲*	'it is spotted'	$\sqrt[?]{kax'}$	'spotted'	state (-*H*)	*g*

Table 5.15: Some unaccusative state verbs with *d-*

morphology. All are either lexically specified for *g*-conjugation or otherwise unidentified for conjugation class; the *g*-conjugation class is typical though not mandatory for states (ch. 6 sec. 3.4.1).

The verb *diyáshk̲* 'they are scarce' probably includes the deprivative suffix allomorph *-k̲* which is associated with *d-* as discussed earlier in section 7.3.2. But unlike most examples of deprivatives, the root $\sqrt[1]{ÿash}$ is not known in any other contexts so it is unclear what it should mean without the deprivative derivation. If *d-* is associated with the deprivative then it seems likely that the root is monovalent since the *d-* of the deprivative derivation does not affect valency.

The verb *kadzitéix'* 'it is rocky; there are lots of rocks' is based on the root $\sqrt[0]{te}$ otherwise known from the noun *té* 'rock, stone'. The *s-* presumably adds the lone argument, but it is unclear what is contributed by *d-*. The final *-x'* is the plural suffix, here potentially interpreted as either the pluralizer of an underlying noun (scoping over entities) or as a pluristative (scoping over eventualities). Similarly, the verb *kajikáx'x̲* 'it is spotted' is presumably related to the noun *káax'* 'grouse' (*Tetraoninae* Vigors 1825). The function of *sh-* is unknown, as is the function of *d-*. The *-x̲* suffix is one of the repetitive suffixes, here presumably forming a pluristative.

The verb *dliwóo* 's/he/it is pale, fair-skinned; (raven) is white' is also attested as *dliwú* with -*H* stem variation that is otherwise uncommon (unknown?) for state imperfectives. It is probably frozen in the obscure noun *shalwú* 'bald eagle' (cf. *ch'áak'* 'bald eagle') with incorporated *sha-* 'head' which presumably means 'white-headed'. The root $\sqrt[?]{wu}$ 'pale' also occurs in the noun *wéinaa* 'light powder, chalk' and its derivatives like *yawéinaa* 'face powder' and is found as a frozen element in some nouns like *jánwu* 'mountain goat', *ch'eetwú* 'murre', *ch'áatwu* 'epidermis'. The presence in *wéinaa* 'light powder, chalk' of ablaut stem variation *-eH* along with the *-n* and the instrument nominalizer *-aa* suffix imply that it is derived from an unattested verb like **yawóo* and not directly from the root. This noun is itself used as a verb stem in *yawd*(*l*)*iwéinaa* 's/he powdered own face' (Leer 1976a: 237). The Tlingit root $\sqrt[?]{wu}$ 'pale' is cognate with the Proto-Dene * $\sqrt{wa^{y}}$ 'grey, (off-)white' (Leer 1996a: wa/6, 2008: 29) as in Navajo *łibá* 'it is grey' (Young & Morgan 1987: 908; Young, Morgan, & Midgette 1992: 41) and Tłı̨chǫ *dehbaa* (Saxon & Siemens 1996: 15).

The verb *jidik̲áanaatsk'* 's/he is rich' is peculiar in featuring a disyallbic stem with a complex

coda. The underlying root is not known though Williams, Williams, & Leer (1978: 74) suggests a relationship with the $\overset{2}{\sqrt{}}$*ḵa* 'gamble' discussed in section 7.3.3.1. If this is indeed the underlying root then the *-naatsk'* remains obscure (there is no *√*nats*), although the final *-k'* looks like the diminutive suffix.

7.3.3.5. Unaccusative achievements with *d-*

There are a fairly sizable number of roots that are documented with unaccusative achievements that always have an unexplained *d-*. Table 5.16 presents a fairly extensive but possibly not exhaustive listing. Judging by meanings alone, many of these are likely to represent passive forms of incompletely collected paradigms, particularly those with an overt *v* which is probably causative. Some of the verbs without overt *v* are probably analyzable as lexicalized middle voice, but these possibilities are still unexplored.

A few of the roots in table 5.16 have corresponding nouns that could shed light on valency. The root √*x̲a't* 'fish' in *kawdzix̲át* 'it (fish) finned on water surface' is clearly connected to *x̲áat* 'fish, salmon', √*x̲ax̲'* 'dew' is transparently related to *x̲áax̲'* 'dew', √*ḵa* 'man' is obviously related to *ḵáa* 'man', √*gits* 'rash' is related to *geets* 'rash, hives', and √*naḵw* 'wood rot' is related to *naaḵw* 'rotten wood, punk'. Some roots are clearly etymologically related to nouns but show some phonological differences from them, such as √*wan* 'maggoty' and *woon* 'maggot' where the vowel inexplicably differs, or √*x̲ich* 'rash' and *x̲éesh* 'rash' where the coda consonant differs. The root √*ts'u'n* 'squint' has a phonological counterpart in $\overset{1}{\sqrt{}}$*tl'u'n* 'squint; mutter' and *tl'óon* 'big shot; self-aggrandizer', but it is unclear why they should differ in onset.

Several roots have related nouns that could be either based directly on the root or instead nominalized from a verb based on the root: √*x'ut'* 'pull fingers' has *xóot'aa* 'middle finger' with the instrument nominalizer *-aa*,[24] √*wu'tl* 'troubled, upset' has *adawóotl* 'trouble, conflict, war' with *a-* and *d-*, and √*xwan* 'frost' and √*g̲it* 'dark' have *kaxwaan* 'frost' and *kag̲ít* 'darkness' (also *kag̲eet* 'dark portal') which could contain the qualifier *k-* but this could instead be a noun compound with *ká* 'horizontal surface'. Leer (1978c: 75) connects √*ḵin* 'new moon' to the postposition *ḵín* 'lacking, short of, less than'.

Finally there are several roots in table 5.16 that might be related to other lexical items but their relationship is less clear: √*.a'k* 'stagger' is phonologically close to $\overset{2}{\sqrt{}}$*.ak* 'weave', √*tis* 'shuffle' is similar to $\overset{1}{\sqrt{}}$*tixw* 'stamp feet', √*x̲'as'* 'spread legs' is homophonous with *x̲'ás'* 'jaw', √*x̲itl* 'newborn' is homophonous with √*x̲itl* 'blessed, lucky', √*.an* 'bedridden' is homophonous with √*.an* 'rest, meditate' and √*.an* 'settle' (also *aan* 'town, land'), and √*g̲it* 'dark' can be plausibly connected to √*g̲it* 'storm'.

8. Voice in the Na-Dene family

The *d-* prefix is reconstructed in Proto-Na-Dene as **d-* because it has more or less the same exponence and function in every member of the family including the most conservative and the most innovative languages (Krauss 1969; Leer 2008). For example, the most conservative Dene languages in Alaska and on the Pacific Coast (Oregon, California) exhibit an overt *d-* prefix (see e.g. Dena'ina in Tenenbaum 1978: 121; Ahtna in Kari 1990: 130; Mattole in Li 1930b: 70; Hupa in Golla 1970: 74). The data in (241) illustrates the overt *d-* in Dena'ina with the iterative *nu=...d-* 'do again; go back'.

24. It is tempting to connect √*x'ut'* 'pull fingers' with $\overset{2}{\sqrt{}}$*x̲ut'* 'drag, pull'.

v	*Perfective*	*Translation*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	kawdich'ách'	'it got spotted'	√*ch'ach'*	'spots'	achievement	*Ø*
	wudi.ék	's/he became paralyzed'	√*.e'k*	'paralyze'	achievement	*Ø*
	wudinákw	'it (wood) got rotten, punky'	√*nakw*	'wood rot'	achievement	*Ø*
	wuditees	's/he shuffled (walk)'	√*tis*	'shuffle'	achievement	*n*
Ø	*kawdits'ún*	's/he squinted'	√*ts'u'n*	'squint'	achievement	*Ø*
	wudiwútl	's/he became troubled'	√*wutl*	'trouble'	achievement	*Ø*
	wudiwútl	'tide became small'	√*wux*	'neap'	achievement	*Ø*
	wudix'ís	's/he got a boil, swelling'	√*x'is*	'swelling'	achievement	*Ø*
	wudixáx'	'it got bedewed'	√*xax'*	'dew'	achievement	*Ø*
	wudixeetl	's/he/it became newly born'	√*xitl*	'newborn'	achievement	*n*
	wudzi.aan	's/he became bedridden'	√*.an*	'rest'	achievement	*n*
	wudzidát	'it shook like jelly'	√*dat*	'jiggle'	achievement	*Ø*
	x'ayawdzidáy	's/he cried out; scolded'	√*da'y*	'exclaim'	achievement	*Ø*
s-	*yawdzikeen*	'it (moon) has become new'	√*kin*	'new moon'	achievement	*g*
	kuwdzitáakw	's/he spent winter'	√*takw*	'winter'	achievement	*g*
	wudzitíx	's/he/it got fleas'	√*tix*	'fleas'	achievement	*Ø*
	kawdzixát	'it (fish) finned on surface'	√*xa't*	'fish'	achievement	*Ø*
	wudzix'éy	'it got sprained, stiff'	√*x'ey*	'sprain'	achievement	*Ø*
	wudligíts	's/he got a rash, hives'	√*gits*	'rash'	achievement	*Ø*
	wudligátl	'it (male) came into rut'	√*gatl*	'rut'	achievement	*Ø*
	wudligítl	'it (fem.) came into heat'	√*gitl*	'estrus'	achievement	*Ø*
l^{s}-	*wudligwátl'*	's/he got numb from cold'	√*gwatl'*	'cold numb'	achievement	*Ø*
	shawdlijúw	's/he got messy hair'	√*ju'w*	'muss'	achievement	*Ø*
	wudlixaash	'it (root) got juicy and ripe'	√*xash*	'root ripe'	achievement	*g*
	áa wdlixás'	's/he had legs spread'	√*xas'*	'leg spread'	achievement	*Ø*
	wudlixícht	's/he got a rash'	√*xich*	'rash'	achievement	*Ø*
	wudliwán	'it got maggoty'	√*wa'n*	'maggoty'	achievement	*Ø*
l-	*wudlikáa*	'he became full grown man'	√*ka*	'man'	achievement	*Ø*
	wudlinák	'it (body part) got numb'	√*nak*	'numb'	achievement	*Ø*
	kawdlixwán	'it got frosted'	√*xwan*	'frost'	achievement	*Ø*
	yawji.aak	's/he staggered'	√*.a'k*	'stagger'	achievement	*n*
sh-	*kawjigít*	'it got dark'	√*git*	'dark'	achievement	*Ø*
	has wujix'út't	'they pulled fingers'	√*x'ut'*	'pull finger'	achievement	*Ø*

Table 5.16: Some unaccusative achievement verbs with *d-*

(241) Dena'ina *d-* prefix

a. Tazyu. *without d-*
t- z- √yu
INCEP-SCNJ-√go·SG
'She left.' (Tenenbaum 1978: 124)

b. Nutazdyu. *iterative with d-*
nu= t- z- d- √yu
ITER=INCEP-SCNJ-MID-√go·SG
'She left again.' (Tenenbaum 1978: 124)

In the Dene languages when *d-* occurs together with *ɬ-* in *v* the result is voicing so that *d-ɬ-* → *l* [l]. This is shown below in (242) with data from Dena'ina, again using the iterative to introduce *d-*.

(242) Dena'ina *d-ɬ-* prefixes

a. Ełkun. *without d-*
ł- √kun
ARG-√rain
'It is raining.' (Tenenbaum 1978: 124)

b. Nu'ilkun. *iterative with d-*
nu= i- d- ł- √kun
ITER=PFV-MID-ARG-√rain
'It started to rain again.' (Tenenbaum 1978: 124)

All Dene languages also have a more or less opaque phonological phenomenon reflecting Proto-Dene **d-* that is conventionally known as the 'D-effect' (Howren 1971). This is a phenomenon where the onset consonant of the verb stem regularly alternates between two forms – e.g. /ʔ/ vs. /t'/ – depending on the absence or presence of **d-*. Howren (1971) provides a detailed summary of the D-effect in Tłı̨cho (Dogrib), Dene Sųłiné (Chipewyan), Tsuut'ina (Sarsi), Dakelh (Carrier), and Navajo. The Dena'ina data in (243) show the combination of *d-* with an onset glottal stop as the ejective stop [t'] with the introduction of *d-* for the reflexive object.

(243) Dena'ina *d-* prefix + glottal stop /ʔ/

a. Ghesh'an. *without d-*
gh- sh- √'an
ГCNJ-1SG·S-√see
'I saw him.' (Tenenbaum 1978: 68)

b. Hughesht'an. *reflexive with d-*
hu- gh- sh- d- √'an
RFLX·O-ГCNJ-1SG·S-MID-√see
'I saw myself.' (Tenenbaum 1978: 125)

Krauss (1969) describes a set of allomorphs of the Eyak classifier including a number that he argues are composed with an underlying *də-* (Krauss 1969: 58). His presentation is difficult to unpack,

exacerbated by his usual practice of not segmenting or glossing any of his examples. Tabular presentations of the Eyak classifier paradigms are given by Krauss (2015: 123) and Leer (2008: 22), the latter with explicit comparison to Tlingit, Proto-Dene, and other stages of reconstruction in the family, but segmentation of examples is once again left to the reader. I have attempted to segment a few Eyak forms here for illustration. When *də-* occurs alone it is generally just *də*, and when it occurs with *i-* STV (see ch. 3 sec. 7) the two together are realized as *di* as demonstrated by the reflexive and reciprocal in (244). The *də-* also combines with *ɬ-* to give *ɬə* and this with *i-* to give *ɬi* as shown in (245).

(244) Eyak *də-* prefix

a. shəsheʰɬi̧ʰ *transitive*
s- i- ²√she-ʰɬ =i̧ʰ
SCNJ-STV-²√kill -VAR=SGH
'S/he killed it.' (Krauss 2015: 125)

b. ʔədshdisheʰɬi̧ʰ *reflexive*
ʔəd- s- də- i- ²√she-ʰɬ =i̧ʰ
RFLX·O-SCNJ-MID-STV-²√kill -VAR=SGH
'S/he killed him/herself.' (Krauss 2015: 125)

c. ʔiɬuʔ shdisheʰɬinuː *reciprocal*
ʔiɬuʔ= s- də- i- ²√she-ʰɬ =inuː
RECIP·O=SCNJ-MID-STV-²√kill -VAR=PLH
'They killed each other.' (Krauss 2015: 125)

(245) Eyak *də-ɬ-* prefixes

a. səɬdətɬ'i̧ʰ *transitive*
s- ɬ- i- ¹√dətɬ' =i̧ʰ
SCNJ-CSV-STV-¹√hurt -VAR=SGH
'S/he made it become hurt.' (Krauss 2015: 125)

b. ʔədsɬidətɬ'i̧ʰ *reflexive*
ʔəd- s- də- ɬ- i- ¹√dətɬ' =i̧ʰ
RFLX·O-SCNJ-MID-CSV-STV-¹√hurt -VAR=SGH
'S/he hurt him/herself.' (Krauss 2015: 125)

c. ʔiɬuʔ sɬidətɬ'inuː *reciprocal*
ʔiɬuʔ= s- də- ɬ- i- ¹√dətɬ' =inuː
RECIP·O=SCNJ-MID-CSV-STV-¹√hurt -VAR=PLH
'They killed each other.' (Krauss 2015: 125)

The disappearance of *də-* in combination with *ɬ-* in Eyak is intriguingly similar to Tlingit's deletion of *d-* with fricative *s-*, *l-*, or *sh-* as detailed in section 2.1.4. In Tlingit the deletion of *d-* probably occurs because of a constraint on affricates in the coda, but in (245b) and (245c) the missing *d-* would be in a complex onset [sɬ]. Krauss follows the traditional Na-Dene approach of assuming that many

prefixes contain a lexically specified 'default' vowel – here *ə* – but it may be that the apperance of a vowel in *də-ɬ-* → *ɬə* could be explained by epenthesis.

The *də-* prefix in Eyak has largely the same function as in Tlingit (Krauss 1965a: 171, 1965b: 22): reflexive, reciprocal, oblique reflexive, oblique reciprocal, passive, detransitivization (antipassive?), and some motion derivations (Krauss 2015: 125–135, 143–144), as well as some intriguingly similar lexicalized appearances (Krauss 2015: 144–170). The syntactic details of these phenomena have yet to be worked out in Eyak, but the cognacy between Tlingit *d-* and Eyak *də-* is uncontroversial.

There are three major surveys of the functions of *d-* in the Dene languages: Thompson 1996, Kibrik 1996, and Rice 2000a. Thompson (1996) distinguishes between productive and non-productive functions of *d-*. Among the productive functions he lists functions involving an affected subject (e.g. reflexives), functions involving a suppressed agent or suppressed agentivity (e.g. passives), antipassives, and iteratives and 'antitelic' constructions. For the non-productive functions he gives examples of 'drink' (cf. self-affecting *d-* in section 7.1), alternations between singular and plural postural verbs ('sit', 'stand', etc.), and statistical correlations between intransitivity and lexical *d-*.

Kibrik (1996) surveys the *d-* prefix in Navajo and other Dene languages and proposes that it has a basic function of detransitivization. Kibrik invokes Hopper & Thompson's concept of 'semantic transitivity' (Hopper & Thompson 1980) which is similar to the concept of valency used here and is notably not a direct analysis of the surface argument structure. Kibrik identifies four areas where his detransitivization function arises with *d-*: passives and similar structures, semipassives, indefinite actors, and actor depersonalization. Notably Kibrik omits any discussion of middle voice phenomena, concentrating solely on the argument saturation of passives, antipassives, etc.

Rice (2000a: 142–158) identifies *d-* in the Dene languages as a marker of middle voice which includes a large variety of phenomena. Specifically she lists *d-* in reflexives and reciprocals, indirect reflexives and reciprocals, self-benefactives, incorporated body parts, mediopassives, spontaneous middles or 'anticausatives', true passives, first person plural subjects, iteratives, erratives, and perambulatives. She presents extensive data from many languages in the family, but generally does not provide ungrammatical examples. Rice analyzes *d-* as a subpart of the same V head where she places *ɬ-* and does not model how it operates on argument structure.

Although the terminology and surface morphology differ, Tlingit's revertive motion structures with *d-* (secs. 5.2.2 and 5.2.3) are semantically related to the 'iterative' motion with *d-* of Dene languages (Thompson 1996: 364; Rice 2000a: 152) as well as to the the 'antitelic' (Thompson 1996: 364) or 'perambulative' (Rice 2000a: 155). Krauss also reports 'iteratives' and 'perambulatives' in Eyak that feature *də-* (Krauss 2015: 106, 127–128) though the rest of the morphology differs from the Dene paradigms. Notably, the Dene-Eyak 'iterative' semantics differs from Tlingit in that it includes additional repetition semantics, hence the name. Rice (2000a) summarizes the Dene iterative:

> The iterative has the form *na* (or cognate) and has more than one reading: return to a previous state (often translated 'back') and repetition of an event (generally translated 'again' or 'another'). It may co-occur with a customary aspect stem in most languages. When combined with an intransitive verb, middle voice is found; it is unusual to find middle voice iteratives with transitive verbs. The iterative construction with intransitive verbs is the nonparticipant argument parallel to the reflexive and reciprocal in the participant argument system; it indicates that the endpoint is identical to the point of initiation. (Rice 2000a: 152)

The pair of sentences in (246) illustrate the appearance of *d-* for revertive motion in Dëne Sųłiné (Chipewyan). Likewise the pair in (247) illustrate revertive motion with *d-* in Eyak. Although Cook (2004) explicitly labels the phenomenon in Dëne Sųłiné as 'reversative' in line with my 'revertive', Krauss (2015) uses the term 'iterative'. The preverbs *ná-* (D.S.), *q'eʔ=* (Eyak), and *k̲ú x̲=* (Tlingit) are not directly cognate, but they share the same function and the same requirement for *d-*.

(246) a. Tı̨gha. *Dëne Sųłiné*
te- n- √gha
INCEP-2SG·S-√GO·SG
'You (sg.) start to go.'

b. Nı̨́da.
ná- n- d- √gha
REV-2SG·S-MID-√GO·SG
'You (sg.) start to go back.' (Cook 2004: 148)

(247) a. Siyahł. *Eyak*
s- i- i- √ał -h
SPFV-1SG·S-STV-√GO·SG-VAR
'I went.'

b. Q'eʔ xsdiyahł.
q'eʔ=x- s- d- i- √ał -h
REV= 1SG·S-SPFV-MID-STV-√GO·SG-VAR
'I went back.', 'I went again.', 'I went another distance' (Krauss 2015: 127)

I am unaware of any efforts to formalize the syntax or semantics of revertive motion in the Na-Dene family. The only explicit comparison of revertive motion that I have encountered is that of Rice (2000a: 152–153). The key difference I see between Tlingit revertive motion and Eyak and Dene 'iterative' motion is the idea of repetition. Krauss's translation of *q'eʔ xsdiyahł* in (247b) as 'I went another distance' implies a motion event following a path established by a previous motion and hence not conjoint with the previous motion's path. It would be interesting to see if this implication bears out in the iteratives of Dene languages, and then whether this is compatible with the equative $a_\ell = b_\ell$ property of middle voice as I have argued for Tlingit and as is implied by Rice's "the endpoint is identical to the point of initiation" (Rice 2000a: 152).

Most languages in the Na-Dene family have a verb for 'drink' that contains lexical *d-* just like in Tlingit, e.g. Eyak *ʔaṇsdilaʰɬ* 's/he drank it' (Krauss 2015: 124), Ahtna *ʔidnaːn* 's/he is drinking it' (Kari 1990: 290), Koyukon *k'ɔdənunʔ* 's/he drank something' (Jetté & Jones 2000: 492), Lower Tanana *ʔəsdənuṇ* 'I'm drinking it' (Leer 2008: 25), Dakelh *ʔəsdnai* 'id.' (Poser p.c. 2012), Witsuwiten *ʔəsdney* 'id.' (Hargus 2007), Hupa *taʍdinaːn* 'I'm drinking' (Golla 1996: 29). Some languages have reinterpreted it as the onset consonant of the stem, e.g. Kaska *ʔèsdàːn* 'I'm drinking it' with $\sqrt[2]{dan}$ and Slave *ʔèhdǫ̀* 'I'm drinking it' with $\sqrt[2]{dǫ}$ (both from P. Moore, p.c. 2017), presumably because the *d-* is unpredictable. Krauss (2015: 124) gives the reconstructed 'drink' lexical entry for Proto-Dene as **O-S-də-√na* 'S drink O'[25] which is nearly identical to Tlingit *O-S-d-∅-*$\sqrt[2]{na^h}$ (*∅*; *-H* activity) 'S drink O'. Krauss

25. Compare Leer's Proto-Dene reconstruction of **O-S-də-√naːŋ* 'S drink O' (Leer 1991: 96).

treats the *d-* in this verb as lexically specified and "perhaps unique for a transitive" (Krauss 2015: 124), suggesting that it is arbitrary with no meaning. But even though this *d-* is more or less lexically specified in Tlingit, it is not arbitrary because its semantics – the agent being affected by the event – can still be detected as I detailed in section 7.1.

Remarkably for a Dene language specialist, Thompson (1996) actually addresses Tlingit data in his survey. I comment on a few of his examples here, giving my reanalyses. First, Thompson's example of a 'self-benefactive' in (248) is not what I identify as the self-benefactive in Tlingit (sec. 1.3.2). Instead the form in (248b) features a PP containing a reflexive possessor (cf. sec. 5.1.2) and is not otherwise distinct from other argument PPs containing reflexives or reciprocals. The translation here (from Story & Naish 1973) is misleading and a more literal interpretation is 's/he is hard-spoken on him/herself' where the PP is not really benefactive (and the verb is a state imperfective).

(248) a. Ax̲ káx̲ x̲'ayat'éex'. *benefactive PP*
ax̲ ká -x̲ x̲'e- i- $^{1}\sqrt{}$t'ix'-μH
1SG·PSS HSFC-PNCT mouth-STV-$^{1}\sqrt{}$hard-VAR
'S/he disputed in my defence.' (Thompson 1996: 357)

b. Sh káx̲ x̲'adit'éex'. *reflexive benefactive PP*
sh ká -x̲ x̲'e- d- i- $^{1}\sqrt{}$t'ix'-μH
RFLX·PSS HSFC-PNCT mouth-MID-STV-$^{1}\sqrt{}$hard-VAR
'S/he disputed in his/her own defence.' (Thompson 1996: 357)

Thompson's example of an incorporated body part in (249) is more specifically an instance of a covert reflexive object with an incorporated noun (sec. 1.3.1). Incorporation in Tlingit does not necessitate middle voice because the subject need not be coreferential with the object qua incorporate possessor (ch. 7 sec. 1.3).

(249) a. At kawlisít. *causative*
at= k- wu-l^{s}- i- $^{1}\sqrt{}$sit -H
4N·O=QUAL-PFV-CSV-STV-$^{1}\sqrt{}$braid-VAR
'S/he braided something.' (Thompson 1996: 358)

b. Shakawdlisít. *causative with reflexive possessor*
Ø sha- k- wu-d- l^{s}- i- $^{1}\sqrt{}$sit-H
RFLX·O head-QUAL-PFV-CSV-STV-$^{1}\sqrt{}$braid-VAR
'S/he braided his/her own hair.' (Thompson 1996: 358)

The data in (250) identified by Thompson (1996) as an "anticausative" is a passive of a causative (sec. 1.2).[26] Crucially this is a more narrow distinction than just "verbs that have been derived from transitive ones by total suppression of the agent" because that description can apply to passives of ordinary transitives that would have covert *v* where this has overt causative *l-*. Thompson asserts that there is no implied agent, but this conclusion seems to be based on Story & Naish's misleading translation (cf. sec. 2.2.1).

26. Thompson here has typos "*.ák*" and "*.ák'*" for what should be *.úk*.

(250) a. Héen awli.úk. *causative*
héen a- wu-l- i- $^{1}\sqrt{}$.uk-H
water ARG-PFV-CSV-STV-$^{1}\sqrt{}$boil-VAR
'S/he boiled the water.' (Thompson 1996: 358)

b. Héen kawdli.úk. *passive of causative*
héen k- wu-d- l- i- $^{1}\sqrt{}$.uk
water SRO-PFV-PASV-CSV-STV-$^{1}\sqrt{}$boil
'The water (in a pot) was boiled.' (orig. 'The water boiled.') (Thompson 1996: 359)

Thompson identifies the form in (251a) as an "antitelic" but here the *d-* is actually an antipassive (cf. sec. 1.1). The root $^{2}\sqrt{}$*x̲ach* 'tow' is bivalent as shown by (251b). The *l-* in (251a) is the extensional (ch. 4 sec. 4.2) following Leer's example in (251c) and Story & Naish's description "tow, esp. large object" for (251d).[27] The addition of incorporated *shu-* 'end' (from *a shú* 'its end') in (251a) regularly gives 'troll (for fish)' by way of the literal meaning 'tow the end of it (a fishing line)'.

(251) a. Has shukalx̲aach.
has=shu-k- d- l^{s}- $^{2}\sqrt{}$x̲ach-μ
PL= end- QUAL-APSV-XTN-$^{2}\sqrt{}$tow -VAR
'They are trolling.' (Thompson 1996: 365)

b. Aas yaa anax̲ách.
aas ÿaa= a- n- $^{2}\sqrt{}$x̲ach-H
tree along=ARG-NCNJ-$^{2}\sqrt{}$tow -VAR
'S/he is towing a tree.' (Story & Naish 1973: 232)

c. Awlix̲aach.
a- wu-l^{s}- i- $^{2}\sqrt{}$x̲ach-μ
ARG-PFV-XTN-STV-$^{2}\sqrt{}$tow -VAR
'S/he towed it (line).' (Leer 1976a: 790)

d. Hít haat wutulix̲ách.
hít haa-t wu-tu- l^{s}- i- $^{2}\sqrt{}$x̲ach-H
house CIS -PNCT PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$tow -VAR
'We towed the house here.' (Story & Naish 1973: 232)

27. Story & Naish's example in (251d) is plausibly an applicative *l-* given the added location PP, or even both as *l-l-*. But it is more likely extensional *l-* since the conjugation class shifts from *n-* in (251b) and (251c) as identified by the *ÿaa=* preverb and *-μH* stem in the perfective to *∅* in (251d) as identified by the *-H* stem in the perfective. The conjugation class shift implies that a motion derivation is the source of the PP rather than applicativization.

6 *Asp⁰: Aspect and modality*

> The study of aspect has been likened to a dark and savage forest full of obstacles, pitfalls, and mazes which have trapped most of those who have ventured into this much explored but poorly mapped territory.
>
> Robert Binnick, *Time and the Verb* (1991, p. 135)

1 Modelling Asp⁰ as a subtree of morphemes . . . 488
- 1.1 Four morphemes: perfective, conjugation, irrealis, modality . . . 490
- 1.2 Alternatives to the subtree model . . . 504
- 1.3 Realizing conjugation class . . . 505

2 Perfective and imperfective aspects: Many morphologies . . . 511
- 2.1 Imperfective aspect . . . 514
- 2.2 Perfective aspect . . . 541
- 2.3 Relationship with Na-Dene . . . 576

3 Conjugation prefixes and classes: Time and space . . . 577
- 3.1 Conjugation prefixes versus conjugation classes . . . 580
- 3.2 Spatial properties of the prefixes and classes . . . 583
- 3.3 Motion derivations and conjugation class . . . 586
- 3.4 Lexically specified conjugation class . . . 612
- 3.5 Conjugation prefixes and grammatical aspect . . . 628

4 Irrealis *u-* . . . 633
- 4.1 Some irrealis morphophonology . . . 637
- 4.2 Lexically specified irrealis . . . 641
- 4.3 Derivationally specified irrealis . . . 650
- 4.4 Aspectually conditioned irrealis . . . 657
- 4.5 Structurally conditioned irrealis . . . 660

I argue in this chapter that the perfective prefix *wu-* ~ *u-* and the conjugation prefixes *n-*, *g̲-*, and *g-* (and their absence as *∅*) are elements in the Asp(ect) head in Tlingit. Closely associated with and adjacent to these aspectual prefixes are the irrealis *u-* ~ *w-* and the modal *g̲-* that are involved with the expression of mood and modality; based on their positions and functions I analyze these as additional elements within Asp. Thus the 'middle field' of the verb word in Tlingit is the realization of Asp and hence the primary locus of aspectual expression. But what is aspect, anyway? I offer a sketchy introduction to this topic before digging into the syntax of Asp in Tlingit.

Although universally accepted as a concept in semantics, aspect has proven exceptionally hard to define. Binnick notes that the term *aspect* is a loan translation from Slavic terms like Russian вид *vid* 'view, appearance; kind, form; aspect' and that the concept is more precisely defined in these languages because they explicitly indicate many aspect distinctions (Binnick 1991: 136).[1] The metaphor of 'viewing' an eventuality is common among definitions of aspect: Comrie says "aspects are different ways of viewing the internal temporal constituency of a situation" (Comrie 1976: 3), Klein says that aspect "serves to 'present' a situation from a particular viewpoint, for example as on-going or completed" (Klein 2009: 40), and Toews says "when events are presented from a certain point of view, this is called aspect" (Toews 2015: 2). Defining aspect is complicated not only by its abstract nature – aspect is essentially a kind of metaphysical grammar for time – but also by the wide variation in terminology and categorization across languages (de Swart 2012: 752). In addition, many researchers are unclear (or unsure!) about which specific phenomena they consider to be aspectual rather than falling in with other temporal categories (tense, modality, etc.), as well as how or even if they distinguish lexical and grammatical aspect.

Aspect is usually divided into two basic realms of linguistic phenomena called 'lexical aspect' and 'grammatical aspect' (Bache 1982; Olsen 1997; Mani, Pustejovsky, & Gaizauskas 2005; Hamm & Bott 2018). **Lexical aspect** describes the basic properties of eventualities: whether they are stable or change over time (static vs. dynamic), whether they occur over a period of time or happen in an instant (durative vs. instantaneous), and whether they end with a goal or culmination (telic vs. atelic), along with a few other less common distinctions (Rothstein 2004: 6–29; Demonte & McNally 2012: 1–6). These distinctions give rise to what are often known as 'Vendler classes' after Vendler (1957) who defined the classes of **state** (non-dynamic), **activity** (dynamic, durative, atelic), **achievement** (dynamic, durative, telic), and **accomplishment** (dynamic, non-durative, telic). The last three can be unified as **event**s because they are all dynamic in contrast with states, and then achievements and accomplishments can be grouped against activities because the former two are telic, thus giving rise to a hierarchical typology of eventualities (Bach 1986). The most discussed property of lexical aspect is probably **telicity**: the presence of a limit in time that acts as an endpoint or goal of an event (Filip 2012: 721–722).[2] Because telicity is usually taken as undefined for states, the semantics of states remains far more hazy than events (Filip 2012: 728–730). Tlingit's explicit indication of state (ch. 3) and rich variety of stative structures provides a remarkable opportunity for exploring stativity.

As its name implies, lexical aspect is generally encoded in the lexicon of a language and so lexical aspect distinctions divide up the lexicon into classes of vocabulary. Usually a single verb belongs to a

1. The word *aspect* is from Latin *aspectus* 'look, sight, appearance' < *aspiciō* 'catch sight of' < *ad* 'to' + *speciō* 'look' < PIE **spéḱyeti* 'be looking at'. Compare AGk. σκέπτομαι *sképtomai* 'I examine', Skt. पश्यति *páśyati* 'see, behold'.
2. The term *telic* is from Greek τελικός *telikós* 'final' which is based on τέλος *télos* 'end' < PIE **kʷél-os* < **kʷél-* 'turn over'. This PIE root **kʷél-* 'turn over' is also the basis of reduplicated **kʷé-kʷl-os* > PGmc. **hwehwlą* > OE *hpēol* > *wheel*.

single lexical aspect class and hence people refer to a 'state verb' like *know* or *be tall* versus an 'activity verb' like *paint* or *eat*. Lexical aspect is also often known by the German label ***Aktionsart*** 'manner of action' due to the Slavicist and runologist Agrell (1908; cf. Genis 2008), though some researchers propose subtle distinctions between lexical aspect and Aktionsart (Filip 2012: 725).[3] Lexical aspect is part of the larger study of event structure which studies both internal and interactional properties of eventualities in semantics and in philosophical metaphysics (see e.g. Montague 1969; Davidson 1970; Bach 1986; Higginbotham, Pianesi, & Varzi 2000; Maienborn 2011; Casati & Varzi 2014).

Grammatical aspect describes the perspective on eventualities as they are expressed by clauses (Rothstein 2016: 343): whether an eventuality is ongoing or completed, regularly occuring or happening only once. As the label implies, grammatical aspect is instantiated by grammatical phenomena rather than being encoded in the lexical entry. There is consensus on a basic contrast between imperfective and perfective grammatical aspects (Comrie 1976; Klein 1994; Olsen 1997; Binnick 2001; Mani, Pustejovsky, & Gaizauskas 2005; de Swart 2012; Rothstein 2016), with other aspects being secondary and cross-linguistically variable. Some researchers insist on the addition of other aspects to the basic inventory such as the progressive (Timberlake 2007; Mair 2012), but even these extensions assume the basic perfective/imperfective contrast.

Although imperfective and perfective aspect are widely accepted as basic aspectual scategories, defining them is still very difficult. Binnick describes a 'phasic school' versus a 'viewpoint school' as two kinds of construals of grammatical aspect. The phasic school "defines perfective aspect as completed action and imperfective as incomplete; such notions are akin to Aktionsart" (Binnick 2001: 562). In contrast, the viewpoint school defines aspect according to "a central opposition between the presentation of an internally structured situation occurring over a time interval (in the imperfective), and that of a situation as an unanalyzable atom occurring at a point in time (the perfective)" (id.). Binnick also notes a 'discourse-pragmatic school' that approaches aspect as a contrast between foreground – "the main narrative line or principal statements" – and background – "the subsidiary, supportive material". In this approach the perfective aspect is foregrounding because it is 'propulsive' by advancing the narrative, whereas imperfective aspect is backgrounding because it lacks narrative movement and may be timeless (Binnick 2001: 562; cf. Gvozdanović 2012). I generally follow the viewpoint school that subsumes theoretical approaches by Klein (1994) and Kratzer (1998) among many others, but I do not delve very far into the semantics of grammatical aspect in Tlingit.

Literature on Na-Dene languages often describes a distinction between 'situation aspect' and 'viewpoint aspect' (Smith 1997, 2005, 2006; Rice 2000a; Smith, Perkins, & Fernald 2007; Racy 2008). These two terms are originally due to Smith (1986) whose analysis of aspect in Navajo (Smith 1996) strongly influenced all later work on aspect in the family. Smith's **situation aspect** is essentially the same as lexical aspect, and her **viewpoint aspect** is equivalent to grammatical aspect. She adds a novel **superlexical aspect** to capture phenomena like inceptives, conatives, and egressives (Smith 1997: 25, 297; Rice 2000a: 260).[4] This has no common label outside of Na-Dene studies though we

3. Filip particularly distinguishes between 'lexical aspect' for verbs – i.e. lexical entries – and 'aspectual class' for verb phrases including objects, where her 'aktionsart' is identical to the latter. This distinction may not be useful in Na-Dene languages given the many layers of derivation where eventuality structure is manipulated.

4. Rice calls 'superlexical aspect' **subsituation aspect**, partly because the associated prefixes in Dene languages appear next to the conjugation prefixes that she calls situation aspect markers. In Tlingit they are derived with preverbs.

might call it 'derivational aspect' because it arises from morphological or syntactic derivation processes – e.g. English *begin to VP* or its Tlingit equivalent *g̲unayéi=* ~ *g̲unéi=* (∅; *-x̲* repetitive) 'begin, start, initiate' – and because it falls somewhere in between grammatical and lexical aspect.

Although Smith's distinct terminology is partly motivated by the visual metaphor for aspect, it is also motivated by morphosemantic phenomena in Na-Dene languages that blur the distinction between lexicon and grammar. Her terms have seen some use beyond the Na-Dene family (e.g. Csirmaz 2006; Kiyota 2008; Spreng 2012; Arche 2014), but most researchers seem to prefer 'lexical' and 'grammatical' over 'situation' and 'viewpoint' (Rothstein 2016). See Binnick 2001 and Filip 2011 for some history and discussion of aspectual terminology in general. The most coherent presentation of traditional Na-Dene aspectual terminology is probably Axelrod 1993 (earlier Axelrod 1990); both Smith 1997 and Rice 2000a develop out of this traditional basis.

Tense[5] is commonly contrasted with aspect: both express time, but they do so orthogonally. Where aspect is usually described with a visual metaphor, tense is usually described with a spatial metaphor, e.g. "tense is the grammaticalized expression of location in time" (Comrie 1985: 9). Typically tense indicates that eventualities are located at 'now' (present), at some time preceding now (past), or at some time following now (future). The anchor point of 'now' is naively thought of as the moment of speaking, but it can be shifted to other times in some contexts. For example in the sentence *Alfred says he will go* the 'now' of the speaker is not the same 'now' when Alfred spoke. In part to deal with this problem, Reichenbach proposed a system of **tense variables** that underly crosslinguistic distinctions in tense (Reichenbach 1947: 287–298; Binnick 1991: 110–116; Klein 1994; Fernando 2015). His variable *S* denotes the time of speech, *E* the time of the eventuality described by the speech, and *R* a reference point that represents the temporal 'point of view' (Binnick 1991: 111).[6] Two formal approaches to tense developed by Prior (1966, 1967; Burgess 2002; Finger, Gabbay, & Reynolds 2002) and Montague (1969; Dowty 1979; Kuhn & Portner 2002) have led to a large field of research in tense logic (Øhrstrøm & Hasle 1995; Blackburn & Jørgensen 2016; Hamm & Bott 2018).

Discussions of tense usually involve languages like English where it is pervasive and by implication is omnipresent. But languages might instead completely lack tense (Tonhauser 2015; though see Matthewson 2006, forthcoming), or they might have **optional tense** which does not have to be expressed except when a specific meaning is desired (Plungian & van der Auwera 2006; Toews 2015; Tonhauser 2015; Bochnak 2016). Cable argues that the 'decessive' *-ín* suffix in Tlingit is a kind of optional past tense (Cable 2017c). Story had described it as "former, formerly, or previously" (Story 1966: 143) and Leer similarly that it means an eventuality "was true at some time in the past, but is no longer true in the present" (Leer 1991: 461). Cable shows that this 'used to be' cessation of validity is an implicature that derives from tense being optional in Tlingit and thus that *-ín* is an ordinary past tense marker. As noted earlier (ch. 2 sec. 2.9), I have analyzed this past tense suffix as the realization of the T head. The apparent suppletion of *-ín* by subordinate *-í* and relative *-i* (Leer 1991: 158, 213) might be explained by T → C movement if *-ín* is in T and *-í* and *-i* are in C. But because T is above AspP, I do not investigate tense phenomena in Tlingit any further in this dissertation.

5. The term *tense* is borrowed from Old French *tens* 'time' < L. *tempus*. This is probably from PIE **ten-* 'stretch, extend' as a stretch of time or alternatively from **temh₂-* 'cut' as a slice or section of time. The adjective *tense* 'strained' is only distantly related via L. *tēnsus* 'stretched' < PIE **tn̥-tós* < **ten-* 'stretch, extend'.

6. Labels of tense variables unfortunately vary among researchers. Often 'reference' *R* = 'topic time' *TT*, 'event' *E* = 'situation time' *ST*, and 'speech' *S* = 'utterance time' *UT*. Klein (1994) reverses the abbreviations, so e.g. *E* = *ST* = *TSit*.

This sketch of aspect and tense presents a perplexing panoply of perspectives but also establishes some basic concepts and contrasts which are significant for the analysis of Tlingit. I focus below on the contrast between lexical aspect and grammatical aspect to show how the morphosyntax realizes both, and then summarize the rest of the material in this chapter.

Lexical aspect in Tlingit is minimally encoded by the root. The root is the basic lexical entry upon which all verbs are built (ch. 2) so it is unsurprising that the root also encodes basic lexical aspect contrasts (ch. 2 sec. 1.3). Following the hierarchical taxonomy of lexical aspect proposed by Bach (1986), the first binary distinction between lexical aspect categories is state versus event. This is diagnosed in Tlingit by the presence (state) or absence (event) of the state-marking *i-* prefix in Ɛ when there is no overt Asp prefix (ch. 2 sec. 1.3.1.2; ch. 3 sec. 3.1). But there are also structures where the presence or absence of *i-* in Ɛ is predicted by material above √ (ch. 3 secs. 3.2 and 4.1). In such cases the state/event distinction arises from derivational or inflectional operations rather than from the lexical entry, and then the term 'lexical aspect' is something of a misnomer. Nonetheless I maintain 'lexical aspect' in these cases for compatibility with the general literature.

Grammatical aspect in Tlingit is expressed primarily through the Asp⁰ head which I model in section 1. The Asp⁰ is a node that takes VoiceP (ch. 5), *v*P (ch. 4), or ƐP (ch. 3) as its complement and projects a phrase AspP (ch. 7). The Asp⁰ head is stereotypically realized by a single morpheme such as the perfective *wu-* or the conjugation prefix *n-* as illustrated by the data in (1).

(1) a. Has wutushikín. *perfective*
has=wu-tu- sh- i- $\sqrt[2]{}$kin -H
PLH= PFV-1PL·S-PEJ-STV-$\sqrt[2]{}$bother-VAR
'We bothered them.'

b. Yaa s natooshkín *progressive*
ÿaa= has=n- tu- sh-$\sqrt[2]{}$kin -H
along=PLH= NCNJ-1PL·S-PEJ-$\sqrt[2]{}$bother-VAR
'We are bothering them.'

There may also be no surface indication of an aspect prefix, such as the imperfective aspect form shown in (2). In this case I analyze the Asp⁰ head as being present but empty. See section 2.1.1 for discussion of the empty Asp⁰ in imperfectives.

(2) X̱ax̱á. *imperfective*
x̱- $\sqrt[2]{}$x̱a-H
1SG·S-$\sqrt[2]{}$eat-VAR
'I eat it.', 'I am eating it.'

Although it often appears as a lone prefix or nothing at all, the Asp⁰ head is not just a single prefix. The conjugation prefixes are sometimes accompanied by the *g̱-* modal prefix such as in the hortatives below in (3). Note that although the *g̱-* modal prefix is homophonous with the *g̱-* conjugation prefix, the two are distinct because they can cooccur as shown by (3c).

(3) a. Ǧatooxaa. *Ø-conjugation hortative*
ǧ- tu- ²√xa-μ
MOD-1PL·S-²√eat-VAR
'Let's eat it.'

b. Naxtoohoon. *n-conjugation hortative*
n- ǧ- tu- ²√hun-μ
NCNJ-MOD-1PL·S-²√sell -VAR
'Let's sell it.'

c. Ǧaaxtooxoox *ǧ-conjugation hortative*
ǧ- ǧ- tu- ²√xux -μ
ǦCNJ-MOD-1PL·S-²√summon-VAR
'Let's summon him/her.'

d. Gaxtooshee *g-conjugation hortative*
g- ǧ- tu- ²√shi -μ
GCNJ-MOD-1PL·S-²√sing-VAR
'Let's sing it.'

The Asp⁰ head can also contain the irrealis prefix *w-* ~ *u-*. All three of the irrealis *w-*, *g-* conjugation prefix, and *ǧ-* modal prefix occur together to express the prospective aspect (Leer 1991: 208; Burge 2017: 32). The example in (4a) shows an ideal case where all three prefixes together realize a phonological sequence *gux* [kʷùχʷ]. But the phonology is complicated by the presence of overt D pronoun subjects because Asp⁰ spells out in the Conjunct domain which also includes the D pronoun subject in *v*P. Thus for example the irrealis *w-* of the prospective *w-g-ǧ-* in Asp⁰ is phonologically obscured in forms like (4b) and (4c).

(4) a. Xat guxshakéen. *prospective with 3sg subject*
xat= w- g- ǧ- sh- ²√kin -μH
1SG·O=IRR-GCNJ-MOD-PEJ-²√bother-VAR
'S/he is going to bother me.'

b. Xat kǧishakéen. *prospective with 2sg subject*
xat= w- g- ǧ- i- sh- ²√kin
1SG·O=IRR-GCNJ-MOD-2SG·S-PEJ-²√bother
'You (sg.) are going to bother me.'

c. Xat gaxyishakéen. *prospective with 2pl subject*
xat= w- g- ǧ- ÿi- sh- ²√kin
1SG·O=IRR-GCNJ-MOD-2PL·S-PEJ-²√bother
'You (pl.) are going to bother me.'

So the Asp⁰ head contains four different sets of prefixes: (i) conjugation {*Ø*, *n-*, *ǧ-*, *g-*}, (ii) perfective *wu-* ~ *u-*, (iii) modal *ǧ-*, and (iv) irrealis *w-* ~ *u-*. Only three of these can occur together in surface forms because the perfective and conjugation prefixes appear to be in complementary distribution (sec. 1.1.1). The Asp⁰ head is thus a complex head which I analyze as a kind of subtree in section 1.1,

featuring its own dedicated syntax. I argue against some alternatives to the subtree model in section 1.2, and then discuss how conjugation class is realized in section 1.3.

Imperfective and perfective aspect in Tlingit are expressed with several morphological mechanisms that give rise to a complex multidimensional matrix of forms (table 6.2 on page 513). In section 2 I define a basic distinction between imperfective or perfective aspect that is expressed with a conjugation prefix *CNJ-* versus imperfective or perfective aspect that is expressed with a dedicated prefix. The dedicated prefixes are the *u-* ~ *wu-* for perfective aspect and the absence of a prefix, i.e. *∅*, for imperfective aspect. This establishes a four way division between *∅*-imperfectives, *CNJ*-imperfectives, *u*/*wu*-perfectives, and *CNJ*-perfectives. An additional dimension is iterativity which can be present or absent for any of the four aspect categories. One further dimension is the state/event contrast, although here some combinatoric possibilities fail to occur so that for example there are no non-stative non-iterative *wu*-perfectives. This new typology of imperfective and perfective aspect predicts several unattested possibilities that need investigation.

The imperfective aspect is detailed in section 2.1, demonstrating the preliminary application of some semantic tests for imperfectivity from Toews (2015). Imperfective aspect forms are initially divided into *∅*-imperfectives (sec. 2.1.1) and *CNJ*-imperfectives (sec. 2.1.2). Each of these is further divided into non-iterative and iterative. The non-iterative *∅*-imperfectives (sec. 2.1.1.1) are the lexical activity imperfectives and the lexical state imperfectives depending on their lexical specification for the appearance of of *i-* in Ɛ. The iterative *∅*-imperfectives (sec. 2.1.1.2) are the repetitive imperfectives, some of which are determined by conjugation class and some of which are more or less lexically specified, and which also show a state/event distinction with *i-* in Ɛ. Tables 6.5–6.11 in this section list lexically specified combinations of roots and repetitive suffixes to provide a foundation for further semantic investigation of iterativity. The non-iterative *CNJ*-imperfectives (sec. 2.1.2.1) are the extensional state imperfectives that describe states stretched along a path. Here the state/event contrast is incomplete with no event forms attested. The iterative *CNJ*-imperfectives (sec. 2.1.2.2) are the multipositional state imperfectives that describe the distribution of multiple entities along a path. Again the state/event contrast is incomplete with no event forms known.

The perfective aspect is detailed in section 2.2, demonstrating the preliminary application of some semantic tests for perfectivity from Toews (2015). Perfective aspect forms have a basic division by prefix that is somewhat more complex than imperfective aspect forms because there is a conjugation class–influenced split between the *u-* perfective prefix for *∅*-conjugation verbs and the *wu-* perfective prefix for others. There is thus a three-way division between *u*-perfectives (sec. 2.2.1), *wu*-perfectives (sec. 2.2.2), and *CNJ*-perfectives (sec. 2.2.3). Each of these is further divided into non-iterative and iterative. The non-iterative *u*-perfectives (sec. 2.2.1.1) are the conventional perfectives of *∅*-conjugation verbs, and are always stative. The iterative *u*-perfectives (sec. 2.2.1.2) are the habituals of *∅*-conjugation verbs. These habituals are always eventive and only occur with the *-ch* repetitive suffix. The non-iterative *wu*-perfectives (sec. 2.2.2.1) are the conventional perfectives of the non-*∅*-conjugation verbs. The iterative *wu*-perfectives (sec. 2.2.2.2) are reflections of an apparently regular but poorly documented phenomenon where iterativity can be extended from a *∅*-imperfective form across an entire paradigm. Their productivity in modern Tlingit is unknown. The non-iterative *CNJ*-perfectives (sec. 2.2.3.1) are the counterparts to the non-iterative *u-* and *wu*-perfectives with a conjugation prefix *CNJ-* instead of a dedicated aspect prefix. The main clause form is traditionally known as the 'realizational' and the corresponding adjunct clause form is known as the 'consecutive', with

the 'admonitive' being the irrealis-marked form of both. The iterative *CNJ*-perfectives (sec. 2.2.3.2) are in general the non-*Ø*-conjugation counterparts of the iterative *u*-perfectives and are thus also habituals with the *-ch* suffix. There is the unattested and untested possibility that non-iterative *CNJ*-perfectives could have iterative counterparts with stativity indicated by *i-*.

The **conjugation prefixes** and **conjugation classes** are detailed in section 3. The conjugation prefixes have two mutually exclusive functions: indicating conjugation class and indicating grammatical aspect. Conjugation class is essentially an inflectional class phenomenon (cf. Corbett 2009; Stump 2015) that is prototypically specified by the lexical entry but which can be regularly modified by derivational operations. The conjugation prefixes directly represent the conjugation classes in some contexts, but in other contexts they are instead associated with grammatical aspect, so in section 3.1 I detail the conceptual distinction between conjugation prefixes and conjugation classes.

Although the assignment of conjugation class can appear meaningless like many other inflectional classes crosslinguistically, I argue in section 3.2 that it is actually an exponent of spatial semantics in Tlingit. This argument is based on correlations between *g-* and upward spatial orientation, *g̱-* and downward orientation, and *n-* and horizontal (left, right, fore, back) orientation. I argue that the *Ø* conjugation class is meaningless, contra Leer (1991) who ascribes telicity to it. The meaninglessness of the *Ø* conjugation class accords with its lack of overt morphological exponence.

Conjugation class membership can be derived by morphological operations or it can be lexically specified. I show in section 3.3 that for motion verbs the conjugation class membership is always due to derivation because motion verb roots are lexically unspecified for conjugation class. Each motion derivation is associated with one of the four conjugation classes, and in these contexts the spatial orientations of the conjugation class are clearly reflected by the semantics. I move to lexically specified conjugation class in section 3.4, where I show that depending on the particular verb a spatial meaning may still be active, but in many cases the conjugation class has become more or less arbitrary somewhat like stem vowels in Latin.

I address the grammatical aspect–marking function of the conjugation prefixes in section 3.5. In this function they no longer identify conjugation class, so that one conjugation prefix occurs regardless of the derivationally or lexically specified class. The prospective aspect is one example of this phenomenon, illustrated by the four forms in (5). Each form is a verb that is lexically specified for one of the four conjugation classes, but the same *g-* conjugation prefix occurs in all four forms because it is used to indicate prospective aspect (Burge 2017).

(5) a. Gax̱tooxáa. *Ø-conjugation prospective*
w- g- g̱- tu- ²√x̱a-μH
IRR-GCNJ-MOD-1PL·S-²√eat-VAR
'We will eat it.'

b. Gax̱toohóon. *n-conjugation prospective*
w- g- g̱- tu- ²√hun
IRR-GCNJ-MOD-1PL·S-²√sell
'We will sell it.'

c. Yei gaxtooxóox. *g-conjugation prospective*
yei= w- g- g- tu- $\sqrt[2]{}$xux
down=IRR-GCNJ-MOD-1PL·S-$\sqrt[2]{}$summon
'We will summon him/her.'

d. Kei gaxtooshée. *g-conjugation prospective*
kei=w- g- g- tu- $\sqrt[2]{}$xa
up= IRR-GCNJ-MOD-1PL·S-$\sqrt[2]{}$sing
'We will sing it.'

I argue in section 3.5 that the use of conjugation prefixes for grammatical aspect is not arbitrary: rather, it reflects a crosslinguistically universal metaphor of space → time mapping. Time is often expressed through spatial metaphor; English examples include *I'm **going** to see her tomorrow*, *She left **before** he did*, and *The deadline is **approaching** fast*. The conjugation prefixes reflect a Tlingit mapping of space to time which appears in some of the aspectual system, specifically a mapping from the upward and lateral spatial orientations to the prospective and progressive aspects; arguably the unmarked *∅*-imperfective aspect may be included. Other aspects are not expressed through conjugation prefix–mediated spatial metaphor, so I suggest that this is a historical development from a system that originally contrasted imperfective and perfective aspect, in line with the consensus that imperfective/perfective is the basic aspectual contrast crosslinguistically. Although these aspects are frequent in everyday speech, their spatial semantics does not seem to be productively exploitable. I suggest that they may be developing into dedicated grammatical aspect prefixes that are homophonous with the conjugation prefixes, and thus propose a model where they are reanalyzed into the perfective and imperfective prefix system that is structurally parallel to the conjugation prefix system.

Irrealis in Tlingit is expressed with a dedicated prefix *u-* or its allomorph *w-*. There is a running argument in the semantics literature about whether irrealis actually exists as a crosslinguistic category or if it is instead some kind of emergent phenomenon (de Haan 2012; Cristofaro 2012; Portner 2018). Because of this controversy, I investigate irrealis marking in some detail in section 4. Irrealis marking in Tlingit can be lexically specified (sec. 4.2), introduced by derivational operations (sec. 4.3), required by temporal expression including aspect and modality (sec. 4.4), and conditioned by higher syntactic operations such as negation (sec. 4.5). Throughout all of these contexts the same irrealis marking is present and there is a regular correlation with the description of possible worlds that are disjoint with the actual world. I propose two major semantic classes of irrealis meaning that range across all of the contexts where irrealis is required. One class of irrealis meaning is what I call 'unreality' where the world described is similar to but not identical with the actual world. I call the other class 'negativity' where the world described is associated with semantic negation operations such as absence, prohibition, pejoration, and propositional negation. Whether or not these two classes of irrealis meaning are epiphenomenal, their consistent indication with dedicated morphology points toward a unified morphosyntactic phenomenon in Tlingit.

The *g-* modal prefix is poorly understood. I do not devote a section to it, unlike the sections for perfective and imperfective prefixes (sec. 2), conjugation prefixes (sec. 3), and irrealis prefixes (sec. 4). I had intended to do so but found so little new information to offer that the result amounted to no more than a tedious listing of forms and translation equivalents. Following Burge, I identify the *g-*

modal prefix with the expression of modality because of its distribution across aspectual paradigms, but I have nothing to add about its semantics. Readers particularly interested in the mechanics of the *g̲*- modal prefix should see Leer 1991 and Burge 2017.

1. Modelling Asp⁰ as a subtree of morphemes

The aspectual[7] prefixes in Tlingit are the prefixes that occur between the object and incorporates on the left hand and the subjects on the right hand, as sketched templatically in (6).

(6) preverbs – arg. mod. – objects + incorporates – aspectual – subjects – Voice – *v* – Ɛ – √ – V

All of the prefixes in this block are associated with the expression of temporal and eventuality semantics, specifically of aspect, modality, and mood (Story 1966: 98–101; Leer 1991: 107–112). All of these prefixes also exhibit complex morphophonological interactions between each other and to a lesser extent with their neighbours (Story 1966: 109–141; Leer 1991: 175–202; Cable 2006). They can be divided by function into four classes based on their paradigmatic distribution and semantics.

- perfective 'PFV'
  - *wu*- perfective (also *ÿi*-, *mu*- all from **ŋu*- ~ **ŋʷə*-)
  - *u*- perfective in ∅-conjugation class verbs
- conjugation 'CNJ'
  - ∅ absence of conjugation prefix
  - *n*- conjugation prefix
  - *g̲*- conjugation prefix
  - *g*- conjugation prefix
- modality 'MOD'
  - *g̲*- modality prefix
- irrealis 'IRR'
  - *u*- irrealis prefix
  - *w*- irrealis prefix

Each prefix in a class is mutually exclusive with all the other prefixes in the same class. The homophonous *g̲*- conjugation prefix and the *g̲*- modality prefix are distinct and can cooccur. This is shown in (7) with the contrast between a hortative of an *n*-conjugation class verb and a hortative of a *g̲*-conjugation class verb. The *n*-conjugation verb in (7a) has a sequence of the *n*- conjugation prefix followed by the *g̲*- modality prefix, showing that conjugation and modality prefixes can cooccur. The *g*-conjugation verb in (7b) replaces the *n*- conjugation prefix by the *g̲*- conjugation prefix but the *g̲*- modality prefix remains, showing that these two homophonous prefixes can cooccur.[8]

7. 'Aspect' is actually too narrow a label here, but there is no common term that encompasses aspect, modality, and mood but not tense. I reject Leer's "schetic" as too opaque and obscure as well as too broad (Leer 1991: 64–71).
8. It is unclear why *g̲*- + *g̲*- spells out with a long vowel where *n*- + *g̲*- spells out with a short vowel. There is no evidence for any occult or opaque morphology so this is apparently a phonological peculiarity.

(7) a. Nagal'éex'. *n-conjugation class hortative*
n- g- $^{1}\sqrt{}$l'ix' -μH
NCNJ-MOD-$^{2}\sqrt{}$break-VAR
'Let it break.' (Eggleston 2017)

b. Ga̲aga̲sháash. *g̲-conjugation class hortative*
g̲- g̲- $^{1}\sqrt{}$sha'sh -μH
G̲CNJ-MOD-$^{1}\sqrt{}$wear·out-VAR
'Let it wear out.' (Eggleston 2017)

The perfective and conjugation prefixes are also mutually exclusive so that any verb form can be realized with one prefix of either class but not both at the same time. The data in (8) shows this with the *n*-conjugation class verb based on the root $^{1}\sqrt{}$*l'ix'* 'break, snap'. The perfective aspect form has only *wu-* in (8a) and the combinations of *wu-* + *n-* in (8b) and *n-* + *wu-* in (8c) are both ungrammatical.

(8) a. Wool'éex'. *perfective with wu-*
wu-i- $^{1}\sqrt{}$l'ix' -μH
PFV-STV-$^{1}\sqrt{}$break-VAR
'It broke.'

b. *Wunaal'éex'. *perfective with wu- + n-*
wu-n- i- $^{1}\sqrt{}$l'ix'
PFV-NCNJ-STV-$^{1}\sqrt{}$break
intended: 'It broke.'

c. *Nawool'éex'. *perfective with n- + wu-*
n- wu-i- $^{1}\sqrt{}$l'ix'
NCNJ-PFV-STV-$^{1}\sqrt{}$break
intended: 'It broke.'

The phonological realization of various combinations of the aspectual prefixes can be complex and somewhat opaque. The complexity probably arises from interacting metrical constraints on the syllable size and complexity of the domain containing these prefixes, but a comprehensive formal model is still wanted.[9] The canonical illustration of this involves the prospective aspect formed with irrealis *w-*, the *g-* conjugation prefix, and the *g̲-* modal prefix. The data in (9) show three significantly different realizations of the same sequence of three prefixes in combination with different neighbouring prefixes.

(9) a. Kuk̲ax̲áa. *prospective with first singular x̲-*
w- g- g̲- x̲- $^{2}\sqrt{}$x̲a-μH
IRR-GCNJ-MOD-1SG·S-$^{2}\sqrt{}$eat-VAR
'I will eat it.'

b. Kakg̲eex̲áa. *prospective with k- and second plural i-*
k- w- g- g̲- i- $^{2}\sqrt{}$x̲a-μH
SRO-IRR-GCNJ-MOD-2SG·S-$^{2}\sqrt{}$eat-VAR
'You will start eating it (small round).'

9. Cable 2006 assumes many questionable underlying forms from Leer 1991 and argues for syncopation where epenthesis seems more likely in Na-Dene (Kari 1976; Tuttle 1994; McDonough 1996; Fountain 1998 etc.).

Figure 6.1: Schematic representation of the complex Asp⁰ head

c. Gax̲dux̲áa. *prospective with 4th human du-*
w- g- g̲- du- ²√x̲a-μH
IRR-GCNJ-MOD-4H·S-²√eat-VAR
'Someone/people will eat it.'

I argue in this section for a model where the four classes of prefix are elements within a single complex head Asp⁰. This complex head acts like a single monolithic unit for the rest of the syntax, hosting all of the features of the elements beneath it. As a subtree it has its own internal syntax somewhat similar to a DP phase which is nominally independent of the clausal spine. Semantically I expect that its composition forms a single complex function built from its internal constituents, taking the Asp⁰ complement as its argument. Its complex phonological behaviour is partly captured by its syntactic status as a single lump of material, with the possibility of internal reordering that has no effects on the structure or interpretation of the rest of the verb.

My model of Asp⁰ is shown schematically in figure 6.1. I explore the various internal configurations of Asp⁰ in section 1.1, and discuss alternative structures in section 1.2. I then sketch a few possible mechanics for how conjugation class can be represented in Asp⁰ in section 1.3 in anticipation of the discussion of conjugation class in section 3.

1.1. Four morphemes: perfective, conjugation, irrealis, modality

The four categories of aspect-associated prefixes in Tlingit are (i) the conjugation 'CNJ' prefixes in the set {*∅*, *n-*, *g̲-*, *g-*}, (ii) the perfective 'PFV' prefix *wu-* ~ *u-*, (iii) the modal 'MOD' prefix *g̲-*, and (iv) the irrealis 'IRR' prefix *u-* ~ *w-*. In the following discussion the abbreviations CNJ, PFV, MOD, and IRR are used to represent any of the appropriate prefixes or allomorphs of each category.

The tree in figure 6.1 represents the maximum possible structure of Asp⁰. The minimum structure is a lone Asp⁰ with no contents. This empty Asp⁰ is required syntactically because all objects move to AspP, all argument modifiers either move to or are merged at AspP, and all preverbs either move to or are merged at AspP. Phonologically, the Preverb and Disjunct domains are defined by the material in AspP and the Conjunct domain realizes the content of Asp⁰. The Asp⁰ also hosts the

semantic structure for the interpretation of aspect and because all verbs are interpreted for aspect – including nominalizations – the Asp^0 must be present in every form even if it is empty. Thus Asp^0 is never optional but it may be covert. I discuss this issue further in section 2.1 in the context of imperfective aspect.

I address the perfective and conjugation prefixes in section 1.1.1. Although the two sets of prefixes are traditionally claimed to be in complementary distribution, I argue that the perfective prefixes actually always occur with covert conjugation prefixes. These covert prefixes determine the conjugation class–dependent allomorphs of the perfective prefixes and also account for other conjugation class–dependent patterns in the morphosyntax such as V-agreement and interpretation of path argument PPs.

I model the modality and irrealis prefixes in section 1.1.2. I argue that both prefixes are modifiers of the perfective and conjugation prefixes, and I discuss their positions relative to those prefixes and to each other. I then move to the linear order of the prefixes in section 1.1.3. I show that phonology is only partially informative for syntactic structure because it cannot provide a single unambiguous linear ordering of these prefixes. I also show that some of the variation in linear order could be based on different syntactic structures in different grammars, and suggest avenues for further analysis.

One striking fact that falls out of exploring the internal structure of Asp^0 is that the *g̱-* modality prefix is limited to contexts other than perfective or imperfective aspect. The *g̱-* modality prefix never occurs with either perfective *wu-* or *u-* (Leer 1991: 187–188, 208). In addition, the *g̱-* modality prefix never occurs with any imperfective aspect forms (sec. 2.1; also Leer 1991: 206–207). This suggests that there is a semantic difference between the two basic imperfective and perfective aspects and the rest of the aspect, mood, and modality system in Tlingit. It is unclear why this should be the case, but it strongly suggests that *g̱-* has a meaning that is somehow incompatible with the basic aspects.

1.1.1. Perfective and conjugation

The Asp^0 head is built upon the perfective and conjugation prefixes. Both can be present in the structure, but only one of the two can be spelled out. There is a one-way entailment relationship where perfective requires conjugation but not vice versa; symbolically this is PFV $\Rightarrow$ CNJ but PFV $\not\Leftarrow$ CNJ. I first show the PFV $\Rightarrow$ CNJ entailment and then discuss the absence of the reverse entailment.

All previous analyses of Tlingit verbs have assumed that because the perfective and conjugation prefixes are in complementary distribution, they must somehow inhabit the same morphosyntactic position or otherwise cannot cooccur in the same verb form (Boas 1917; Story 1966; Leer 1991). It is true that the presence of a perfective prefix blocks the presence of a conjugation prefix, as verified by the data in (10). The imperative in (10a) illustrates that $\sqrt[2]{hun}$ 'sell' gives rise to an *n*-conjugation verb. The grammatical perfective in (10b) features only the perfective prefix *wu-* and adding the *n*-conjugation prefix either before the perfective in (10c) or after it in (10d) is ungrammatical.

(10) a. Nahoon! *n-conjugation imperative*
n- $^{2}\sqrt{}$hun-μ
NCNJ-2SG·S $^{2}\sqrt{}$sell -VAR
'Sell it!'

b. Wutuwahoon. *n-conjugation perfective with wu-*
wu-tu- i- $^{2}\sqrt{}$hun-μ
PFV-1SG·S-STV-$^{2}\sqrt{}$sell VAR
'We sold it.'

c. *Nawtuwahoon. **n-conjugation perfective with n-wu-*
n- wu-tu- i- $^{2}\sqrt{}$hun-μ
NCNJ-PFV-1SG·S-STV-$^{2}\sqrt{}$sell VAR
intended: 'We sold it.'

d. *Wuntuwahoon. **n-conjugation perfective with wu-n-*
wu-n- tu- i- $^{2}\sqrt{}$hun-μ
PFV-NCNJ-1SG·S-STV-$^{2}\sqrt{}$sell VAR
intended: 'We sold it.'

But even when a perfective prefix is present, there are still effects of conjugation class visible elsewhere in the verb form. Compare for example the four derivations in (11) that illustrate perfective aspect forms of four different conjugation classes applied by motion derivations to a motion verb root $^{1}\sqrt{}$*.at* 'pl. go' (sec. 3.3). The *Ø*-conjugation form in (11a) has a distinct *-H* versus the other three with *-μ* in (11b)–(11d).

(11) a. Aant wutuwa.át *Ø-conjugation class perfective*
aan -t wu-tu- i- $^{1}\sqrt{}$.at -H
town-PNCT PFV-1PL·S-STV-$^{1}\sqrt{}$go·PL-VAR
'We went to town.'

b. Aandé wutuwa.aat *n-conjugation class perfective*
aan -dé wu-tu- i- $^{1}\sqrt{}$.at -μ
town-ALL PFV-1PL·S-STV-$^{1}\sqrt{}$go·PL-VAR
'We went to(ward) town.'

c. Aannáx̱ wutuwa.aat *g̱-conjugation class perfective*
aan -náx̱ wu-tu- i- $^{1}\sqrt{}$.at -μ
town-PERL PFV-1PL·S-STV-$^{1}\sqrt{}$go·PL-VAR
'We went through/via town.'

d. Aandáx̱ wutuwa.aat *g-conjugation class perfective*
aan -dáx̱ wu-tu- i- $^{1}\sqrt{}$.at -μ
town-ABL PFV-1PL·S-STV-$^{1}\sqrt{}$go·PL-VAR
'We went from town.'

Even though there is no overt conjugation prefix present in any of the forms in (11), the stem still shows V-agreement for conjugation class. If we posit the presence of a covert prefix in Asp⁰ that hosts

Figure 6.2: Ø-conjugation perfective

Figure 6.3: Non-Ø-conjugation perfective

the relevant ɛ-feature then we have a coherent syntactic source for the V-agreement. There are other well known examples of phonology deleting material in the Conjunct domain – e.g. the loss of irrealis *w-* in *gaxtusa.ée* 'we will cook it' versus *aguxsa.ée* 's/he will cook it' – so phonological deletion of the conjugation prefix is not implausible, particularly since the Conjunct domain is subject to some of the most restrictive constraints on metrical and syllable structure. The structure of the forms in (11) is shown side-by-side in figures 6.2 and 6.3. The covert non-Ø conjugation class prefix is represented by <*n*-> but could just as well be <*g*-> or <*g*->.

An alternative approach might be to suppose that the ɛ-feature determining the stem variation is specified in √ because typically conjugation class is lexically specified. But motion roots like ¹√*.at* 'pl. go' are crucially not specified for conjugation class (ch. 2 sec. 1.3.1.4): they admit all four classes and cannot be realized without a motion derivation that supplies the conjugation class specification. If motion roots are unspecified for conjugation class then there cannot be an ɛ-feature for the conjugation class in the root. Furthermore, deriving *-H* in (11a) from √ would violate the general principle that higher heads like Asp should supersede all lower heads for V-agreement (ch. 2 sec. 2).

Another alternative approach is to say that the distinct ɛ-features of the Ø-conjugation and non-Ø-conjugation classes are hosted by the perfective prefix. This is supported by the selection of perfective *u-* instead of *wu-* with some forms of Ø-conjugation class verbs in the perfective aspect (sec. 2.2.1). Compare the third person subject forms of the verbs in (12) which parallel the two above in (11a) and (11b). The Ø-conjugation class form in (12a) has the *u-* perfective prefix where the *n*-conjugation class form in (12b) has the *wu-* perfective prefix.

(12) a. Aant has uwa.át *Ø-conjugation class perfective*
aan -t has=u- i- $\sqrt[1]{}$.at -H
town-PNCT PLH= ZPFV-STV-$\sqrt[1]{}$go·PL-VAR
'They went to town.'

b. Aandé has woo.aat *n-conjugation class perfective*
aan -dé has=wu-i- $\sqrt[1]{}$.at -μ
town-ALL PLH= PFV-STV-$\sqrt[1]{}$go·PL-VAR
'They went to(ward) town.'

The problem with this approach where the perfective prefix carries the conjugation class ε-feature is that it still does not account for where the specification of conjugation class comes from. Even though *u-* versus *wu-* could account for *-H* versus *-μ*, there is no explanation for why *u-* versus *wu-* are themselves selected for the two different structures. The presence of a covert conjugation class would explain both the selection of perfective prefix and the selection of stem variation in V.

Motion roots like $\sqrt[1]{}$*.at* 'pl. go' are not lexically specified for conjugation class (ch. 2 sec. 1.3.1.4). Instead the conjugation class in motion verbs is supplied by a motion derivation that usually also supplies a PP (sec. 3.3). Given the association with PPs, we might suppose that it is the P head that supplies the ε-feature determining conjugation class; call this the 'conjugation class P' approach. This approach runs into a structural problem: the P does not c-command any of the relevant heads. This can be seen by reviewing the trees in figures 6.2 and 6.3. In these structures the P heads a PP that is adjoined to AspP. In this position P is too low to c-command either Asp⁰ or V. Furthermore, given that motion PPs are arguments, the position of a motion PP in AspP is secondary to its first merge location in VP (or perhaps in *v*P with covert + covert *v* stacking; see ch. 4 sec. 5). The first merge of the argument PP would be high enough to c-command V but it would not be high enough to c-command Asp⁰.

I adopt the 'covert CNJ' approach where perfective prefixes can coexist with conjugation prefixes in the syntax. Phonology – or more precisely the syntax-phonology interface – must somehow suppress or delete the conjugation prefix in the perfective aspect when it would otherwise be an overt value in the set {*n-*, *g̲-*, *g-*}. I suspect this may fall out of more general constraints on the Conjunct domain prefix phonology.

The argument above holds that there is an entailment of PFV ⇒ CNJ because a conjugation prefix must exist to determine conjugation class features in perfective aspect forms. The reverse entailment CNJ ⇒ PFV is not true: conjugation class does not require the presence of perfectivity. This can be shown by verb forms where a conjugation prefix regularly appears but a perfective prefix does not and there is no perfective interpretation. I offer two cases: imperatives and progressives.

The imperative case is shown by the data in (13). The *n*-conjugation verb forms an imperative with *n-* as in (13a) but this can only be interpreted as (i) referring to an eventuality relative to 'now' where $R \subseteq E$ and not (ii) to an eventuality relative to some other time where $E \subseteq R$ (cf. Toews 2015: 178–184). Attempts to add the perfective reading by the addition of *wu-* fail in (13b) and (13c), and the perfective *wu-* replacing *n-* in (13d) is also ungrammatical.

(13) a. Nahoon! *n-conjugation imperative with n-*
n- $\sqrt[2]{}$hun-μ
NCNJ-2SG·S $\sqrt[2]{}$sell -VAR
i. 'Sell it!'
ii. * 'Have sold it!'

b. * Nawuhoon! **n-conjugation imperative with n-wu-*
n- wu- $\sqrt[2]{}$hun-μ
NCNJ-PFV-2SG·S $\sqrt[2]{}$sell -VAR
intended: 'Have sold it!'

c. * Wunahoon! **n-conjugation imperative with wu-n-*
wu-n- $\sqrt[2]{}$hun-μ
PFV-NCNJ-2SG·S $\sqrt[2]{}$sell -VAR
intended: 'Have sold it!'

d. * Wuhoon! **n-conjugation imperative with wu-*
wu- $\sqrt[2]{}$hun-μ
PFV-2SG·S $\sqrt[2]{}$sell -VAR
intended: 'Have sold it!'

The imperative above features a conjugation prefix that reflects the verb's conjugation class. As detailed in section 3, conjugation prefixes may also be used to express grammatical aspects. One such context is the progressive aspect where *n-* is used for this dedicated grammatical aspect function. Just like the imperative, the progressive in (14) can only be interpreted relative to 'now' and not relative to some other time. The combinations of *n-* and *wu-* are ungrammatical in (14b) and (14c), and the progressive with *wu-* alone in (14d) is also ungrammatical.[10]

(14) a. Yaa ntoo.át. *n-conjugation progressive with n-*
ÿaa= n- tu- $\sqrt[1]{}$.at -H
along=NCNJ-1PL·S-$\sqrt[1]{}$go·PL-VAR
i. 'We are going along.'
ii. * 'We have been going along.'

b. * Yaa nwutu.át. **n-conjugation progressive with n-wu-*
ÿaa= n- wu-tu- $\sqrt[1]{}$.at -H
along=NCNJ-PFV-1PL·S-$\sqrt[1]{}$go·PL-VAR
intended: 'We have been going along.'

c. * Yaa wuntu.át. **n-conjugation progressive with wu-n-*
ÿaa= wu-n- tu- $\sqrt[1]{}$.at -H
along=PFV-NCNJ-1PL·S-$\sqrt[1]{}$go·PL-VAR
intended: 'We have been going along.'

10. It is possible to combine the progressive with other aspects through a progressive aspectual paradigm like the repetitive aspectual paradigm I noted in chapter 2 sections 2.3.3.5 and 2.3.4. This is what Leer calls "epiaspect" (Leer 1991: 80–82, 215–218, 228–231, 497–505) and what Dene researchers call "superaspect" (Kari 1992; Axelrod 1993). But apparently the progressive still cannot be combined with the perfective in this manner (Leer 1991: 229).

Figure 6.4: Structure of Asp⁰ with IRR < MOD

Figure 6.5: Structure of Asp⁰ with IRR > MOD

d. *Yaa wutu.át. **n-conjugation progressive with wu*
ÿaa= wu-tu- $\sqrt[1]{}$.at -H
along=PFV-1PL·S-$\sqrt[1]{}$go·PL-VAR
intended: 'We have been going along.'

Since both imperatives and progressives can occur without PFV and cannot be interpreted like they have a covert PFV, I conclude that conjugation does not entail perfectivity: CNJ $\not\Rightarrow$ PFV. The consequence of the one way entailment PFV $\Rightarrow$ CNJ is that Asp⁰ can minimally contain just CNJ but it cannot minimally contain just PFV. There is an alternative possibility that the node that otherwise contains PFV could be empty in imperfective aspect forms. I discuss this further in section 2.1 on imperfective aspect.

1.1.2. Modality and irrealis

The irrealis and modality prefixes are 'optional' in that they are not necessary elements in a verb form. I maintain a branching structure within Asp⁰ formed by binary merge. If PFV and CNJ are the first two elements merged in Asp⁰ then MOD and IRR must be merged after PFV and CNJ. Ignoring linear order (see sec. 1.1.3), the two possible structures are shown in figures 6.4 and 6.5. The configuration in figure 6.4 has IRR merged before and thus below MOD where the configuration in figure 6.5 is reversed with MOD below IRR.

It is surprisingly hard to argue for or against either of figures 6.4 and 6.5 because of how little is known about the semantics of either IRR or MOD. Their paradigmatic contexts are well documented, but there is no compositional account of their semantics nor is there any analysis of their individual meanings.[11] As implied by figure 6.1, I have taken figure 6.5 to be the correct choice, but the arguments I offer to support this are relatively weak. First I argue for MOD above CNJ based on the contrast between imperatives and hortatives. Then I argue for IRR above CNJ and IRR above PFV based on how irrealis modifies the interpretation of aspect. Finally I argue for IRR above MOD. I ignore the relationship between PFV and MOD because this combination cannot occur.

I suggest that MOD acts as a kind of modifier which adds possible world semantics to the interpretation of aspect. This would then support the introduction of MOD above CNJ in the structure of

11. Although Leer 1991 has extensive discussion of aspect and related phenomena, he does not offer a formal analysis of either IRR or MOD and develops a model without a one-to-one mapping between morphology and semantics.

Asp⁰. The contrast between CNJ without and with MOD can be seen by comparing imperatives and hortatives, particularly because hortatives are the minimal verb forms where *g̱-* appears alone.[12] Both imperatives and hortatives feature the presence of a conjugation prefix that reflects the conjugation class of the verb. They differ in three ways: subject constraints,[13] stem variation,[14] and absence versus presence of the *g̱-* modality prefix. A four-way set of imperatives is given in (15) and a corresponding set of hortatives in (16).

(15) a. Jáḵ! *Ø-conjugation imperative*
Ø ²√jaḵ-H
ZCNJ-2SG·S-²√kill -VAR
'Kill it!'

b. Nahoon! *n-conjugation imperative*
n- ²√hun-μ
NCNJ-2SG·S-²√sell -VAR
'Sell it!'

c. Ga̱xoox̱! *g̱-conjugation imperative*
g̱- ²√x̱ux̱ -μ
GCNJ-2SG·S-²√summon-VAR
'Summon him/her!'

d. Gagwaal! *g-conjugation imperative*
g- ²√gwal-μ
GCNJ-2SG·S-²√beat -VAR
'Beat it!'

(16) a. Ga̱toojaaḵ. *Ø-conjugation hortative*
Ø g̱- tu- ²√jaḵ-μ
ZCNJ-MOD-1PL·S-²√kill -VAR
'Let's kill it.'

b. Naxtoohoon. *n-conjugation hortative*
n- g̱- tu- ²√hun-μ
NCNJ-MOD-1PL·S-²√sell -VAR
'Let's sell it.'

c. Ga̱ax̱toox̱oox̱. *g̱-conjugation contingent*
g̱- g̱- tu- ²√x̱ux̱ -μ
GCNJ-MOD-1PL·S-²√summon-VAR
'Let's summon him/her.'

12. Contingents also can surface with just *g̱-*, but they include Adv and probably covert C (ch. 2 sec. 2.3.3.7).
13. Imperatives are restricted to second person subjects and hortatives to first or third person subjects. This is presumably tied to their different illocutionary forces and so is not directly relevant for their eventuality semantics.
14. The stem variation differences between imperatives (ch. 2 sec. 2.6.5) and hortatives (ch. 2 sec. 2.6.6) could be related to the absence or presence of the *g̱-* modality prefix or could just as well be arbitrary. But if stem variation is a kind of agreement then we should expect it to have no consequences for interpretation.

d. Gaxtoogwaal. *g-conjugation contingent*
g- g- tu- $^{2}\sqrt{}$gwal-μ
GCNJ-MOD-1PL·S-$^{2}\sqrt{}$beat -VAR
'Let's beat it.'

The ∅-conjugation imperative in (15a) has no overt aspectual prefix. It also shows *-H* stem variation rather than the *-μ* of the other three conjugations in (15b)–(15d). If we accept that Asp⁰ is present but can be empty then this can determine the *-H* instead of *-μ* in V. This follows from the argument in section 1.1.1 for a covert CNJ in perfective aspect forms.

Given the presence of a covert Asp⁰ in the ∅-conjugation imperative in (15a), it is not much of a leap to accept the same covert element in the ∅-conjugation hortative in (15a). The other three hortatives in (16b)–(16d) have the *g-* modality prefix together with the conjugation prefix, so it follows that the the ∅-conjugation hortative in (15a) has both ∅ and *g-* as well. If this is the case then the minimal case of *g-* alone still includes the presence of CNJ. I conclude then that MOD is added to CNJ and so is merged after CNJ.[15]

The argument for IRR above CNJ is similar to that for MOD, but it is complicated by the far greater variety of contexts where an irrealis prefix can be found. In most cases the same paradigmatic logic of ∅ versus *n-*, *g-*, and *g-* can be followed, suggesting that IRR is added to a structure based on CNJ. Similarly, although the irrealis prefixes lack any obvious phonological effects in perfective aspect (sec. 2.2), there is still semantic evidence for their presence and thus IRR is added to the structure based on CNJ. The exception is in imperfective aspect where there is no paradigmatic alternation between nothing in Asp⁰ and an overt prefix. Instead, as discussed further in section 2.1, there seems to be a distinction between imperfectives without any conjugation class properties and imperfectives that do show the effects of conjugation class.

The argument for IRR above PFV is distinct from the preceding arguments because there is no paradigm of null versus overt morphemes with an overt irrealis prefix. Instead the problem is reversed: irrealis prefixes never occur together with perfective prefixes (Leer 1991: 110, 176 rule 5a). Despite this, there is still a realis versus irrealis contrast in the perfective aspect as witnessed by Ɛ-suppression (ch. 3 sec. 4.1) and stem variation. The data in (17) contrasts an affirmative and a negative perfective. Under negation the irrealis *u-* appears but is absent in the surface form in (17b), but the Ɛ-suppression still occurs with the lack of *i-* and the stem is *-H* rather than *-μ*.

(17) a. Dzísk'w loowú wutuwaxáa. *affirmative perfective with i- and -μH*
dzísk'w lú -í wu-tu- i- $^{2}\sqrt{}$xa-μH
moose nose-PSS PFV-1PL·S-STV-$^{2}\sqrt{}$eat-VAR
'We ate moose nose.'

b. Tléil dzísk'w loowú wutooxá. *negative perfective with u-, no i-, and -H*
tléil dzísk'w lú -í u- wu-tu- $^{2}\sqrt{}$xa-H
NEG moose nose-PSS IRR-PFV-1PL·S- $^{2}\sqrt{}$eat-VAR
'We didn't eat moose nose.'

15. The addition of MOD might help explain why hortatives can be questions. Both imperatives and hortatives can be modified by some particles like *x'wán* 'be sure', *déi* 'now', *s'é* 'first', *k'é* 'better', and *dáa* 'pleading'. But hortatives also allow polar yes/no questions with *gí* ~ *gé* which imperatives prohibit. Another possibly significant distinction is that hortatives can be embedded clauses where imperatives cannot.

Negation in other contexts reliably introduces an irrealis prefix along with Ɛ-suppression and V-agreement. There is no obvious reason why it should uniquely not introduce an irrealis prefix in the perfective aspect. In addition, the irrealis *u-* and the perfective *wu-* or *u-* uniquely include labialization, so there is a potential phonological argument that they are in some kind of competition or that they are autosegmentally reduced to a single unit. If we accept that irrealis is covertly added to perfectives then this implies that IRR is added to a structure based on PFV (and CNJ per sec. 1.1.1). The alternative is paradigmatically weird because it would imply for example that an irrealis imperfective with IRR is derived to become an irrealis perfective by the addition of PFV. In general irrealis seems to be a secondary modification of aspects rather than a category of its own, so I conclude that IRR is added to PFV and so is merged after PFV.

The argument for IRR above MOD is weak. The two prefixes do not have any obvious syntactic or semantic interactions, and as noted in the introduction of this chapter we know very little about the syntax or semantics of the *g̲-* modal prefix qua MOD. The major difference between IRR and MOD seems to be that IRR can be selected by phenomena much higher in the clause such as negation and optativity (sec. 4.5) whereas MOD is apparently selected only by Asp⁰ patterns for aspect and modality. I have thus placed MOD lower than IRR because it is less productive. Given a better understanding of the semantics of IRR and MOD we may be able to determine scope requirements, but there are no reliable syntactic diagnostics for c-command relations between them.

1.1.3. Linear order of prefixes

I represent the linear order of the aspectual prefixes as shown in (18). Because the perfective and conjugation prefixes do not cooccur overtly (sec. 1.1.1) it is impossible to say which is ordered before the other; the symbol '≷' indicates this ambiguity. Aside from this indeterminacy, I give the irrealis prefix as always preceding the perfective or conjugation prefix, and modality as always following the perfective or conjugation prefix.

(18) IRR > (PFV ≷ CNJ) > MOD *linear ordering of aspectual prefixes*

The ordering in (18) is partly stipulative because there is significant phonological variation in the realization of Asp⁰. Indeed, this phonological variation is part of the motivation for representing the whole as a single complex head with its own syntax rather than a sequence of separate heads in the syntax. The irrealis prefix is the most linearly problematic because it is sometimes realized as a vowel, sometimes as labialization, and sometimes is completely absent; see section 4.1 for further discussion of irrealis morphophonology. In addition, there is considerable variation that suggests different linear orderings for different speakers, and even possibly different orderings for the same speaker. Semantic scope relationships cannot yet be appealed to for ordering constraints because we know so little about the compositional semantics of these prefixes. Thus although I assume the order of the aspectual prefixes as in (18) throughout this dissertation, this ordering is an analytical convenience rather than a settled fact.

The position of MOD after PFV is impossible to determine because the two do not occur together in the same forms (sec. 1.1.2). The position of MOD after CNJ follows from the phonological realization of the two combinations of *n-* + *g̲-* and *g-* + *g̲-*. The data in (19) shows that *n-* must precede *g̲-* and the data in (20) shows the same for *g-*.

(19) a. Nagataa. *n-conjugation hortative with n-g̱-*
n- g̱- $\sqrt[1]{\text{ta}^{\text{h}}}$ -μ
NCNJ-MOD-$\sqrt[1]{\text{sleep}}$·SG-VAR
'Let him/her sleep.'

b. * Ganataa. **n-conjugation hortative with g̱-n-*
g̱- n- $\sqrt[1]{\text{ta}^{\text{h}}}$ -μ
MOD-NCNJ-$\sqrt[1]{\text{sleep}}$·SG-VAR
intended: 'Let him/her sleep.'

(20) a. Gagagaax̱. *g-conjugation hortative with g-g̱-*
g- g̱- $\sqrt[1]{\text{gax̱}}$ -μ
GCNJ-MOD-$\sqrt[1]{\text{cry}}$·SG-VAR
'Let him/her cry.'

b. * Gagagaax̱. **g-conjugation hortative with g̱-g-*
g̱- g- $\sqrt[1]{\text{gax̱}}$ -μ
MOD-GCNJ-$\sqrt[1]{\text{sleep}}$·SG-VAR
intended: 'Let him/her cry.'

The patterns of *n-* > *g̱-* and *g-* > *g̱-* are taken to imply the ordering of *g̱-* ḠCNJ > *g̱-* MOD as shown in (21). Then this ordering is generalized to *Ø* as in (22).

(21) a. Ga̱aganook. *g̱-conjugation hortative with g̱-g̱-*
g̱- g̱- $\sqrt[1]{\text{nuk}}$ -μ
ḠCNJ-MOD-$\sqrt[1]{\text{sit}}$·SG-VAR
'Let him/her sit down.'

b. * Ga̱aganook. **g̱-conjugation hortative with g̱-g̱-*
g̱- g̱- $\sqrt[1]{\text{nuk}}$ -μ
MOD-ḠCNJ-$\sqrt[1]{\text{sit}}$·SG-VAR
intended: 'Let him/her sit down.'

(22) a. Ga̱.ee. *Ø-conjugation hortative with Ø-g̱-*
Ø g̱- $\sqrt[1]{\text{.i}}$ -μ
ZCNJ MOD-$\sqrt[1]{\text{cook}}$-VAR
'Let it get cooked.'

b. * Ga̱.ee. **Ø-conjugation hortative with g̱-Ø-*
g̱- Ø $\sqrt[1]{\text{.i}}$ -μ
MOD-ZCNJ $\sqrt[1]{\text{cook}}$-VAR
intended: 'Let it get cooked.'

The linear position of irrealis with respect to the conjugation prefixes is phonologically problematic. The examples in (23) show *u-* > *n-* in a conditional with a lexical irrealis *u-* and in a progressive with a negative irrealis *u-*. The forms in (24) show *u-* > *n-* > *g̱-* with two potentials, one in a relative clause and one with past tense.

(23) a. Unayéx̱ni… *lexical irrealis conditional with u-n- as una*
u- n- $^{1}\sqrt{}$yex̱-H -n -í
IRR-NCNJ-$^{1}\sqrt{}$lack-VAR-NSFX-SUB
'If it is lacking…' (Eggleston 2017)

b. Tléil kei x̱at unanéekw. *negative progressive with u-n- as una*
tléil kei=x̱at= u- n- $^{1}\sqrt{}$nikw-μH
NEG up= 1SG·S=IRR-NCNJ-$^{1}\sqrt{}$sick -VAR
'I'm not getting sick.' (Eggleston 2017)

(24) a. Tléil aadé ung̱aayáat'i yé. *rel. potential with u-n-g̱- as ung̱a*
tléil á -dé u- n- g̱- i- $^{1}\sqrt{}$ÿat'-μH-i yé
NEG [CP 3N-ALL IRR-NCNJ-MOD-STV-$^{1}\sqrt{}$long-VAR-REL] way
'(There is) no way that it can get long.' (Eggleston 2017)

b. A yáx̱ ung̱ateeyín. *past potential with u-n-g̱- as ung̱a*
a yáx̱ u- n- g̱- $^{1}\sqrt{}$ti^{h}-μ -ín
3N SIM IRR-NCNJ-MOD-$^{1}\sqrt{}$be -VAR-PAST
'It could have been like that.' (Eggleston 2017)

But the combination of *u-* and *n-* is not always realized in this order. The data in (25) show three past potentials with the apparent order *n-* > *g̱-* > *u-* instead of *u-* > *n-* > *g̱-*. The first two in (25a) and (25b) have an overt *v*, but (25c) lacks *v* so this cannot be the explanation for the difference with (24b).

(25) a. Ashunax̱wsayaayín. *past potential with u-n-g̱- as nax̱w*
a- shu-u- n- g̱- s- $^{1}\sqrt{}$ya -μ -ín
ARG-end- IRR-NCNJ-MOD-CSV-$^{1}\sqrt{}$lower-VAR-PAST
'S/he could have anchored it (boat).' (Eggleston 2017)

b. Nax̱wlal'éex'ín. *past potential with u-n-g̱- as nax̱w*
u- n- g̱- l- $^{1}\sqrt{}$l'ix' -μH-ín
IRR-NCNJ-MOD-XTN-$^{1}\sqrt{}$break-VAR-PAST
'It could have broken.' (Eggleston 2017)

c. Nag̱wageiyín. *past potential with u-n-g̱- as nag̱wa*
u- n- g̱- $^{1}\sqrt{}$ge-μ -ín
IRR-NCNJ-MOD-$^{1}\sqrt{}$big-VAR-PAST
'There could have been many.' (Eggleston 2017)

The combination of irrealis *u-* with the *g-* conjugation prefix and the *g̱-* modal prefix is apparently always realized in the order *g-* > *u-* > *g̱-*, as shown by the forms in (26). This motivated Leer to place *g-* in a position apart from *n-* and *g̱-* despite the fact that they are functionally similar elements (Leer 1991: 108, 111).

(26) a. Xat gooxsanéegún. *past potential with u-g-g̲-*
x̲at= u- g- g̲- s- $^{1}\sqrt{}$nikw-μH-ín
1SG·O=IRR-GCNJ-MOD-CSV-$^{1}\sqrt{}$sick -VAR-PAST
'It could have made me sick.' (Eggleston 2017)

b. Gug̲awóolín. *past potential with u-g-g̲-*
u- g- g̲- $^{1}\sqrt{}$wu'l-μH-ín
IRR-GCNJ-MOD-$^{1}\sqrt{}$hole -VAR-PAST
'It could have gotten a hole.' (Eggleston 2017)

The *w-* irrealis prefix is similarly problematic in its ordering with the *g-* conjugation prefix in the prospective aspect. In many contexts it appears to be in between *g-* and *g̲-* as in (27), suggesting an order *g-* > *w-* > *g̲-* identical to *g-* > *u-* > *g̲-*.

(27) a. Igux̲lach'éix̲'w. *prospective with w-g-g̲- as gux̲*
i- w- g- g̲- l- $^{0}\sqrt{}$ch'ex̲'w-μH
2SG·O-IRR-GCNJ-MOD-INTR-$^{0}\sqrt{}$dirt -VAR
'You (sg.) will get dirty.'

b. Agux̲sa.ée. *prospective with w-g-g̲- as gux̲*
a- w- g- g̲- s- $^{1}\sqrt{}$.i -μH
ARG-IRR-GCNJ-MOD-CSV-$^{1}\sqrt{}$cook-VAR
'S/he will cook it.'

c. Akagux̲shagéen. *prospective with w-g-g̲- as gux̲*
a- k- w- g- g̲- sh-$^{2}\sqrt{}$gin -μH
ARG-HSFC-IRR-GCNJ-MOD-PEJ-$^{2}\sqrt{}$wrinkle-VAR
'S/he will wrinkle it.'

But the *w-* irrealis can also appear after the *g̲-* modal prefix as in (28). The *g-* is spelled out as the coda of the preceding syllable: [ʔìk] in (28a) and (28b) or [kʰàk] in (28c). The *g̲-* forms the onset of the following syllable and the irrealis is realized as labialization of this onset. The *g̲-* + *w-* forms the syllable [qʷà] in (28a), but the following uvular fricative *x̲-* becomes aspiration on the onset to give [qʰʷà] in (28b) and (28c).

(28) a. Ikg̲walnéetl. *prospective with w-g-g̲- as kg̲wa*
i- w- g- g̲- d- l- $^{1}\sqrt{}$ni'tl-μH
2SG·O-IRR-GCNJ-MOD-MID-CSV-$^{1}\sqrt{}$fat·H-VAR
'You (sg.) will get fat.'

b. Ikk̲wasa.ée. *prospective with w-g-g̲- as kg̲wa*
i- w- g- g̲- x̲- s- $^{1}\sqrt{}$.i -μH
2SG·O-IRR-GCNJ-MOD-1SG·S-CSV-$^{1}\sqrt{}$cook-VAR
'I will cook you (sg.).'

c. Kakk̲washagéen. *prospective with w-g-g̲- as kg̲wa*
k- w- g- g̲- x̲- sh-$^{2}\sqrt{}$gin -μH
HSFC-IRR-GCNJ-MOD-1SG·S-PEJ-$^{2}\sqrt{}$wrinkle-VAR
'I will wrinkle it.'

Figure 6.6: Asp⁰ with IRR on the left

Figure 6.7: Asp⁰ with IRR on the right

And the irrealis prefix can even disappear completely in some contexts. The data in (29) illustrate this with a handful of overt subjects: with the second person singular *i-* in (29a), with the second person plural *ÿi-* in (29b), with the first person plural *tu-* in (29c), and with the fourth person human *du-* in (29d).

(29) a. Kei kg̲eeshée. *prospective with w-g-g̲-i- as kg̲ee*
kei=w- g- g̲- i- ²√shiʰ-μ
up= IRR-GCNJ-MOD-2SG·S-²√sing -VAR
'You (sg.) will sing it.'

b. Kei gax̲yishée. *prospective with w-g-g̲-ÿi- as gax̲yi*
kei=w- g- g̲- ÿi- ²√shiʰ
up= IRR-GCNJ-MOD-2PL·S-²√sing-VAR
'You (pl.) will sing it.'

c. Kei gax̲tooshée. *prospective with w-g-g̲-tu- as gax̲too*
kei=w- g- g̲- tu- ²√shiʰ
up= IRR-GCNJ-MOD-1PL·S-²√sing-VAR
'We will sing it.'

d. Kei gax̲dushée. *prospective with w-g-g̲-du- as gax̲du*
kei=w- g- g̲- du- ²√shiʰ
up= IRR-GCNJ-MOD-4H·S-²√sing-VAR
'We will sing it.'

I conclude from this variation that the phonological form cannot be used to reliably determine the linear order of the irrealis prefix with respect to the conjugation and modality prefixes, at least not with what we currently know about the phonology of these prefixes in Tlingit. My linear ordering of IRR > CNJ is stipulated for now, but I hope that more arguments for or against it can be developed in the future.

Inspired by Williams (2002), I suggest that something like branch flipping in Asp⁰ might account for at least some of the variation in linear order. One possibility is sketched in figures 6.6 and 6.7. In figure 6.6 the IRR node appears to the left of all of the other nodes in Asp⁰. Then in figure 6.7 the top-level branch of Asp⁰ is flipped to the right side, consequently placing IRR to the right of all

Figure 6.8: Aspectual prefixes from Burge (2017: 65)

the other nodes in Asp⁰. This would maintain the hierarchical structure within Asp⁰ and allow the system to spell out both forms like *unga* in (24) and forms like *naxw* or *nagwa* in (25).

1.2. Alternatives to the subtree model

A straightforward alternative model to the subtree of Asp⁰ is to place each of the CNJ, PFV, MOD, and IRR elements into a separate syntactic head. Burge (2017: 65) adopts this kind of model, specifically representing the prefixes aside from PFV as a tree shown in figure 6.8 (6.8). She is deliberately silent on the syntactic labelling of the individual nodes because her research addresses only the semantics. The lack of overt PFV reflects the assumption that because PFV and CNJ cannot cooccur, both PFV and CNJ are in the same position (sec. 1.1.1). The order CNJ > IRR > MOD in figure 6.8 reflects the phonological realization of the prospective as e.g. *g-w-g-* → *guga* [kʷùqà] and *g-w-g-x-* → *kuka* [kʰʷùqʰà].

Following the discussion in sections 1.1.1–1.1.3, there are a couple of possible models along the lines of that in figure 6.8. All of these involve placing each of the CNJ, PFV, MOD, and IRR prefixes in a separate syntactic node. Variations on this theme include distinct phrases for each head, a single phrase with modifiers, and intermediate combinations of these two. Figure 6.9 is one possible structure where each head projects its own phrase. Figure 6.10 is one possible structure where one head projects a phrase and the other prefixes are modifiers of this phrase.

I do not explore these alternative models in any serious detail here, but I offer a few tentative criticisms. One is that these approaches exacerbate the still unresolved ordering problems between the aspectual prefixes. The subtree model places all these prefixes into a single syntactic unit that corresponds to a phonological subdomain. The advantage of this approach is that it predicts the possibility of linear order variation without any significant changes to the syntax or lexicon. The separate phrases approach like in figure 6.9 is forced to specify different c-selection properties for different ordering variations, necessitating different lexical entries for each head with each different order. The modifiers approach in figure 6.10 is less problematic since the order of modifiers is not usually encoded by c-selection specifications in the lexicon. Both are also more limited in their possible orderings because they entail that the more rightward a position the lower the position in the tree, whereas the subtree model can accomodate higher positions on the right side.

The separate phrases approach of figure 6.9 is also problematic for the analysis of the middle

Figure 6.9: Aspectual prefixes as heads with separate phrases

Figure 6.10: Aspectual prefixes as modifiers of a single head

field and left field of the verb word. All objects and argument PPs must move from VP to AspP, the Preverb and Disjunct domains are defined by the material in AspP, and the Conjunct domain is partly defined by the aspectual prefixes. Breaking the aspectual prefixes into separate heads would greatly complicate the syntactic and phonological implementations of these middle and left field phenomena. The modifiers approach of figure 6.10 is less problematic since it is based on a single phrase.

In both figures 6.9 and 6.10 I give CNJ above PFV although this is not the case in figure 6.1 where CNJ and PFV symmetrically c-command each other. The configuration of CNJ > PFV is because of the asymmetric relationship between CNJ and PFV discussed in section 1.1.1: CNJ can determine forms of PFV (*u-* for *∅* versus *wu-* for *n*/*g*/*g*) but not vice versa. This asymmetric relationship between CNJ and PFV is one point in favour of a simple head analysis and against a complex head subtree analysis.

1.3. Realizing conjugation class

The conjugation classes and their associated conjugation prefixes are documented in detail in section 3. In this section I discuss how they can be realized in the morphosyntax, following on the discussion in chapter 2 section 1.3.1.4 on the lexical specification of conjugation class as ɛ-features.

Conjugation class can be introduced either by lexical specification in the root or by other derivational material. An instance of lexical specification is shown in (30) where the root $\sqrt[2]{hun}$ 'sell' forms an imperative with only *n-* and no other conjugation prefix. A contrasting case of derivational specification is shown in (31) where the motion root $\sqrt[1]{\underline{k}u\underline{x}}$ 'go by boat, other vehicle' forms imperatives with all four conjugation prefixes depending on the motion derivation applied to it. For more on motion derivations see section 3.3.

(30) a. *Tá! **lexical conjugation class with ∅*
$\sqrt[1]{\text{ta}^{\text{h}}}$ -H
ZCNJ 2SG·S $\sqrt[1]{\text{sleep}}$-VAR
intended: 'Sleep!'

b. Natá! *lexical conjugation class with n-*
n- $^{1}\sqrt{\text{ta}^{\text{h}}}$ -H
NCNJ-2SG·S $^{1}\sqrt{\text{sleep}}$-VAR
'Sleep!'

c. *Ga̱tá! **lexical conjugation class with ga̱-*
ga̱- $^{1}\sqrt{\text{ta}^{\text{h}}}$ -H
GA̱CNJ-2SG·S $^{1}\sqrt{\text{sleep}}$-VAR
intended: 'Sleep!'

d. *Gatá! **lexical conjugation class with ga-*
ga- $^{1}\sqrt{\text{ta}^{\text{h}}}$ -H
GCNJ-2SG·S $^{1}\sqrt{\text{sleep}}$-VAR
intended: 'Sleep!'

(31) a. Daak ka̱ux̱! *derived conjugation class with ∅*
daak= $^{1}\sqrt{\text{ka̱ux̱}}$ -H
seaward=ZCNJ 2SG·S $^{1}\sqrt{\text{go·boat}}$-VAR
'Boat out to sea!'

b. Aadé naka̱ux̱! *derived conjugation class with n-*
á -dé n- $^{1}\sqrt{\text{ka̱ux̱}}$ -H
3N-ALL NCNJ-2SG·S $^{1}\sqrt{\text{go·boat}}$-VAR
'Boat to(ward) there!'

c. Aanáx̱ ga̱ka̱ux̱! *derived conjugation class with ga̱-*
á -náx̱ ga̱- $^{1}\sqrt{\text{ka̱ux̱}}$ -H
3N-PERL GA̱CNJ-2SG·S $^{1}\sqrt{\text{go·boat}}$-VAR
'Boat down along there!'

d. Aadáx̱ ga̱ka̱ux̱! *derived conjugation class with ga̱-*
á -dáx̱ ga̱- $^{1}\sqrt{\text{ka̱ux̱}}$ -H
3N-ABL GCNJ-2SG·S $^{1}\sqrt{\text{go·boat}}$-VAR
'Boat up from there!'

I defined ε-features corresponding to the four conjugation classes in chapter 2 section 1.3.1.4. Briefly, there four features [αCNJ$_{\varepsilon}$] where α ∈ {Z, N, G̱, G}. The lexical specification of conjugation class as in (30) is modelled by the presence of [NCNJ$_{\varepsilon}$] in the root. Figure 6.11 illustrates the structure of the lexically specified *n*-conjugation imperative in (30b). The Asp⁰ head probes √ for the conjugation class ε-feature and then realizes *n-* to match this feature.

The derivational specification of conjugation class as in (31) should be modelled by the same set of ε-features. But the syntactic element associated with the specification of conjugation class is above Asp⁰: all four PPs in (31) precede the rest of the verb word and thus must be above it. This requires Asp⁰ to probe upwards for its ε-feature, where probe-agree is usually understood to only work downwards in an asymmetric c-command domain. The PPs associated with motion derivation are arguments, so we can alleviate the problem by first merging these below AspP like other arguments. I suggest that they are merged in VP like objects, and hence are within the c-command domain of

Figure 6.11: Lexically specified *n*-conjugation imperative in (30b)

Figure 6.12: Derivationally specified *n*-conjugation imperative in (31b)

Asp⁰. This configuration is shown in figure 6.12 which represents the structure of (31b). The P *-dé* hosts the [NCNJ$_\varepsilon$] feature and Asp⁰ probes for this, realizing *n-*. The same mechanism should work for motion derivations that introduce Adv instead of PP such as *daak=* 'seaward, out to sea' in (31a), where the [ZCNJ$_\varepsilon$] feature would be specified by the Adv.

This solution where the Adv or P hosts the derived conjugation class feature raises a couple of interesting problems. One problem is how to handle structures where a derived conjugation class supersedes a lexically specified conjugation class. Related to this problem are structures where multiple motion derivations provide different derived conjugation classes. Another problem is how to reconcile the realization of conjugation class with the realization of conjugation-dependent stem variation.

Tlingit allows some motion derivations to be applied to non-motion verbs. The limiting factor seems to be semantic: if a particular motion derivation can be interpreted metaphorically as restricting an eventuality rather than a path then it can be applied to a non-motion verb. The canonical examples of this are the inceptive motion derivation *g̲unayéi=* ~ *g̲unéi=* (*∅*; *-x̲* repetitive) 'starting, beginning, initiating' and the terminative motion derivation *ÿán=* ~ *ÿáx̲=* ~ *ÿánde=* (*∅*; *-μ* repetitive) 'finishing, ending'. The latter is morphologically identical to the 'shoreward' motion derivation which is based on the noun *ÿán* 'shore' together with the telic motion derivation *NP-{t,x̲,dé}* (*∅*; *-μ* repetitive) 'arriving at NP'. To illustrate this, first consider the imperatives in (32) based on the root $\sqrt[2]{shi^h}$ 'sing'. This root is lexically specified for the *g*-conjugation class since only (32d) is grammatical.

(32) a. *Shí! **∅-conjugation imperative*
∅ $\sqrt[2]{\text{shi}^h}$-μH
ZCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
intended: 'Sing it!'

b. *Nashí! **n-conjugation imperative*
n- $\sqrt[2]{\text{shi}^h}$-μH
NCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
intended: 'Sing it!'

c. *G̲ashí! **g̲-conjugation imperative*
g̲- $\sqrt[2]{\text{shi}^h}$-μH
G̲CNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
intended: 'Sing it!'

d. Gashí! *g-conjugation imperative*
g- $\sqrt[2]{\text{shi}^h}$-μH
GCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
'Sing it!'

Even though the root $\sqrt[2]{shi^h}$ 'sing' is lexically specified for the *g*-conjugation class, the application of the inceptive and terminative motion derivations causes a shift to to the *∅*-conjugation class. The data in (33) show that the addition of the inceptive motion derivation causes the *∅*-conjugation imperative to be grammatical instead of the *g*-conjugation imperative. The data in (34) shows the same for the terminative motion derivation.

(33) a. Ḡunayéi shí! *inceptive Ø-conjugation imperative*
ḡunayéi=Ø $\sqrt[2]{\text{shi}^{\text{h}}}$-μH
INCEP= ZCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
'Start singing it!'

b. *Ḡunayéi nashí! **inceptive n-conjugation imperative*
ḡunayéi=n- $\sqrt[2]{\text{shi}^{\text{h}}}$-μH
INCEP= NCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
intended: 'Start singing it!'

c. *Ḡunayéi ḡashí! **inceptive ḡ-conjugation imperative*
ḡunayéi=ḡ- $\sqrt[2]{\text{shi}^{\text{h}}}$-μH
INCEP= ḠCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
intended: 'Start singing it!'

d. *Ḡunayéi gashí! **inceptive g-conjugation imperative*
ḡunayéi=g- $\sqrt[2]{\text{shi}^{\text{h}}}$-μH
INCEP= GCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
intended: 'Start singing it!'

(34) a. Yan shí! *terminative Ø-conjugation imperative*
ÿán= Ø $\sqrt[2]{\text{shi}^{\text{h}}}$-μH
TERM=ZCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
'Finish singing it!'

b. *Yan nashí! **terminative n-conjugation imperative*
ÿán= n- $\sqrt[2]{\text{shi}^{\text{h}}}$-μH
TERM=NCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
intended: 'Finish singing it!'

c. *Yan ḡashí! **terminative ḡ-conjugation imperative*
ÿán= ḡ- $\sqrt[2]{\text{shi}^{\text{h}}}$-μH
TERM=ḠCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
intended: 'Finish singing it!'

d. *Yan gashí! **terminative g-conjugation imperative*
ÿán= g- $\sqrt[2]{\text{shi}^{\text{h}}}$-μH
TERM=GCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
intended: 'Finish singing it!'

The structure in figure 6.13 reflects the grammatical form of the inceptive in (33a). Both √ and Adv specify a conjugation class ε-feature, but the Asp⁰ must only agree with the Adv and not with √ so that it does not realize *g-*. Presumably this can be accomodated by some kind of nearest match condition on agreement, but it is not clear what the consequences of this condition are for the rest of Tlingit's various agreement phenomena. Further complicating this problem is that there is occasional evidence for the application of multiple motion derivations to a single verb, but it is not yet known if these stacked derivations have a similar hierarchical precedence for determining conjugation class. Thus there are both theoretical and empirical issues to be worked out in this area of the grammar.

Figure 6.13: Derivational conjugation class supersedes lexical conjugation class

The other problem mentioned above is that the conjugation class of a verb can determine its stem variation, a fact sketched earlier in section 1.1.1. The *n*-conjugation class perfective form in (11b) is repeated here as (35). Its structure is represented in figure 6.14.

(35) Aandé wutuwa.aat *n-conjugation class perfective* (= 11b)
aan -dé wu-tu- i- ¹√.at -μ
town-ALL PFV-1PL·S-STV-¹√go·PL-VAR
'We went to(ward) town.'

In the perfective aspect the conjugation class of the verb determines its perfective prefix allomorph (*u-* versus *wu-*) and its stem variation. In a motion verb the conjugation class is determined by the motion derivation. To handle this the model must implement a sequence of agreement operations. First the argument PP of the motion derivation must be merged in VP to provide the conjugation class specification. Then the Asp head must probe the conjugation class feature of the PP, determining the conjugation prefix. The conjugation prefix then provides the feature specifying the perfective prefix allomorph and the feature specifying the V-agreement realization. After this the phase at Asp commences and the argument PP is raised to AspP where it will spell out.

Earlier in section 1.1.1 I claimed that the P should not be the determining factor for conjugation class specification. The structure in figure 6.14 contradicts this claim because the P introduces the [NCNJε] feature that specifies the *n*-conjugation class and hence the covert *n-* conjugation prefix. However the P is not the basis for the conjugation-dependent features, but is instead the basis only for the conjugation class. The covert conjugation prefix provides the other features to specify the perfective prefix allomorph and the stem variation.

Figure 6.14: V-agreement with conjugation prefix in perfective aspect for (35)

2. Perfective and imperfective aspects: Many morphologies

In this section I present a novel organization and analysis of the imperfective and perfective aspects in Tlingit. Tlingit is traditionally said to have a single perfective aspect and a bewildering variety of imperfective aspects distinguished by stem variation, suffixation, and other morphology.[16] I abandon this approach, instead describing a basic imperfective/perfective distinction that is cross-cut by various semantic and morphological variables. Taken together, these form a complex multidimensional matrix of aspectual expressions, the outlines of which begin to emerge from the fog. I follow the trajectory of crosslinguistic research on aspect which proposes a basic distinction between perfective and imperfective (Comrie 1976; Klein 1994; Olsen 1997; Binnick 2001; Mani, Pustejovsky, & Gaizauskas 2005; de Swart 2012; Rothstein 2016), with other aspects like the progressive and prospective being more or less language-specific constructions that more finely slice the aspectual pie or that introduce additional relationships with times and worlds.

Both imperfective and perfective aspect are expressed in Tlingit with two distinct prefixation patterns. One pattern uses the lexically or derivationally specified conjugation prefixes *CNJ-* = {∅, *n-*, *g̱-*, *g-*}. The other pattern is either a dedicated aspectual prefix or no prefix at all. This is a two dimensional system as shown in table 6.1 where one axis is the imperfective/perfective contrast and the other the conjugation/other contrast. The details are more complicated, but this forms the or-

16. Leer presents at least 18 imperfective aspects, excluding the realis/irrealis contrast (Leer 1991: 206–207).

	conjugation prefix	*other prefix*
imperfective	CNJ-imperfective	*∅*-imperfective
perfective	CNJ-perfective	*u/wu*-perfective

Table 6.1: Four-way prefix division in the imperfective/perfective system

ganizational basis for section 2.1 on the imperfective aspect and section 2.2 on the perfective aspect. The symbol *∅* in '*∅*-imperfective' should be taken to reflect the absence of a perfective prefix and is not necessarily identical to the notional *∅* conjugation prefix; see section 2.1.1 for discussion.

An additional dimension is the contrast between non-iterative and iterative eventualities. **Iterativity** is essentially the pluralization of eventualities, where a single type of eventuality occurs multiple times. The term **pluractional** for this is popular (Lasersohn 1990; Beck & von Stechow 2007; Ward 2012; Henderson 2013) but it wrongly implies a limitation to activities whereas Tlingit can apply iterativity to any kind of eventuality such as an iterated state or **pluristate**. The iterated eventualities may be discrete or they may be contained within some enclosing eventuality. For convenience I refer to the latter case where a single eventuality encloses a plurality of eventualities as **subiteration**. Non-iterative eventualities are simply the basis case of a single eventuality.

The timeline diagrams in (36) illustrate iterativity for an achievement like like $\sqrt[1]{}$*dut'* 'hiccup' or $\sqrt[1]{}$*tuk* 'pop, explode': an instantaneous (non-durative) telic event. The diagram in (36a) represents a single event ε. The diagram in (36b) represents iteration of an instantaneous event resulting in three discrete events ε_1, ε_2, and ε_3. The diagram in (36c) represents iterative instantaneous events ε_1, ε_2, and $\varepsilon_3$which are contained within a larger durative event ε. For convenience I describe the configuration in (36c) as **subiteration**: one eventuality that contains iterated subeventualities.

(36) a.

instantaneous event

b.

discrete iterated events

c.

iterated subevents

Tlingit expresses iterativity with the presence of a **repetitive suffix** in the set {*-x̲, -ch, -k, -t, -t', -x', -s', -l'*} as well as a few allomorphs of these. I analyze the repetitive suffixes as Adv nodes merged in VP, functioning as plural quantifiers over the eventuality (ch. 2 sec. 2.3.3). Non-iterativity does not have any special morphosyntax and so it is the unmarked elsewhere case.

In addition to the presence or absence of iterativity, there is another dimension of variation in stativity with the presence or absence of *i-* in Ɛ. As detailed in chapter 3, the presence of *i-* in Ɛ may be lexically specified, derived by morphosyntactic operations, or grammatically specified by aspectual inflection. I discuss the sources of stativity in the context of each aspectual form later in this section.

One other dimension of variation is whether the particular aspect form is lexically specified or not. Out of all the possible imperfective and perfective aspect forms, only two are clearly lexically

Name	Asp	*Perfective*	*Iterative*	*Stative*	*Lexical*	*Evt. Type*	Adv	*Notes*
lexical activity impfv.	none	–	–	–	+	durative	none	§2.1.1.1
lexical state impfv.	none	–	–	+	+	stative	none	§2.1.1.1
repetitive activity impfv.	none	–	+	–	±	durative	any	§2.1.1.2
repetitive state impfv.	none	–	+	+	±	stative	*-k*	§2.1.1.2
(unknown)	(*CNJ-*)	–	–	–	?	(durative)	(none)	
extensional state impfv.	*CNJ-*	–	–	+	±	stative	none	§2.1.2.1
(unknown)	(*CNJ-*)	–	+	–	?	(durative)	(any?)	
multipos. state impfv.	*CNJ-*	–	+	+	?	stative	*-kw*(*-t*)	§2.1.2.2
(unknown)	(*wu-*?)	+	–	–	–	(durative)	(none)	
perfective	*u-*	+	–	+	–	stative	none	§2.2.1.1; ∅-conj.
	wu-	+	–	+	–	stative	none	§2.2.2.1; non-∅-conj.
habitual	*u-*	+	+	–	–	durative?	*-ch*	§2.2.1.2; ∅-conj.
repetitive perfective	*wu-*	+	+	+	–	stative	any?	§2.2.2.2; rare
(unknown)	(*CNJ-*)	+	–	–	–	(durative)	(none)	
realizational	*CNJ-*	+	–	+	–	stative	none	§2.2.3.1
habitual	*CNJ-*	+	+	–	–	durative?	*-ch*	§2.2.3.2; non-∅-conj.
(unknown)	(*CNJ-*)	+	+	+	–	(stative)	(*-k*?)	

Table 6.2: Imperfective and perfective aspect morphologies

specified, namely the lexical activity ∅-imperfective and the lexical state ∅-imperfective. The details of their lexical specification are addressed in chapter 2 sections 1.3.1.1 and 1.3.1.2 in the discussion of the root and its lexical features. Among the *CNJ*-imperfective forms the extensional state imperfectives (sec. 2.1.2.1) may be lexically specified for some roots but are derived for others (ch. 2 sec. 2.6.1). This might also be the case for at least some multipositional state imperfectives as well, but the details are unclear (sec. 2.1.2.2). Apparently no perfective aspect forms are ever lexically specified, excluding secondary sources of variation like conjugation class.

Taking the various dimensions above into account, we have a fairly rich but also fairly regular system of creating imperfective and perfective aspect forms sketched in table 6.2. The first column gives the conventional name of the aspect form. The 'Asp' column indicates the absence or presence of a PFV or CNJ prefix in Asp⁰. The 'Perfective' column is the basic binary distinction between imperfective and perfective aspect. The 'Iterative' column is the binary distinction between non-iterative and iterative, ignoring any differences between discrete iteration and subiteration. The 'Stative' column reflects the binary absence or presence of *i-* in Ɛ as a result of lexical, derivational, or grammatical specification. The 'Lexical' column is the binary distinction between specification of the form in the root lexical entry or not. The 'Event Type' reflects whether the eventuality class is durative, stative, or otherwise; durativity has not been determined for some perfective aspect forms.

The 'Adv' column indicates the absence or presence of a repetitive suffix and if present which of the eight suffixes occurs. Section numbers in the 'Notes' column refer to the following subsections.

The typology of imperfective and perfective aspect in table 6.2 predicts at least five different forms that are unattested. None has been elicited so it is unknown if these gaps are grammatical or not. The lack of *CNJ*-imperfective events in Leer's description of the imperfective aspect (Leer 1991: 206–209, 356–365) is implied by the restriction of imperfective aspect to durative eventualities, but I am not aware of any negative evidence confirming this implication. A similar interesting gap is the lack of non-state perfectives without durativity, but this is not predicted by any descriptions of perfective aspect in Tlingit and there is no negative evidence confirming their absence.

The typology in table 6.2 fails to predict a significant distinction between the *∅*-conjugation class perfectives and the non-*∅*-conjugation class perfectives which have distinct PFV prefixes in Asp. This issue is discussed in section 2.2. The typology highlights some interesting distinctions such as the use of *-k* ~ *-kw* only for states and the dedicated use of *-ch* for habituals. Another unusual property highlighted in table 6.2 is that the habitual is the only conventional aspectual category that is split across the two systems of Asp marking: *∅*-conjugation habituals use *u-* in Asp where non-*∅*-conjugation habituals use *CNJ-*.

2.1. Imperfective aspect

What is the imperfective aspect? Rothstein describes the imperfective aspect using Reichenbach's (1947) three time variables: speech time *S*, reference time *R*, and event time *E*. She says "we can say that imperfective aspect occurs when the interval at which the event holds surrounds the reference time, i.e. $R \subseteq E$" (Rothstein 2016: 361). To illustrate this, Toews (2015: 179) contrasts the English past perfective in (37a) with the past imperfective in (37b).

(37) a. She painted the house purple. *perfective*

b. She was painting the house purple. *imperfective*

Both (37a) and (37b) describe a past event of painting the house, with the same reference time of the speaker watching. In (37a) the perfective watching event of *R* contains the entirety of the painting event of *E* so $E \subseteq R$. But in (37b) the imperfective watching event of *R* is contained within the painting event of *E* so that $R \subseteq E$. Toews goes on to describe a different analysis proposed by Klein (1994) where the relation is not one of containment but of overlap, thus shifting from a set-theoretic approach to a mereological approach not discussed by Rothstein (2016). Beyond these basic differences there are many other issues such as intentionality and inertial worlds, the generic versus continuous readings, defaultness, and the potential contrast with neutral aspect. For some recent reviews of imperfective aspectology see de Swart (2012), Toews (2015), and Rothstein (2016).

Imperfective aspect has at least ten diagnostic tests that distinguish it from other temporal categories (Toews 2015: 207–213). Since there are a number of different flavours of imperfective aspect in Tlingit, applying all these tests to them is an enormous task which I will not attempt here.[17] I offer

17. Judging from table 6.2 we would need at least 8 × 10 = 800 different examples, ignoring the differences between conjugation prefixes and repetitive suffixes. This would easily be its own dissertation.

below some data applying eight of the ten diagnostics to a few exemplary forms. The form in (38) illustrates the lexical activity with the root $\sqrt[2]{\underline{x}a}$ 'eat' that is used in most of the other examples.[18]

(38) Laak̲'ásk x̲ax̲á. *non-iterative lexical activity Ø-imperfective*
laak̲'ásk x̲- $\sqrt[2]{\underline{x}}$a-H
black·seaweed 1SG·S-$\sqrt[2]{}$eat-VAR
'I eat black seaweed.', 'I am eating black seaweed.'

The imperfective aspect is generally interpreted as referring to the speech time, and is thus compatible with a present time adverb. The form in (39) shows that the imperfective is compatible with *yá yeedát* 'now; this moment'.[19]

(39) Yá yeedát laak̲'ásk x̲ax̲á. *imperfective with present time adverb*
yá yeedát laak̲'ásk x̲- $\sqrt[2]{\underline{x}}$a-H
PROX moment black·seaweed 1SG·S-$\sqrt[2]{}$eat-VAR
'I am eating black seaweed right now.'

The imperfective aspect is not required in present time contexts. Many Tlingit verbs cannot be expressed in the imperfective aspect without a repetitive suffix because they are not inherently durative, particularly including the motion verbs and achievement verbs. Perfectives of these verbs can still refer to the present time, however. The form in (40) illustrates the adverb *yá yeedát* 'now; this moment' together with a motion verb denoting the arrival of an individual to the speaker's location.

(40) Yá yeedát ax̲ x̲ánt uwagút. *non-imperfective in present time context*
yá yeedát ax̲ x̲án-t u- i- $\sqrt[1]{}$gut -H
PROX moment 1SG·PSS near-PNCT ZPFV-STV-$\sqrt[1]{}$go·SG-VAR
'S/he has just come to me now.'

The imperfective aspect is compatible with the past tense *-ín* as shown by the form in (41). See Cable (2017c) for further analysis of the past tense *-ín* and its semantics with imperfectives.

(41) Laak̲'ásk x̲ax̲áayin. *imperfective with past tense -ín*
laak̲'ásk x̲- $\sqrt[2]{\underline{x}}$a-μH-ín
black·seaweed 1SG·S-$\sqrt[2]{}$eat-VAR-PAST
'I was eating black seaweed.', 'I used to eat black seaweed.'

The imperfective aspect cannot be combined with the perfective aspect. This is shown in (42) by the addition of the perfective *u-* to the imperfective form of (38), though *Ø*-imperfectives have no overt prefix so the ungrammaticality could possibly be for other reasons. To alleviate this, the form in (43) shows that a *CNJ*-imperfective – specifically the extensional state imperfective with the *g̲*-conjugation prefix – cannot be combined with the perfective *wu-*.

18. *Laak̲'ásk* [ɬàːˈqˈásk] 'black seaweed' is *Pyropia abbotiae* (V.Krishnamurthy) S.C.Lindstrom 2011, recently renamed from *Porphyra abbotiae*. It is widely consumed in the Pacific Northwest (Turner 2003). Leer (1978c: 92) suggests that the name was originally borrowed from Coast Tsimshian, but offers no evidence or discussion.
19. Some speakers can use just the bare *yeedát* without the proximate deictic determiner *yá* to mean 'now'.

(42) *Laak̲'ásk x̲wax̲á. **imperfective with perfective u-*
laak̲'ásk u- x̲- ²√x̲a-H
black·seaweed PFV-1SG·S-²√eat-VAR
intended: 'I have been eating black seaweed.'

(43) a. *Yá áa wug̲aadlaan. **g̲-imperfective with perfective wu-*
yá áa wu-g̲- i- ¹√dlan-μ
PROX lake PFV-G̲CNJ-STV-¹√deep -VAR
intended: 'This lake is deep.'

b. *Yá áa g̲uwaadlaan. **g̲-imperfective with perfective wu-*
yá áa g̲- wu-i- ¹√dlan-μ
PROX lake G̲CNJ-PFV-STV-¹√deep -VAR
intended: 'This lake is deep.'

c. Yá áa g̲aadlaan. *g̲-imperfective*
yá áa g̲- i- ¹√dlan-μ
PROX lake G̲CNJSTV-¹√deep -VAR
'This lake is deep.'

The imperfective aspect does not entail that the eventuality culminates or terminates. This is shown in (44) with the addition of an adjunct clause that explicitly asserts the absence of termination with a negated terminative perfective. The terminative is formed by the addition of the derivation *ÿán=* ~ *ÿáx̲=* ~ *ÿánde=* (Ø; *-μ* repetitive) 'finishing, ending, terminating'.

(44) Laak̲'ásk x̲ax̲á; tléil k̲u.aa yan x̲wax̲aayí. *no culmination entailment*
laak̲'ásk x̲- ²√x̲a-H tléil k̲u.aa ÿán= wu-x̲- ²√x̲a-μ -í
black·seaweed 1SG·S-²√eat-VAR NEG CONTR TERM=PFV-1SG·S-²√eat-VAR-SUB
'I'm eating black seaweed; I haven't finished eating it however.'

The imperfective aspect allows an in-progress reading; as Leer states "the default interpretation is that it refers to an ongoing, continuous situation" (Leer 1991: 357). This is shown in (45) with the addition of an in-progress adverb *yeisú* 'still, yet'.

(45) Ch'a yeisú laak̲'ásk x̲ax̲á. *imperfective with in-progress adverb*
ch'a yeisú laak̲'ásk x̲- ²√x̲a-H
just still black·seaweed 1SG·S-²√eat-VAR
'I am still eating black seaweed.'

The imperfective aspect also allows a generic[20] interpretation. Leer says of this that the imperfective aspect "may also be interpreted generically, indicating a characteristically valid situation" (Leer 1991: 327). The form in (46) shows this with a generic time adverb *tlákw* 'always, all the time'.

20. Many researchers refer to this interpretation of the imperfective as 'habitual', including Toews (2015). Unfortunately this conflicts with the iterative perfective called 'habitual' (sec. 2.2.3.2), so I use 'generic' instead.

Diagnostic	*Status*	*Data*
default present interpretation	✓	(39)
acceptable in non-present contexts	?	(48)?
not required in present contexts	✓	(40)
combines with past tense	✓	(41)
incompatible with perfective	✓	(42), (43)
event time exceeds temporal adverb boundaries	?	
no culmination/termination entailments	✓	(44)
in-progress reading	✓	(45)
generic reading	✓	(46)
acceptable with lexical statives	✓	(47)

Table 6.3: Imperfective aspect diagnostics following Toews 2015

(46) Ch'a tlákw laak̲'ásk x̲ax̲á. *imperfective with generic time adverb*
ch'a tlákw laak̲'ásk x̲- $\overset{2}{\sqrt{}}$x̲a-H
just always black·seaweed 1SG·S-$\overset{2}{\sqrt{}}$eat-VAR
'I always eat black seaweed.', 'I eat black seaweed all the time.'

The last diagnostic listed by Toews (2015) is that the imperfective aspect should be acceptable with lexical statives. This is shown in (47) by the use of a lexical state root like $\overset{1}{\sqrt{}}$*k'e* 'good' where the stativity indicator *i-* appears in Ɛ.

(47) X̲at yak'éi. *lexical state imperfective*
x̲at= i- $\overset{1}{\sqrt{}}$k'e -μH
1SG·O-STV-$\overset{1}{\sqrt{}}$good-VAR
'I am good.'

Table 6.3 summarizes the imperfective diagnostics as applied above to Tlingit, following Toews (2015: 208). There are two diagnostics which are more difficult for me to address: (i) imperfective aspect should be acceptable in non-present contexts and (ii) the event time of imperfective aspect should be able to exceed the boundaries of a temporal adverb. I suspect that both of these also hold, but I do not have supporting data for them at present.

The sequence from a narrative in (48) suggests that the imperfective is possible in non-present contexts but this depends on a complex discourse context and needs further investigation. The context is a narrative detailing the cultural history of the *Yanyeidí* clan of the *T'aak̲ú k̲wáan* (Nyman & Leer 1993: 9–35); the character *Naada.éiyaa* meets a group whose sole adze has been broken. Since this is a historical narrative the framing and scene-setting sentences are perfective, but there are sequences of imperfective forms within each scene (cf. Dauenhauer & Dauenhauer 2012). The narrator explains the perfective eventuality in (48a) and (48b)[21] with the imperfective in (48c), then maintains the imperfective in (48d)–(48e) and switches to the perfective in (48f) which is necessary to describe the result of an achievement.

21. The word *tláax̲wayei* 'klahowya' is from Chinook Jargon *tłáχuyə* 'hello'. Though a general greeting in CJ, it is used in Tlingit only to greet people who are unfamiliar to the speaker and sounds weird with family or friends.

(48) a. Aag̱áa áwé Naada.éiyaa áwé yéi yaawak̲aa «Tláax̲wayei», *pfv.*
á -g̱áa á -wé Naada.éiyaa á -wé yéi= ÿ- wu-i- ¹√k̲a-μ Tláax̲wayei
3N-ADES FOC-MDST NAME FOC-MDST thus=QUAL-PFV-STV-¹√say-VAR klahowya
'So then it's Naada.éiyaa who said "Klahowya"' (Nyman & Leer 1993: 16.120–121)

b. tle wé tléix' aa tsú tle «Tláax̲wayei». (*no verb*)
tle wé tléix' aa tsú tle Tláax̲wayei
then MDST one PART also just klahowya
'and then the other one also (said) "Klahowya".' (Nyman & Leer 1993: 17.122)

c. «Hello» yóo áwé has x̲'ayak̲á. *impfv.*
hello yóo á -wé has=x̲'e- ÿ- ¹√k̲a-H
hello thus FOC-MDST PLH= mouth-QUAL-¹√say-VAR
'It's "hello" that they are saying.' (Nyman & Leer 1993: 17.123)

d. Aag̱áa áwé wé Naada.éiyaa tle du een kadunéek *impfv.*
á -g̱áa á -wé wé Naada.éiyaa tle du ee -n k- du- ¹√nik-μH
3N-ADES FOC-MDST MDST NAME just 3H BASE-INSTR QUAL-4H·S-¹√tell -VAR
wé x̲út'aa,
wé x̲út'aa
MDST adze
'Then people tell Naada.éiyaa (about) the adze,' (Nyman & Leer 1993: 17.124–126)

e. tle dei ch'a yá tléix' k̲aa jée yéi yateeyi át áyá *impfv.*
tle dei ch'a yá tléix' k̲aa jee -H yéi= i- ¹√tiʰ-μ -i át á -yá
just already only PROX one 4H·PSS poss'n-LOC thus= STV-¹√be -VAR-REL thing FOC-PROX
'that it's just this only one thing that people have that' (Nyman & Leer 1993: 17.127)

f. sháadáx̲ wool'éex'. *pfv.*
shá -dáx̲ wu-i- ¹√l'ix' -μH
head-ABL PFV-STV-¹√break-VAR
'broke off at the head.' (Nyman & Leer 1993: 17.127)

The imperfective aspect in Tlingit is morphologically divisible into *∅*-imperfectives and *CNJ*-imperfectives as shown in table 6.4 which is a subset of table 6.2 on page 513. The *∅*-imperfectives occur without any overt Asp prefix to indicate their grammatical aspect so they can be taken as morphologically unmarked in contrast with most other expressions of aspect in Tlingit.[22] The *CNJ*-imperfectives have an overt Asp prefix which is the conjugation prefix corresponding to the lexically specified or motion derived conjugation class of the verb.

The *∅*-imperfective forms can denote either activities or states, the latter with *i-* in Ɛ. The data in (49) illustrates a *∅*-imperfective activity and a *∅*-imperfective state. Crucially, both of the roots used in (49) are lexically specified members of the *n*-conjugation class so the absence of an overt Asp⁰ cannot be attributed to a *∅* conjugation prefix reflecting the *∅*-conjugation class. I discuss the *∅*-imperfectives in section 2.1.1.

22. Morphological unmarkedness does not make *∅*-imperfective aspect forms the default aspect, however, at least not in the sense of Bohnemeyer & Swift (2004). Perfective aspect is a better candidate for default aspect on productivity grounds because it is available for nearly all roots whereas most *∅*-imperfectives are lexically specified.

Name	Asp	*Perfective*	*Iterative*	*Stative*	*Lexical*	*Evt. Type*	Adv	*Notes*
lexical activity imperfective	none	–	–	–	+	durative	none	§2.1.1.1
lexical state imperfective	none	–	–	+	+	stative	none	§2.1.1.1
repetitive activity imperfective	none	–	+	–	±	durative	not *-k*	§2.1.1.2
repetitive state imperfective	none	–	+	+	±	stative	*-k*	§2.1.1.2
(unknown)	(*CNJ-*)	–	–	–	?	(durative)	(none)	
extensional state imperfective	*CNJ-*	–	–	+	±	stative	none	§2.1.2.1
(unknown)	(*CNJ-*)	–	+	–	?	(durative)	(any?)	
multipos. state imperfective	*CNJ-*	–	+	+	?	stative	*-kw(-t)*	§2.1.2.2

Table 6.4: Imperfective aspect morphologies

(49) a. Itoohóon. *lexical activity Ø-imperfective*
i- tu- $\sqrt[2]{}$hun-μH
2SG·O-1PL·S-$\sqrt[2]{}$sell -VAR
'We sell you (sg.).', 'We are selling you (sg.).'

b. Ituwahéin. *lexical state Ø-imperfective*
i- tu- i- $\sqrt[2]{}$hen -μH
2SG·O-1PL·S-STV-$\sqrt[2]{}$claim-VAR
'We claim you (sg.).', 'We own you (sg.).'

The *CNJ*-imperfectives contrast with the *Ø*-imperfectives because they occur with an overt conjugation prefix. The conjugation prefix in a *CNJ*-imperfective depends on the conjugation class in just the same way as with e.g. imperatives (ch. 2 sec. 1.3.1.4; this ch. sec. 3). Only stative and motion roots are known to form *CNJ*-imperfectives which suggests that they are morphologically derived. But a few stative roots only have *CNJ*-imperfective forms and lack *Ø*-imperfectives. These are presumably lexicalized instances of the more general derived patterns, and this may be a sign that the rest of the *CNJ*-imperfectives could potentially become lexicalized. The data in (50) illustrates one such root $\sqrt[1]{li^h} \sim \sqrt[1]{le^h}$ 'far, distant', showing that it only permits a *n*-imperfective state in (50a) since the *Ø*-imperfective in (50b) is ungrammatical. I discuss the the *CNJ*-imperfectives in section 2.1.2.

(50) a. Naalée. *lexical state n-imperfective*
n- i- $\sqrt[1]{}$li^h-μH
NCNJ-STV-$\sqrt[1]{}$far-VAR
'It is far, distant.'

b. *Yalée. *lexical state Ø-imperfective*
i- $\sqrt[1]{}$li^h-μH
STV-$\sqrt[1]{}$far-VAR
'It is far, distant.'

2.1.1. Ø-IMPERFECTIVE

The Ø-imperfective aspect forms are a flavour of imperfective aspect that is expressed without an overt aspectual prefix in Asp. It can be divided semantically and morphologically into non-iterative versus iterative. The iterative Ø-imperfective features the presence of repetitive suffixes in the set {*-x̲, -ch, -k, -t, -t', -x', -s', -l'*} which are Adv elements adjoined in VP.

The non-iterative Ø-imperfectives are discussed in section 2.1.1.1. They denote durative eventualities which are either states or activities. Aside from the state/activity contrast with the presence or absence of *i-* in Ɛ, the non-iterative Ø-imperfectives have no distinctive morphology.

The iterative Ø-imperfectives are discussed in section 2.1.1.2. They denote a durative eventuality which may be either a state or an activity and which encompasses some number of subeventualities. The iterative Ø-imperfectives are thus inherently pluristative or pluractional. They characteristically feature a repetitive suffix that quantifies over the eventuality to pluralize it, with the resulting sequence of subeventualities satisfying the imperfective aspect requirement for durativity.

Although the Ø-imperfective aspect forms lack an overt prefix in Asp, the Asp⁰ head may still contain other material. Specifically, Ø-imperfective aspect forms may include an irrealis prefix *u-* in Asp⁰ due to the lexical specification of the root, due to a derivational process (e.g. comparatives), or due to structural conditioning. For more on irrealis marking see section 4. The data in (51) illustrates the addition of irrealis *u-* with negation of an activity Ø-imperfective. The data in (52) shows the same contrast with negation of a state Ø-imperfective.

(51) a. Saak eex̲í x̲ax̲á. *affirmative lexical activity Ø-imperfective*
saak eex̲-í x̲- $\sqrt[2]{}$x̲a-H
hooligan oil -PSS 1SG·S-$\sqrt[2]{}$eat-VAR
'I eat hooligan grease.'

b. Tléil saak eex̲í x̲wax̲á. *negative lexical activity Ø-imperfective*
tléil saak eex̲-í u- x̲- $\sqrt[2]{}$x̲a-H
NEG hooligan oil -PSS IRR-1SG·S-$\sqrt[2]{}$eat-VAR
'I don't eat hooligan grease.'

(52) a. Tsaa x̲aatéen. *affirmative lexical state Ø-imperfective*
tsaa x̲- i- $\sqrt[2]{}$tin-μH
seal 1SG·S-STV-$\sqrt[2]{}$see -VAR
'I can see a seal.'

b. Tléil tsaa x̲wateen. *negative lexical state Ø-imperfective*
tléil tsaa u- x̲- $\sqrt[2]{}$tin-μ
NEG seal IRR-1SG·S-$\sqrt[2]{}$see -VAR
'I can't see a seal.'

I have suggested that there is a question of whether Asp⁰ actually exists in Ø-imperfective forms. There are at least three different ways to analyze the lack of an overt aspectual prefix:

i. Asp⁰ does not exist
ii. Asp⁰ exists but is empty

Figure 6.15: Perfective aspect and conjugation prefix

Figure 6.16: Imperfective aspect and conjugation prefix

iii. Asp⁰ exists and contains the *Ø* conjugation prefix

I reject (i) on syntactic, phonological, and semantic grounds. Imperfective aspect with a *Ø*-imperfective form shows no significant structural differences from a *CNJ*-imperfective form or perfective aspect or any of the other aspects, moods, or modalities in Tlingit. Without Asp⁰ there would be no projection of AspP and then all the phenomena related to AspP (ch. 7) would require a special explanation for *Ø*-imperfective aspect forms even though they are otherwise exactly parallel to structures where Asp⁰ is present. In particular, there would be no explanations for the raising of objects and argument PPs, the position of the plural human *has=* and distributive/plural *dax̲=* modifiers, or the position and ordering of preverbs. The phonological Conjunct, Disjunct, and Preverb domains are defined at the syntax-phonology interface by their relationships with Asp⁰ and AspP to account for the middle field and left edge of the verb word. The compositional semantics of aspect – including imperfective aspect – must be implemented as a function that takes the remainder of the verbal semantics as its argument. This remainder corresponds directly to the complement of Asp⁰, so the node hosting the aspectual function must be Asp⁰ itself. Thus Asp⁰ must exist for syntactic, phonological, and semantic reasons even if it is empty.

The remaining two possibilities (ii) and (iii) are difficult to untangle. I have previously assumed that the *Ø*-imperfective forms contain the *Ø* conjugation prefix, making them parallel to the *CNJ*-imperfective forms. I show below that this is probably incorrect and instead offer a novel alternative that blends the two possibilities. I suggest that imperfective aspect is indeed an empty Asp node, but that this does not prevent a combination with a *Ø* conjugation prefix. Instead the empty Asp of imperfectives is equivalent to the PFV node.

Figures 6.15 and 6.16 illustrate the idea by comparison to the perfective aspect analysis developed in section 1.1.1. The perfective aspect has a PFV Asp node that hosts the perfective prefix and a separate CNJ Asp node that hosts the conjugation prefix. As detailed in section 1.1.1, the CNJ node is covert when the PFV node is present. The corresponding structure in figure 6.16 is exactly the same except that the PFV node is now an IMPFV node. This IMPFV node hosts the relevant semantic function for imperfective aspect, but it has no content. It does not block the appearance of an overt CNJ prefix, and so figure 6.16 represents the *CNJ*-imperfective forms discussed in section 2.1.2.

The structure in figure 6.16 predicts the existence of imperfectives which have both the covert IMPFV node and a *∅* conjugation prefix in the CNJ node. These would be *CNJ*-imperfectives of the *∅*-conjugation class. It turns out that these exist, but they have been overlooked because they are obscure. Leer gives a couple among extensional state imperfectives derived from motion verbs with a *∅*-conjugation class motion derivation (Leer 1991: 319). Compare the forms in (53) which show the same root $\sqrt[1]{shu^h}$ 'extend' in extensional state imperfectives with motion derivations in all four conjugation classes. For more details on the extensional state imperfectives see section 2.1.2.1.

(53) a. Át yashóo. *∅-conj. extensional state CNJ-imperfective*
á -t i- $\sqrt[1]{\text{shu}^h}$ -μH
3N-PNCT ZCNJ STV-$\sqrt[1]{\text{extend}}$-VAR
'It extends (all the way) to it.' (Leer 1991: 319)

b. Aadé naashóo. *n-conj. extensional state CNJ-imperfective*
á -dé n- i- $\sqrt[1]{\text{shu}^h}$ -μH
3N-ALL NCNJ-STV-$\sqrt[1]{\text{extend}}$-VAR
'It extends to(ward) it.' (Leer 1991: 320)

c. Áx̲ g̲aashóo. *g̲-conj. extensional state CNJ-imperfective*
á -x̲ g̲- i- $\sqrt[1]{\text{shu}^h}$ -μH
3N-PERT G̲CNJ-STV-$\sqrt[1]{\text{extend}}$-VAR
'It extends down along it.' (Leer 1991: 320)

d. Aax̲ gaashóo. *g-conj. extensional state CNJ-imperfective*
á -dáx̲ g̲- i- $\sqrt[1]{\text{shu}^h}$ -μH
3N-ABL GCNJ-STV-$\sqrt[1]{\text{extend}}$-VAR
'It extends off away from it.' (Leer 1991: 320)

Crucially the extensional state *CNJ*-imperfective form in (53a) contrasts paradigmatically with the other three forms in (53b)–(53d) following the usual diagnostic for *∅*-conjugation class. This means that the *∅*-conjugation *CNJ*-imperfective is sensitive to conjugation class. But this is not the case for the *∅*-imperfective aspect forms.

The *∅*-imperfective forms are unique among all the aspectual expressions in that they show no sensitivity to conjugation class. The data in (54) shows this with examples of *∅*-imperfectives in each conjugation class with the same argument structure and stem variation. Unlike the perfective aspect (sec. 2.2) there is no special aspectual prefix or stem variation that is distinct for any conjugation class in *∅*-imperfectives. Unlike the progressive and prospective aspects (sec. 3.5) there is no selection of directional preverb based on conjugation class. There are some correlations between conjugation class and the activity versus state distinction (sec. 3.4), but these are not deterministic.

(54) a. X̲axáas'. *∅-conj. lexical activity ∅-imperfective*
x̲- $\sqrt[2]{\text{xas'}}$ -μH
1SG·S-$\sqrt[2]{\text{scrape}}$-VAR
'I scrape it.', 'I am scraping it.'

b. X̲ahóon. *n-conj. lexical activity ∅-imperfective*
x̲- $\sqrt[2]{\text{hun}}$-μH
1SG·S-$\sqrt[2]{\text{sell}}$ -VAR
'I sell it.', 'I am selling it.'

Figure 6.17: Imperfective aspect without conjugation prefix

c. X̲a.éex'. *g̲-conj. lexical activity Ø-imperfective*
x̲- $\overset{2}{\sqrt{}}$.ix'-μH
1SG·S-$\overset{2}{\sqrt{}}$call-VAR
'I call him/her.', 'I am calling him/her.'

d. X̲ahées'. *g̲-conj. lexical activity Ø-imperfective*
x̲- $\overset{2}{\sqrt{}}$his' -μH
1SG·S-$\overset{2}{\sqrt{}}$borrow-VAR
'I borrow it.', 'I am borrowing it.'

So the Ø-imperfective forms and the Ø-conjugation class *CNJ*-imperfective forms are distinct. I suggest that the difference is the presence or absence of the CNJ node in Asp⁰. Both forms have a covert IMPFV node that hosts the semantics of imperfective aspect. But the Ø-imperfectives like in (54) completely lack a CNJ node, thus explaining their lack of morphological features related to conjugation class. The Ø-conjugation *CNJ*-imperfectives have a covert CNJ node and so show morphological reflections of conjugation class given the right inflectional contexts. Thus the form in (54b) has the structure in figure 6.17. Since Asp⁰ is empty it will not trigger V-agreement; compare empty T and empty C in non-past main clauses. This leaves √ as the sole source of V-agreement, in contrast with *CNJ*-imperfectives where the V-agreement is more constrained and predictable.

If it is possible to have a form with just IMPFV and not CNJ, then this predicts the possibility of a form with just PFV and not CNJ. There is no evidence for any such forms, and it is unclear to me how they could be empirically distinguished from the perfectives with covert CNJ as in section 1.1.1.

2.1.1.1. Non-iterative Ø-imperfective

A non-iterative Ø-imperfective is known variously as a **basic imperfective**, a **lexical imperfective**, or in Leer's terms a **primary imperfective** (Leer 1991: 72).[23] The term 'basic' reflects the morphological simplicity of the form: there is no overt aspectual prefix, no repetitive Adv suffix, and no required directional preverb or other path argument. The term 'lexical' reflects the fact that all non-iterative Ø-imperfectives are lexically specified as part of the root lexical entry and are hence unpredictable from any morphosyntactic properties. The term 'primary' reflects a similar division among verbs as reconstructed in Proto-Indo-European (Fulk 2018: 245).

23. Leer actually includes many (but not all) lexically specified *iterative* Ø-imperfectives in his class of primary imperfectives, specifically in the case when the root does not occur in the imperfective aspect without a repetitive Adv suffix. I instead analyze these as derived but lexically specified iterative Ø-imperfectives; see section 2.1.1.2.

Two of the smallest possible examples of lexical Ø-imperfectives are shown in (55). These are both unergative intransitives based on monovalent roots with a covert third person subject. The surface morphology thus consists solely of the root and stem variation in V.

(55) a. Tá. *minimal lexical Ø-imperfective*
$^{1}\sqrt{\text{ta}^{\text{h}}}$ -H
$^{1}\sqrt{\text{sleep}}$·SG-VAR
'S/he sleeps.', 'S/he is sleeping.'

b. Ǵáax̲. *minimal lexical Ø-imperfective*
$^{1}\sqrt{\text{ga}}$x̲-μH
$^{1}\sqrt{\text{cry}}$ -VAR
'S/he cries.', 'S/he is crying.'

Being morphologically minimal does not mean that the non-iterative Ø-imperfective aspect form is the default aspect (cf. Bohnemeyer & Swift 2004). Lexical Ø-imperfectives are only available for roots that denote durative eventualities (ch. 2 sec. 1.3.1.1); as such they are prohibited with achievement roots like $^{1}\sqrt{dut'}$ 'hiccup' in (56) and $^{1}\sqrt{jak}$ 'kill' in (57). An aspect cannot be a default aspect if it is not available for every eventuality, so the lexical Ø-imperfective is not the default aspect. Instead, the *wu*/*u*-perfective discussed in section 2.2 is a more appropriate candidate for a default aspect in Tlingit because it is available for almost every root in the language.

(56) a. *X̲at dút'. **lexical Ø-imperfective activity*
x̲at= $^{1}\sqrt{\text{dut'}}$ -H
1SG·O=$^{1}\sqrt{\text{hiccup}}$-VAR
intended: 'I am hiccuping.'

b. *X̲at yadút'. **lexical Ø-imperfective state*
x̲at= i- $^{1}\sqrt{\text{dut'}}$
1SG·O=STV-$^{1}\sqrt{\text{hiccup}}$
intended: 'I have the hiccups.'

c. X̲at uwadút'. *u-perfective result state*
x̲at= u- i- $^{1}\sqrt{\text{dut'}}$ -H
1SG·O=ZPFV-STV-$^{1}\sqrt{\text{hiccup}}$-VAR
'I hiccuped.'

(57) a. *Itoojáḵ. **lexical Ø-imperfective activity*
i- tu- $^{1}\sqrt{\text{jak}}$-H
2SG·O-1PL·S-$^{2}\sqrt{\text{kill}}$ -VAR
intended: 'We kill you.'

b. *Ituwajáḵ. **lexical Ø-imperfective state*
i- tu- i- $^{1}\sqrt{\text{jak}}$-H
2SG·O-1PL·S-STV-$^{2}\sqrt{\text{kill}}$ -VAR
intended: 'We kill you.'

c. Iwtuwajáḵ. *wu-perfective result state*
i- wu-tu- i- $^{1}\sqrt{}$jaḵ-H
2SG·O-PFV-1PL·S-STV-$^{2}\sqrt{}$kill -VAR
'We killed you.'

Lexical Ø-imperfectives denote only activities or states. Each durative root specifies whether its Ø-imperfective form represents an activity or a state (ch. 2 sec. 1.3.1.2). When the root is specified as a state then the stative prefix *i-* appears in Ɛ (ch. 3 sec. 3.1), and when the root is specified as an activity there is no stative prefix. No root specifies both activity and state, so the presence or absence of *i-* in a lexical Ø-imperfective is diagnostic for the lexical specification of stativity. This is shown in (58) and (59): the activity root $^{1}\sqrt{}$*hun* 'sell' in (58) is ungrammatical with *i-* and the state root $^{1}\sqrt{}$*hen* 'claim, own' in (59) is ungrammatical without *i-*.

(58) a. Itoohóon. *lexical activity Ø-imperfective without i-*
i- tu- $^{2}\sqrt{}$hun-μH
2SG·O-1PL·S-$^{2}\sqrt{}$sell -VAR
'We sell you.', 'We are selling you.'

b. *Ituwahóon. **lexical activity Ø-imperfective with i-*
i- tu- i- $^{2}\sqrt{}$hun-μH
2SG·O-1PL·S-STV-$^{2}\sqrt{}$sell -VAR
intended: 'We sell you.', 'We are selling you.'

(59) a. *Itoohéin. **lexical state Ø-imperfective without i-*
i- tu- $^{2}\sqrt{}$hen -μH
2SG·O-1PL·S-$^{2}\sqrt{}$claim-VAR
intended: 'We are claiming you.', 'We are owning you.'

b. Ituwahéin. *lexical state Ø-imperfective with i-*
i- tu- i- $^{2}\sqrt{}$hen -μH
2SG·O-1PL·S-STV-$^{2}\sqrt{}$claim-VAR
'We own you.', 'We claim you.'

The restriction to durative eventualities highlights a unique fact about non-iterative Ø-imperfective forms in contrast with all other aspects in Tlingit. As far as I am aware, all aspects are available for nearly every root in the lexicon except for the non-iterative Ø-imperfective. For example, achievements like $^{1}\sqrt{}$*dut'* 'hiccup' as in (56) or $^{2}\sqrt{}$*jaḵ* 'kill' as in (57) cannot be used as a lexical Ø-imperfective, but they can be used in perfectives as shown above, in progressives as in (60), and in iterative Ø-imperfectives ('repetitive imperfectives') as in (61).

(60) a. Yaa x̱at nadút'. *$^{1}\sqrt{}$dut' 'hiccup' with progressive aspect*
ÿaa= x̱at= n- $^{1}\sqrt{}$dut' -H
along=1SG·O=NCNJ-$^{1}\sqrt{}$hiccup-VAR
'I am in the process of hiccuping.', 'I am about to hiccup.'

b. Yaa nx̱ajáḵ. *$^{2}\sqrt{}$jaḵ 'kill' with progressive aspect*
ÿaa= n- x̱- $^{2}\sqrt{}$jaḵ-H
along=NCNJ-1SG·S-$^{2}\sqrt{}$kill -VAR
'I am in the process of killing it.', 'I am about to kill it.'

(61) a. X̲at dút'x̲. *$\overset{1}{\sqrt{}}$dut' 'hiccup' with iterative Ø-imperfective aspect*
x̲at= $\overset{1}{\sqrt{}}$dut' -H -x̲
1SG·O=$\overset{1}{\sqrt{}}$hiccup-VAR-REP
'I am repeatedly hiccupping.', 'I keep hiccupping.'

b. X̲ajákx̲. *$\overset{2}{\sqrt{}}$jak̲ 'kill' with iterative Ø-imperfective aspect*
x̲- $\overset{2}{\sqrt{}}$jak̲-H -x̲
1SG·S-$\overset{2}{\sqrt{}}$kill -VAR-REP
'I repeatedly kill it/them.', 'I keep trying to kill it.'

The progressive aspect and the iterative Ø-imperfective denote durative eventualities, but achievement roots like $\overset{1}{\sqrt{}}$*dut'* 'hiccup' and $\overset{2}{\sqrt{}}$*jak̲* 'kill' do not. The non-iterative Ø-imperfective form cannot add durativity to the eventuality denoted by the root, but other aspects can do so. As I noted in chapter 2 section 2.3.2, the Adv suffixes can introduce durativity so this accounts for why iterative Ø-imperfective forms like (61) are possible with achievement roots. There may similarly be a covert *-n* Adv suffix in progressives that introduces durativity (ch. 2 sec. 2.3.2) and this would account for why progressives like (60) are possible with achievement roots. Perfectives denote result states that hold after an eventuality so the durativity of the root eventuality is probably irrelevant. It seems then that only the non-iterative Ø-imperfective (i) cares about the durativity of the root eventuality and (ii) lacks the ability to add durativity to the interpretation. This is a major factor in why non-iterative Ø-imperfectives must be lexically specified.

The other factor indicating that non-iterative Ø-imperfectives must be lexically specified is their wide gamut of stem variation and its unpredictability. I showed in chapter 2 section 1.3.1.3 that their stem variation is generally unpredictable (table 2.4 on p. 73). Since their stem variation is unpredictable, I argued that the V-agreement feature which encodes the stem variation must be lexically specified in √. Thus for example the root $\overset{2}{\sqrt{}}$*hun* 'sell' as in (58) must include an ε-feature [μH_ε] in its lexical specification to account for the stem $\overset{2}{\sqrt{}}$*hun* + *-μH* → *–hóon* [hú:n] in its lexical Ø-imperfective.

This lexically specified and hence unpredictable V-agreement in non-iterative Ø-imperfectives supports the analysis that these forms lack a CNJ node in Asp⁰. If Asp⁰ contained the Ø conjugation prefix then we would expect it to consistently assign certain stem variation values. This is the case with all other aspects in Tlingit, including all contexts where Ø varies paradigmatically with the other conjugation prefixes {*n-*, *g̲-*, *g-*}. The consistency in stem variation suggests that in each case the Asp⁰ head is the V-agreement trigger for these structures. The Asp⁰ head is high enough to override lexical specification, and higher heads are associated with less variation than lower heads. Only the non-iterative Ø-imperfective has widely varying stem variation that must be lexically specified. If Asp⁰ is empty then this is entirely reasonable according to the V-agreement model because an empty head should not be a trigger for V-agreement. This is shown by the structure in figure 6.18 which represents the activity in (54b). This lack of V-agreement in with an empty Asp⁰ in Ø-imperfectives is exactly parallel to the lack of V-agreement with other heads like T or C when these are present but empty.

There are a few exceptional non-iterative Ø-imperfectives that sit outside of the lexical Ø-imperfective category. The major exceptions I am familiar with are positional imperfectives, though there may be a few others lurking in the lexical documentation. The positional imperfectives were discussed in chapter 2 section 2.3.3.3. They are mostly derived from motion roots and denote the physical configuration of an entity at some location, i.e. its position. They only occur as Ø-imperfectives

Figure 6.18: Lack of V-agreement between empty Asp⁰ and V in (54b)

and are not possible with other aspects like the perfective or progressive; this paradigmatic defectiveness suggests that they are special-case derived structures. Some based on open syllable roots have an *-n* suffix like progressives which may explain durativity and thus the non-iterative Ø-imperfective form, but some apparently lack an Adv suffix.

2.1.1.2. Iterative Ø-imperfective

Iterative Ø-imperfective aspect form is traditionally known as the **repetitive imperfective** in Tlingit. Repetitive imperfectives have the same empty Asp⁰ as lexical Ø-imperfective forms, but they feature an additional repetitive suffix in the set {*-x̲*, *-k*, *-ch*, *-t*, *-t'*, *-x'*, *-s'*, *-l'*}. I analyze the repetitive suffixes as Adv nodes adjoined to VP (ch. 2 sec. 2.3). The individual suffixes certainly have distinct meanings, but the details remain to be worked out. The *-x̲*, *-k*, and *-ch* suffixes can be specified by conjugation class but they can also be lexically specified. The other suffixes are conventionally modelled as being lexically specified, but most would be better modelled as compositional once their semantics is fully understood. I have the impression that the *-ch* suffix is the most 'generic' of all of the repetitive suffixes, but this intuition needs exploration.

All repetitive imperfectives denote a durative eventuality containing iterated subevents, and so are a kind of subiteration. Since the repetitive Adv suffix introduces durativity (sec. 2.1.1.1), repetitive imperfectives can be formed from non-durative roots like $\sqrt[1]{xuk}$ 'dry' in (62) and $\sqrt[2]{t'i^h} \sim \sqrt[2]{t'e^h}$ 'find' in (63).

(62) a. Uwaxúk. *u-perfective*
u- i- $^{1}\sqrt{}$xuk-H
PFV-STV-$^{1}\sqrt{}$dry -VAR
'It dried.'

b. *Xóok. **lexical activity Ø-imperfective*
$^{1}\sqrt{}$xuk-μH
$^{1}\sqrt{}$dry -VAR
intended: 'It dries.', 'It is drying.'

c. *Yaxóok. **lexical state Ø-imperfective*
i- $^{1}\sqrt{}$xuk
STV-$^{1}\sqrt{}$dry
intended: 'It is dry.'

d. Xúkch. *repetitive Ø-imperfective*
$^{1}\sqrt{}$xuk-H -ch
$^{1}\sqrt{}$dry -VAR-REP
'It repeatedly dries.'

(63) a. X̲waat'ee. *wu-perfective*
wu-x̲- i- $^{2}\sqrt{}$t'iʰ-μ
PFV-1SG·S-STV-$^{2}\sqrt{}$find-VAR
'I found it.'

b. *X̲at'ee. **lexical activity Ø-imperfective*
x̲- $^{2}\sqrt{}$t'iʰ-μ
1SG·S-$^{2}\sqrt{}$find-VAR
intended: 'I find it.', 'I am finding it.'

c. *X̲ayat'ee. **lexical state Ø-imperfective*
x̲- i- $^{2}\sqrt{}$t'iʰ-μ
1SG·S-STV-$^{2}\sqrt{}$find-VAR
intended: 'I am finding it.'

d. Kei x̲at'eech. *repetitive Ø-imperfective*
kei=x̲- $^{2}\sqrt{}$t'iʰ-μ -ch
up= 1SG·S-$^{2}\sqrt{}$find-VAR-REP
'I repeatedly find it.'

The eventuality denoted by a repetitive imperfective may be either an activity as with $^{2}\sqrt{}$*ÿik̲* 'bite, mouth' in (64) or a state as with $^{1}\sqrt{}$*na* 'die' in (65). Repetitive state Ø-imperfectives are characteristically associated with the *-k* ~ *-kw* suffix.

(64) a. X̲waayeek̲. *wu-perfective*
wu-x̲- i- $^{2}\sqrt{}$yik̲-μ
PFV-1SG·S-$^{2}\sqrt{}$bite-VAR
'I bit it.'

b. Kei x̲ayík̲ch. *repetitive activity Ø-imperfective*
kei=x̲- $^{2}\sqrt{}$ÿik̲-H -ch
up= 1SG·S-$^{2}\sqrt{}$bite-VAR-REP
'I repeatedly bite it.'

(65) a. Woonaa. *wu-perfective*
wu-i- $^{1}\sqrt{}$na-μ
PFV-STV-$^{1}\sqrt{}$die-VAR
'It died.'

b. Yoo yanáak. *repetitive state Ø-imperfective*
yoo=i- $^{1}\sqrt{}$na-μH-k
ALT= STV-$^{1}\sqrt{}$die-VAR-REP
'It repeatedly dies (and comes back to life).'

The *-k* suffix is not exclusively found with repetitive states, however. Some roots unpredictably occur in repetitive imperfectives with *-k* where *i-* is not present (see below). One example of this is the *n*-conjugation root $^{2}\sqrt{}$*.us'* 'wash' which supports both a repetitive state with *-k* and a repetitive activity with *-k* as shown in (66). Presumably the distinction between (66a) and (66b) involves alternation from *yoo=* 'back and forth, to and fro, off and on' on the one hand and stativity from *i-* on the other, but the semantics of repetitive states has not been explored in any detail.

(66) a. Yoo aya.ús'k. *repetitive state Ø-imperfective*
yoo=a- i- $^{2}\sqrt{}$.us' -H -k
ALT= ARG-STV-$^{2}\sqrt{}$wash-VAR-REP
'S/he is repeatedly washing it.' (Eggleston 2017)

b. A.ús'k. *repetitive activity Ø-imperfective*
a- $^{2}\sqrt{}$.us' -H -k
ARG-$^{2}\sqrt{}$wash-VAR-REP
'S/he is repeatedly washing it.' (Eggleston 2017)

The specification of conjugation class – whether lexical or derived – determines the availability of at least one iterative *Ø*-imperfective form for every verb (ch. 2 sec. 2.3.3.1; table 2.7 on p. 115). There are three patterns of suffixation across the four conjugation classes: (i) *Ø*-conjugation has a repetitive imperfective with *-x̲*, (ii) *n*-conjugation has a repetitive imperfective with *-k*, and (iii) *g̲-* and *g*-conjugation have a repetitive imperfective with *-ch*. The *g̲-* and *g*-conjugation forms are further differentiated by the selection of a directional preverb: *yei=* 'down' for *g̲*-conjugation and *kei=* 'up' for *g*-conjugation. See section 3 for discussion of the association between directional preverbs and conjugation class. The data in (67) illustrate the repetitive imperfectives for each of the four conjugation classes.

(67) a. X̲ajákx̲ *Ø-conjugation repetitive Ø-imperfective with -x̲*
x̲- $^{2}\sqrt{}$jak̲-H -x̲
1SG·S-$^{2}\sqrt{}$kill -VAR-REP
'I repeatedly kill it.' 'I am repeatedly killing it.'

b. Yoo x̲ayahúnk *n-conjugation repetitive Ø-imperfective with -k*
yoo=x̲- i- $\sqrt[2]{}$hun-H -k
ALT= 1SG·S-STV-$\sqrt[2]{}$sell -VAR-REP
'I repeatedly sell it.', 'I am repeatedly selling it.'

c. Yei x̲ax̲úx̲ch *g-conjugation repetitive Ø-imperfective with -ch*
yei= x̲- $\sqrt[2]{}$x̲ux̲ -H -ch
down=1SG·S-$\sqrt[2]{}$summon-VAR-REP
'I repeatedly summon him/her.' 'I am repeatedly summoning him/her.'

d. Kei x̲agwálch *g-conjugation repetitive Ø-imperfective with -ch*
kei=x̲- $\sqrt[2]{}$gwal-H -ch
up= 1SG·S-$\sqrt[2]{}$beat -VAR-REP
'I repeatedly beat it.' 'I am repeatedly beating it.'

Only the *-x̲*, *-k*, and *-ch* repetitive suffixes are determined by conjugation class. The remaining *-t*, *-t'*, *-x'*, *-s'*, and *-l'* suffixes are found sporadically across the root lexicon. Each suffix probably has a distinct meaning, and in some cases they are attested well enough to determine this meaning (see ch. 2 sec. 2.3.3.1). For example, the ictive *-t* repetitive suffix denotes iterated events of (perhaps attempted) contact with a target and consequently it only occurs with roots like $\sqrt[2]{}$*.u'n* 'shoot', $\sqrt[2]{}$*tsix̲* 'kick', and $\sqrt[2]{}$*dzu* 'throw'. In such cases the semantics of the suffix can be used to determine its occurrence with particular roots. But some suffixes are so rare that their meaning is difficult to reliably identify, and so they are treated as opaque and lexically specified. The *-x̲*, *-k*, and *-ch* suffixes can also be lexically specified where they occur in forms that are not predicted by conjugation class; these lexical cases might help clarify why they are associated with the conjugation classes. The data in (68) give examples of verbs with each of the repetitive suffixes.

(68) a. X̲asatéix̲. *lexical -x̲ repetitive Ø-imperfective*
x̲- s- $\sqrt[1]{}$ta -eH-x̲
1SG·S-CSV-$\sqrt[1]{}$boil-VAR-REP
'I repeatedly boil it.', 'I am repeatedly boiling it.'

b. X̲a.ús'k. *lexical -k repetitive Ø-imperfective*
x̲- $\sqrt[2]{}$.us' -H -k
1SG·S-$\sqrt[2]{}$wash-VAR-REP
'I repeatedly wash it.', 'I am repeatedly washing it.'

c. X̲adaléich. *lexical -ch repetitive Ø-imperfective*
x̲- d- $\sqrt[1]{}$la -eH-ch
1SG·S-MID-$\sqrt[1]{}$yell-VAR-REP
'I repeatedly yell.', 'I am repeatedly yelling.'

d. X̲a.únt. *lexical -t repetitive Ø-imperfective*
x̲- $\sqrt[2]{}$.u'n -H -t
1SG·S-$\sqrt[2]{}$shoot-VAR-REP
'I repeatedly shoot it.', 'I am repeatedly shooting it.' (with a gun)

e. Xasagánt'. *lexical -t' repetitive Ø-imperfective*
x- s- ¹√gan -H -t'
1SG·S-CSV-¹√burn-VAR-REP
'I repeatedly burn them up.', 'I am repeatedly burning them up.'

f. Shaxatlékwx'. *lexical -x' repetitive Ø-imperfective*
sha- x- ²√tlekw-H -x'
head-1SG·S-²√snatch-VAR-REP
'I repeatedly snatch them.', 'I am repeatedly snatching them.'

g. Xakéis'. *lexical -s' repetitive Ø-imperfective*
x- ²√ka -eH-s'
1SG·S-²√stitch-VAR-REP
'I repeatedly stitch (sew) it.', 'I am repeatedly stitching (sewing) it.'

h. Kaxlaxákwl'. *lexical -l' repetitive Ø-imperfective*
k- x- l- ²√xakw-H -l'
SRO-1SG·S-XTN-²√whip -VAR-REP
'I repeatedly whip/froth it.', 'I am repeatedly whipping/frothing it.'

The most well attested of the non-conjugation suffixes are *-t*, *-x'*, and *-s'*, and the rarest are *-t'* and *-l'*. The ictive *-t* is probably related to the punctual postposition *-t* 'at/to/around a point' and *-x'* is certainly identical with the plural noun suffix. The origins of *-t'*, *-s'*, and *-l'* are unknown, but there are a number of nouns that contain *-l'*,[24] several that contain *-t'*,[25] and a handful that contain *-s'*.[26] Tables 6.8 through 6.11 (pp. 532–535) list verbs that are unpredictably attested with the various repetitive suffixes in the lexical documentation. The translations in these tables sometimes leave out 'repeatedly' to save space, but iterativity should be understood in every case. Most of these lists are not exhaustive although table 6.11 for *-l'* might be complete. I have not compiled many entries for *-k* nor any for *-x* or *-ch* because they are difficult to distinguish from predictable cases of these suffixes that are associated with conjugation class specification.

Roots can support multiple repetitive imperfectives with different suffixes. For example, the root ²√*chux* 'knead, massage' is lexically specified for *Ø*-conjugation as shown by the perfective in (69a) with *-H* stem variation. This root supports a lexical activity *Ø*-imperfective with *-μ* stem variation in (69b). The *Ø*-conjugation class membership predicts the repetitive imperfective with *-x* in (69c), and there is also an unpredictable repetitive imperfective with *-s'* in (69d).

(69) a. Akaawachúx. *Ø-conjugation wu-perfective*
a- k- wu-i- ²√chux-H
3·O-SRO-PFV-STV-²√knead-VAR
'S/he kneaded it.'

24. E.g. *xákwl'i* 'soapberries' (*Shepherdia canadensis* Nutt. 1818), *yadzánl'* 'ugly face', *gúnl'* 'burl', *gúkl'* 'swan' (*Cygnus* spp.), *táax'ál'* 'needle', *x'éigwál'* 'safety pin', *kéich'ál'* 'seam', *néegwál'* 'paint', *tsaagál'* 'spear', *xeeygwál'* 'pack strap', *t'aagál'* 'fastening peg', *shax'éex'wál'* 'hair clip'.
25. E.g. *íxt'* 'shaman', *s'áxt'* 'devilsclub' (*Oplopanax horridus* (Sm.) Miq. 1863), *kél't'* 'ash', *tóot'* 'wood waste', *xóosht'* 'burnt stuff', *k'ísht'* 'puck'.
26. E.g. *gíks'* 'fish roasted by fire', *káxs'* 'coho tied to bush', *x'ás'* 'jaw', *náks'* 'cold sore', *xaanás'* 'raft', and *taagwás'* 'big skate' (*Beringraja binoculata* Girard 1855).

v	*Rep. Impfv.*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	ach'éx't	's/he repeatedly points at it'	+	+	$\sqrt[2]{ch'ex'}$	'point'	activity (-μH)	*Ø/n*
	adáxt	's/he adzes it (canoe) out'	+	+	$\sqrt[2]{dax}$	'adze out'	activity (-μH)	*Ø/n*
	ayakadlákwt	's/he scratches his/her face'	+	+	$\sqrt[2]{dlakw}$	'scratch'	achievement	*Ø*
	adzeit	's/he repeatedly throws at it'	+	+	$\sqrt[2]{dzu^h}$	'throw'	achievement	*Ø*
	agwált	's/he repeatedly beats it'	+	+	$\sqrt[2]{gwal}$	'beat'	activity (-μH)	*Ø/n*
	agúkt	's/he repeatedly pecks it'	+	+	$\sqrt[2]{gu'k}$	'peck'	achievement	*Ø*
	ajúx't	's/he slings at it'	+	+	$\sqrt[2]{jux'}$	'sling'	achievement	*Ø*
	akít't	's/he repeatedly pries it'	+	+	$\sqrt[2]{kit'}$	'pry'	activity (-μH)	*Ø*
	ak'ísht	's/he repeatedly swats it'	+	+	$\sqrt[2]{k'ish}$	'swat'	achievement	*Ø*
	as'áxwt	's/he stacks them'	+	+	$\sqrt[2]{s'axw}$	'stack'	achievement	*Ø*
	as'él't	's/he repeatedly tears it'	+	+	$\sqrt[2]{s'el'}$	'tear'	activity (-μH)	*Ø/n*
	as'úwt	's/he repeatedly chops it'	+	+	$\sqrt[2]{s'u'w}$	'chop'	activity (-μH)	*Ø/n/g*
	atákt	's/he repeatedly spears it'	+	+	$\sqrt[2]{tak}$	'spear'	activity (-μH)	*Ø*
	akatéx't	's/he wrings it out'	+	+	$\sqrt[2]{tex'}$	'twist'	activity (-μH)	*Ø*
	atáx't	's/he repeatedly bites it'	+	+	$\sqrt[2]{tax'}$	'bite'	achievement	*Ø*
Ø	*at'ácht*	's/he repeatedly slaps it'	+	+	$\sqrt[2]{t'ach}$	'slap'	achievement	*Ø*
	at'áx't	's/he repeatedly flicks it'	+	+	$\sqrt[2]{t'ax'}$	'flick'	achievement	*Ø/n*
	at'éx't	's/he repeatedly pounds it'	+	+	$\sqrt[2]{t'ex'}$	'pound'	achievement	*Ø*
	at'íyt	's/he repeatedly elbows it'	+	+	$\sqrt[2]{t'ï'ÿ}$	'elbow'	achievement	*Ø*
	at'úkt	's/he (arrow) shoots it'	+	+	$\sqrt[2]{t'u'k}$	'shoot'	achievement	*Ø*
	atsákt	's/he repeatedly pokes it'	+	+	$\sqrt[2]{tsak}$	'poke'	achievement	*Ø/n*
	atsíxt	's/he repeatedly kicks it'	+	+	$\sqrt[2]{tsix}$	'kick'	achievement	*Ø*
	asatsíx't	's/he strangles it'	+	+	$\sqrt[2]{tsix'}$	'strangle'	achievement	*Ø*
	atsúwt	's/he repeatedly pushes it'	+	+	$\sqrt[2]{tsu'w}$	'push'	activity (-μH)	*Ø*
	atsúxt	's/he repeatedly blocks it'	+	+	$\sqrt[2]{tsux}$	'block'	activity (-μH)	*Ø*
	ats'ík'wt	's/he repeatedly pinches it'	+	+	$\sqrt[2]{ts'ï'kw}$	'pinch'	activity (-μH)	*Ø/g*
	a.únt	's/he (gun) shoots it'	+	+	$\sqrt[2]{.u'n}$	'shoot'	achievement	*Ø*
	awál't	's/he repeatedly breaks it'	+	+	$\sqrt[2]{wal'}$	'break'	achievement	*Ø*
	axít't	's/he repeatedly sweeps it'	+	+	$\sqrt[2]{xit'}$	'sweep'	achievement	*g*
	ax'íx't	's/he repeatedly nips it'	+	+	$\sqrt[2]{x'ix'}$	'nip'	achievement	*Ø*
	axícht	's/he repeatedly clubs it'	+	+	$\sqrt[2]{xich}$	'club'	achievement	*Ø/n*
s-	*aksahánt*	's/he cuts it into strips'	+	+	$\sqrt[2]{han}$	'fringe'	activity (-μH)	*Ø/g*
	aksatékt	's/he repeatedly twists it'	+	+	$\sqrt[1]{tek'}$	'twist'	activity (-μH)	*Ø*
l-	*aklaxút't*	's/he repeatedly adzes it'	+	+	$\sqrt[1]{xut'}$	'adze'	activity (-μH)	*Ø/g*
sh-	*akshat'áx't*	's/he repeatedly pops it'	+	+	$\sqrt[2]{t'ax'}$	'pop'	achievement	*Ø*

Table 6.5: Some repetitive (ictive) activity imperfectives with *-t*

v	*Rep. Impfv.*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	akachúxs'	's/he repeatedly kneads it'	+	+	$\sqrt[2]{chux}$	'knead'	activity (-μ)	Ø
	achúks'	's/he rubs it soft'	+	+	$\sqrt[2]{chu'k}$	'rub soft'	activity (-μH)	Ø
	akagwáls'	's/he repeatedly knocks it'	+	+	$\sqrt[2]{gwal}$	'beat'	achievement	Ø
	akagúks'	's/he repeatedly squeezes it'	+	+	$\sqrt[2]{guk}$	'squeeze'	achievement	Ø
	ashukoojeis'	's/he advises him/her'	+	+	$\sqrt[2]{ja^h}$	'advise'	achievement	Ø⁺
	akakíks'	's/he shakes it out'	+	+	$\sqrt[2]{kik}$	'shake out'	activity (-μ)	Ø
	akéis'	's/he repeatedly stitches it'	+	+	$\sqrt[2]{ka}$	'stitch'	achievement	Ø
	kadal'úxs'	's/he closes eyes'	–	+	$\sqrt[1]{l'ux}$	'close eye'	achievement	Ø
	ayanákws'	's/he baits them (hooks)'	+	+	$\sqrt[2]{nakw}$	'octopus'	achievement	Ø
Ø	*danáls'*	's/he blows nose'	–	+	$\sqrt[2]{nal}$	'steam'	achievement	Ø
	as'íks'	's/he repeatedly sucks it'	+	+	$\sqrt[2]{s'ik}$	'suck'	activity (-μH)	Ø
	atíys'	's/he repeatedly patches it'	+	+	$\sqrt[2]{tiÿ}$	'patch'	activity (-μH)	Ø
	atíys'	's/he soaks it (food)'	+	+	$\sqrt[2]{tiÿ}$	'soak'	achievement	Ø/*n*
	atsíks'	's/he repeatedly roasts it'	+	+	$\sqrt[2]{tsik}$	'skewer'	activity (-μH)	Ø
	awéis'	's/he repeatedly sends for it'	+	+	$\sqrt[2]{wu}$	'send'	achievement	Ø⁺
	adawéis'	's/he takes lunch'	–	+	$\sqrt[2]{wu}$	'send'	achievement	Ø⁺
	akaxíks'	'it repeatedly flaps wings'	–	+	$\sqrt[2]{xik}$	'shoulder'	achievement	Ø
	ayíks'	's/he repeatedly marks it'	+	+	$\sqrt[2]{yik}$	'mark'	activity (-μH)	Ø
	ayíks'	's/he repeatedly pulls it'	+	+	$\sqrt[2]{yik}$	'pull'	activity (-μH)	Ø
	akayúks'	's/he repeatedly shakes it'	+	+	$\sqrt[2]{yu'k}$	'shake'	achievement	Ø
	algéys'	's/he pays them off'	+	+	$\sqrt[1]{ge'ÿ}$	'pay debt'	achievement	Ø
	aklaneis'	's/he half-dries it'	+	+	$\sqrt[1]{na^h}$	'damp'	achievement	Ø⁺
s-	*altáx's'*	's/he repeatedly bites it'	+	+	$\sqrt[2]{tax'}$	'bite'	achievement	Ø
	alt'eis'	's/he repeatedly warms it'	+	+	$\sqrt[1]{t'a^h}$	'warm'	achievement	Ø
	aklat'íx's'	's/he repeatedly hardens it'	+	+	$\sqrt[1]{t'ix'}$	'hard'	achievement	Ø
	aklachéis'	's/he repeatedly strains it'	+	+	$\sqrt[1]{cha}$	'strain'	achievement	Ø⁺
l^s-	*aklagíshs'*	's/he repeatedly soaks it'	+	+	$\sqrt[1]{gish}$	'soak'	activity (-μ)	Ø
	aklakéls'	's/he repeatedly soaks it'	+	+	$\sqrt[1]{kel}$	'soak'	achievement	Ø
	alxwáchs'	's/he repeatedly scrapes it'	+	+	$\sqrt[2]{xwach}$	'scrape'	activity (-μH)	Ø
	aklahíns'	's/he repeatedly waters it'	+	+	$\sqrt[1]{hin}$	'water'	achievement	Ø
	alneis'	's/he repeatedly oils it'	+	+	$\sqrt[1]{na^h}$	'oil'	achievement	Ø
	aklaneis'	's/he dampens it'	+	+	$\sqrt[1]{na^h}$	'damp'	achievement	Ø
l-	*aklat'áks'*	's/he repeatedly dents it'	+	+	$\sqrt[1]{t'a'k}$	'dent'	achievement	Ø
	aklaxéis'	's/he repeatedly pours it'	+	+	$\sqrt[1]{xa}$	'pour'	achievement	Ø/*n*
	ashuklaxúxs'	's/he composes it (song)'	+	+	$\sqrt[2]{xux}$	'summon'	achievement	*n*
	awoolx'éiys'	's/he encourages them'	+	+	$\sqrt[2]{x'e'ÿ}$	'encourage'	achievement	Ø
sh-	*akshatúks'*	's/he repeatedly bursts it'	+	+	$\sqrt[1]{tu'k}$	'pop'	achievement	Ø/*n*

Table 6.6: Some repetitive activity imperfectives with *-s'*

v	*Rep. Impfv.*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	ach'ínx'	's/he repeatedly ties it'	+	+	$\sqrt[2]{ch'i'n}$	'tie bow'	activity (-μH)	*Ø*
	ayadlákx'w	's/he repeatedly wins it'	+	+	$\sqrt[2]{dlak}$	'win'	achievement	*n*
	aheex'	's/he pays him/her (shaman)'	+	+	$\sqrt[2]{hi^h}$	'pay *íxt*"	achievement	*n*
	akwáchx'	's/he repeatedly carries it'	+	+	$\sqrt[2]{kwach}$	'handful'	achievement	*n*
	ak'wáchx'	's/he repeatedly breaks it'	+	+	$\sqrt[2]{k'wach}$	'break'	achievement	*Ø*
	anéix'	's/he inherits them'	+	+	$\sqrt[2]{na}$	'inherit'	achievement	*Ø*
	kasóosx'w	'they fall'	+	–	$\sqrt[1]{su's}$	'fall'	achievement	*g*
Ø	*kadus'ísx'*	'wind blows them around'	+	–	$\sqrt[2]{s'is}$	'windblow'	achievement	*n*
	atíyx'	's/he soaks them (food)'	+	+	$\sqrt[2]{tiÿ}$	'soak'	achievement	*Ø/n*
	atúlx'w	's/he repeatedly drills it'	+	+	$\sqrt[2]{tul}$	'drill, spin'	activity (-μH)	*n*
	has x'adatóolx'w	'they are murmuring'	–	+	$\sqrt[1]{tu'l}$	'murmur'	achievement	*n*
	ashatlékwx'	's/he snatches them'	+	+	$\sqrt[2]{tlekw}$	'snatch'	achievement	*n*
	atsúwx'	's/he repeatedly pushes it'	+	+	$\sqrt[2]{tsu'w}$	'push'	activity (-μH)	*Ø*
	axáchx'	's/he repeatedly tows it'	+	+	$\sqrt[2]{xach}$	'tow'	activity (-μH)	*Ø/n*
	ayáax'w	's/he repeatedly packs it'	+	+	$\sqrt[2]{ya}$	'pack'	activity (-μH)	*n*
	ayíkx'	's/he repeatedly mouths it'	+	+	$\sqrt[2]{yik}$	'bite'	achievement	*g*
	aksahánx'w	's/he cuts it into strips'	+	+	$\sqrt[2]{han}$	'fringe'	activity (-μH)	*Ø/g*
	aksahátx'	's/he repeatedly covers it'	+	+	$\sqrt[2]{hat}$	'cover'	activity (-μH)	*Ø/n*
s-	*ast'áyx'*	's/he repeatedly warms it'	+	+	$\sqrt[1]{t'a^h}$	'hot'	achievement	*Ø*
	asxát'x'	's/he repeatedly drags it'	+	+	$\sqrt[1]{xat'}$	'drag'	activity (-μH)	*n*
	asyíkx'	's/he repeatedly pulls them'	+	+	$\sqrt[2]{yik}$	'pull'	activity (-μH)	*Ø*
	aklagíshx'	's/he repeatedly soaks it'	+	+	$\sqrt[1]{gish}$	'soak'	activity (-μ)	*Ø*
	alhítsx'w	's/he repeatedly singes it'	+	+	$\sqrt[1]{hits}$	'singe'	activity (-μH)	*Ø*
l^s-	*aklanáashx'*	's/he shakes it off'	+	+	$\sqrt[2]{na'sh}$	'shake off'	achievement	*Ø*
	alsínx'	's/he hides them'	+	+	$\sqrt[1]{sin}$	'hide'	achievement	*Ø*
	aklatsísx'w	's/he puts corks on them'	+	+	$\sqrt[1]{tsis}$	'float'	achievement	*Ø*
	alxwáchx'	's/he repeatedly tans them'	+	+	$\sqrt[1]{xwach}$	'tan'	activity (-μH)	*Ø*
	aklagíshx'	's/he repeatedly soaks it'	+	+	$\sqrt[1]{gish}$	'soak'	activity (-μ)	*Ø*
	has ayalakánx'	'they return-dance'	–	+	$\sqrt[2]{kan}$	'wave'	achievement	*Ø*
	aklanálx'	's/he steams them'	+	+	$\sqrt[1]{nal}$	'steam'	achievement	*Ø*
l-	*altúxx'*	's/he repeatedly spits it'	+	+	$\sqrt[1]{tux}$	'spit'	activity (-μH)	*n*
	alxwénx'	's/he dishes it out'	+	+	$\sqrt[2]{xwe'n}$	'ladle'	activity (-μH)	*Ø/n*
	aklayénx'	's/he repeatedly waves it'	+	+	$\sqrt[2]{ye'n}$	'wave'	activity (-μH)	*Ø*
	awoolx'éiyx'	's/he encourages them'	+	+	$\sqrt[2]{x'e'ÿ}$	'encourage'	acheievement	*Ø*
sh-	*akshatúkx'*	's/he pops them'	+	+	$\sqrt[2]{tu'k}$	'pop'	achievement	*Ø/n*

Table 6.7: Some repetitive activity imperfectives with -*x'*(*w*)

v	*Rep. Impfv.*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	as'óoshkw	's/he pinches him/her'	+	+	$\sqrt[2]{s'ush}$	'pinch'	achievement	*?*
Ø	*a.ús'k*	's/he repeatedly washes it'	+	+	$\sqrt[2]{.us'}$	'wash'	achievement	*n*
	axít'kw	's/he repeatedly sweeps it'	+	+	$\sqrt[2]{xit'}$	'sweep'	achievement	*g̲/n*
s-	*aksakéikw*	's/he repeatedly undoes it'	+	+	$\sqrt[1]{ke}$	'unravel'	achievement	*Ø/n*
l^s-	*alshíkw*	's/he repeatedly strokes it'	+	+	$\sqrt[1]{shi^h}$	'reach hand'	achievement	*n*
l-	*alg̲éikw*	's/he repeatedly wipes it'	+	+	$\sqrt[2]{g̲u}$	'wipe'	achievement	*g̲/n*

Table 6.8: Some repetitive activity imperfectives with *-k(w)*

v	*Rep. Impfv.*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
Ø	*yal'íkwk*	's/he blinks'	–	+	$\sqrt[1]{l'ikw}$	'blink'	achievement	*Ø*
	diséikw	's/he breathes'	–	+	$\sqrt[1]{sa}$	'breathe'	achievement	*n*
l^s-	*k̲udliwás'k*	's/he is inquisitive'	–	+	$\sqrt[2]{wůs'}$	'ask'	activity (*-μH*)	*n*

Table 6.9: Some repetitive state imperfectives with *-k(w)*

v	*Rep. Impfv.*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
–	*has náat'*	'they die off'	+	–	$\sqrt[1]{na}$	'die'	achievement	*n*
	láxwt'	'they starve to death'	+	–	$\sqrt[1]{laxw}$	'starve'	achievement	*Ø*
	asgánt'	's/he burns them'	+	+	$\sqrt[1]{gan}$	'burn'	achievement	*g̲*
s-	*as.héit'*	's/he erases them'	+	+	$\sqrt[1]{ha}$	'invisible'	achievement	*n*
	askweit'	's/he gets to know them'	+	+	$\sqrt[2]{ku^h}$	'know'	achievement	*Ø*
l^s-	*alxóosht'*	's/he repeatedly singes it'	+	+	$\sqrt[1]{xu'sh}$	'singe'	achievement	*n/g̲*
sh-	*ashkél't'*	's/he makes ash of it'	+	+	$\sqrt[1]{kel'}$	'ash'	achievement	*Ø*

Table 6.10: Some repetitive activity imperfectives with *-t'*

v	*Rep. Impfv.*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
Ø	*achóox'ál'*	's/he repeatedly rubs it'	+	+	$\sqrt[2]{chux'}$	'rub'	activity (*-μH*)	*Ø*
	akaagúkl'	's/he works to know it'	+	+	$\sqrt[2]{guk}$	'know how'	state (*-μH*)	*g̲/g*
l-	*aklaxákwl'*	's/he whips/grinds it'	+	+	$\sqrt[2]{xakw}$	'whip'	achievement	*Ø*

Table 6.11: Some repetitive imperfectives with *-l'*

b. Akachoox. *lexical activity Ø-imperfective*
a- k- $\sqrt[2]{}$chux-μ
3·O-SRO-$\sqrt[2]{}$knead-VAR
'S/he is kneading it.'

c. Akachúxx̲. *-x̲ repetitive Ø-imperfective*
a- k- $\sqrt[2]{}$chux-H -x̲
3·O-SRO-$\sqrt[2]{}$knead-VAR-REP
'S/he is kneading it.'

d. Akachúxs'. *-s' repetitive Ø-imperfective*
a- k- $\sqrt[2]{}$chux-H -s'
3·O-SRO-$\sqrt[2]{}$knead-VAR-REP
'S/he is kneading it.'

I have encountered one root that supports four different repetitive imperfectives, namely the root $\sqrt[2]{}$*tu'k* 'pop, explode, burst' shown in (70). This root is attested with both *Ø*-conjugation and *n*-conjugation perfectives in (70a) and (70b) respectively, so it is already somewhat anomalous. The data in (70c)–(70f) illustrate repetitive imperfectives with *-x̲*, *-t*, *-x'*, and *-s'*. The *-x̲* repetitive imperfective in (70c) is predicted by the *Ø*-conjugation class membership in (70a) but the other three are unpredictable.

(70) a. Akawshitúk. *Ø-conjugation wu-perfective*
a- k- wu-sh-i- $\sqrt[2]{}$tu'k -H
ARG-QUAL-PFV-PEJ-STV-$\sqrt[2]{}$explode-VAR
'S/he exploded it, blew it up.' (Leer 1976a: 412)

b. Akawshitóok. *n-conjugation wu-perfective*
a- k- wu-sh-i- $\sqrt[2]{}$tu'k -μH
ARG-QUAL-PFV-PEJ-STV-$\sqrt[2]{}$explode-VAR
'S/he exploded it, blew it up.' (Leer 1976a: 412)

c. Akshatúkx̲. *-x̲ repetitive Ø-imperfective*
a- k- sh-$\sqrt[2]{}$tu'k -H -x̲
ARG-QUAL-PEJ-$\sqrt[2]{}$explode-VAR-REP
'S/he repeatedly explodes it/them.' (Story & Naish 1973: 39.368)

d. Akshatúkt. *-t repetitive Ø-imperfective*
a- k- sh-$\sqrt[2]{}$tu'k -H -t
ARG-QUAL-PEJ-$\sqrt[2]{}$explode-VAR-REP
'S/he repeatedly explodes it/them.' (Leer 1976a: 412)

e. Akshatúkx'. *-x' repetitive Ø-imperfective*
a- k- sh-$\sqrt[2]{}$tu'k -H -x'
ARG-QUAL-PEJ-$\sqrt[2]{}$explode-VAR-REP
'S/he repeatedly explodes it/them.' (Leer 1976a: 412)

f. Akshatúks'. *-s' repetitive Ø-imperfective*
a- k- sh-$\sqrt[2]{}$tu'k -H -s'
ARG-QUAL-PEJ-$\sqrt[2]{}$explode-VAR-REP
'S/he repeatedly explodes it/them.' (Leer 1976a: 412)

v	*Rep. Impfv.*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	aadé naadaa	'it flows there'	+	–	$\sqrt[1]{da}$	'flow'	state (-μ)	*n*
	áx̲ g̲aadaa	'it flows down there'	+	–	$\sqrt[1]{da}$	'flow'	state (-μ)	*g̲*
	g̲aadlaan	'it is deep'	+	–	$\sqrt[1]{dlan}$	'deep'	state (-μ)	*g̲*
	naaléi	'it is far away'	+	–	$\sqrt[1]{le^h}$	'far'	state (-μH)	*n*
Ø	*kunaaséi*	'it is far away'	+	–	$\sqrt[1]{se^h}$	'near'	state (-μH)	*n*
	aadé naashóo	'it extends there'	+	–	$\sqrt[1]{shu^h}$	'extend'	state (-μH)	*n*
	áx̲ g̲aashóo	'it extends down there'	+	–	$\sqrt[1]{shu^h}$	'extend'	state (-μH)	*g̲*
	aax̲ gaashóo	'it extends off there'	+	–	$\sqrt[1]{shu^h}$	'extend'	state (-μH)	*g*
	kug̲aats'áan	'it is shallow'	+	–	$\sqrt[1]{ts'an}$	'shallow'	state (-μH)	*g̲*

Table 6.12: Extensional state imperfectives

Given that *-t'* is associated with destruction, it might be possible to use this with $\sqrt[2]{tu'k}$ 'pop, explode, burst' as well. If this root is truly *n*-conjugation as implied by (70b) then a *yoo=i-...-k* repetitive imperfective should also be possible. This would then give six different repetitive imperfective forms which I take as a clear sign of being compositional and hence semantically predictable.

2.1.2. *CNJ*-IMPERFECTIVE

The *CNJ*-imperfective aspect forms are imperfective aspect forms that include a conjugation prefix in Asp⁰. As with the *Ø*-imperfectives there are two kinds of *CNJ*-imperfectives: non-iteratives and iteratives. The iterative *CNJ*-imperfectives have repetitive suffixes and thus encode iteration of eventualities. The non-iterative *CNJ*-imperfectives do not have repetitive suffixes. Both kinds of *CNJ*-imperfective describe static (state) eventualities that trace a path in space. As states, they all contain *i-* in Ɛ. There are no dynamic (event) counterparts for either the non-iterative or iterative *CNJ*-imperfectives and the reason for these gaps is unknown.

The non-iterative *CNJ*-imperfectives are discussed in section 2.1.2.1. A few of these, particularly those based on the roots $\sqrt[1]{li^h} \sim \sqrt[1]{le^h}$ 'far, distant' and $\sqrt[1]{dlan}$ 'deep' are part of the basic vocabulary and are encountered relatively often in speech. Others are much less common and seem to occur mostly in oratory and classical narrative.

The iterative *CNJ*-imperfectives are discussed in section 2.1.2.2. All of these are relatively rare, but they are nonetheless understood by all of my consultants. Unlike the non-iteratives, these are only attested with *n*-conjugation class verbs. The reason for this constraint is unknown; I have not attempted to elicit examples in other conjugation classes.

2.1.2.1. Non-iterative *CNJ*-imperfective

A non-iterative *CNJ*-imperfective is traditionally known as an **extensional imperfective** (Leer 1991: 319) or more precisely as a **extensional state imperfective**. They are morphologically characterized by the presence of a *CNJ-* conjugation prefix and the stative prefix *i-* in Ɛ. Attested stem variation is only either -μ or -μH. They denote the extension of a state along a path in space and the conjugation class regularly reflects the spatial orientation of the path as discussed in section 3.2. Close approximations in English include *The river flows down the valley* and *The trail runs over the pass*. The best documented verbs are listed in table 6.12.

The extensional state imperfectives can be divided into two groups on based on productivity: lexical ones are exclusive to particular roots and motion ones are more or less productively derived from motion roots. Leer finds two antonymic pairs of lexical extensional state imperfectives with the roots $\sqrt[1]{li^h}$ ~ $\sqrt[1]{le^h}$ 'far, distant' : $\sqrt[1]{se^h}$ 'near, close' and $\sqrt[1]{dlan}$ 'deep' : $\sqrt[1]{ts'an}$ 'shallow' (Leer 1991: 322). There may be others, but I have not encountered any though neither have I gone looking for any. The data in (71)–(74) illustrate the extensional imperfective forms of each of these roots along with an ungrammatical non-iterative Ø-imperfective.

(71) a. *Yaléi. **lexical state Ø-imperfective*
i- $\sqrt[1]{le^h}$-μH
STV-$\sqrt[1]{\text{far}}$ -VAR
intended: 'It is far away.'

b. Naaléi. *lexical n-conj. extensional state CNJ-imperfective*
n- i- $\sqrt[1]{le^h}$-μH
NCNJ-STV-$\sqrt[1]{\text{far}}$ -VAR
'It is far away.'

(72) a. *Kooséi. **lexical state Ø-imperfective*
k- u- i- $\sqrt[1]{se^h}$-μH
CMPV-IRR-STV-$\sqrt[1]{\text{far}}$ -VAR
intended: 'It is relatively near.'

b. Kunaaséi. *lexical n-conj. extensional state CNJ-imperfective*
k- u- n- i- $\sqrt[1]{se^h}$-μH
CMPV-IRR-NCNJ-STV-$\sqrt[1]{\text{far}}$ -VAR
'It is relatively near.'

(73) a. *Yadlaan. **lexical state Ø-imperfective*
i- $\sqrt[1]{\text{dlan}}$-μ
STV-$\sqrt[1]{\text{deep}}$ -VAR
intended: 'It is deep.'

b. Ǧaadlaan. *lexical ǧ-conj. extensional state CNJ-imperfective*
ǧ- i- $\sqrt[1]{\text{dlan}}$-μ
ǦCNJ-STV-$\sqrt[1]{\text{far}}$ -VAR
'It is deep.'

(74) a. *Koots'áan. **lexical state Ø-imperfective*
k- u- i- $\sqrt[1]{\text{ts'an}}$ -μH
CMPV-IRR-STV-$\sqrt[1]{\text{shallow}}$-VAR
intended: 'It is relatively shallow.'

b. Kuǧaats'áan. *lexical ǧ-conj. extensional state CNJ-imperfective*
k- u- ǧ- i- $\sqrt[1]{\text{ts'an}}$ -μH
CMPV-IRR-ǦCNJ-STV-$\sqrt[1]{\text{shallow}}$-VAR
'It is relatively shallow.'

Motion extensional state imperfectives have not been catalogued in any detail. Leer describes the most productive example as the root $\sqrt[1]{shu^h}$ 'extend' (cf. the relational noun *a shú* 'its end') which can be combined with motion derivations to give extensional state imperfectives in all four conjugation classes (Leer 1991: 319). The data in (75), which is repeated from (53) on page 522, illustrates the root $\sqrt[1]{shu^h}$ 'extend' with four different motion derivations.

(75) a. Át yashóo. *motion Ø-conj. extensional state CNJ-imperfective* (= 53)
á -t i- $\sqrt[1]{\text{shu}^h}$ -μH
3N-PNCT ZCNJ STV-$\sqrt[1]{\text{extend}}$-VAR
'It extends (all the way) to it.' (Leer 1991: 319)
NP-t (*Ø*; *-μ* rep.) 'arriving at NP'

b. Aadé naashóo. *motion n-conj. extensional state CNJ-imperfective*
á -dé n- i- $\sqrt[1]{\text{shu}^h}$ -μH
3N-ALL NCNJ-STV-$\sqrt[1]{\text{extend}}$-VAR
'It extends to(ward) it.' (Leer 1991: 320)
NP-dé (*n*; *yoo=i-...-k* rep.) 'toward NP'

c. Áx̲ g̲aashóo. *motion g̲-conj. extensional state CNJ-imperfective*
á -x̲ g̲- i- $\sqrt[1]{\text{shu}^h}$ -μH
3N-PERT G̲CNJ-STV-$\sqrt[1]{\text{extend}}$-VAR
'It extends down along it.' (Leer 1991: 320)
NP-x̲ (*g̲*; *-ch* rep.) 'down along NP'

d. Aax̲ g̲aashóo. *motion g̲-conj. extensional state CNJ-imperfective*
á -dáx̲ g̲- i- $\sqrt[1]{\text{shu}^h}$ -μH
3N-ABL GCNJ-STV-$\sqrt[1]{\text{extend}}$-VAR
'It extends off away from it.' (Leer 1991: 320)
NP-dáx̲ (*g̲*; *-ch* rep.) 'up away from NP'

Another well attested example of a motion extensional state *CNJ*-imperfective is the root $\sqrt[1]{da}$ 'flow' that is illustrated by some corpus examples in (76). This root is documented with both the *n*- and *g̲*-conjugation classes as shown by the forms in (76d). The past tense *g̲*- form with *-ín* in shows Ɛ-suppression and the negated *n*- form shows this together with irrealis *u*-.

(76) a. Héen naadaa. *n-conj. extensional state CNJ-imperfective*
héen n- i- $\sqrt[1]{\text{da}}$ -μ
river NCNJ-STV-$\sqrt[1]{\text{flow}}$-VAR
'The creek is flowing.' (Story & Naish 1973: 94.1193)
– (*n*; *yoo=i-...-k* rep.) 'laterally, horizontally'

b. A tóonáx̲ naadaa. *n-conj.*
a tú -náx̲ n- i- $\sqrt[1]{\text{da}}$ -μ
3N inside-PERL NCNJ-STV-$\sqrt[1]{\text{flow}}$-VAR
'It flows through it.' (Leer 1973a: 05/3)
NP-náx̲ (*n*; *yoo=i-...-k* rep.) 'via, through NP'

c. K'óox̲' lél'k a daax̲ x̲'akanaadaa. *n-conj.*
k'óox̲' lél'k a daa -x̲ x̲'e- k- n- i- ¹√da -μ
pitch soft 3N around-PERT mouth-QUAL-NCNJ-STV-¹√flow-VAR
'Soft pitch is flowing around it (tree).' (Leer 1973a: 05/4)
NP-x̲ (*n*; *yoo=i-...-k* rep.) 'along, contacting NP'

d. Héen tlein áx̲ g̲adaayín, yeedát k̲u tléil unadaa. *g̲- & n-conj.*
héen tlein á -x̲ g̲- ¹√da -μ -ín yeedát k̲u.aa tléil u- n- ¹√da -μ
river big 3N-PERT GCNJ-¹√flow-VAR-PAST now CONTR NEG IRR-NCNJ-¹√flow-VAR
'A large river used to flow there, but now it doesn't flow.' (Leer 1973a: 05/4)
NP-x̲ (*n*; *-ch* rep.) 'down along NP'

Given that there are motion derivations without an overt PP – e.g. (76a) above – it seems likely that the lexical extensional state *CNJ*-imperfectives are lexicalized cases of a root with a motion derivation. This would tie them into the rest of the motion verb system and would help to account for their spatial semantics. And if these lexical extensional states can support a comparative derivation as in (72) and (74) then it might be possible to apply this to the motion extensional states as well. If not then this would help clarify what lexical properties of roots permit or prohibit the application of the comparative derivation (cf. ch. 3 sec. 2.2.3).

We know relatively little about the syntax and semantics of non-iterative *CNJ*-imperfectives. They are compatible with past tense as attested by (76d) and they apparently have a default present interpretation. Further tests of their imperfective aspect status still need to be tested, but Leer's identification of them as imperfective aspect forms seems to be justified. The presence of a conjugation prefix in Asp⁰ presumably means that their stem variation is determined by Asp, but the paucity of data is not enough to make any firm generalizations about their V-agreement behaviour. They also need to be contrasted with the non-iterative *CNJ*-perfectives (sec. 2.2.3.1) since their forms overlap.

2.1.2.2. Iterative *CNJ*-imperfective

An iterative *CNJ*-imperfective is known as a **multipositional state imperfective** or just **multipositional imperfective.**[27] They are morphologically characterized by the presence of a *CNJ*- conjugation prefix, the stative prefix *i-* in Ɛ, and a repetitive suffix that is either *-k* ~ *-kw* or the unique combination of *-kw-t* with an open syllable root. They denote a mass or a plurality of discrete entities positioned at multiple locations along a path in space, and so the conjugation class reflects their spatial orientation as discussed in section 3.2. Close approximations in English include *The water lies here and there along the road* and *The coins lie scattered across the table*.

Multipositional state *CNJ*-imperfectives are only attested with the *n*-conjugation class (Leer 1991: 328). There is no negative evidence against other conjugation classes however, so it is not clear if their absence with *Ø*, *g̲-*, or *g-* is accidental or principled. A principled explanation could be due to the lateral spatial semantics of the *n*-conjugation class versus the others (sec. 3.3.3), but we need supporting data. Unlike the extensional state *CNJ*-imperfectives, the multipositionals are always accompanied by a path argument PP with the pertingent postposition *-x̲* 'at, along, contacting'. Leer suggests that they are instances of the motion derivation *NP-x̲* (*n*; *yoo=i-...-k*) 'along, via NP'. But the same postposition *-x̲* is also found in motion derivations with the *Ø* and *g̲*-conjugation classes so the PP does not account for a possible restriction to *n*-conjugation.

27. Leer used the more unwieldy label "multiple-positional imperfective" (Leer 1991: 328).

Leer's very brief description implies the possibility of many multipositional state *CNJ*-imperfectives (Leer 1991: 328) but I have only confirmed two roots: $\sqrt[1]{}$*.at* 'pl. go' and $\sqrt[1]{}$*da* 'flow'. The forms in (77) use the root $\sqrt[1]{}$*.at* 'pl. go'. The appearance of *l-* in these forms is related to the positional imperfective with *l-* and this same root (ch. 2 sec. 2.3.3.3). But positionals lack *i-* whereas multipositionals have *i-* so the multipositional is not simply an iterative of the positional.

(77) a. Héen x̲'ayaax̲ nali.átk. *n-conj. multipositional state CNJ-imperfectives*
héen x̲'aÿaa-x̲ n- l- i- $\sqrt[1]{}$.at -H -k
river edge -PERT NCNJ-XTN-STV-$\sqrt[1]{}$go·PL-VAR-REP
'They (fish, berries) are lying about along the riverbank.' (Leer 1976a: 97)

b. Áx̲ luyanli.átk.
á -x̲ lu- ÿ- n- l- i- $\sqrt[1]{}$.at -H -k
3N-PERT nose-QUAL-NCNJ-XTN-STV-$\sqrt[1]{}$go·PL-VAR-REP
'They are piled up along there in bunches.' (Leer 1976a: 02/79)

c. Áx̲ x̲'anli.átk.
á -x̲ x̲'e- n- l- i- $\sqrt[1]{}$.at -H -k
3N-PERT mouth-NCNJ-XTN-STV-$\sqrt[1]{}$go·PL-VAR-REP
'They are protruding along there.' (Leer 1976a: 02/82)

The $\sqrt[1]{}$*da* 'flow' root is shown with two multipositonal state *CNJ*-imperfectives in (78). This root is an open syllable since it lacks a coda consonant. It consequently demonstrates the unusual appearance of both *-kw* and *-t* repetitive suffixes which is apparently a hallmark of multipositionals. The semantic contribution of these two suffixes together is unclear. The *-k* ~ *-kw* is common with states (sec. 2.1.1.2) and since multipositionals are always states this is not particularly remarkable. But the combination with *-t* is exceedingly unusual. The noun *kakékwti* 'unraveled part at hem' (cf. $\sqrt[2]{}$*ke* 'unravel') might be related, but this is all I have to offer at present.

(78) a. Áx̲ naadákwt.
á -x̲ n- i- $\sqrt[1]{}$da^{h} -H -kw-t
3N-PERT NCNJ-STV-$\sqrt[1]{}$go·PL-VAR-REP-REP
'They (bodies of water) lie here and there along it.' (Leer 1991: 328)

b. A káx̲ kanaadákwt.
a ká -x̲ k- n- i- $\sqrt[1]{}$da^{h}-H -kw-t
3N·PSS HSFC-PERT HSFC-NCNJ-STV-$\sqrt[1]{}$flow-VAR-REP-REP
'They (rivers) are flowing here and there on its surface.' (Leer 1976a: 312)

The iterative *CNJ*-imperfectives are so poorly documented that it is hard to generalize about them. We still need to know at least (i) if they can occur with other conjugation classes besides the *n*-conjugation class, (ii) if they can occur with roots other than $\sqrt[1]{}$*.at* or $\sqrt[1]{}$*da*, and (iii) if they can occur with PPs other than *NP-x̲*. In addition they need to be tested to verify that they have imperfective aspect semantics like the non-iterative *CNJ*-imperfectives.

2.2. Perfective aspect

Perfective aspect is generally analyzed as a relationship between the event time E and the reference time R where where $E \subseteq R$ so that the eventuality associated with E is perceived as complete or total

(Rothstein 2016: 361). Toews (2015: 179) illustrates this with an English past perfective example *She painted the house purple* and says that the reference time *R* where the speaker watched the painting must contain the painting event *E*, and so $E \subseteq R$.

Perfective aspect has at least eleven diagnostic tests that distinguish it from other temporal categories (Toews 2015: 217–233). As with the imperfective aspect there are a number of different flavours of perfectives so testing all of them for each of the diagnostics would be a complex task.[28] I offer below some data applying seven of the eleven diagnostics to a few exemplary forms. The form in (79) illustrates a non-iterative *u*-perfective based on the *∅*-conjugation achievement root $\sqrt[2]{ja\underline{k}}$ 'kill'.[29] As implied by its translation, this perfective has a default past tense interpretation.

(79) Táax'aa x̲waajáḵ. *∅-conj. non-iterative u-perfective*
táax'aa u- x̲- i- $\sqrt[2]{ja\underline{k}}$-H
mosquito ZPFV-1SG·S-STV-$\sqrt[2]{}$kill -VAR
'I killed a mosquito.'

The perfective aspect can also be used in non-past contexts, showing that it is not inherently a past tense. This is shown by the form in (80) which adds a time adverb *yá yeedát* 'now, this moment' which refers to the present tense.

(80) Ch'a yá yeedát táax'aa x̲waajáḵ. *perfective with present time adverb*
ch'a yá yeedat táax'aa u- x̲- i- $\sqrt[2]{ja\underline{k}}$-H
just PROX moment mosquito ZPFV-1SG·S-STV-$\sqrt[2]{}$kill -VAR
'I killed a mosquito just now.'

The past tense *-ín* can be combined with an imperfective to denote a past tense eventuality without using the perfective. This is shown by the form in (81). Thus the perfective aspect is not required in past tense contexts.

(81) Yeisú dziyáak táayín. *non-perfective with past tense -ín*
yeisú dziyáak $\sqrt[1]{ta^h}$ -μH-ín
still earlier $\sqrt[1]{}$sleep·SG-VAR-PAST
'He was still sleeping earlier.' (Cable 2017c: 647)

The perfective is compatible with the past tense *-ín* as shown by the form in (82). This root $\sqrt[2]{ku^h}$ 'know' is an instantaneous telic event (achievement) and so cannot form a *∅*-imperfective so (82) cannot be analyzed as a *∅*-imperfective with irrealis *u-*. This means that the perfective is not itself a past tense since it can combine with one.

(82) X̲wasakóowún. *perfective with past tense -ín*
u- x̲- s- $\sqrt[2]{ku^h}$ -μH-ín
ZPFV-1SG·S-XTN-$\sqrt[2]{}$know-VAR-PAST
'I had come to know it (but no longer do).' (Leer 1991: 464)

28. Table 6.2 suggests at least (4 + 3 + 4) × 11 = 121 different examples, ignoring repetitive suffixes.
29. The noun *táax'aa* 'mosquito' is based on $\sqrt[2]{tax'}$ 'bite, chew' + *-μH* VAR + *-aa* 'instrument'.

Diagnostic	*Status*	*Data*
default past interpretation	✓	(79)
acceptable in non-past contexts	✓	(80)
not required in past contexts	✓	(81)
combines with past	✓	(82)
incompatible with imperfective	✓	(42), (43)
result state reading	✓	(83)
inceptive reading with punctual adverbials	✓	(84)
event time contained in temporal adverb boundaries	?	
event non-continuation clause (tests for termination)	?	
event completion clause (tests for culmination)	?	
no interruption interpretation (tests for culmination)	?	

Table 6.13: Perfective aspect diagnostics following Toews 2015

I showed earlier in section 2.1 that the perfective and imperfective cannot be combined, so I will not repeat that test here. The data for this can be found on page 516 in (42) and (43).

The non-iterative *wu*- and *u*-perfective forms – the basic perfectives – inherently have a result state reading. This is particularly the case for achievements where the perfective denotes inchoativity into the state that holds after the event. For example, the root $\overset{1}{\sqrt{}}$*na* 'die' is instantaneous and so cannot be used to denote an imperfective activity or state. But its *wu*-perfective form can be used to describe the result state of being dead that holds after death. This is shown in (83) with the coordination of perfective $\overset{2}{\sqrt{}}$*jak* 'kill' and perfective $\overset{1}{\sqrt{}}$*na* 'die'.

(83) Táax'aa xwaaják ka yá yeedát woonaa. *pfv. has result state reading*
táax'aa u- x- i- $\overset{2}{\sqrt{}}$jak-H ka yá yeedát wu-i- $\overset{1}{\sqrt{}}$na-μ
mosquito ZPFV-1SG·S-STV-$\overset{2}{\sqrt{}}$kill -VAR and PROX moment PFV-STV-$\overset{1}{\sqrt{}}$die-VAR
'I killed a mosquito and now it's dead.'

The perfective is compatible with punctual time adverbs where it can be read as inceptive. As Toews describes it, "this means that the initial part of the event is contained within the reference time, but not the end part of the event" (Toews 2015: 228). The sentence in (84) illustrates this with the activity root $\overset{2}{\sqrt{}}$*l'ex* 'dance'. The house master did not just dance at the moment the clock turned 2:00, but instead started dancing at that time and implicitly continued for as long as necessary to complete the dance.

(84) Déix gaaw kát aawal'eix, wé hít s'aatí. *pfv. has inceptive reading*
déix gaaw ká -t a- wu-i- $\overset{2}{\sqrt{}}$l'ex -μ wé hít s'aatí
two hour HSFC-PNCT XPL-PFV-STV-$\overset{2}{\sqrt{}}$dance-VAR MDST house master
'At two o'clock the house master danced.'

Table 6.13 summarizes the perfective diagnostics that I have applied above, following Toews (2015: 217). The last four diagnostics are difficult for me to address because they depend partly on lexical aspect distinctions and require some preliminary work to determine suitably unambiguous

Name	Asp	*Perfective*	*Iterative*	*Stative*	*Lexical*	*Evt. Type*	Adv	*Notes*
(unknown)	(*wu-*?)	+	–	–	–	(durative)	(none)	
perfective {	*u-*	+	–	+	–	stative	none	§2.2.1.1; *Ø*-conj.
	wu-	+	–	+	–	stative	none	§2.2.2.1; non-*Ø*-conj.
habitual	*u-*	+	+	–	–	durative?	*-ch*	§2.2.1.2; *Ø*-conj.
repetitive perfective	*wu-*	+	+	+	–	stative	any?	§2.2.2.2; rare, non-*Ø*?
(unknown)	(*CNJ-*)	+	–	–	–	(durative)	(none)	
realizational	*CNJ-*	+	–	+	–	stative	none	§2.2.3.1; all conj.
habitual	*CNJ-*	+	+	–	–	durative?	*-ch*	§2.2.3.2; non-*Ø*-conj.
(unknown)	(*CNJ-*)	+	+	+	–	(stative)	(*-k*?)	

Table 6.14: Perfective aspect morphologies

culmination, termination, interruption, and continuation phenomena. I suspect that given the right combinations of lexical aspect and adjunct clauses the perfective aspect should pass these tests.

The perfective aspect is actually a family of related morphosyntactic structures, just like the imperfective aspect. Table 6.14, which is a subset of table 6.2 on page 513, shows the morphological elaboration of the perfective aspect. Similar to the imperfective aspect there is a basic division between forms marked with a conjugation class prefix in Asp⁰ and forms with a dedicated aspectual prefix in Asp⁰. Although the imperfective aspect probably has a single covert element that hosts the imperfective aspect semantics, this is not the case for the perfective aspect. Here instead there is some allomorphy conditioned by conjugation class, specifically the selection of the *u-* perfective prefix allomorph for the *Ø*-conjugation class and *wu-* for the other classes.

The data in (85)–(88) illustrate the conjugation class–dependent allomorphy of the perfective aspect with four monovalent roots in each of the four conjugation classes. The *Ø*-conjugation root *$^{1}\sqrt{dut'}$* 'hiccup' is uniquely grammatical with *u-* in (85a) whereas the other three conjugations in are grammatical only with *wu-* in (86b)–(88b).

(85) a. Xat uwadút'. *Ø-conj. u-perfective*
xat= u- i- $^{1}\sqrt{dut'}$-H
1SG·O-ZPFV-STV-$^{1}\sqrt{dut'}$ -VAR
'I hiccuped.'

b. *Xat woodút'. **Ø-conj. wu-perfective*
xat= wu- i- $^{1}\sqrt{dut'}$-H
1SG·O-PFV- STV-$^{1}\sqrt{dut'}$ -VAR
intended: 'I hiccuped.'

(86) a. *Xat uwanaa. *n-conj. u-perfective
xat= u- i- √na-μ
1SG·O-ZPFV-STV-√na -VAR
intended: 'I died.'

b. Xat woonaa. n-conj. wu-perfective
xat= wu- i- √na-μ
1SG·O-PFV- STV-√na -VAR
'I died.'

(87) a. *Xat uwas'éex'. *g-conj. u-perfective
xat= u- i- √s'ix'-μ
1SG·O-ZPFV-STV-√gush-VAR
intended: 'I got diarrhea.'

b. Xat woos'éex'. g-conj. wu-perfective
xat= wu- i- √s'ix'-μ
1SG·O-PFV- STV-√gush-VAR
'I got diarrhea.'

(88) a. *Xat uwanéekw. *g-conj. u-perfective
xat= u- i- √nikw-μ
1SG·O-ZPFV-STV-√sick -VAR
intended: 'I got sick.'

b. Xat woonéekw. g-conj. wu-perfective
xat= wu- i- √nikw-μ
1SG·O-PFV- STV-√sick -VAR
'I got sick.'

This allomorphic distinction between *u-* and *wu-* is frequently obscured by the phonological realization of the Conjunct domain. The data in (89) and (90) illustrate this with bivalent achievement roots in the four conjugation classes. The forms in (89) have a fourth person (indefinite, nonspecific) nonhuman object D pronoun *at=* 'something, stuff' and a covert third person subject. Like the examples above, the data in (89) shows a clear distinction between *u-* and *wu-*.

(89) a. At uwa.áx. Ø-conj. u-perfective
at= u- i- √.ax -H
4N·O=ZPFV-STV-√hear-VAR
'S/he heard something.'

b. At woos'éil'. n-conj. wu-perfective
at= wu- i- √s'el'-μH
4N·O=PFV- STV-√tear -VAR
'S/he tore something.'

c. At wooxéet'. *g̲-conj. wu-perfective*
at= wu- i- $\sqrt[2]{}$xit' -μH
4N·O=PFV- STV-$\sqrt[2]{}$sweep-VAR
'S/he swept something.'

d. At woot'ee. *g-conj. wu-perfective*
at= wu- i- $\sqrt[2]{}$t'i^{h} -μ
4N·O=PFV- STV-$\sqrt[2]{}$find-VAR
'S/he found something.'

In contrast, the forms in (90) show that both *u-* and *wu-* are realized with the first person singular subject D pronoun *x̲-* 'I' as the labialization in *x̲wa* [χ^{w}à].

(90) a. At x̲waa.áx̲. *∅-conj. u-perfective*
at= u- x̲- i- $\sqrt[2]{}$.ax̲ -H
4N·O=ZPFV-1SG·S-STV-$\sqrt[2]{}$hear-VAR
'I heard something.'

b. At x̲waas'éil'. *n-conj. wu-perfective*
at= wu- x̲- i- $\sqrt[2]{}$s'el'-μH
4N·O=PFV- 1SG·S-STV-$\sqrt[2]{}$tear -VAR
'I tore something.'

c. At x̲waaxéet'. *g̲-conj. wu-perfective*
at= wu- x̲- i- $\sqrt[2]{}$xit' -μH
4N·O=PFV- 1SG·S-STV-$\sqrt[2]{}$sweep-VAR
'I swept something.'

d. At x̲waat'ee. *g-conj. wu-perfective*
at= wu- x̲- i- $\sqrt[2]{}$t'i^{h} -μ
4N·O=PFV- 1SG·S-STV-$\sqrt[2]{}$find-VAR
'I found something.'

Contrasts like those in (85)–(89) are difficult if not impossible to explain from a purely phonological perspective, leading to the adoption of two underlying forms *u-* and *wu-* that are selected by the syntax according to conjugation class features (sec. 1.1.1). I have admittedly been sloppy about tracking the difference between these two when their surface appearance is identical like in (90), but this sloppiness raises a puzzling question: is *u-* always different from *wu-* in the syntax or are they only different when they are realized differently by the phonology? I leave this unanswered here because of how little we actually know about the syntax-phonology interface and particularly about perfective allomorphy. Besides, there are several other allomorphic contrasts which seem to be more phonologically motivated but which also call into question the underlying forms. For example, the realization with second person singular subject *i-* 'you' in (91) is phonologically unexpected, and forms with second person plural subject *ÿi-* 'you guys' in (92) are similarly perplexing (cf. ch. 3 sec. 2.1).

(91) a. At iya.áx̱. *Ø-conj. u-perfective*
at= u- i- i- $\sqrt[2]{}$.ax̱ -H
4N·O=ZPFV-2SG·S-STV-$\sqrt[2]{}$hear-VAR
'You heard something.'

b. At yees'éil'. *n-conj. wu-perfective*
at= wu- i- i- $\sqrt[2]{}$s'el'-μH
4N·O=PFV- 2SG·S-STV-$\sqrt[2]{}$tear -VAR
'You tore something.'

c. At yeexéet'. *g̱-conj. wu-perfective*
at= wu- i- i- $\sqrt[2]{}$xit' -μH
4N·O=PFV- 2SG·S-STV-$\sqrt[2]{}$sweep-VAR
'You swept something.'

d. At yeet'ee. *g-conj. wu-perfective*
at= wu- i- i- $\sqrt[2]{}$t'iʰ -μ
4N·O=PFV- 2SG·S-STV-$\sqrt[2]{}$find-VAR
'You found something.'

(92) a. At yeey.áx̱. *Ø-conj. u-perfective*
at= u- ÿi- i- $\sqrt[2]{}$.ax̱ -H
4N·O=ZPFV-2PL·S-STV-$\sqrt[2]{}$hear-VAR
'You guys heard something.'

b. At yeeys'éil'. *n-conj. wu-perfective*
at= wu- ÿi- i- $\sqrt[2]{}$s'el'-μH
4N·O=PFV- 2PL·S-STV-$\sqrt[2]{}$tear -VAR
'You guys tore something.'

c. At yeeyxéet'. *g̱-conj. wu-perfective*
at= wu- ÿi- i- $\sqrt[2]{}$xit' -μH
4N·O=PFV- 2PL·S-STV-$\sqrt[2]{}$sweep-VAR
'You guys swept something.'

d. At yeeyt'ee. *g-conj. wu-perfective*
at= wu- ÿi- i- $\sqrt[2]{}$t'iʰ -μ
4N·O=PFV- 2PL·S-STV-$\sqrt[2]{}$find-VAR
'You guys found something.'

I have adopted a basic distinction between *u*-perfectives and *wu*-perfectives for descriptive purposes in sections 2.2.1 and 2.2.2. I acknowledge that there are questions about the distribution of this distinction and the reality of separate underlying forms but I ignore these questions for now. Other than the association with conjugation class, there seems to be no substantive distinction between *u-* and *wu-* in the semantics: both are simply 'perfective'. There is also still no coherent historical explanation for this perfective allomorphy which could suggest meaning or structure differences in the synchronic system.

Table 6.14 on page 544 shows that the perfective aspect has a contrast between non-iterative and iterative forms just like the imperfective aspect. But the descriptive tradition treats these differently: where iterative forms of the imperfective aspect are described as special kinds of imperfective, instead the iterative forms of perfective aspect are described as distinct aspects. Specifically, the habitual is treated as an aspectual category separate from the perfective, though Leer sometimes refers to it as the "perfective habitual" because of its semantic similarity and partial morphological overlap with the non-iterative *u*-perfective aspect (Leer 1991: 393). The habitual is uniquely split across the categories in table 6.14: habituals of *Ø*-conjugation class verbs have the *u-* perfective prefix whereas habituals of the other three conjugation classes have a conjugation class prefix *CNJ-*. This is shown in (93)–(96) using the same monovalent roots from earlier in (85)–(88).

(93) a. Ch'a tlákw x̲at udút'ch. *Ø-conj. habitual with u-*
ch'a tlákw x̲at= u- ²√dut' -H -ch
just always 1SG·O=ZPFV-²√hiccup-VAR-REP
'I have always hiccupped.'

b. *Ch'a tlákw x̲at dút'ch. **Ø-conj. habitual with Ø-*
ch'a tlákw x̲at= ²√dut' -H -ch
just always 1SG·O=ZCNJ-²√hiccup-VAR-REP
intended: 'I have always hiccupped.'

(94) a. *Ch'a tlákw x̲at wunáach. **n-conj. habitual with wu-*
ch'a tlákw x̲at= wu-²√na-μH-ch
just always 1SG·O=PFV-²√die-VAR-REP
intended: 'I have always died.'

b. Ch'a tlákw x̲at nanáach. *n-conj. habitual with n-*
ch'a tlákw x̲at= n- ²√na-μH-ch
just always 1SG·O=NCNJ-²√die-VAR-REP
'I have always died.'

(95) a. *Ch'a tlákw x̲at wus'éex̲'ch. **g̲-conj. habitual with wu-*
ch'a tlákw x̲at= wu-²√s'ix̲'-μH-ch
just always 1SG·O=PFV-²√gush-VAR-REP
intended: 'I have always gotten diarrhea.'

b. Ch'a tlákw x̲at gas'éex̲'ch. *g̲-conj. habitual with g̲-*
ch'a tlákw x̲at= g̲- ²√s'ix̲'-μH-ch
just always 1SG·O=G̲CNJ-²√gush-VAR-REP
'I have always gotten diarrhea.'

(96) a. *Ch'a tlákw x̲at wunéekwch. **g-conj. habitual with wu-*
ch'a tlákw x̲at= wu-²√nikw-μH-ch
just always 1SG·O=PFV-²√sick -VAR-REP
intended: 'I have always gotten sick.'

b. Ch'a tlákw x̲at ganéekwch. *g-conj. habitual with g-*
ch'a tlákw x̲at= g- ²√nikw-μH-ch
just always 1SG·O=GCNJ-²√sick -VAR-REP
'I have always gotten sick.'

To reflect this split, I have discussed the habitual in two separate places: in section 2.2.1.2 on iterative *u*-perfectives for the *∅*-conjugation class like in (93), and in section 2.2.3.2 on iterative *CNJ*-perfectives for the other three conjugation classes like in (94)–(96). I am still undecided if this is the best approach to describing and analyzing the habitual, but it is required by the categorization system in table 6.14.

Another notable property highlighted by the organization in table table 6.14 is that the perfective aspect does not have lexical forms unlike the imperfective aspect. Although there are various flavours of the perfective aspect whose morphology is dependent on lexical properties like conjugation class, there is no general pattern of entirely unpredictable forms unlike with the lexical activity and state *∅*-imperfectives discussed in section 2.1.1.1. I suspect that this gap is because the perfective aspect is determined by material in Asp⁰ where the lexical *∅*-imperfectives are characterized by the lack of material in Asp⁰. The lack of Asp⁰ material leaves only Ɛ and √ to supply grammatical aspect information, and since √ is the lexical entry it is obviously the primary locus of lexical specification. Further review of the lexical documentation may turn up lexicalized perfective forms (cf. sec. 2.2.2.2), but in general there is no regular pattern of lexical perfective aspect.

States are attested for both non-iterative *u*/*wu*-perfectives and for non-iterative *CNJ*-perfectives, but among the iteratives only *wu*-perfectives are regularly stative with *i-* in Ɛ. It is not clear if this gap is accidental or if there is a principled explanation. It could simply be that they exist but have not been documented, but this seems unlikely given the body of research over the last century. Iterative states are particularly associated with the *-k* ~ *-kw* repetitive suffix where the habitual uses only *-ch*, so it could be that the selection of Adv militates against the formation of states. A possibly related fact is that the secondary derivation of a repetitive aspectual paradigm prohibits combination with the perfective aspect (Leer 1991: 229).

2.2.1. *U*-PERFECTIVE

The *u-* perfective prefix is an allomorph of the *wu-* perfective prefix that is exclusive to the *∅*-conjugation class. Because *u-* is only allowed with verbs of the *∅*-conjugation class I have glossed it as ZPFV for 'zero (conjugation) perfective' to contrast it with the elsewhere case of perfective *wu-* PFV. It occurs in both non-iterative and iterative perfectives. Both non-iterative and iterative *u*-perfectives can be events, but only non-iterative *u*-perfectives can be states. Like the *wu-* perfective prefix, the *u-* perfective prefix has no other function besides marking perfective aspect. This sets these two prefixes apart from the *CNJ-* prefixes which are used for other aspects in combination with the other elements in Asp⁰, the stative *i-* prefix in Ɛ, and stem variation in V. Aside from the difference in conjugation class, the *u-* and *wu-* perfective appear to be semantically identical. The contrast between *u-* and *wu-* is robust across all dialects, is well attested in records from the 19th century, and is maintained among the youngest speakers of Tlingit today. This allomorphy is therefore universal and stable, so it probably does not represent a historical anomaly and is not undergoing levelling.

The *u-* perfective prefix allomorph is problematic for the syntax and phonology because its appearance is subject to a number of constraints beyond just conjugation class. Some of these constraints look like they are probably phonological, but others look like they are probably syntactic, and there is as yet no unified analysis that accounts for all of them at once. I assume for now that there is a syntactic selection of *u-* for *∅*-conjugation verbs in all contexts and that the surface form is adjusted phonologically as appropriate, but this is almost certainly incomplete. I illustrate the

Type	*v*	*Subj.*	*Conj.*	*u-*	*wu-*	*Data*
unaccusative	—	—	*Ø*	✓	*	(97)
unaccusative	—	—	*n*	*	✓	(98)
unergative	covert	3	*Ø*	✓	*	(99)
unergative	covert	3	*n*	*	✓	(100)
unergative	covert	2sg	*Ø*	✓	*	(101)
unergative	covert	2sg	*n*	*	✓	(102)
transitive	covert	3	*Ø*	✓	*	(103)
transitive	covert	3	*n*	*	✓	(104)
transitive	covert	2sg	*Ø*	✓	*	(105)
transitive	covert	2sg	*n*	*	✓	(106)

Table 6.15: Contexts distinguishing *u-* versus *wu-*

problem here and leave it unsolved. I start with the basic cases which clearly differentiate *u-* from *wu-* depending on conjugation class, then present the constraints on the appearance of *u-*.

The data in (97)–(106) document each of the contexts where *u-* regularly contrasts with *wu-* in non-iterative *u*/*wu*-perfectives. All of the contexts with *u-* in (97)–(106) feature a disyllabic phonological pattern [ʔV(ː).Ÿa] where V is either [u] or [i] and Ÿ is either [w] or [j]. These are opposed by the monosyllabic *wu-* pattern of [ŸVː]. The data in (97)–(106) are summarized in table 6.15. The "*v*" column in table 6.15 represents the absence or covertness of *v*. The "Subj." column is the subject which may be absent, covert third person, or overt second person singular *i-*. The "Conj." column is the conjugation class, contrasting *Ø* against *n*. The "*u-*" and "*wu-*" columns track the grammaticality of the two prefixes. The "Data" column is the relevant example number.

First, the data in (97) and (98) show the distribution of *u-* versus *wu-* in unaccusatives which lack *v* and thus have no subject.

(97) a. Xat uwadút'. *unacc. Ø-conj. with u-perfective*
xat= u- i- $\sqrt[1]{}$dut' -H
1SG·S=PFV-STV-$\sqrt[1]{}$hiccup-VAR
'I hiccuped.'

b. *Xat woodút'. **unacc. Ø-conj. with wu-perfective*
xat= wu-i- $\sqrt[1]{}$dut' -H
1SG·S=PFV-STV-$\sqrt[1]{}$hiccup-VAR
intended: 'I hiccuped.'

(98) a. *Xat uwayeix. **unacc. n-conj. with u-perfective*
xat= u- i- $\sqrt[1]{}$yex -μ
1SG·O=PFV-STV-$\sqrt[1]{}$absent-VAR
'I became absent.'

b. Xat wooyeix. *unacc. n-conj. with wu-perfective*
xat= wu-i- ¹√yex -μ
1SG·O=PFV-STV-¹√absent-VAR
intended: 'I became absent.'

The data in (99) and (100) show the distribution of *u-* versus *wu-* in unergatives with covert *v* and covert third person subjects. These unergatives are motion verbs so the conjugation class is established by the motion derivation because motion verbs can support all four conjugation classes. The motion derivation in (99) is the *ÿán= ~ ÿáx= ~ ÿán-de=* 'arriving at shore; terminating' derivation which selects *∅*-conjugation. The motion derivation in (100) is the *NP-dé* 'toward NP' derivation that selects *n*-conjugation.

(99) a. Yan uwakúx. *unerg. ∅-conj. 3 subj. with u-perfective*
ÿán= u- i- ¹√kux -H
shore=ZPFV-STV-¹√go·boat-VAR
'He boated ashore.'

b. *Yan wookúx. **unerg. ∅-conj. 3 subj. with wu-perfective*
ÿán= wu-i- ¹√kux -H
shore=PFV-STV-¹√go·boat-VAR
intended: 'He boated ashore.'

(100) a. *Aandé uwakoox. **unerg. n-conj. 3 subj. with u-perfective*
aan -dé u- i- ¹√kux-μ
town-ALL ZPFV-¹√go·boat-VAR
intended: 'He boated to town.'

b. Aandé wookoox. *unerg. n-conj. 3 subj. with wu-perfective*
aan -dé wu-i- ¹√kux-H
town-ALL PFV-¹√go·boat-VAR
'He boated to town.'

The data in (101) and (102) show the distribution of *u-* versus *wu-* in unergatives with covert *v* and overt second person singular subject *i-*. These use the same motion verbs and derivation as above.

(101) a. Yan eeyakúx. *unerg. ∅-conj. 2sg. subj. with u-perfective*
ÿán= u- i- i- ¹√kux-H
shore=ZPFV-2SG·S-¹√go·boat-VAR
'You (sg.) boated ashore.'

b. *Yan yeekúx. **unerg. ∅-conj. 2sg. subj. with wu-perfective*
ÿán= u- i- i- ¹√kux-H
shore=PFV-2SG·S-¹√go·boat-VAR
intended: 'You (sg.) boated ashore.'

(102) a. *Aandé eeyaḵooẖ. **unerg. n-conj. 2sg. subj. with u-perfective*
aan -dé u- i- i- $^{1}\sqrt{}$ḵuẖ-μ
town-ALL ZPFV-3·S-$^{1}\sqrt{}$go·boat-VAR
intended: 'You (sg.) boated to town.'

b. Aandé yeeḵooẖ. *unerg. n-conj. 2sg. subj. with wu-perfective*
aan -dé u- i- i- $^{1}\sqrt{}$ḵuẖ-μ
town-ALL PFV-3·S-$^{1}\sqrt{}$go·boat-VAR
'You (sg.) boated to town.'

Next, the data in (103) and (104) show the distribution of *u-* versus *wu-* in transitives with covert *v* and covert third person subjects.

(103) a. X̱at uwahíxw. *trans. Ø-conj. 3 subj. with u-perfective*
x̱at= u- i- $^{2}\sqrt{}$hixw-H
1SG·O=ZPFV-STV-$^{2}\sqrt{}$magic-VAR
'S/he bewitched me.' (Story & Naish 1973: 29)

b. *X̱at woohíxw. **trans. Ø-conj. 3 subj. with wu-perfective*
x̱at= wu-i- $^{2}\sqrt{}$hixw-H
1SG·O=PFV-STV-$^{2}\sqrt{}$magic-VAR
intended: 'S/he bewitched me.'

(104) a. *X̱at uwajáaḵw. **trans. n-conj. 3 subj. with u-perfective*
x̱at= u- i- $^{2}\sqrt{}$ja'ḵw -μH
1SG·O=ZPFV-STV-$^{2}\sqrt{}$beat·up-VAR
intended: 'S/he beat me up.'

b. X̱at woojáaḵw. *trans. n-conj. 3 subj. with wu-perfective*
x̱at= wu-i- $^{2}\sqrt{}$ja'ḵw -μH
1SG·O=PFV-STV-$^{2}\sqrt{}$beat·up-VAR
'S/he beat me up.' (Story & Naish 1973: 27)

The data in (105) and (106) show the distribution of *u-* versus *wu-* in transitives with covert *v* and overt second person singular subject *i-*. The combination of *u-i-i-* is *eeya* [ˌʔìː.jà] with a long vowel, but it is often written as *ìya* [ˌʔì.jà] probably by analogy with *u-i-* → *uwa* as in (97a) and (104a) above. It is not clear if anyone actually pronounces *ìya* rather than *eeya* in such contexts, or if this is only an orthographic (mis)convention.

(105) a. X̱at eeyahíxw. *trans. Ø-conj. 2sg. subj. with u-perfective*
x̱at= u- i- i- $^{2}\sqrt{}$hixw-H
1SG·O=ZPFV-2SG·S-STV-$^{2}\sqrt{}$magic-VAR
'You (sg.) bewitched me.'

b. *X̱at yeehíxw. **trans. Ø-conj. 2sg. subj. with wu-perfective*
x̱at= wu-i- i- $^{2}\sqrt{}$hixw-H
1SG·O=PFV-2SG·S-STV-$^{2}\sqrt{}$magic-VAR
intended: 'You (sg.) bewitched me.'

(106) a. *Xat eeyajáakw. **trans. n-conj. 2sg. subj. with u-perfective*
x̱at= u- i- i- $^{2}\sqrt{}$ja'k̲w -μH
1SG·O=ZPFV-2SG·S-STV-$^{2}\sqrt{}$beat·up-VAR
intended: 'You (sg.) beat me up.'

b. Xat yeejáak̲w. *trans. n-conj. 2sg. subj. with wu-perfective*
x̱at= wu-i- i- $^{2}\sqrt{}$ja'k̲w -μH
1SG·O=PFV-2SG·S-STV-$^{2}\sqrt{}$beat·up-VAR
'You (sg.) beat me up.'

The data above in (97)–(106) crucially satisfy all of the constraints listed in (107). These are presented as syntactic phenomena but some of them may actually be phonological.

(107) a. the verb is a member of the *∅*-conjugation class (lexically or derivationally)
b. the Ɛ head contains overt *i-* (only for non-iteratives)
c. the *v* head is either absent (unaccusatives) or covert (transitives, unergatives)
d. the Voice head is absent (no lexical, derivational, or grammatical *d-*)
e. the subject is either absent, third person, or second person singular *i-*
f. there are no incorporated nouns or qualifiers
g. the object prefix if present is not *CV-* (*a-*, *i-*, *k̲u-*)

The constraint in (107b) is unusual in that it applies only to non-iterative *u*-perfectives (Leer 1991: 178). Compare the forms in (108) for a *g̲*-conjugation monovalent achievement root $^{1}\sqrt{}$*nix̲* ~ $^{1}\sqrt{}$*nex̲* 'safe, healed' with the forms in (109) for a *∅*-conjugation monovalent achievement root $^{1}\sqrt{}$*laxw* 'starve'.

(108) a. Xat wooneix̲. *affirmative non-iterative wu-perfective*
x̱at= wu-i- $^{1}\sqrt{}$nex̲-μ
1SG·O=PFV-STV-$^{1}\sqrt{}$safe -VAR
'I recovered.', 'I became safe.' (Eggleston 2017)

b. Tlél x̱at wuneix̲. *negative non-iterative wu-perfective*
tlél x̱at= u- wu-$^{1}\sqrt{}$nex̲ -μ
NEG 1SG·O=IRR-PFV-$^{1}\sqrt{}$starve-VAR
'I didn't recover.', 'I didn't become safe.' (Eggleston 2017)

c. Xat g̲anéxch. (*habitual*) *iterative g̲-perfective*
x̱at= g̲- $^{1}\sqrt{}$laxw-H -ch
1SG·O=GCNJ-$^{1}\sqrt{}$starve-VAR-REP
'I recovers (every time).', 'I becomes safe (every time).' (Eggleston 2017)

(109) a. Xat uwaláxw. *affirmative non-iterative u-perfective*
x̱at= u- i- $^{1}\sqrt{}$laxw-H
1SG·O=ZPFV-STV-$^{1}\sqrt{}$starve-VAR
'I starved.' (Eggleston 2017)

b. Tlél x̱at wulaaxw. *negative non-iterative u-perfective*
tlél x̱at= u- u- $^{1}\sqrt{}$laxw-μ
NEG 1SG·O=IRR-ZPFV-$^{1}\sqrt{}$starve-VAR
'I didn't starve.' (Eggleston 2017)

c. X̱at ulaaxwch. (*habitual*) *iterative u-perfective*
x̱at= u- $^{1}\sqrt{}$laxw-μ -ch
1SG·O=ZPFV-$^{1}\sqrt{}$starve-VAR-REP
'I starves (every time).' (Eggleston 2017)

The problem arises in (109b) with the negative *u*-perfective. Negation triggers Ɛ-suppression so the *i-* prefix – the *wa* [wà] in (109a) – disappears. The result appears to have *wu-* instead of *u-*. The surface syllable *wu* [wù] could however be due to the combination of irrealis *u-* and perfective *u-*. Crucially Leer claims that irrealis *u-* is deleted in perfectives (Leer 1991: 176) so the combination of *u-* + *u-* → *wu* is impossible in his analysis.

The constraint in (107c) against overt *v* is shown in (110). This constraint excludes all causatives, applicatives, pejoratives, and extensional *s-* ~ *l-*. The ungrammaticality of (110b) cannot be explained by phonology because similar forms are possible with irrealis *u-* such as *tlél ushik'éiyi aa* 'one that is not good' (Eggleston 2017).

(110) a. X̱at wusixét. *Ø-conj. non-iterative wu-perfective*
x̱at= wu- s- i- $^{1}\sqrt{}$xet -H
1SG·O=PFV- CSV-STV-$^{1}\sqrt{}$winded-VAR
'S/he knocked the wind out of me.'

b. *X̱at usixét. **Ø-conj. non-iterative u-perfective*
x̱at= u- s- i- $^{1}\sqrt{}$xet -H
1SG·O=ZPFV-CSV-STV-$^{1}\sqrt{}$winded-VAR
intended: 'S/he knocked the wind out of me.'

The constraint in (107d) against *d-* in Voice is shown in (111). This constraint excludes all passives, antipassives, and middle voice structures like reflexives, reciprocals, self-benefactives, and revertive motions.

(111) a. X̱at wudichún. *Ø-conj. non-iterative wu-perfective*
x̱at= wu- d- i- $^{1}\sqrt{}$chun -H
1SG·O=PFV- MID-STV-$^{1}\sqrt{}$wound-VAR
'I got hurt, wounded.'

b. *X̱at udichún. **Ø-conj. non-iterative u-perfective*
x̱at= u- d- i- $^{1}\sqrt{}$chun -H
1SG·O=ZPFV-MID-STV-$^{1}\sqrt{}$wound-VAR
'I got hurt, wounded.'

The constraint in (107e) against subjects that are not third person (no prefix) or second person singular (*i-*) is shown in (112)–(116). The basis case in (112) shows that the *Ø*-conjugation activity root $^{2}\sqrt{}$*.ax̱w* 'tie, wrap, bind' takes *u-* versus the *wu-* for the *n*-conjugation activity root $^{2}\sqrt{}$*hun* 'sell'. The data in (113)–(116) show that the surface form of both *u-* and *wu-* is identical for the first person singular *x̱-* 'I', plural *tu-* 'we', second person plural *ÿi-* 'you guys', and fourth person *du-* 'someone, people'.

(112) a. At uwa.áx̱w. *Ø-conj. non-iterative u-perfective with 3rd subj.*
at= u- i- $\sqrt[2]{}$.ax̱w-H
4N·O=ZPFV-STV-$\sqrt[2]{}$tie -VAR
'S/he tied something.'

b. At woohoon. *n-conj. non-iterative wu-perfective with 3rd subj.*
at= wu- i- $\sqrt[2]{}$hun-μ
4N·O=PFV- STV-$\sqrt[2]{}$sell -VAR
'S/he sold something.'

(113) a. At x̱waa.áx̱w. *Ø-conj. non-iterative u-perfective with 1sg subj.*
at= u- x̱- i- $\sqrt[2]{}$.ax̱w
4N·O=ZPFV-1SG·S-STV-$\sqrt[2]{}$tie
'I tied something.'

b. At x̱waahoon. *n-conj. non-iterative wu-perfective with 1sg subj.*
at= wu- x̱- i- $\sqrt[2]{}$hun
4N·O=PFV- 1SG·S-STV-$\sqrt[2]{}$sell
'I sold something.'

(114) a. At wutuwa.áx̱w. *Ø-conj. non-iterative u-perfective with 1pl subj.*
at= u- tu- i- $\sqrt[2]{}$.ax̱w
4N·O=ZPFV-1PL·S-STV-$\sqrt[2]{}$tie
'We tied something.'

b. At wutuwahoon. *n-conj. non-iterative wu-perfective with 1pl subj.*
at= wu- x̱- i- $\sqrt[2]{}$hun
4N·O=PFV- 1PL·S-STV-$\sqrt[2]{}$sell
'We sold something.'

(115) a. At yeey.áx̱w. *Ø-conj. non-iterative u-perfective with 2pl subj.*
at= u- ÿi- i- $\sqrt[2]{}$.ax̱w
4N·O=ZPFV-1PL·S-STV-$\sqrt[2]{}$tie
'You pl. tied something.'

b. At yeeyhoon. *n-conj. non-iterative wu-perfective with 2pl subj.*
at= wu- ÿi- i- $\sqrt[2]{}$hun
4N·O=PFV- 1PL·S-STV-$\sqrt[2]{}$sell
'You pl. sold something.'

(116) a. At wuduwa.áx̱w. *Ø-conj. non-iterative u-perfective with 4th subj.*
at= u- du- i- $\sqrt[2]{}$.ax̱w
4N·O=ZPFV-4H·S-STV-$\sqrt[2]{}$tie
'We tied something.'

b. At wuduwahoon. *n-conj. non-iterative wu-perfective with 4th subj.*
at= wu- du- i- $\sqrt[2]{}$hun
4N·O=PFV- 4H·S-STV-$\sqrt[2]{}$sell
'We sold something.'

The introduction of qualifiers or incorporated nouns also causes the *u-* versus *wu-* contrast to disappear. The data in (117) shows that the distinct *u-* and *wu-* in (112) merge as *kaawa* [kʰà:.wà] with the introduction of the *ka-* 'small round' qualifier.

(117) a. At kaawa.áx̱w. *Ø-conj. non-iterative u-perfective with k-*
at= ka- u- i- ²√.ax̱w
4N·O=SRO-ZPFV-STV-²√tie
'S/he tied something small and round.'

b. At kaawahoon. *n-conj. non-iterative wu-perfective with k-*
at= ka- wu- i- ²√hun
4N·O=SRO-PFV- STV-²√sell
'S/he sold something small and round.'

The indefinite human object prefix allomorph *k̲u-* behaves phonologically like a qualifier or incorporated noun. The data in (118) replace the indefinite nonhuman *at=* with *k̲u-* and show a loss of difference similar to the introduction of *ka-* except with labialization spread.

(118) a. K̲oowa.áx̱w. *Ø-conj. non-iterative u-perfective with k̲u-*
k̲u- u- i- ²√.ax̱w-H
4H·O-ZPFV-STV-²√tie -VAR
'S/he tied someone.'

b. K̲oowahoon. *n-conj. non-iterative wu-perfective with k̲u-*
k̲u- wu- i- ²√hun-μ
4H·O-PFV- STV-²√sell -VAR
'S/he sold someone.'

The *a-* object prefix that occurs in AspP might be expected to combine with *u-* and *i-* to produce a form *a-u-i-* → *oowa* [ʔù:wà] in contrast with the *aawa* [ʔà:wà] that results from *a-wu-i-*. This however does not occur. The form *oowa* [ʔù:wà] is well known from contexts where irrealis *u-* occurs with *a-*, such as the *Ø*-imperfectives in (119).

(119) a. Oowayáa. *a-u-* → *oo with irrealis u-*
a- u- i- ²√ÿaʰ -μH
3·O-IRR-STV-²√resemble-VAR
'S/he/it resembles him/her/it.'

b. Yéi oowajée. *a-u-* → *oo with irrealis u-*
yéi= a- u- i- ²√jiʰ -μH
thus=3·O-IRR-STV-²√think-VAR
'S/he thinks so about him/her/it.'

But *a-* with perfective *u-* never gives rise to *oowa* for reasons that remain unclear. To illustrate this phenomenon, first consider the basis case in (120) and (121) for a perfective *n*-conjugation verb. The data in (120) with the fourth person nonhuman object *at=* 'something, stuff' show expected *wu-* rather than *u-*. The data in (121) with the third person object *a-* 'him/her/it' have the same pattern.

(120) a. *At uwashee. *n-conj. u-perfective*
at= u- i- $\sqrt[2]{}$shi^{h}-μ
4N·O=ZPFV-STV-$\sqrt[2]{}$sing -VAR
intended: 'S/he sang something.'

b. At wooshee. *n-conj. wu-perfective*
at= wu-i- $\sqrt[2]{}$shi^{h}-μ
4N·O=PFV-STV-$\sqrt[2]{}$eat -VAR
'S/he sang something.'

(121) a. *Oowashee. *n-conj. u-perfective*
a- u- i- $\sqrt[2]{}$shi^{h}-μH
3·O-ZPFV-STV-$\sqrt[2]{}$sing -VAR
intended: 'S/he sang it.'

b. Aawashee. *n-conj. wu-perfective*
a- wu-i- $\sqrt[2]{}$shi^{h}
3·O-PFV-STV-$\sqrt[2]{}$sing
'S/he sang it.'

Now compare the preceding forms to those in (122) and (123) with a *Ø*-conjugation class verb. The data in (122) show an expected *u*-perfective. But in (123a) the predicted form with *a-* and *u-* is ungrammatical, and instead the grammatical form in (123b) appears to have an underlying *wu-*.

(122) a. At uwax̱áa. *Ø-conj. u-perfective*
at= u- i- $\sqrt[2]{}$x̱a-μH
4N·O=ZPFV-STV-$\sqrt[2]{}$eat-VAR
'S/he ate something.'

b. *At wooxáa. **Ø-conj. wu-perfective*
at= wu-i- $\sqrt[2]{}$x̱a-μH
4N·O=PFV-STV-$\sqrt[2]{}$eat-VAR
intended: 'S/he ate something.'

(123) a. *Oowax̱áa. **Ø-conj. u-perfective*
a- u- i- $\sqrt[2]{}$x̱a-μH
3·O-ZPFV-STV-$\sqrt[2]{}$eat-VAR
intended: 'S/he ate it.'

b. Aawax̱áa. *Ø-conj. wu-perfective*
a- wu-i- $\sqrt[2]{}$x̱a
3·O-PFV-STV-$\sqrt[2]{}$eat
'S/he ate it.'

There are two approaches to account to this discrepancy, one syntactic and the other phonological. The syntactic approach would be to say that *a-* disallows perfective *u-* (but not irrealis *u-*) in Asp⁰ and so perfective *wu-* must be present instead. This might be modelled easily in an Optimality

Theoretic syntax with some appropriate output constraints, but it is unwieldy in a purely Minimalist syntax because it requires the head to be constrained by its specifier and both head and specifier are actually complex structures (Asp⁰ and D⁰ respectively; see ch. 7 for the latter). This approach is also arbitrary: there is no reasonable semantic or syntactic relationship between *a-* and *u-* that is any different from other combinations of object prefix and Asp⁰. The phonological approach is to say that both *u-* and *wu-* spell out the same when immediately preceded by *a-*. This has some precedent: when *u-* is immediately preceded by the self-benefactive *g-* or by the qualifiers *k-* or *ÿ-* the output is identical to that with *wu-*. The complication for this approach is how the otherwise homophonous irrealis prefix *u-* should output a form with *oowa* [ʔùːwà] rather than *aawa* [ʔàːwà], as in (119) above. I do not have a solution for this problem.

Going beyond particulars, the contrast between *u-* and *wu-* is itself somewhat problematic. There are no synchronic or diachronic explanations for why the distinction should exist at all. The *u-* prefix seems to be semantically identical with *wu-* except for the restriction to the *∅*-conjugation class, and the two are in complementary distribution so they cannot be composed. The *u-* serves to distinguish the *∅*-conjugation class from the other conjugation classes in the perfective aspect, but stem variation also marks the same distinction and it does so more reliably and obviously across most verb paradigms. The historical origin of the *u-* prefix seems to be the same as the *wu-* prefix, i.e. from **ŋu-* (sec. 2.3), and there is no historical explanation for why they should have split. The *u-* prefix is homophonous with the irrealis *u-* (sec. 4), but there is no reasonable semantic connection between them to explain the rise of *u-*. At present the best we can do is model *u-* to account for its peculiarities and hope that further work on the aspectual system may uncover an explanation for the *u-* versus *wu-* contrast.

2.2.1.1. Non-iterative *u*-perfective

Non-iterative *u*-perfectives were detailed above in section 2.2.1 in the description and illustration of the *u-* perfective prefix. Like non-iterative *wu*-perfectives (sec. 2.2.2.1), they are always states with overt *i-* in Ɛ unless this is suppressed by a higher head (Ɛ-suppression; ch. 3 sec. 4.1).

As far as we currently know, there is no semantic difference between non-iterative *u*-perfectives and their *wu*-perfective counterparts aside from the conjugation class difference. The pair of *u-* and *wu*-perfectives in (124) illustrates their semantic equivalency using the monovalent achievement roots $\sqrt[1]{laxw}$ 'starve' and $\sqrt[1]{na}$ 'die'. Both have essentially the same meaning other than the manner of death which in (124a) is more specific.

(124) Context: Playing a video game. An onlooker asks *Wáa sá eewanee?* 'What happened to you?'.

a. Yá yeedát xat uwaláxw. *∅-conj. u-perfective*
yá yeedát xat= u- i- $\sqrt[1]{}$laxw-H
PROX moment 1SG·O=ZPFV-STV-$\sqrt[1]{}$starve-VAR
'I just starved right now.'

b. Yá yeedát xat woonaa. *n-conj. wu-perfective*
yá yeedát xat= wu-i- $\sqrt[1]{}$na-μ
PROX moment 1SG·O=PFV-STV-$\sqrt[1]{}$die-VAR
'I just died right now.'

The one example above is obviously insufficient to argue convincingly that there is no semantic difference between the *u-* and *wu*-perfectives. But there is no positive evidence that suggests a difference between them. For now I take them to be semantically equivalent. A first pass showing that they are equivalent would be a side-by-side comparison of state, activity, achievement, and motrion roots in the perfective aspect testing each of the perfective aspect diagnostics in table 6.13 on page 543.

2.2.1.2. Iterative *u*-perfective

The iterative *u*-perfective is traditionally known as the **habitual** or the **perfective habitual** (Leer 1991: 393; Eggleston 2013: 89). The iterative *u*-perfective only occurs with *Ø*-conjugation class verbs; for the other three classes see the iterative *CNJ*-perfective which is the other form of the habitual in section 2.2.3.2. Unlike the iterative *Ø*-imperfective (secs. 2.1.1.2), the iterative *u*-perfective occurs with only one repetitive suffix which is specifically *-ch*. Leer analyzes this as a distinct suffix apart from the *-ch* of repetitive imperfectives (Leer 1991: 152, 155, 393), but I unify them because they have identical morphophonology and morphosyntax. See chapter 2 section 2.3.3.5 for more about the *-ch* suffix and its V-agreement properties, including the still unexplained variation between *-H* and *-μ*/*-μH* in *Ø*-conjugation verbs with open syllable roots.

The data in (125) and (126) illustrate a couple of habituals. The forms in (125) are based on the monovalent achievement root $\sqrt[1]{dut'}$ 'hiccup' and show that, as expected for an achievement root it lacks a non-iterative *Ø*-imperfective in (125a), has a non-iterative *u*-perfective in (125b), and has a habitual or iterative *u*-perfective in (125c). The forms in (126) are based on the bivalent activity root $\sqrt[2]{\underline{x}a}$ 'eat' and show a lexical activity *Ø*-imperfective in (126a), a non-iterative *u*-perfective in (126b), and a habitual in (126c).

(125) a. *Xat dút'. **Ø-conj. activity Ø-imperfective*
xat= $\sqrt[1]{}$dut' -H
1SG·O=$\sqrt[1]{}$hiccup-VAR
intended: 'I hiccup.', 'I am hiccupping.

b. Xat uwadút'. *Ø-conj. non-iterative u-perfective*
xat= u- i- $\sqrt[1]{}$dut' -H
1SG·O=ZPFV-STV-$\sqrt[1]{}$hiccup-VAR
'I hiccuped.'

c. Xat udút'ch. *Ø-conj. iterative u-perfective*
xat= u- $\sqrt[1]{}$dut' -H -ch
1SG·O=ZPFV-$\sqrt[1]{}$hiccup-VAR-REP
'I regularly hiccup.', 'I have always/often hiccuped.'

(126) a. Tsaa eexí xaxá. *Ø-conj. activity Ø-imperfective*
tsaa eex -í x- $\sqrt[2]{}$xa
seal oil -PSS1SG·S-$\sqrt[2]{}$eat
'I eat seal oil.', 'I am eating seal oil.'

b. Tsaa eexí xwaaxáa. *Ø-conj. non-iterative u-perfective*
tsaa eex -í u- x- i- $\sqrt[2]{}$xa
seal oil -PSSPFV-1SG·S-STV-$\sqrt[2]{}$eat
'I ate seal oil.', 'I have eaten seal oil.'

c. Tsaa eex̲í x̲wax̲áaych. *∅-conj. iterative u-perfective*
tsaa eex̲-í u- x̲- ²√x̲a-μH-ÿ -ch
seal oil -PSS ZPFV-1SG·S-²√eat-VAR-ŸSFX-REP
'I regularly eat seal oil.', 'I have always/often eaten seal oil.'

The semantics of the habitual is still somewhat unclear, but essentially it seems to denote repeated instances of an eventuality in the past, in contrast to iterative ∅-imperfectives that denote repeated instances of an eventuality around the present. Cable has recently begun exploring the semantics of the habituals (Cable 2018), although he has not (yet) adopted a compositional semantics based on the morphology.

There is an intriguing split between non-iterative *u-* and *wu-*perfectives and their iterative *u-* and *wu-* perfective counterparts. Specifically, the non-iteratives are stative with *i-* in Ɛ unless it is suppressed, whereas the iteratives never have *i-* in Ɛ. So although the non-iterative *u*-perfectives in (125b) and (126b) have *i-*, the iterative *u*-perfectives in (125c) and (126c) do not have *i-*. Attempting to introduce *i-* results in ungrammaticality as shown in (127).

(127) a. *X̲at uwadút'ch. **∅-conj. iterative u-perfective with i-*
x̲at= u- i- ¹√dut' -H
1SG·O=ZPFV-STV-¹√hiccup-VAR
intended: 'I regularly hiccup.', 'I have always/often hiccuped.'

b. *Tsaa eex̲í x̲waax̲áaych. **∅-conj. iterative u-perfective with i-*
tsaa eex̲-í u- x̲- i- ²√x̲a-μH-ÿ
seal oil -PSS ZPFV-1SG·S-STV-²√eat-VAR-ŸSFX
intended: 'I regularly eat seal oil.', 'I have always/often eaten seal oil.'

The lack of *i-* in Ɛ has two possible explanations. One possibility is that, unlike the ordinary perfectives, habituals do not denote result states. The other possibility is that habituals do actually denote result states, but that *i-* is absent because of Ɛ-suppression (ch. 3 sec. 4.1). The only way to distinguish these two possibilities is through semantic elicitation. The Ɛ-suppression case is syntactically plausible if Adv is accepted as a trigger of Ɛ-suppression. The *-ch* repetitive suffix is notably unattested in iterative state ∅-imperfectives, so it could be specifically the *-ch* suffix that triggers Ɛ-suppression since other Adv suffixes like *-k* ~ *-kw* do occur with *i-*.

2.2.2. *WU*-PERFECTIVE

The *wu-* perfective prefix is the stereotypical prefix of perfective aspect in Tlingit. It occurs in both non-iterative and iterative structures, but the non-iteratives are overwhelmingly more common. The *wu-* prefix has no other function aside from indicating perfective aspect and so it is traditionally known as "the perfective prefix". Strictly speaking however this is a misnomer, even if *u-* is taken to be no more than a phonological variant of *wu-*, because the perfective aspect can also arise with *CNJ*-prefixes as detailed in section 2.2.3. Nevertheless, since the vast majority of perfective aspect forms have *wu-* or *u-* it is not worth disputing the traditional label.

The *wu-* perfective prefix only occurs with the *n-*, *g̲-*, and *g*-conjugation class verbs where *u-* occurs with ∅-conjugation class verbs. There are a variety of possible exceptions depending on how phonological surface forms are analyzed for underlying elements, for which see the discussion in

section 2.2.1. The basic patterns of contrast between *u-* and *wu-* are illustrated in (128)–(131); these contexts are specifically chosen to highlight the *u-* versus *wu-* distinction which can be obscured in other contexts.

(128) a. *Xat wooják **Ø-conj. wu-perfective*
xat= wu-i- $\sqrt[2]{}$jak-H
1SG·O=PFV-STV-$\sqrt[2]{}$kill -VAR
intended: 'S/he killed me.'

b. Xat uwaják *Ø-conj. u-perfective*
xat= u- i- $\sqrt[2]{}$jak-H
1SG·O=ZPFV-STV-$\sqrt[2]{}$kill -VAR
'S/he killed me.'

(129) a. Xat wookei *n-conj. wu-perfective*
xat= wu-i- $\sqrt[2]{}$ke -μ
1SG·O=PFV-STV-$\sqrt[2]{}$pay-VAR
'S/he paid me.'

b. *Xat uwakei **n-conj. u-perfective*
xat= u- i- $\sqrt[2]{}$ke -μ
1SG·O=ZPFV-STV-$\sqrt[2]{}$pay-VAR
intended: 'S/he paid me.'

(130) a. Xat woogaak *g-conj. wu-perfective*
xat= wu-i- $\sqrt[2]{}$gak-μ
1SG·O=PFV-STV-$\sqrt[2]{}$visit-VAR
'S/he visited me.'

b. *Xat uwagaak **g-conj. u-perfective*
xat= u- i- $\sqrt[2]{}$gak-μ
1SG·O=ZPFV-STV-$\sqrt[2]{}$visit-VAR
intended: 'S/he visited me.'

(131) a. Xat wooheich *g-conj. wu-perfective*
xat= wu-i- $\sqrt[2]{}$hech -μ
1SG·O=PFV-STV-$\sqrt[2]{}$accuse-VAR
'S/he accused me.'

b. *Xat uwaheich **g-conj. u-perfective*
xat= u- i- $\sqrt[2]{}$hech -μ
1SG·O=ZPFV-STV-$\sqrt[2]{}$accuse-VAR
intended: 'S/he accused me.'

The perfective *wu-* undergoes a significant phonological alternation when it occurs in the vicinity of a high front vowel [i]. This occurs in the second person singular subject *i-* and second person

plural subject *ÿi-*. The onset *w* [w] of the perfective *wu-* instead appears as *y* [j], reflecting the historical alternation between *ÿ* [ɥ] and *w* [w] with the latter in labialized contexts (apx. A sec. 6.1.3). The vowel also loses its labialization, shifting from *u* [ù] to *i* [ì]. This is shown for the second singular *i-* in (132) and the second plural *ÿi-* 'you guys' in (133).

(132) a. Xat yeekei. *n-conj. wu-perfective with 2sg. subj.*
xat= wu-i- ²√ke -μ
1SG·O=PFV-STV-²√pay-VAR
'You paid me.'

b. *Xat weekei. **n-conj. wu-perfective with 2sg. subj.*
xat= wu-i- ²√ke -μ
1SG·O=PFV-STV-²√pay-VAR
intended: 'You paid me.'

(133) a. Xat yeeykei. *n-conj. wu-perfective with 2pl. subj.*
xat= wu-ÿi- ²√ke -μ
1SG·O=PFV-STV-²√pay-VAR
'You paid me.'

b. *Xat weeykei. **n-conj. wu-perfective with 2pl. subj.*
xat= wu-ÿi- ²√ke -μ
1SG·O=PFV-STV-²√pay-VAR
intended: 'You paid me.'

The Inland Tlingit dialects preserve a *m-* [m] allomorph of *wu-* that occurs only in syllable codas. This is functionally identical to the [w] form of *wu-* that appears in Coastal dialects. The data in (134) illustrates this contrast with an Inland Tlingit form and a Coastal Tlingit form of the same perfective. Some Coastal speakers maintain a nasalized [w̃] that reflects the older [m] which was present through the mid-19th century, so that (134b) is pronounced [ʔàw̃.sì.ʔíː] rather than [ʔàw.sì.ʔíː].

(134) a. Amlik'oots. *Inland Northern*
a- m- l- i- ¹√k'uts-μ
ARG-PFV-CSV-STV-¹√break-VAR
'S/he broke it.'

b. Awlik'oots. *Coastal Northern*
a- wu-l- i- ¹√k'uts-μ
ARG-PFV-CSV-STV-¹√skin -VAR
'S/he broke it.'

The Inland perfective *m-* only occurs when the perfective prefix is phonologically realized in a syllable coda; there is no substantial dialect difference between perfective prefix realization in other contexts. The data in (135) and (136) illustrate contexts where the perfective prefix is realized as a full syllable and as lengthening with a syllable onset, and in both contexts the *m* does not occur in the Inland dialect.

(135) a. Wutulik'oots. *Inland Northern*
wu-tu- l- i- $\sqrt[1]{}$k'uts
PFV-1PL·S-CSV-STV-$\sqrt[1]{}$break
'We broke it.'

b. Wutulik'oots. *Coastal Northern*
wu-tu- l- i- $\sqrt[1]{}$k'uts
PFV-1PL·S-CSV-STV-$\sqrt[1]{}$break
'We broke it.'

(136) a. Aawa.óos'. *Inland Northern*
a- wu-i- $\sqrt[1]{}$.us' -μH
ARG-PFV-STV-$\sqrt[1]{}$wash-VAR
'S/he washed it.'

b. Aawa.óos'. *Coastal Northern*
a- wu-i- $\sqrt[1]{}$.us' -μH
ARG-PFV-STV-$\sqrt[1]{}$wash-VAR
'S/he washed it.'

The phonology of the *wu-* perfective prefix needs more investigation. None of the variations in form depend on syntactic or semantic properties unlike the difference between the *u-* and *wu-* perfectives, so the contextual allomorphy should be handled entirely by the phonology. This poses an interesting challenge for the modelling of an underlying form: how can [wù], [jì], [àː], and [m] be unified? All the typical phonological contexts are well documented and there does not seem to be any significant dialect variation so the next steps for the investigation of perfective *wu-* should not require any novel empirical data.

All *wu*-perfectives denote states, specifically result states that hold after a prejacent event. This is evidenced morphosyntactically by the presence of *i-* in Ɛ for both non-iterative and iterative *wu*-perfectives. Leer (1991: 365–371) argues that the semantic evidence also supports this analysis; Cable (2017c) comes to similar conclusions in his investigation of the past tense and its interaction with the perfective aspect. Their arguments have only been applied to the non-iterative *wu*-perfective, but impressionistically they seem to go through for the iterative *wu*-perfective as well.

This raises an interesting dichotomy: *wu*-perfectives are all stative but only non-iterative *u*-perfectives are stative. Superficially this split seems to be related to the conjugation class difference, but I suspect that is a secondary feature. Instead, I have the sense that the difference lies specifically in the formation of iterative *u*-perfectives qua habitual aspect. If the net is cast wider beyond the *u*/*wu*-perfectives to include the *CNJ*-perfectives, we see that the same split occurs and involves precisely the same difference between habituals and everything else. I do not have an answer for why this should be the case, but there must be something about the syntax or semantics of habituals that prevents *i-* from appearing in Ɛ.

2.2.2.1. Non-iterative *wu*-perfective

The non-iterative *wu*-perfective is the stereotypical perfective aspect form in Tlingit and so it is commonly referred to as 'the' perfective aspect. All non-iterative *wu*-perfectives denote result states that

hold after some entailed preceding eventuality. For convenience I refer to the preceding eventuality that is entailed by the perfective's result state as the **prejacent eventuality.**[30] The existence of the prejacent eventuality is entailed for every perfective form except where this is logically excluded by negation, counterfactuals, etc. I suspect that the entailment is what gives the perfective aspect its past-like character but I have yet to delve into the literature on perfective semantics.

The encyclopedic meaning of the prejacent eventuality – effectively the 'happening' of the perfective – is provided by the root. The prejacent eventuality can be of any kind – state or event, activity or achievement, motion or non-motion; the formation of the perfective aspect is entirely independent of the root's lexical specification for eventuality class. The upshot of this is that *wu*-perfectives (or *u*-perfectives) are possible for essentially all verbal (eventuality-denoting) roots in the language. This is illustrated by (137)–(140) which show *wu*-perfectives for an activity, a state, an achievement, and a motion respectively, all with *n*-conjugation verbs.

(137) activity $\sqrt[2]{hun}$ 'sell'

a. Toohóon. *n-conj. activity Ø-imperfective*
tu- $\sqrt[2]{}$hun-μH
1PL·S-$\sqrt[2]{}$sell -VAR
'We sell it.', 'We are selling it.'

b. ✓Wutuwahoon. *n-conj. non-iterative wu-perfective*
wu-tu- i- $\sqrt[2]{}$hun-μ
PFV-1PL·S-STV-$\sqrt[2]{}$sell -VAR
'We have sold it.'

(138) state $\sqrt[2]{hen}$ 'claim ownership'

a. Tuwahéin. *n-conj. state Ø-imperfective*
tu- i- $\sqrt[2]{}$hen -μH
1PL·S-STV-$\sqrt[2]{}$claim-VAR
'We claim it.'

b. ✓Wutuwahein. *n-conj. non-iterative wu-perfective*
wu-tu- i- $\sqrt[2]{}$hen -μ
PFV-1PL·S-STV-$\sqrt[2]{}$claim-VAR
'We have claimed it.'

(139) achievement $\sqrt[2]{t'ï^h} \sim \sqrt[2]{t'e^h}$ 'find'

a. *Toot'ée. **n-conj. activity Ø-imperfective*
tu- $\sqrt[2]{}$t'i^h -μH
1PL·S-$\sqrt[2]{}$find-VAR
'We find it.', 'We are finding it.'

30. The term *prejacent* is from post-classical Latin *praeiacens* < *prae-* 'before' + *iaceō* 'lie', the latter being the stative counterpart of *iaciō* 'throw' (hence *alea iacta est* 'the die has been cast') < PIE *(*H*)*yeh*$_1$- 'throw'. The same root occurs in *subject*, *object*, and *adjacent*.

b. ✓Wutuwat'ee. *n-conj. non-iterative wu-perfective*
wu-tu- i- $\sqrt[2]{}$t'iʰ-μ
PFV-1PL·S-STV-$\sqrt[2]{}$find-VAR
'We have found it.'

(140) motion $\sqrt[1]{}$*.at* 'pl. go'

a. *Aadé too.áat. **n-conj. activity Ø-imperfective*
á -dé tu- $\sqrt[1]{}$.at -μH
3N-ALL 1PL·S-$\sqrt[1]{}$go·PL-VAR
'We go (toward) there.', 'We are going (toward) there.'

b. ✓Aadé wutuwa.aat. *n-conj. non-iterative wu-perfective*
á -dé wu-tu- i- $\sqrt[1]{}$.at
3N-ALL PFV-1PL·S-STV-$\sqrt[1]{}$go·PL
'We went (toward) there.'

There are only a very few exceptions to the availability of the *u*/*wu*-perfective. The positional imperfectives only occur in the imperfective aspect (ch. 2 sec. 2.3.3.3) so they are one consistent exception. There are also a very few other verbs that do not permit the perfective aspect; these are currently treated as lexical exceptions but there are potential avenues for semantic explanations that could shift the exceptionality to more abstract properties. Consider the data in (141) and (142).

(141) a. Ixaatéen. *g-conj. state Ø-imperfective*
i- x- i- $\sqrt[2]{}$tin-μH
2SG·O- 1SG·S-STV-$\sqrt[2]{}$see-VAR
'I can see you.'

b. *Ixwaateen. **g-conj. non-iterative wu-perfective*
i- wu- x- i- $\sqrt[2]{}$tin-μ
2SG·O-1SG·S-STV-$\sqrt[2]{}$see-VAR
intended: 'I saw you', 'I could see you.'

(142) a. *Ixsitéen. **g-conj. state Ø-imperfective*
i- x- s- i- $\sqrt[2]{}$tin-μH
2SG·O- 1SG·S-XTN-STV-$\sqrt[2]{}$see-VAR
intended: 'I see you.'

b. *Ixsatéen. **g-conj. activity Ø-imperfective*
i- x- s- $\sqrt[2]{}$tin-μH
2SG·O- 1SG·S-XTN- $\sqrt[2]{}$see-VAR
intended: 'I see you.', 'I am seeing you.'

c. Ixwsiteen. *g-conj. non-iterative wu-perfective*
i- wu-x- s- i- $\sqrt[2]{}$tin-μ
2SG·O-PFV-1SG·S-STV-XTN-$\sqrt[2]{}$see-VAR
'I saw you.', 'I caught sight of you.'

The root $\sqrt[2]{tin}$ 'see' denotes an eventuality of visual experience; it supports a state *∅*-imperfective in (141a). But it is inexplicably ungrammatical in (141b) with the perfective aspect. The pattern is reversed in (142) with the addition of the extensional *s-* (ch. 4 sec. 4.2) where the *∅*-imperfective is ungrammatical and the *wu*-perfective is grammatical. The *∅*-imperfective in (141a) suggests that the lexical entry is a state, but the forms in (142) paradoxically suggest that the lexical entry is an achievement. Two other changes are also evident between (141) and (142): the conjugation class goes from *g-* to *g̲-* and the interpretation goes from 'able to see' to 'caught sight of'. Both of these changes, plus the somewhat enigmatic contribution of *s-*, suggest that there may be a principled semantic reason for why the perfective is impossible in (141b) and also why the imperfective is impossible in (142a) and (142b).

The *∅*-conjugation class has either *-H* or *-μH* stem variation in the perfective aspect where the other three conjugation classes have *-μ* stem variation except where this is phonologically ungrammatical and *-μH* occurs instead. This is summarized in (143) for the five root shapes.

(143) *u/wu-perfective stem variation*

conj. class	Asp⁰	√CV	√CVʰ	√CVC	√CVC'	√CV'C
∅	u-	-μH	-μH	-H	-H	-H
n, g, g̲	wu-	-μ	-μ	-μ	-μH	-μH

The difference in stem variation between *wu-* and *u*-perfectives can distinguish them even when morphophonology obscures the difference between the two prefixes. This has significant consequences for learning and teaching the conjugation class system because the *u*/*wu*-perfectives are far more common than any other forms aside from perhaps the *∅*-imperfectives. The data in (144) constrast a *u*-perfective and a *wu*-perfective, showing both the difference in prefixes and difference in stem variation. In (145) the addition of the second person plural subject *ÿi-* 'you pl.' obscures the phonological distinction between the *u-* and *wu-* prefixes. The stem variation remains the same in (144) and (145) however, so the forms in (145) still distinguish conjugation class. See section 2.2.1 for more contexts where the *u-* vs. *wu-* distinction is obscured.

(144) a. *∅-conjugation monochronic u-perfective*
Xat uwajáx.
xat= u- i- $\sqrt[2]{}$jax-H
1SG·O=ZPFV-STV-$\sqrt[2]{}$kill -VAR
'S/he killed me.'

b. *n-conjugation monochronic wu-perfective*
Xat woohoon.
xat= wu-i- $\sqrt[2]{}$hun-μ
1SG·O=PFV-STV-$\sqrt[2]{}$kill -VAR
'S/he sold me.'

(145) a. *∅-conjugation monochronic u-perfective*
Xat yeeyjáx.
xat= u- ÿi- i- $\sqrt[2]{}$jax-H
1SG·O=ZPFV-2PL·S-STV-$\sqrt[2]{}$kill -VAR
'You (pl.) killed me.'

b. *n-conjugation monochronic wu-perfective*
Xat yeeyhoon.
xat= wu-ÿi- i- $\sqrt[2]{}$hun-μ
1SG·O=PFV-2PL·S-STV-$\sqrt[2]{}$sell -VAR
'You (pl.) sold me.'

Since the prefix phonology of both forms in (145) is identical, it is possible to argue that both forms have the same underlying prefix. This is effectively what Leer does with a morphophonological rule "*ÿu-ÿa-* > *ʔuÿa*" which is applied only to *Ø*-conjugation class forms (Leer 1991: 178 rule 9f). I have instead taken the allomorphy approach because it simplifies the phonology: spellout need not be aware of syntactic features like [ZCNJ] and the surface distinction – or lack thereof – between *u-* and *wu-* is phonologically tractable if not exactly straightforward. The syntactic features must be in place even when the perfective allomorphy is obscured because the stem variation still reflects the *Ø* versus non-*Ø* difference.

2.2.2.2. Iterative *wu*-perfective

Iterative *wu*-perfectives can be formed by the combination of a *wu*-perfective with a repetitive suffix that occurs with a corresponding iterative *Ø*-imperfective form of the verb. This is part of a more general phenomenon of iterativizing a whole paradigm, what Leer calls 'epiaspect' and what is known as 'superaspect' in descriptions of Dene languages (Leer 1991: 80–82; Kari 1992; Axelrod 1993). Leer (1991: 80–82) gives exemplary selections of two paradigms shown in (146) and (147).

(146) $\sqrt[2]{}$*yex̲* 'make'

	non-iterative		iterative	
imperfective	*x̲alayéix̲*	'I make it.'	*x̲alayéx̲x̲*	'I repeatedly make it.'
perfective	*x̲waliyéx̲*	'I made it.'	*x̲waliyéx̲x̲*	'I repeatedly made it.'
prospective	*kuk̲alayéix̲*	'I will make it.'	*kuk̲alayéx̲x̲*	'I will repeatedly make it.'
potential	*k̲waliyeix̲*	'I may make it.'	*unk̲aliyéx̲x̲*	'I may repeatedly make it.'

(147) $\sqrt[2]{}$*k̲a* 'stitch, sew'

	non-iterative		iterative	
imperfective	—	—	*x̲ak̲éis'*	'I repeatedly stitch it.'
perfective	*x̲waak̲áa*	'I sewed it.'	*x̲waak̲éis'*	'I repeatedly stitched it.'
prospective	*kuk̲ak̲áa*	'I will sew it.'	*kuk̲ak̲éis'*	'I will repeatedly stitch it.'
potential	*k̲waak̲aa*	'I may sew it.'	*unk̲ak̲éis'*	'I may repeatedly stitch it.'

Both of the non-iterative verbs in (146) and (147) are lexically specified members of the *Ø*-conjugation class as can be seen by their potential forms containing *u-Ø-g̲-*. The corresponding iterative forms are *n*-conjugation as shown by their potentials with *u-n-g̲-*. Thus the formation of a repetitive paradigm is not simply the addition of the repetitive suffix; the conjugation class is also modified.

There is very little known about these repetitive paradigms beyond the limited discussion from Leer (1991: 80–82, 215–218, 497–501). The are represented continuously up through recent decades in texts, but are relatively uncommon. I have occasionally encountered them in conversation but only rarely. I have not been able to elicit them consistently though admittedly I have not worked on them in any detail. They are represented in the lexical documentation by the occasional appearance of iterative *wu*-perfectives, but there are no consistent paradigms established for them outside of Leer 1991.[31] We need review of the lexical documentation and textual materials for attested examples as well as elicitation to establish the availability and productivity of these structures.

31. The contrast between *x̲waa.áx̲* 'I heard it' without a non-iterative *Ø*-imperfective form and *x̲aa.áx̲ch* 'I can hear it' without a *u*/*wu*-perfective form as documented by Eggleston (2017) may reflect this phenomenon.

According to Leer's description the progressive can also be added to other aspects, resulting in a shift to *g*-conjugation (Leer 1991: 217). Unlike the repetitive paradigms, the progressive paradigms are not compatible with the perfective aspect (Leer 1991: 229). Leer argues that this is because his PROG operator does not admit states and so cannot be applied to the result state that is formed by prospective aspect (Leer 1991: 501).

2.2.3. *CNJ*-PERFECTIVE

All four *CNJ-* = {∅, *n-*, *g̲-*, *g-*} conjugation prefixes can occur as the main aspectual prefix of both non-iterative and iterative perfectives. They never occur together with *u-* or *wu-* so their perfectivity must be determined by interpretation, context, and paradigmatic properties rather than by explicit morphology. Unlike the *u*/*wu*-perfectives, there do not seem to be any iterative *CNJ*-perfectives that are marked for stativity with *i-* in Ɛ.

The non-iterative *CNJ*-perfectives are traditionally known as 'realizational' following Leer (1991). They are very rare in contemporary Tlingit speech, appearing almost exclusively in traditional narratives, song lyrics, and set phrases. The data from the late 19th and early 20th centuries is mostly narratives and song lyrics so it is difficult to say whether *CNJ*-perfectives were more common in every day speech back then, but there are a couple of examples 'in the wild' that suggest they may have seen more frequent use. Section 2.2.3.1 details the non-iterative *CNJ*-perfectives and presents my novel argument that Leer's 'consecutive' and 'admonitive' aspectual categories are based on the 'realizational' with added clause embedding for the former and irrealis for the latter.

The iterative *CNJ*-perfectives are the non-∅-conjugation class counterparts of the iterative *u*-perfectives (habituals) discussed in section 2.2.1.2. Unlike the non-iterative *CNJ*-perfectives, there is no such thing as an iterative ∅-perfective because this is suppleted by the iterative *u*-perfective. Section 2.2.3.2 details the properties of the iterative *CNJ*-perfectives and speculates on the possibility of other related forms.

My model of *CNJ*-perfective aspects is essentially the reverse of the model of *u*/*wu*-perfective aspects. I introduced the idea in section 1.1.1 that the perfective and conjugation prefixes could coexist in a single structure, but that spellout must somehow make the conjugation prefix covert if it is not ∅. In section 2.1.1 I suggested that the *CNJ*-imperfectives could be analyzed with a conjugation prefix and a covert node for the imperfective aspect semantics. For *CNJ*-perfectives the conjugation prefix must be overt, so if there is a perfective prefix that contirbutes the perfective semantics it must then be covert. This flips the overt/covert relationship between the perfective and conjugation prefixes with respect to the *u*/*wu*-perfectives as shown by the structures in figures 6.19 and 6.20.

At once the model in figure 6.20 is both aesthetically symmetrical and logically problematic. The symmetry with the *u*/*wu*-perfective is obvious from comparison with figure 6.19. The logical problem is in the syntax-phonology interface. Ignoring *CNJ*-perfectives, the interface has a simple constraint against the realization of both PFV and CNJ by universally favouring PFV and deleting the phonological material of CNJ. But with the introduction of *CNJ*-perfectives as in figure 6.20, we need a way to signal to the interface that sometimes PFV should win but other times CNJ should win. There are more than a few ways to go about this, including the adoption of a covert ∅ form of PFV. I leave this issue unresolved for now.

Figure 6.19: *U-/wu*-perfective with covert conjugation prefix

Figure 6.20: *CNJ*-perfective with covert perfective prefix

2.2.3.1. Non-iterative *CNJ*-perfective

The non-iterative *CNJ*-perfectives are the counterparts of the non-iterative *u/wu*-perfectives with the presence of a conjugation prefix rather than a perfective prefix. They were introduced in chapter 2 section 2.6.4 in the documentation of V-agreement and the effects of Asp on stem variation. As detailed there, the basic form of a non-iterative *CNJ*-perfective has a conjugation prefix *CNJ-*, stative *i-* in Ɛ, and *-μH* stem variation. These basic forms are known as the **realizational** (Leer 1991: 378). In addition to the realizational there are two derived structures called the 'consecutive' (Leer 1991: 443) and 'admonitive' (Leer 1991: 430). The **consecutive** is the adjunct clause form of the realizational and the **admonitive** is the irrealis form of the realizational. All three are very rare today, confined mostly to set phrases and song lyrics, so it is difficult to elicit them. The morphosyntactic patterns of the three kinds of non-iterative *CNJ*-perfectives are sketched in (148).

(148) *non-iterative CNJ-perfectives*

	Asp⁰	Ɛ	√	V	C
realizational	CNJ-	i-		-μH	
consecutive	CNJ-			-μH	∅
admonitive	u-CNJ-			-μH	(∅)

The three minimal pairs in (149)–(151) illustrate the difference between a non-iterative *wu*-perfective and a non-iterative *CNJ*-perfective – a realizational – for the same verbs in the three *n-*, *g-*, and *g*-conjugation classes. The realizationals are natural examples; the three *wu*-perfectives are constructed to match.

(149) a. *n-conj. wu-perfective*

Wáa sáyá dé at woonee?
wáa s=á -yá dé at= wu-i- ¹√niʰ -μ
how Q=FOC-PROX now 4N·O=PFV-STV-¹√OCCUR-VAR
'What is it that has happened now?'

b. *n-conj. realizational CNJ-perfective*

Wáa sáyá dé at naanée?
wáa s=á -yá dé at= n- i- ¹√niʰ -μ
how Q=FOC-PROX now 4N·O=PFV-STV-¹√OCCUR-VAR
'What on earth has happened now?' (Nyman & Leer 1993: 222.80)

(150) a. Dei sgé yaa has woo.aat. *g̲-conj. wu-perfective*
dei s= gí ÿaa= has=wu-i- $^{1}\sqrt{}$.at -μ
already DUB=DUB along=PLH= PFV-STV-$^{1}\sqrt{}$go·PL-VAR
'After a while they went down along already.'

b. Dei sgé yaa s g̲aa.áat. *g̲-conj. realizational CNJ-perfective*
dei s= gí ÿaa= s= g̲- i- $^{1}\sqrt{}$.at -μH
already DUB-DUB along=PLH=G̲CNJ-STV-$^{1}\sqrt{}$go·PL-VAR
'They went down along for so very long.' (Dauenhauer & Dauenhauer 1987: 199.84)

(151) a. Daak wulis'ees *g̲-conj. wu-perfective*
daak= wu-l- i- $^{1}\sqrt{}$sis -μ
seaward=PFV-XTN-STV-$^{1}\sqrt{}$blown-VAR
'It has blown out to sea.'

b. Daak galis'ées du toowú, i yéili. *g̲-conj. rlzn. CNJ-perfective*
daak= g̲- l- i- $^{1}\sqrt{}$s'is -μH du tú -í i yéil -í
seaward=GCNJ-XTN-STV-$^{1}\sqrt{}$blow-VAR 3H·PSS spirit-PSS 2SG·PSS raven-VAR
'It has blown out to sea, his soul, your raven.' (Leer 1991: 380)

I have yet to find a natural example of a ∅-conjugation realizational, but they must be possible because I have elicited the one in (152) below and have encountered a moderate number of consecutive forms which are realizationals in adjunct clauses. The lack of a ∅-conjugation realizational is not particularly surprising because realizationals are extremely rare and the absence of a conjugation prefix makes them difficult to distinguish from lexical state ∅-imperfectives.

(152) a. K'ínk' wutuwax̲áa. *∅-conj. wu-perfective*
k'ínk' wu-tu- i- $^{2}\sqrt{}$x̲a-μH
stinkhead PFV-1PL·S-STV-$^{2}\sqrt{}$eat-VAR
'We ate *k'ínk'*.'

b. Tsaatsguyéig̲aa k'ínk' tuwax̲áa. *∅-conj. realizational CNJ-perfective*
tsaatsguyéig̲aa k'ínk' tu- i- $^{2}\sqrt{}$x̲a-μH
at·long·last stinkhead ZCNJ 1PL·S-STV-$^{2}\sqrt{}$eat-VAR
'At long last we have finally eaten *k'ínk'*.' (*K̲eixwnéi* Nora Marks Dauenhauer)

The interpretation of realizationals is still not exactly clear. They were first recognized by Leer and his description remains the sole source of detail on their form and meaning (Leer 1991: 378–381). His initial summary is worth repeating here to explain why we know so little about them:

> It appears to be a relative of the perfective that was once more widespread in the language but has become largely restricted to elevated speech, or as [*T'aawchán* Walter Soboleff] puts it the 'classical language', confined mainly to songs and oratory. In [*Seidayaa* Elizabeth Nyman]'s texts, it is restricted to a few recurrent expressions that seem lexicalized… It is in general translated like the perfective, but seems to convey an impression of vividness or immediacy.
> (Leer 1991: 378–379)

There is a set phrase *yéi naatée* 'let it be' combined with hortatives as demonstrated by (153) that is a clear example of the realizational. Leer (1991: 379) notes that this phrase is associated with performative utterances and magic, and I have been taught to use it in such contexts.

(153) Yéi naatée, aankáawu xat gasháa. *n-conj. realizational CNJ-perfective*
yéi= n- i- $^{1}\sqrt{}$tiʰ-μH aan-káaʷ-í xat= g- $^{2}\sqrt{}$sha -μH
thus=NCNJ-STV-$^{1}\sqrt{}$be -VAR [CP land-man -PSS 1SG·O=ZCNJ MOD-$^{2}\sqrt{}$marry-VAR SUB]
realizational hortative
'Let it be that a rich man marries me.' (orig. tr.) (Leer 1991: 379)

The translation in (153) could be taken as evidence that the realizational is not really a perfective. But its perfectivity I believe is rooted in the context of magic actions. When the speaker utters *yéi naatée* she or he has modified reality so that the hortative eventuality will become true at some point in the future. The realizational in this context does not express a wish, but rather the fact that the speaker is now (at long last?) in the result state of having performed the magic that will allow the hortative eventuality to come true. A more precise translation for (153) might be 'it is at last the case that an aristocrat should marry me'.

Leer gives one example that he says "is the only instance where I have heard the realizational used spontaneously in conversation" (Leer 1991: 380). I offer an analysis of this form in (154b) and note that it does not actually seem to be a realizational according to his morphological criteria.

(154) a. Yawtuwadlaak. *n-conj. wu-perfective*
ÿa- wu-tu- i- $^{2}\sqrt{}$dlak -μ
QUAL-PFV-1PL·S-STV-$^{2}\sqrt{}$succeed-VAR
'We've made it.' (orig. tr.) (Leer 1991: 380)

b. ! Yanaxtuwadláak. *n-conj. realizational CNJ-perfective?*
ÿa- n- g- tu- i- $^{2}\sqrt{}$dlak -μH
QUAL-NCNJ-MOD-1PL·S-STV-$^{2}\sqrt{}$succeed-VAR
'We've made it (at last/and here we are)!' (orig. tr.) (Leer 1991: 380)

The form in (154b) looks suspiciously like a hortative with the combination of *CNJ-* = *n-* and *g-*. But it also has *i-* which is not expected with hortatives, and it has *-μH* stem variation rather than the expected *-μ* as shown by the forms in (155); see also chapter 2 section 2.6.6.

(155) a. Yankadlaak. *n-conj. hortative with first singular subj.*
ÿa- n- g- x- $^{2}\sqrt{}$dlak -μ
QUAL-NCNJ-MOD-1SG·S-$^{2}\sqrt{}$succeed-VAR
'Let me win it.' (Eggleston 2017)

b. Yanaxtoodlaak. *n-conj. hortative with first plural subj.*
ÿa- n- g- tu- $^{2}\sqrt{}$dlak -μ
QUAL-NCNJ-MOD-1PL·S-$^{2}\sqrt{}$succeed-VAR
'Let's win it.', 'Let us succeed at it.'

Going from the established evidence for realizationals and for the spellout of a prefix sequence of *ÿa-n-tu-i-*, I would instead expect a form like (156) instead of the form in (154b).

(156) ※Yantuwadláak̲. *n-conj. realizational CNJ-perfective*
ÿa- n- tu- i- ²√dlak̲ -μH
QUAL-NCNJ-1PL·S-STV-²√succeed-VAR
'We have finally won it.', 'We have finally succeeded at it.'

Beyond the realizational there are two other structures that I identify as non-iterative CNJ-perfectives: the consecutive and the admonitive. The consecutive only occurs as an adjunct clause at the beginning of a sentence. Unlike most adjunct clauses it does not have an overt complementizer *-í*, but like all adjunct clauses it features Ɛ-suppression (ch. 3 sec. 4.1.4). The Ɛ-suppression in consecutives has not previously been noted, but it is clear when comparing a realizational with an equivalent consecutive as in (157). There is no other explanation for Ɛ-suppression, so I take it to be from a covert complementizer.

(157) a. Shunlihá̱ash. *n-conj. realizational CNJ-perfective*
shu-n- l- i- ¹√hash-μH
end- NCNJ-XTN-STV-¹√float -VAR
'It has finally floated away.'

b. Shunalhá̱ash tléil x̲wateen. *n-conj. consecutive CNJ-perfective*
shu-n- l- ¹√hash-μH tléil u- x̲- ²√tin-μ
[CP end- NCNJ-XTN- ¹√float -VAR SUB] NEG IRR-1SG·S-²√see -VAR
'Having floated away, I cannot see it.'

The consecutive is a kind of perfective aspect just like the realizational which is predictable if the former is derived from the latter. Leer notes that the consecutive "usually occurs in dependent clauses paired with main clauses in the perfective" (Leer 1991: 443), suggesting a semantic pairing between the two. It does occur with matrix imperfectives, but Leer argues that in such cases the imperfective eventuality is interpreted as past with respect to the speech time (Leer 1991: 443–444). The data in (158) illustrate consecutives with the four conjugation classes.

(158) a. Yan at tooxá̱a áwé *Ø-conj. consecutive*
ÿán= at= tu- ²√x̲a-μH á -wé
[CP TERM=4N·O=ZCNJ 1PL·S-²√eat-VAR SUB] FOC-MDST
sh kawtudlineek.
sh= ka- wu-tu- d- l- i- ²√nik-μ
RFLX·O=QUAL-PFV-1PL·S-MID-XTN-STV-²√tell -VAR
'Having eaten, we told stories.' (Leer 1991: 443)

b. Tlax̲ x'oon aa yagiyee shunaxéex sáwé *n-conj. consecutive*
tlax̲ x'oon aa yagiyee shu-n- ¹√xix-μH s=á -wé
[CP very how·many PART day end- NCNJ-¹√fall -VAR SUB] Q=FOC-MDST
ch'a yeisú ax̲éx'w.
ch'a yeisú a- ¹√x̲ex'w -H
just still 4H·S-¹√sleep·PL-VAR
'So many days have gone by, still they are sleeping.' (Dauenhauer & Dauenhauer 1987: 91.162)

c. Yá g̲unanaach g̲astéen… *g̲-conj. consecutive*
yá g̲una-naa -ch g̲- s- ²√tin-μH
[CP PROX other- nation-ERG G̲CNJ-XTN-²√see -VAR SUB]
'When he was seen by the Indian…' (Story 1966: 148)

d. Ách áyá átx̲ gadaháan *g̲-conj. consecutive*
á -ch á -yá á -dáx̲ g̲- d- ¹√han -μH
3N-ERG FOC-PROX [CP 3N-ABL GCNJ-MID-²√stand·SG-VAR SUB]
ldakát du daa yéi yatee.
ldakát du daa yéi= i- ¹√tiʰ-μ
all 3H·PSS around-LOC thus=STV-¹√be -VAR
'This is why, having stood up from there, it (bear feces) is all over her.'
(Dauenhauer & Dauenhauer 1987: 197.51)

Story (1966: 148) notes a phenomenon she calls 'mirroring' – akin to what Dauenhauer & Dauenhauer (1987: 19) call 'terracing' – where one sentence is immediately followed by another that begins with an adjunct clause with the same verb as the preceding sentence. This context frequently involves the consecutive following a perfective as shown by a couple of Story's examples in (159).

(159) a. G̲unayéi uwa.át. / Át has áat…
g̲unayéi=u- i- ¹√.at -H á -t has= ¹√.at -μH
start= ZPFV-STV-¹√go·PL-VAR 3N-PNCT PLH= ZCNJ ¹√go·PL-VAR
'They started going. When they arrived there…' (Story 1966: 148)

b. Héent aawax̲ích. / Héent ax̲éech…
héen-t a- wu-i- ²√x̲ich -H héen-t a- ²√x̲ich -μH
water-PNCT ARG-PFV-STV-²√throw-VAR water-PNCT ARG-ZCNJ ²√throw-VAR
'He threw it in the water. When he threw it in the water…' (Story 1966: 148)

The admonitive occurs as both a main clause and an adjunct clause, though as an adjunct it lacks an overt complementizer. I claim that, like the consecutive, the admonitive is derived from the realizational. It features the addition of an irrealis prefix *u-* as well as Ɛ-suppression. The data in (160) show admonitives with three of the four conjugation classes; the lack of *g*-conjugation is presumably accidental.

(160) a. A kát tsé iseix'áak̲w. *Ø-conj. admonitive*
a ká -t tsé i- se- u- ¹√x'ak̲w-μH
3N·PSS HSFC-PNCT PCL 2SG·O-voice-IRR-ZCNJ ¹√die·out-VAR
'Lest you forget it.' (Leer 1991: 431 from Naish 1966: 64)

b. Aaá, kaawayíkt unaxéex g̲aa áwé *n-conj. admonitive*
aaá kaawayík-t u- n- ¹√xix-μH =g̲áa á -wé
yes [CP air -PNCT IRR-NCNJ-¹√fall -VAR SUB] =ADES FOC-PROX
ax̲ léelk'w du yéigi áyá x̲wsihaan
ax̲ léelk'w du yéik -í á -yá wu-x̲- s- i- ¹√han -μ
1SG·PSS g'parent 3H·PSS spirit-PSS FOC-PROX PFV-1SG·S-CSV-STV-¹√stand·SG-VAR
'Yes, so that they do not linger in the air, I'm raising my grandparen's spirit in return'
(orig. tr.) (Dauenhauer & Dauenhauer 1990: 304.119–121)

c. Áwé tle k̲únáx̲ taat yeen áwé *g̲-conj. admonitive*
á -wé tle k̲únáx̲ taat yeen á -wé
FOC-MDST just very night middle FOC-MDST
aax̲ g̲unayéi wtuwa.át haa x̲dustéen g̲aa
á -dáx̲ g̲unayéi=wu-tu- i- $^{1}\sqrt{}$.at -H haa= u- g̲- du- s- $^{2}\sqrt{}$tin-μH =g̲áa
3N-ABL start= PFV-1PL·S-STV-$^{1}\sqrt{}$go·PL-VAR [$_{CP}$ 1PL·O=IRR-G̲CNJ-4H·S-XTN-$^{2}\sqrt{}$see -VAR SUB] =ADES
'In the middle of the night we started off so that we would not be seen' (orig. tr.)
(Nyman & Leer 1993: 74.682–683)

Leer suggests a couple of translations for the admonitive "beware lest *V*", "be careful not to let *V*", "watch out or … will/might/could *V*", "lest *V*, and "so … will/would not *V*" (Leer 1991: 430–431). Most of these have the flavour of a negative imperative, and indeed Leer suggests that the admonitive is the functional equivalent of a negative imperative which is grammatically impossible. I suggest that the admonitive, as the irrealis counterpart of the realizational, means something like "it might have been the case" or "it has not been the case but it might". Further analysis requires a better understanding of the compositional semantics of the realizational and consecutive.

I believe that the realizational semantics arises from the combination of the spatial semantics of the conjugation prefix and the perfective semantics of a covert perfective prefix. Leer suggests that the realizational "refers to a state resulting from a past event [and] treats the past event as if it were being witnessed by the speaker" (Leer 1991: 381). The result state reading is common to perfective aspect and so would be introduced by a perfective prefix. The spatial semantics could provide both the 'witnessed' meaning and the 'at long last' meaning that seem to be unique to realizationals and their kin. Given that the perfective aspect entails a prejacent event (sec. 2.2.2.1), the spatial semantics of the conjugation prefix may serve to metaphorically draw the prejacent event away from the speaker's temporal viewpoint. The result state continues to hold, but the spatial semantics places the prejacent event further away in time than ordinarily expected.

2.2.3.2. Iterative *CNJ*-perfective

The iterative *CNJ*-perfective is the non-*Ø*-conjugation counterpart of the iterative *u*-perfective (sec. 2.2.1.2), and thus another kind of **habitual** or **perfective habitual** (Leer 1991: 393; Eggleston 2013: 89). This habitual form only occurs with the *-ch* suffix, just like the *Ø*-conjugation habituals.

The data in (161)–(163) illustrate three habituals for each of the non-*Ø*-conjugation classes, comparing them with their corresponding non-iterative *wu*-perfectives. All three verbs are transitives based on bivalent achievement roots.

(161) a. X̲waa.óos'. *n-conj. non-iterative wu-perfective*
wu-x̲- i- $^{2}\sqrt{}$.us' -μH
PFV-1SG·S-STV-$^{2}\sqrt{}$wash-VAR
'I washed it.'

b. Nax̲a.ús'ch. *n-conj.* CNJ*-perfective*
wu-x̲- i- $^{2}\sqrt{}$.us' -H -ch
PFV-1SG·S-STV-$^{2}\sqrt{}$wash-VAR-REP
'I regularly wash it.', 'I have always/often washed it.'

(162) a. Xwaaxéet'. *g-conj. non-iterative wu-perfective*
wu-x- i- $\sqrt[2]{}$xit' -μH
PFV-1SG·S-STV-$\sqrt[2]{}$sweep-VAR
'I swept it.'

b. Gaxaxít'ch. *g-conj.* CNJ-*perfective*
g- x- $\sqrt[2]{}$xit' -H -ch
GCNJ-1SG·S-$\sqrt[2]{}$sweep-VAR-REP
'I regularly sweep it.', 'I have always/often swept it.'

(163) a. Xwaat'ee. *g-conj. non-iterative wu-perfective*
wu-x- i- $\sqrt[2]{}$t'i^{h}-μ
PFV-1SG·S-STV-$\sqrt[2]{}$find-VAR
'I found it.'

b. Gaxat'eech *g-conj.* CNJ-*perfective*
g- x- $\sqrt[2]{}$t'i^{h}-μ -ch
GCNJ-1SG·S-$\sqrt[2]{}$find-VAR-REP
'I regularly find it.', 'I have always/often found it.'

As far as we currently know the habitual as iterative *CNJ*-perfective is semantically identical with the habitual as iterative *u*-perfective discussed in section 2.2.1.2, although there presumably are some differences depending on conjugation class membership. For this reason, even though these forms have starkly different morphology with the presence of a conjugation prefix rather than a perfective prefix, they have traditionally been treated as a single aspectual category.

There is a notable absence of documentation for iterative *CNJ*-perfectives that include *i-* in Ɛ, just as with the absence of iterative *u*-perfectives with *i-*. They may be possible through the same mechanism that gives rise to iterative *wu*-perfectives, namely the paradigmatic addition of a repetitive suffix. The same paradigm that supports a repetitive perfective like in (164a) should plausibly support a realizational like in (164b).

(164) a. Yú dakká áyá áx' yéi haa wooteex. *repetitive perfective*
yú dáak -ká á -yá á -x' yéi= haa= wu-i- $\sqrt[1]{}$ti^{h}-μ -x
DIST inland-HSFC FOC-PROX 3N-LOC thus=1PL·O=PFV-STV-$\sqrt[1]{}$be -VAR-REP
'It was the interior where we were living.' (Dauenhauer & Dauenhauer 1987: 74.31–32)

b. ※Áx' yéi haa naateex. *※repetitive realizational*
á -x' yéi= haa= n- i- $\sqrt[1]{}$ti^{h}-μ -x
3N-LOC thus=1PL·O=NCNJ-STV-$\sqrt[1]{}$be -VAR-REP
intended: 'At last we were regularly living there.'

One problem with testing the availability of forms like (164b) is that the non-iterative *CNJ*-perfectives are already quite rare as discussed in section 2.2.3.1. Another problem is that since they have an overt conjugation prefix rather than an overt aspect prefix, forms like (164b) must be tested for whether they are truly perfectives instead of *CNJ*-imperfectives (sec. 2.1.2). This latter problem I suspect plagues the description of aspect in some Dene languages: I have frequently seen verbs that

are described as having *CNJ*-perfective and *CNJ*-imperfective forms that are morphologically identical. At least some of these look suspiciously like they denote instantaneous events and so might not actually be grammatical in the imperfective aspect, though speakers may translate them with present tense in English like *x̲wasikóo* 'I know it'.

2.3. Relationship with Na-Dene

The Tlingit imperfective and perfective aspects show many parallels with their Dene and Eyak counterparts, strongly implying that Proto-Na-Dene (PND) had a very similar system that has been manipulated in various ways to give rise to its daughter languages. I sketch a plausible account of the development of both Tlingit and Dene-Eyak systems in this section.

The Dene languages are traditionally described as having *CNJ*-perfectives – where *CNJ-* = {**Ø*, **s-*, **ɣ-*, **n-*} – that are in complementary distribution with each other and which may combine with or be distinct from a *n-* or *ị-* perfective prefix (Hardy 1979: 58–84; Rice 1989: 485; Kari 1990: 55–56; Axelrod 1993: 34–40). Krauss & Leer (1981: 40–42) reconstruct the *n-*/*ị-* prefix as Proto-Dene (PD) **ŋ(ə)-* < Proto-Dene-Eyak (PDE) **ŋi-*. They further argue that this **ŋi-* is the only "real" perfective prefix and that the other *CNJ-* prefixes are conjugation prefixes.

The Tlingit *wu-* internally reconstructs via **ỹu-* [ũu] to a Pre-Tlingit **ŋʷu-* (Krauss & Leer 1981: 150) and thence probably something like **ŋʷə-* < **ŋʷ-* + epenthetic **ə*. Nasalization is still present in the syllable-final [m] allomorph for *wu-* that occurs in Inland Tlingit, corresponding to a sporadic [w̃] for more usual [w] elsewhere (sec. 2.2.2). The alternation between *w* [w] and *y* [j] in forms like *at woohoon* 's/he sold something' and *at yeeyhoon* 'you pl. sold something' is a regular consequence of the earlier alternation between *ÿ* [ɥ] and *y* [j] (apx. A sec. 6.1.3) which arose from the palatalization of **ŋ⁽ʷ⁾* to **nʸ* (Krauss & Leer 1981: 149).

Comparing the "real" PDE perfective **ŋi-* and the Pre-Tlingit perfective **ŋʷu-* < **ŋʷ-*, we have a reasonably clear parallel in both form and function with only the appearance of labialization in Tlingit left to account for.[32] The parallel between the Tlingit *CNJ*-perfectives and the Dene *CNJ*-perfectives is similarly obvious except that the specific conjugation prefixes in both branches do not all directly correspond to each other. It seems likely that PD **ɣ-* corresponds with Tlingit *g̲-* via PND **ɢ-*. Perhaps PD **n-* may correspond with Tlingit *n-* but this is complicated by the blurry relationship between PD **n-* and PD **ŋi-* in various daughter languages whereas Tlingit clearly distinguishes *n-* from *wu-*. The connection between PD **s-* and the Tlingit conjugation classes is obscure; Leer's suggestion that Tlingit *wu-* might come from **xʸi-* > PD **s-* (Leer 2008: 25) is unmaintainable given the connection sketched above between *wu-* and PDE **ŋi-*. Furthermore, Tlingit's *g-* conjugation prefix has no obvious parallel in PDE. Relating Tlingit *g-* to PD **s-* is difficult, but it is not outright impossible given the apparent connection between Tlingit first singular *x̲-* and Eyak *x-* ~ *s-* with PD **x-* ~ **š-* ~ **s-* via the celebrated PND **$-* first person singular prefix (Krauss 1977a). A connection between the Tlingit *Ø* and PD **Ø* conjugation prefixes can only be proposed after the rest of the system is accounted for because its evidence can only be paradigmatic. The Eyak conjugation class system is not well described, with the only relatively detailed documentation in Krauss's incomplete grammar draft (Krauss 2015: 217). A more detailed account of Eyak's conjugation classes is necessary to

32. Perhaps the labialization was a separate morpheme. Compare the Tlingit irrealis *u-* and the PD optative **ɣu-* for one possible though semantically unlikely source. PD **ɣu-* might itself be bimorphemic with its **ɣ-* plausibly corresponding to Tlingit modal *g̲-*.

reconstruct the Proto-Dene-Eyak system and then to compare Tlingit with it.

Despite the problems with reconstructing individual prefixes, the more general organizational similarity between the Tlingit and Dene perfective aspects strongly implies a shared basis in the Proto-Na-Dene mother language. My speculation starts with the assumption that Pre-PND had a basic imperfective versus perfective contrast between empty Asp⁰ and *ŋ(w)-; this is justified by being the crosslinguistic norm according to synchronic research on the semantics of grammatical aspect (p. 511).

The conjugation prefix system developed separately as a mechanism for expressing spatial semantics that was metaphorically extended to temporal semantics (sec. 3). In this system the conjugation prefixes may have been within Asp⁰ or perhaps a low adjunct of AspP. At this evolutionary stage the PND language had two orthogonal semantic domains expressed in its Conjunct domain, one for grammatical aspect and one for abstract spatial categorization. The two sets of prefixes could be composed, resulting in sequences like *ɢ-ŋ(w)-, *n-ŋ(w)-, or *∅-ŋ(w)-.

At some later stage in the evolution of PND the semantics of *CNJ- and *ŋ(w)- underwent some kind of restructuring so that a conjugation prefix alone could represent grammatical aspect via metaphoric mapping from space to time. I suspect this was due to a reinterpretation of imperfective *CNJ-∅- as just *CNJ-, and then extension of this lone *CNJ- structure to contexts where perfective aspect would otherwise be expected. This change established the duality of CNJ-aspect and ∅/ŋ(w)-aspect which persists in one way or another among all the daughter languages. The Tlingit branch of PND developed a perfective aspect dominated by the *ŋ(w)- prefix whereas the Dene branch developed a perfective aspect dominated by the *CNJ- prefixes, at the same time apparently losing most of the spatial semantics associated with the conjugation prefixes. In both branches the resulting minority system is still functional with various kinds of semantic specialization, although it may be trending towards nonfunctionality in some contexts.

3. Conjugation prefixes and classes: Time and space

The conjugation prefixes are the four prefixes ∅, *n-*, *g̲-*, and *g-*, all of which occur as the CNJ node within Asp⁰ as detailed in section 1. The **∅ conjugation prefix** is an abstraction with no overt phonological form nor any significant effects on other phonological phenomena. The other three prefixes are the consonants *n-* /n/, *g̲-* /q/, and *g-* /k/; all of these are realized with surface forms that are relatively close to their underlying forms.

The ***n-* conjugation prefix** is always realized by a nasal stop [n]. Unlike structurally similar *n-* prefixes in Dene languages, this Tlingit *n-* is never reduced to nasalization, nor converted to a suprasegmental feature like tone or length. The ***g-* conjugation prefix** is always realized as a velar stop [k]; it can be aspirated [kʰ] in some contexts where aspiration spreads anticipatorily from the coalesced [qʰ] realization of modal *g̲-* /q/ and first person singular *x̲-* /χ/. The ***g̲-* conjugation prefix** is normally realized as the unaspirated uvular stop [q] in an onset, but it may be an aspirated [qʰ] when it coalesces together with the first person singular subject *x̲-* /χ/. In codas the *g̲-* conjugation prefix is spirantized to [χ]; coalescence with the first person singular subject takes precedence over this spirantization. The *g̲-* conjugation prefix can cooccur with the homophonous *g̲-* modal prefix, so they are structurally distinct despite having identical surface phonology. Both *g̲-* and *g-* may be labialized by an adjacent irrealis prefix allomorph *w-* or *u-*, but *n-* never labializes because anterior consonants cannot be labialized in Tlingit. For examples of the various phonological realizations of

the three overt conjugation prefixes see the tables of prefix combinations from Leer (1991: 185–202) and Eggleston (2013: 185–221).

A verb form can contain only one of the four conjugation prefixes; they are thus in complementary distribution. A verb form need not have a conjugation prefix: perfective aspect forms may have a perfective prefix *wu-* or *u-* that is in complementary distribution with all of the conjugation prefixes (sec. 2.2). So any given verb form may or may not have a conjugation prefix, but if it does have a conjugation prefix it must have one and only one. This is exemplified in section 3.1.

The conjugation prefixes have two grammatical functions: (i) indicating the verb's membership in a conjugation class, and (ii) indicating a grammatical aspect. In any given inflectional context they have only one of these two functions, never both at the same time. When they indicate a conjugation class there is a paradigmatic four-way contrast between forms with each of the prefixes depending on each verb's conjugation class specification, but when they indicate grammatical aspect only one prefix appears regardless of the verb's conjugation class specification.

The imperative mood is one context where the conjugation prefix indicates the verb's membership in a conjugation class. Thus the imperative of the *n*-conjugation class root $\sqrt[2]{}$*hun* 'sell' in (165a) includes the *n-* conjugation prefix. Likewise the imperative of the *g̲*-conjugation class root $\sqrt[2]{}$*xit'* 'sweep' in (165b) includes the *g̲-* conjugation prefix.

(165) a. Nahóon! *n-conjugation imperative*
n- $\sqrt[2]{}$hun-μH
NCNJ-2SG·S-$\sqrt[2]{}$sell -VAR
'Sell it!'

b. Gaxéet'! *g̲-conjugation imperative*
g̲- $\sqrt[2]{}$xit' -μH
GCNJ-2SG·S-$\sqrt[2]{}$sweep-VAR
'Sweep it!'

The prospective aspect is one context where the conjugation prefix indicates a grammatical aspect rather than conjugation class membership. Specifically, all prospective aspect forms have *g-* regardless of their conjugation class specification (sec. 3.5.1). Thus the prospective of *n*-conjugation $\sqrt[2]{}$*hun* 'sell' in (166) has the same *g-* as the prospective of the *g̲*-conjugation $\sqrt[2]{}$*xit'* 'sweep' in (166b) and neither verb includes the *n-* or *g̲-* conjugation prefixes.

(166) a. Gax̲toohóon. *n-conjugation prospective*
w- g- g̲- tu- $\sqrt[2]{}$hun-μH
IRR-GCNJ-MOD-1PL·S-$\sqrt[2]{}$sell -VAR
'We will sell it.'

b. Yei gax̲tooxéet'. *g̲-conjugation prospective*
yei= w- g- g̲- tu- $\sqrt[2]{}$xit' -μH
down=IRR-GCNJ-MOD-1PL·S-$\sqrt[2]{}$sweep-VAR
'We will sweep it.'

Because of this mutually exclusive division of functions for the prefixes, I emphasize the conceptual distinction between conjugation prefixes on the one hand and conjugation classes on the

other. The prefixes are used as *labels* for the classes, but in a given form they need not be *indicators* for the classes. I expand on this distinction between conjugation prefixes and conjugation classes in section 3.1.

The conjugation prefixes and the conjugation classes are associated with spatial semantics. Essentially, *n-* is lateral (left, right, forward, backward), *g̲-* is downward, and *g-* is upward; *∅* is the elsewhere case with no specific meaning. The spatial semantics is readily apparent in motion derivations where each derivation belongs to one conjugation class and reflects its meaning. Lexically specified conjugation class is more nebulous, being clear for some verbs but less so for others. When the conjugation prefixes are used for grammatical aspect the spatial meaning seems prima facie to be absent, but it is likely that spatial semantics is – or was – metaphorically involved in the underlying organization of parts of the grammatical aspect system. I review the association between conjugation prefixes, conjugation classes, and spatial semantics in section 3.2, discussing individual prefixes and classes in later sections.

The conjugation classes are a fundamental organizing principle for the motion derivation system that affects all motion verbs and many non-motion verbs. A motion verb cannot occur without the application of one of the 70 or so motion derivations. Each motion derivation specifies one conjugation class along with a path argument and a repetitive imperfective form. Over half of the motion derivations specify the *∅*-conjugation which I argue is meaningless, but the remainder specify one of the three spatially significant *n-*, *g̲-*, or *g-*conjugation classes. The conjugation class of a motion derivation influences the interpretation of the path argument, changing its orientation with respect to the origo from e.g. lateral with *n-* to downward with *g̲-*. I detail the relationships between conjugation class and motion derivations in section 3.3.

Among non-motion verbs the conjugation class is unpredictable and hence lexically specified. I address lexically specified conjugation class in section 3.4. Most roots derive verbs with only one conjugation class so the class is analyzed as a lexical property of the root (ch. 2 sec. 1.3.1.4). The lexical semantics of some of these roots show more or less clear correlations with the spatial meanings of their lexically specified conjugation classes – e.g. $\sqrt[1]{nuk}$ 'sg. sit' is *g̲*-conjugation and hence downward – but there are many roots where the conjugation class is apparently arbitrary. I analyze these as purely lexicalized and unproductive assignments which may admit a diachronic explanation but not a synchronic one. There are also some roots that regularly derive verbs with more than one conjugation class. Most of these can be analyzed as applications of motion derivations without path arguments, and one case – often *∅* – is the basic lexical specification underlying the others. Some multiple conjugation class cases are resistant to explanation via motion derivation; these are probably frozen applications of motion derivations where the spatial semantics has drifted or faded.

Finally, in section 3.5 I review the use of the conjugation prefixes as indicators of grammatical aspect. As noted above, there are two aspects where the conjugation prefixes appear to be dedicated to expressing grammatical aspect; in such cases they are grammatically divorced from conjugation class indication. But I argue that this does not mean they are semantically divorced because the spatial meanings may still be applicable. I appeal to the crosslinguistically universal fact that temporal phenomena are often metaphorically mapped to spatial phenomena, and thus that the spatial meanings of the conjugation classes underlie their aspectual functions. Given a formal analysis of the spatial semantics in Tlingit, it should be possible to construct a regular mapping from spatial viewpoints to aspectual viewpoints. I do not attempt such a formalization here, but I argue that one

is tractable and would be insightful for Tlingit and for crosslinguistic research into aspect.

Before going any further we must confront the reality of the *∅* conjugation prefix. As a null morpheme it has no phonology and is only analyzable paradigmatically, so it is entirely possible that there is no such element in Tlingit. Leer (1991) takes the existence of a zero morpheme for granted, but Burge (2017: 36–37) challenges this assumption. After exploring the possibility that it is unnecessary for the semantics, she concludes that it is still convenient to assume *∅* does exist. She raises an important possibility that *∅* may in fact reflect underspecification rather than a class per se, with the apparent *∅* actually being the lack of a conjugation prefix and thus the lack of either a conjugation class or aspect. Evidence from the *∅*-conjugation motion derivations suggests that the lack of meaning is correct (sec. 3.3), contra Leer. I side with Burge in accepting *∅* as an analytic tool but hoping that we can clarify its (ir)reality with more investigation. The other Na-Dene languages, including Eyak, have all been analyzed with the more or less implicit assumption that *∅* must exist in contrast with the other three conjugation classes (see sec. 3.2), so familial comparison may help clarify the situation in Tlingit.

3.1. Conjugation prefixes versus conjugation classes

There is a crucial distinction between a 'conjugation prefix' on the one and 'conjugation class' on the other. A **conjugation prefix** is any one of the prefixes *∅*, *n-*, *g̲-*, or *g-* as they appear in various verb forms. A **conjugation class** is a kind of inflectional class which may be lexically or derivationally specified. There is a regular mapping from conjugation class to conjugation prefix: each conjugation class is associated with a single conjugation prefix and no conjugation prefix is associated with more than one conjugation class. Because of this mapping the conjugation classes are labelled '*∅*-conjugation', '*n*-conjugation', '*g̲*-conjugation', and '*g*-conjugation' after the conjugation prefixes.

The presence of a conjugation prefix in a given verb form is not a guaranteed indication of the verb's membership in a conjugation class, so the mapping of class → prefix is not bidirectional, i.e. prefix ↛ class. The conjugation prefixes in their class-indicating function reflect either spatial orientations (with motion verbs, sec. 3.3) or lexical classes (with non-motion verbs, sec. 3.4). But the conjugation prefixes are also used to indicate grammatical aspect (with certain aspects, sec. 3.5), so the presence of a conjugation prefix in a verb form does not necessarily indicate the verb's membership in the associated class.

One case where the conjugation class is not represented by a conjugation prefix is when there is no overt conjugation prefix at all. Compare the imperative forms in (167) of the four conjugation classes with the equivalent perfective forms in (168). The imperative forms have overt conjugation prefixes corresponding to each lexically specified conjugation class. In contrast, the perfective forms do not have an overt conjugation prefix.

(167) a. X̲á! *∅-conjugation imperative*
$\sqrt[2]{\text{x̲a}}$-H
ZCNJ 2SG·S-$\sqrt[2]{\text{eat}}$-VAR
'Eat it!'

b. Natá! *n-conjugation imperative*
n- $\sqrt[1]{\text{ta}^{\text{h}}}$ -H
NCNJ-2SG·S-$\sqrt[1]{\text{sleep}}$·SG-VAR
'Sleep!'

c. Gaykí! *g-conjugation imperative*
g- ÿi- ¹√ki -H
GCNJ-2PL·S-¹√sit·PL-VAR
'Sit down!'

d. Gashí! *g-conjugation imperative*
g- ²√shiʰ-H
GCNJ-2SG·S-²√sing -VAR
'Sing it!'

(168) a. Wutuwaxáa. *Ø-conjugation perfective*
wu-tu- i- ²√xa-μH
PFV-1PL·S-STV-²√eat-VAR
'We ate it.'

b. Xwaataa. *n-conjugation perfective*
wu-x- i- ¹√taʰ -μ
PFV-1SG·S-STV-¹√sleep·SG-VAR
'I slept.'

c. Wutuwakee. *g-conjugation perfective*
wu-tu- i- ¹√ki -μ
PFV-1PL·S-STV-¹√sit·PL-VAR
'We sat down.'

d. Wutuwashee. *g-conjugation perfective*
wu-tu- i- ²√shiʰ-μ
PFV-1PL·S-STV-²√sing -VAR
'We sang it.'

The lack of an overt conjugation prefix in (168) does not mean that these perfective aspect forms are no longer members of their lexically specified conjugation classes. The difference in stem variation between the *-μH* of the verb in (168a) and the *-μ* of the other three verbs in (168b)–(168d) reflects their conjugation class memberships (ch. 2 sec. 2.6.3). Thus a verb form need not have an overt conjugation class prefix to be a member of a conjugation class.

So the absence of a conjugation prefix does not imply the absence of a conjugation class. The logical inverse is also true: the presence of a conjugation prefix does not imply the presence of a conjugation class. One context for this is the progressive aspect where the conjugation prefix *n-* is used to indicate the aspect regardless of the conjugation class of the verb. The forms in (169) demonstrate this non-conjugational use of *n-*.

(169) a. Yaa ntooxéin. *Ø-conjugation progressive*
ÿaa= n- tu- ²√xa-eH-n
along=NCNJ-1PL·S-²√eat-VAR-NSFX
'We are eating it.'

Morphology	*Ø-class*	*n-class*	*g̱-class*	*g-class*
lexical state/activity imperfective Asp prefix	—	—	—	—
imperative Asp prefix	Ø	n-	g̱-	g-
realizational Asp prefix	Ø	n-	g̱-	g-
consecutive Asp prefix	Ø	n-	g̱-	g-
conditional Asp prefix	Ø	n-	g̱-	g-
extensional state imperfective Asp prefix	Ø	n-	g̱-	g-
multipositional state imperfective Asp prefix	Ø	n-	g̱-	g-
hortative Asp prefix (+ *g̱*- MOD)	Ø	n-	g̱-	g-
contingent Asp prefix (+ *g̱*- MOD)	Ø	n-	g̱-	g-
admonitive Asp prefix (+ *u*- IRR)	Ø	n-	g̱-	g-
potential Asp prefix (+ *u*- IRR+ *g̱*- MOD-)	Ø	n-	g̱-	g-
habitual Asp prefix	u-	n-	g̱-	g-
perfective Asp prefix	u-	wu-	wu-	wu-
perfective V stem	-H	-μ	-μ	-μ
prospective preverb	—	—	yei=	kei=
progressive preverb	ÿaa=	ÿaa=	yei=	kei=
repetitive imperfective preverb	—	yoo=	yei=	kei=
repetitive imperfective Ɛ prefix	—	i-	—	—
repetitive imperfective Adv suffix	-x̱	-k	-ch	-ch

Table 6.16: Morphological reflections of the conjugation classes

b. Yaa nx̱atein. *n-conjugation progressive*
ÿaa= n- x̱- ¹√ta^{h} -e -n
along=NCNJ-1SG·S-¹√sleep·SG-VAR-NSFX
'I am going to sleep.'

c. Yei ntooḵéen. *g̱-conjugation progressive*
yei= n- tu- ¹√ḵi -μH-n
down=NSFX-1PL·S-¹√sit·PL-VAR-NSFX
'We are (in the process of) sitting down.'

d. Kei ntooshéen. *g-conjugation progressive*
kei= n- tu- ²√shi^{h} -μH-n
up= NCNJ-1PL·S-²√singing-VAR
'We are singing it.'

When the conjugation prefixes are used for grammatical aspect there are usually other accompanying morphological reflections of conjugation class. These secondary reflections of conjugation class are not fully informative because they only distinguish one or two of the classes from the rest. For example, the perfectives in (168) only distinguish *Ø*-conjugation from the other three classes by

the difference between *-H* and *-μ* stem variation. Similarly, the progressives in (169) distinguish *g̲*-conjugation with *yei=* 'down' and *g*-conjugation with *kei=* 'up' versus the other two with *ÿaa=* 'along'.[33] Nonetheless, the fact that any of the conjugation classes are distinguished implies that they persist without overt prefixes.

Table 6.16 documents all of the known reflexes of conjugation class across all of the aspectual categories (aspects, moods, and/or modalities; a.k.a. 'modes'). The only aspectual categories that lack some kind of indication of conjugation class are the lexical state and activity *∅*-imperfectives (sec. 2.1.1.1). All other aspectual categories exhibit at least some partial indication of the verb's conjugation class membership.

The imperative is the conventional diagnostic for partitioning verbs into the conjugation classes. As shown in (167), it unambiguously distinguishes all four classes by the presence of a conjugation prefix. The imperative mood is available for motion verbs where the conjugation class takes on a spatial role (sec. 3.3), as well as for non-motion verbs where the conjugation class is more or less lexicalized (sec. 3.4). When the conjugation prefixes are used for aspectual purposes (sec. 3.5) the imperative is structurally orthogonal – we cannot form say an imperative progressive – and so imperatives are not a useable diagnostic. But preverbs and stem variation can still distinguish the conjugation classes even when the conjugation prefixes are otherwise in use, as documented in table 6.16. Indeed, given an appropriate pair of perfective and progressive forms the conjugation class can be determined entirely without an overt prefix. This means that although the imperative is the conventional diagnostic for conjugation class, a given verb's class can be still be determined without an imperative form. This is particularly significant for learning and for documentation.

Although the conjugation classes are probably the most noticeable inflectional class in Tlingit, they are not the only one: there are other lexical and derivational distinctions among verb forms that are orthogonal to the conjugation class distinction. One distinction is the unpredictable V-agreement (stem variation) of lexical non-iterative *∅*-imperfectives (ch. 2 sec. 2.1); as far as is known this has no connection to conjugation class. Another distinction is the unpredictable specification of state versus activity among non-iterative *∅*-imperfectives, where states have overt *i-* in Ɛ and activities do not (ch. 2 sec. 1.3.1.2); there is a correlation between states and *g*-conjugation class (sec. 3.4.1), but this the relationship is not deterministic in either direction. A third distinction is the selection of *l-* versus *s-* in *v* when there is no phonological or semantic motivation (ch. 4 sec. 6); this appears to be wholly independent of conjugation class. A fourth distinction is whether *d-* in Voice forms an antipassive (ch. 5 sec. 3) or a passive (ch. 5 sec. 4) when combined with a bivalent root; this also has no coherent relationship with conjugation class. Tlingit thus has a variety of different inflectional classes that partition the lexical space along different logical dimensions.

3.2. Spatial properties of the prefixes and classes

The conjugation classes are closely associated with spatial orientation. More specifically, the three non-*∅* conjugation classes that are represented by overt prefixes – *n-*, *g̲-*, and *g-* – are associated with three directions relative to the origo. The *g*-conjugation class is associated with the upward direction, the *g̲*-conjugation class is associated with the downward direction, and the *n*-conjugation class is associated with all horizontal directions along a plane centred on the origo: e.g. left, right, for-

33. The *-e* in (169b) versus the *-eH* in (169a) and the *-μH* in (169c) and (169d) is unrelated to conjugation class. It is because $\sqrt[1]{ta^h}$ is a $\sqrt{CV^h}$ root where the others are $\sqrt{CV}$. See chapter 2 section 2.3.3.4 and appendix B for details.

Figure 6.21: Spatial orientations of the three non-∅ conjugation classes

Property	*∅-class*	*n-class*	*g̲-class*	*g-class*
preverb (prog., prosp., rep. impfv.)	—	—	*yei=* 'down'	*kei=* 'up'
motion derivation semantics	—	lateral	downward	upward
grammatical aspect	—	progressive	—	prospective
phonetic articulation	—	apical	uvular	velar

Table 6.17: Distributional properties of conjugation classes with spatial associations

ward, and backward. These spatial relationships are represented by the three dimensional diagram in figure 6.21. The **origo** is the basis of spatial coordinates; "in the unmarked case, [it] is defined by the speaker's location at the time of the utterance" (Diessel 2012: 2410).

Table 6.17 sketches three major distributional properties that point toward the spatial semantics of the conjugation classes and a more tenuous phonetic pattern that might be associated with space. The two directional preverbs *yei=* 'down' with *g̲-* and *kei=* 'up' with *g-* that appear with the prospective and progressive aspects are perhaps the most obvious reflections of spatial meaning. The motion derivations (sec. 3.3) also show clear connections between the conjugation classes and the directions in figure 6.21. Similar connections can be seen among some lexically specified instances of conjugation class (sec. 3.4). The grammatical aspects that use *n-* and *g-* (sec. 3.5) might be metaphorically associated with the horizontal and upward spatial orientations. In addition to these three properties, there is a weak iconicity in the phonetics of uvular *g̲-* as 'down' versus velar *g-* as 'up' and perhaps also apical *n-* as 'forward'.

The relatively clear connection between spatial semantics and conjugation class in Tlingit apparently sets it apart from the other Na-Dene languages. The Dene languages have a similar system of conjugation classes, although their inventory is slightly different and not completely cognate with

Tlingit's inventory. The four standard conjugation prefixes in Dene languages are *Ø, *n-, *ɣ-, and *s-, with various realizations of these depending on the language. These prefixes are taken as representative of four conjugation classes in much the same way as I have described for Tlingit. But the Dene conjugation classes are often held to represent lexical (situation) aspect properties rather than spatial properties. The most detailed account is from Rice (2000a: 251–281), who ascribes Aktionsart to the conjugation classes:

> There are four nonnull markers, which I refer to as *n*, *s*, *gh* [i.e. *ɣ* – JAC], and *í*[34] based on their reconstructions in Proto-Athapaskan. I argue that *n* is an indicator of achievements, marking nondurativity and telicity. *S* is an indicator of accomplishments, marking durativity and telicity. *Gh* indicates activities, expressing durativity and atelicity. Finally, *í* indicates semelfactives, expressing the absence of duration and of a natural endpoint. A fifth situation aspect marker, usually identified as a phonologically null element, is also important in the system, marking durativity with no indication whatsoever of telicity. (Rice 2000a: 256)

Not all Na-Dene scholars agree with Rice's assessment of the conjugation class semantics in Dene languages. She mentions Axelrod who says "Unfortunately, these characterizations do not seem to hold for Koyukon… It is difficult to imagine a single semantic characterization underlying each of these groupings." (Axelrod 1993: 35–36). Smith likewise argues that the Dene conjugation classes are essentially meaningless:

> Some scholars have suggested that there are dependencies between particular conjugational morphemes and telic verb bases. There may be such dependencies for particular subclasses of verb bases, e.g. the Transitional VLCs [Verb Lexeme Categories – JAC]. But it is difficult to find a pattern at the global level, partly because there are several types of dependencies between certain lexical prefixes, VLCs, and the viewpoint morphemes.
>
> [Footnote:] The pattern of dependences is intricate, with many exceptions, and its force is much debated. Krauss (1969: 82) and Young and Morgan (1987: 104) argue that the perfective morphemes have consistent semantic force. I was unable to find a consistent semantics at the level of either situation types or the feature of telicity. (Smith 1996: 244)

This disagreement may be partly due to focusing on one or two languages and then generalizing to the rest. Most published analyses of Dene conjugation class also work primarily from lexical documentation and translation rather than felicity or truth-conditional judgements, and ungrammatical data are largely absent in the literature. There is also a remarkable lack of detail on motion verbs where the system may be more regular. This area of Dene language research needs much more attention to lexical semantics, derivational paradigms, and modern techniques for semantic fieldwork (e.g. Matthewson 2004).

Whether or not a connection exists between conjugation class and lexical aspect properties in Dene languages, there is no consistent evidence of the same phenomenon in Tlingit. States, activities, and achievements can be found in every conjugation class. Accomplishments do not appear to

34. Rice's *í* is reconstructed as Proto-Dene *ŋ(ə)- < Proto-Dene-Eyak *ŋi- (Krauss & Leer 1981: 40, 152); she uses *ñ-* for the same prefix in her grammar of Slave (Rice 1989: 485). PD *ŋ(ə)- < PDE *ŋi- is probably cognate with Tlingit *wu-* < *ÿu- < *ŋʷu- (sec. 2.3). Some forms in various languages are Witsuwit'en *ən- ~ in- ~ en-* (Hargus 2007: 357), Navajo *´-* (Young 2000: 25), Ahtna *n-* (Kari 1990: 41, 286), Koyukon *ne-* (Jetté & Jones 2000: 459, 759), Mattole *ni-* (Li 1930b: 66), Kaska *n-* (Moore 2002: 479), and Eyak *yi-* (Krauss 2015: 222).

be a coherent category in Tlingit, and semelfactives are also apparently absent. Although Leer ascribed telicity to the *∅*-conjugation class and thus atelicity to the other three (Leer 1991: 109), I argue in section 3.3.4 that this conflicts with the evidence.

Descriptions of the Dene languages never mention any connection between conjugation class and spatial semantics, but the connection is undeniable in Tlingit (Burge 2017). The semantics of conjugation class thus seems to be radically different between the two branches of the Na-Dene family. But there is almost no description of the system in Eyak, and perhaps consideration of the Tlingit system as described here may lead to future insights in the Dene system.

3.3. Motion derivations and conjugation class

Among the motion verbs – or more precisely, among the motion derivations that are applied to motion verbs – the conjugation classes completely partition space with respect to the origo. Specifically, the *g*-conjugation class denotes paths (location + direction) upward with respect to the origo, the *g*-conjugation class denotes paths downward w.r.t. the origo, the *n*-conjugation class denotes paths horizontal w.r.t. the origo, and the *∅*-conjugation class is unspecified for spatial relationships.

The motion verbs are verbs which denote a change of location (ch. 2 sec. 1.2.1). They have unique syntactic and semantic properties which set them apart from all other verbs in Tlingit. One characteristic is their **path argument** which denotes a location or a path (location and direction) that is represented syntactically by an adverb or a PP. Another characteristic is that motion verbs are not lexically specified as members of one of the four conjugation classes. Most verb roots specify a conjugation class (ch. 2 sec. 1.3.1.4) but uniquely the motion verb roots do not. Instead every motion verb has an added **motion derivation** which specifies the conjugation class, a path argument (source, destination, manner, etc.), and a repetitive imperfective form (cf. sec. 2.1.1.2). The various combinations of conjugation class, path argument, and repetitive imperfective show strong correlations with spatial semantics. Motion derivations are represented descriptively as in (170).

(170) *DP-nax̲* (*g̲*; *-ch* repetitive) 'down via, through DP' *representation of a motion derivation*

conjugation class; translation; path argument; repetitive imperfective type

The selection of conjugation class by motion derivation is illustrated in (171). These examples show four different imperatives based on the root $\sqrt[1]{k\underline{u}x}$ 'go by boat or other vehicle'. Each imperative exhibits one of the four conjugation prefixes despite all of these verbs being based on the same root. Thus the conjugation class for these roots is not lexically specified, and is instead associated with the PP. But the contrast between (171a) and (171b) shows that it is not that the PP determines the conjugation class since both sentences have the same punctual postposition *-t* 'at, to'. Instead, it is the abstract motion derivation which specifies both the conjugation class and the PP. Different motion derivations may specify the same PP as long as they also specify different conjugation classes.

(171) a. Át kúx̲! *Ø-conj. motion imperative*
á -t ¹√k̲ux̲ -H
3N-PNCT ZCNJ 2SG·S ¹√go·boat-VAR
'Get there by boat!'
DP-{t,x̲,dé} (*Ø*; *-μ* repetitive) 'arrive at DP'

b. Át nak̲úx̲! *n-conj. motion imperative*
á -t n- ¹√k̲ux̲ -H
3N-PNCT NCNJ-2SG·S ¹√go·boat-VAR
'Go around there by boat!'
DP-t (*n*; *yoo=i-…-k* repetitive) 'circle, bypass DP'

c. Áx̲ g̲ak̲úx̲! *g̲-conj. motion imperative*
á -x̲ g̲- ¹√k̲ux̲ -H
3N-PERT G̲CNJ-2SG·S ¹√go·boat-VAR
'Go down along there by boat!'
DP-x̲ (*g̲*; *-ch* repetitive) 'down along DP'

d. Aadáx̲ gak̲úx̲! *g-conj. motion imperative*
á -dáx̲ g̲- ¹√k̲ux̲ -H
3N-ABL GCNJ-2SG·S ¹√go·boat-VAR
'Go up from there by boat!'
DP-dáx̲ (*g*; *-ch* repetitive) 'up from DP'

Motion derivation is always the source of conjugation class in motion verbs. But it is somewhat difficult to show this because of the surface ambiguity of the *Ø* conjugation prefix and the lack of a conjugation prefix. The evidence hinges on the path arguments that are supplied by various motion derivations. Contra Eggleston (2013: 45), not all motion derivations include an overt path argument. There are exactly three motion derivations listed in (172) that do not have an overt path argument (hence '—' rather than e.g. '*DP-náx̲*').

(172) *motion derivations that lack path arguments*

a. — (*n*; *yoo=i-…-k* repetitive) 'along, horizontally' (Leer 1991: 306) *n-conj.*
b. — (*g̲*; *-ch* repetitive) 'falling, downward' (Leer 1991: 311) *g̲-conj.*
c. — (*g*; *-ch* repetitive) 'starting off, picking up, upward' (Leer 1991: 308) *g-conj.*

Using these argumentless motion derivations we can construct motion verbs that lack a path argument. But because there is no argumentless *Ø*-conjugation motion derivation, the resulting forms must necessarily be specified for one of the non-*Ø* conjugation classes. As shown in (173), a motion verb in the imperative must have an overt conjugation prefix if it lacks a path argument.

(173) a. *K̲úx̲! **Ø-conj. motion imperative*
¹√k̲ux̲ -H
ZCNJ 2SG·S ¹√go·boat-VAR
intended: 'Go by boat!'

b. Nak̲úx̲! *n-conj. motion imperative*
n- $^{1}\sqrt{}$k̲ux̲ -H
NCNJ-2SG·S $^{1}\sqrt{}$go·boat-VAR
'Go along by boat!'

c. Gak̲úx̲! *g̲-conj. motion imperative*
g̲- $^{1}\sqrt{}$k̲ux̲ -H
G̲CNJ-2SG·S $^{1}\sqrt{}$go·boat-VAR
'Go down by boat!'

d. Gak̲úx̲! *g-conj. motion imperative*
g- $^{1}\sqrt{}$k̲ux̲ -H
GCNJ-2SG·S $^{1}\sqrt{}$go·boat-VAR
'Go up by boat!'

It is therefore impossible to construct an imperative of a motion verb without an overt conjugation prefix and without a path argument at the same time. I conclude that it is impossible to form motion verbs without motion derivations since either a path argument or a conjugation prefix reflecting the conjugation class must be present, and the only source for both of these is a motion derivation.

As first pointed out by Leer (1991: 236) and reiterated by Burge (2017), the association between conjugation classes and motion derivations is not arbitrary. For the *g-* and *g̲-* conjugation classes there is a clear connection with motion upwards and downwards, respectively. The *n*-conjugation is associated with lateral or horizontal motion, though this association is somewhat less obvious from the data and so deserves clarification. Leer (1991: 72) claimed that the *∅*-conjugation class is tied to telicity, but he admits that the connection is tenuous (Leer 1991: 77–78). I interpret the *∅*-conjugation class as being essentially meaningless because of its morphosyntactic diversity and lack of semantic coherence in motion derivations (sec. 3.3.4). Most of the argumentation for the spatial interpretations of the conjugation classes in motion verbs is based on paradigmatic evidence and translations. The whole system of motion verbs would greatly benefit from controlled semantic elicitation.

Leer's list of motion derivations could be taken as exhaustive considering its extent and detail (Leer 1991: 293–329). I am inclined to believe it is close to exhaustive based on my experience in learning and speaking the language, but there may still be a few undocumented derivations lurking in texts or used only in certain uncommon circumstances. Although there are many obscure motion derivations that are only rarely encountered in set phrases or in narratives, most of them do see regular use today. There is a tendency for some less common motion derivations to be restricted to particular motion verbs, but in my experience speakers can readily apply these near-frozen or 'slushy' derivations to other verbs given sufficient need or desire. The system as a whole is clearly productive and powerful even if particular corners of the inventory are archaic or obscure.

The presence of path argumentless motion derivations detailed above has a profound implication for the organization of the lexicon which has yet to be investigated. Specifically, a large number of verbs with lexically specified conjugation classes (sec. 3.4) may in fact have one of these path argumentless motion derivations applied to it. I suspect that this is actually the case for roots that appear to have more than one conjugation class, particularly ones which are specified for *∅*-conjugation.

Path Arg.	*Conj.*	*Rep. Type*	*Translation*
—	g	kei=…-ch	upward, starting off, picking up
DP-dáx̲	g	kei=…-ch	upward, starting off, picking up from DP
k̲ut=	g	—	going astray, getting lost

Table 6.18: *G*-conjugation class motion derivations

Given the lack of a path argumentless *Ø*-conjugation motion derivation, such roots would be lexically specified for *Ø* and then the other conjugation classes would be captured by argumentless motion derivations. There is probably still a place for lexically specified conjugation class, but for many roots it might be better analyzed as more or less frozen motion derivation.

The usual order in which I list the conjugation classes is ⟨*Ø*, *n-*, *g̲-*, *g-*⟩. This ordering places *Ø* first because it is the most frequently encountered, followed by *n-* which is next most common, and then *g̲-* and *g-* which are roughly equal in frequency but *g̲-* has more motion derivations attested than *g-*. However, presenting the conjugation classes with *Ø* first in this section would be confusing because I argue that for motion verbs *Ø* is the elsewhere case and thus has no coherent spatial meaning. So for expository clarity I have reversed my usual order, discussing them as ⟨*g-*, *g̲-*, *n-*, *Ø-*⟩.

3.3.1. *G*-CONJUGATION IS UPWARD

The *g*-conjugation class is associated with upward motion. This is reflected not only by the meanings of the *g*-conjugation motion derivations, but also by these motion derivations' requirement for the *kei=* 'up' preverb in certain aspectual contexts. There are only three motion derivations that fall in the *g*-conjugation class as listed in table 6.18 (Leer 1991: 308–309; Edwards 2009: 611). They are exemplified by the imperatives in (174) with the motion root $\sqrt[1]{gut}$ 'sg. go'. The form in (174a) illustrates a motion derivation without any PP or preverb. The forms in (174a) and (174b) contrast with (174c) in that the former specify a repetitive imperfective whereas the latter does not.

(174) a. Gagú! *g-conjugation motion derivations*
g- $\sqrt[1]{gut}$ -⊗
GCNJ-2SG·S $\sqrt[1]{go}$·SG-VAR
'Get going!', 'Go up!'
(*g*; *kei=…-ch* repetitive) 'start off, take off, pick up, upward'

b. Aadáx̲ gagú!
á -dáx̲ g- $\sqrt[1]{gut}$ -⊗
there-ABL GCNJ-2SG·S $\sqrt[1]{go}$·SG-VAR
'Get up from there and go!', 'Go up from there!'
DP-dáx̲ (*g*; *kei=…-ch* repetitive) 'start off, take off, pick up, upward from DP'

c. K̲ut gagú!
k̲ut=g- $\sqrt[1]{gut}$ -⊗
lost= GCNJ-2SG·S $\sqrt[1]{go}$·SG-VAR
'Get lost!', 'Go astray!'
(*g*; no repetitive) 'lost, astray'

Leer mentions an informative contrast between a *g*-conjugation motion derivation and an *n*-conjugation motion derivation with the same PP, specifically with the ablative postposition *-dáx̲* 'from, away from, out of, off of' (Leer 1991: 308 fn. 18). His examples are analyzed in (175). The *n*-conjugation form in (175a) describes motion departing the location horizontally. This contrasts with the *g*-conjugation form in (175b) which specifically describes departing upward from the location.

(175) a. Aax̲ nagú! *n-conj. motion imperative*
á -dáx̲ n- ¹√gut -⊗
there-ABL NCNJ-2SG·S ¹√go·SG-VAR
'Go away from there!' (Leer 1991: 308 fn. 18)
NP-dáx̲ (*n*; *yoo=i-...-k* repetitive) 'away from NP'

b. Aax̲ gagú! *g-conj. motion imperative* (≈ 174b)
á -dáx̲ g- ¹√gut -⊗
there-ABL GCNJ-2SG·S ¹√go·SG-VAR
'Get up from there and go!' (Leer 1991: 308 fn. 18)
DP-dáx̲ (*g*; *yei=...-ch* repetitive) 'start off, take off, pick up, upward from DP'

As shown earlier in table 6.16 on page 582, the preverb associated with the *g*-conjugation is *kei=*. This preverb is conventionally translated as 'up', affirming the connection between *g*-conjugation and the upward direction. The *kei=* preverb is etymologically related to the directional noun *kée* ~ *kín* 'up' as in *shaa shakée* 'mountain top', *dikée* 'above', *kínde* 'upward', *kindatáan* 'upright', and *kindayígín* 'face up', so the conventional translation as 'up' is consistent with its lexical relations.

The data in (176) illustrates the use of *kei=* for the *g*-conjugation class in the prospective aspect, contrasting it with the lack of a preverb for the *n*-conjugation class. The form in (176a) features the same *g*-conjugation motion derivation with ablative *-dáx̲* that was used above in (174b) and (175b). The contrasting form in (176b) gives an *n*-conjugation motion derivation using the same postposition. In the prospective aspect the *g-* conjugation prefix is used for aspectual indication and does not indicate the conjugation class (sec. 3.5.1). Thus *g-* occurs in both forms even though only one of the two belongs to the *g*-conjugation class. The change from *kk̲wa* [kqʰʷà] to *kuk̲a* [kʰʷùqʰʷà] is a phonological alternation due to the preceding syllable.

(176) a. Wé dei kaadáx̲ kei kk̲wagóot. *g-conj. motion prospective*
wé dei ká -dáx̲ kei=w- g- g̲- x̲- ¹√gut -μH
MDST road HSFC-ABL up= IRR-GCNJ-MOD-1SG·S-¹√go·SG-VAR
'I'm going to go up from the road.'

b. Wé dei kaadáx̲ kuk̲agóot. *n-conj. motion prospective*
wé dei ká -dáx̲ w- g- g̲- x̲- ¹√gut -μH
MDST road HSFC-ABL IRR-GCNJ-MOD-1SG·S-¹√go·SG-VAR
'I'm going to go away from the road.'

Another context where *kei=* 'up' occurs due to the *g*-conjugation class is in the progressive aspect (sec. 3.5.2). The pair in (177) shows prospective aspect forms that correspond to the prospective aspect forms in (176). Similar to the prospective, in the progressive aspect the *n-* conjugation prefix is used for aspect and so does not indicate the conjugation class. The *g*-conjugation form in (177a)

selects the *kei*= 'up' preverb whereas the *n*-conjugation form in (177b) selects the *ÿaa*= 'along' preverb (as does the *Ø*-conjugation; see table 6.16).

(177) a. Wé dei kaadáx̱ kei nx̱agút. *g-conj. motion progressive*
wé dei ká -dáx̱ kei= n- x̱- $^{1}\sqrt{}$gut -H
MDST road HSFC-ABL up= NCNJ-1SG·S-$^{1}\sqrt{}$go·SG-VAR
'I'm going up from the road.'

b. Wé dei kaadáx̱ yaa nx̱agút. *n-conj. motion progressive*
wé dei ká -dáx̱ yaa= n- x̱- $^{1}\sqrt{}$gut -H
MDST road HSFC-ABL along=NCNJ-1SG·S-$^{1}\sqrt{}$go·SG-VAR
'I'm going away from the road.'

The two *g*-conjugation class motion derivations in (174a) and (174b) specify a repetitive imperfective whereas (174c) does not. The repetitive imperfective includes the *kei*= 'up' preverb, characteristic of the *g*-conjugation as shown already by the prospective and progressive aspects. The data in (178) illustrates two repetitive imperfectives with the same *g*- and *n*-conjugation motion derivations as before. The *g*-conjugation form in (178a) has *kei*= 'up' whereas the *n*-conjugation form in (178b) has the alternating preverb *yoo*= 'back and forth, to and fro'.

(178) a. Wé dei kaadáx̱ kei x̱agútch. *g-conj. motion repetitive imperfective*
wé dei ká -dáx̱ kei=x̱- $^{1}\sqrt{}$gut -H -ch
MDST road HSFC-ABL up= 1SG·S-$^{1}\sqrt{}$go·SG-VAR-REP
'I repeatedly go up from the road.'

b. Wé dei kaadáx̱ yoo x̱aagútk. *n-conj. motion repetitive imperfective*
wé dei ká -dáx̱ yoo=x̱- i- $^{1}\sqrt{}$gut -H -k
MDST road HSFC-ABL ALT= 1SG·S-STV-$^{1}\sqrt{}$go·SG-VAR-REP
'I repeatedly go away from the road.'

For unclear reasons, the *kei*= 'up' preverb does not itself form a *g*-conjugation class motion derivation. Instead, like the *yei*= 'down' preverb (sec. 3.3.2) and the *yoo*= 'back and forth' preverb (sec. 3.3.3), the motion derivation that specifies this preverb is a member of the *Ø*-conjugation class. This is shown in (179) where the imperative with *kei*= and *g*- in (179a) is ungrammatical and instead (179b) with *kei*= and *Ø* is the grammatical form.

(179) a. *Kei gagú! **g-conj. motion imperative*
kei=g- $^{1}\sqrt{}$gut -⊗
up= GCNJ-2SG·S $^{1}\sqrt{}$go·SG-VAR
intended: 'Go up!'

b. Kei gú! *Ø-conj. motion imperative*
kei= $^{1}\sqrt{}$gut -⊗
up= ZCNJ 2SG·S $^{1}\sqrt{}$go·SG-VAR
'Go up!'
kei= (*Ø*; *-ch* repetitive) 'up'

The data in (180) show an overlap in forms between this *∅*-conjugation motion derivation with *kei=* and what would be expected for a *g*-conjugation motion derivation. All three prospective, progressive, and repetitive imperfective forms have the *kei=* as specified by the motion derivation, and the repetitive imperfective has *-ch* as well. Thus this *∅*-conjugation motion derivation looks like a *g*-conjugation motion derivation when the conjugation prefix is not present.

(180) a. Kei kk̲wagóot. *∅-conj. motion prospective*
kei=w- g- g̲- x̲- ¹√gut -μH
up= IRR-GCNJ-MOD-1SG·S-¹√go·SG-VAR
'I will go up.'

b. Kei= nx̲agút. *∅-conj. motion progressive*
kei= n- x̲- ¹√gut -H
up= NCNJ-1SG·S-¹√go·SG-VAR
'I am going up.'

c. Kei x̲agútch. *∅-conj. motion repetitive imperfective*
kei=x̲- ¹√gut -H -ch
up= 1SG·S-¹√go·SG-VAR-REP
'I repeatedly go up.', 'I am repeatedly going up.'

But the *yei=* motion derivation is still *∅*-conjugation as shown not only by the imperative in (179) but also by the perfective in (181). The *∅*-conjugation class form in (181b) requires the characteristic *u-* perfective prefix (sec. 2.2.1) and *-H* stem variation (ch. 2 sec. 2.6.3).

(181) a. *Kei woogoot. **g-conj. motion wu-perfective*
kei=wu-i- ¹√gut -μ
up= PFV-STV-¹√go·SG-VAR
intended: 'S/he went up.'

b. Kei uwagút. *∅-conj. motion u-perfective*
kei=u- i- ¹√gut -H
up= ZPFV-STV-¹√go·SG-VAR
'S/he went up.'

3.3.2. G̲-CONJUGATION IS DOWNWARD

The g̲-conjugation class is associated with downward motion. This is reflected by the meanings of the g̲-conjugation class motion derivations as well as their requirement for the *yei=* 'down' preverb in the exact same aspectual contexts where the *g*-conjugation motion derivations require *kei=* 'up'. There are at least eight attested motion derivations that belong to the g̲-conjugation class as listed in table 6.19 (Leer 1991: 309–312, 314; Edwards 2009: 612). The imperative forms in (182) illustrate five of these g̲-conjugation class motion derivations.

(182) a. G̲agú! *g̲-conjugation motion derivations*
g̲- ¹√gut -⊗
GCNJ-2SG·S-¹√go·SG-VAR
'Go down!'
(g̲; *-ch* repetitive) 'downward, falling'

Path Arg.	*Prefixes*	*Conj.*	*Rep. Type*	*Translation*
—		g̲	yei=…-ch	downward, falling
ÿaa=		g̲	yei=…-ch	down (*yei=* blocks *ÿaa=*)
yaax̲=		g̲	yei=…-ch	embarking, aboard boat, into vehicle
ÿanax̲=		g̲	yei=…-ch	down into ground
DP-x̲		g̲	yei=…-ch	down along DP
héen-x̲		g̲	yei=…-ch	down into water
ká-x̲	sha-	g̲	yei=…-ch	falling over, prone
DP-nax̲		g̲	yei=…-ch	down via, through DP

Table 6.19: *G̲*-conjugation class motion derivations

b. Áx̲ g̲agú!
á -x̲ g̲- $\sqrt[1]{\text{gut}}$ -⊗
there-PERT G̲CNJ-2SG·S-$\sqrt[1]{\text{go}}$·SG-VAR
'Go down along there!'
DP-x̲ (*g̲*; *-ch* repetitive) 'down along DP'

c. Aanax̲ g̲agú!
á -nax̲ g̲- $\sqrt[1]{\text{gut}}$ -⊗
there-PERL G̲CNJ-2SG·S-$\sqrt[1]{\text{go}}$·SG-VAR
'Go down through there!'
DP-x̲ (*g̲*; *-ch* repetitive) 'down via, through DP'

d. Yaax̲ g̲agú!
yaax̲= g̲- $\sqrt[1]{\text{gut}}$ -⊗
aboard=G̲CNJ-2SG·S-$\sqrt[1]{\text{go}}$·SG-VAR
'Go aboard!'
ÿaax̲= (*g̲*; *-ch* repetitive) 'embarking, aboard boat, into vehicle'

e. Yanax̲ g̲agú!
ÿanax̲=g̲- $\sqrt[1]{\text{gut}}$ -⊗
ground=G̲CNJ-2SG·S-$\sqrt[1]{\text{go}}$·SG-VAR
'Go down into the ground!'
ÿanax̲= (*g̲*; *-ch* repetitive) 'down into ground'

The derivations in (182d) and (182e) are historically derived from (182b) and (182c), but the connections are no longer synchronically active for most speakers. The preverb *yaax̲=* 'aboard' in (182d) is originally from *yaakw* 'canoe, boat' with the pertingent postposition *-x̲* 'at, contacting, of'. The preverb *yaax̲=* is not available outside of this particular motion derivation so it is frozen and has not been 'liberated' from this structure unlike English *aboard*. The preverb *ÿanax̲=* 'into ground' in (182e) is etymologically from *ÿán* 'shore' (< PT **ŋanʰ* < PND **ŋəṅ* 'ground') and the perlative postposition *-nax̲* 'along, via, through'. The phonological form of *ÿanax̲=* is irregular because we would normally expect *yánnax̲* [ˈján.náχ] rather than [ˈjà.nàχ], so this form is also frozen.

The preverb associated with the g̲-conjugation class is *yei=* 'down'. This preverb is related to the relational noun *ÿee* 'below, beneath' as in *hít yee* 'inside house' (i.e. below its roof), *héen shuwee* 'waterline of river', *wanyeenáx̲* 'secretly', *diyée* 'below', *yínde* 'downward', and *yindatáan* 'face down'.[35] The data in (183) illustrates the use of *yei=* 'down' for the g̲-conjugation class in the prospective aspect, contrasting it with the lack of a preverb for the *n*-conjugation class. The form in (183a) features the g̲-conjugation motion derivation shown above in (182b). The form in (183b) uses the *n*-conjugation motion derivation that has the same pertingent postposition *-x̲* 'at, contacting, of'.

(183) a. *g̲-conj. motion prospective*

Wé	dei	káx̲		yei	kk̲wagóot.					
wé	dei	ká	-x̲	yei=	w-	g-	g̲-	x̲-	$^{1}\sqrt{}$gut	-μH
MDST	road	HSFC-PERT		down=	IRR-GCNJ-MOD-1SG·S-				$^{1}\sqrt{}$go·SG-VAR	

'I'm going to go down along the road.'

NP-náx̲ (*g̲*; *-ch* repetitive) 'down along NP'

b. *n-conj. motion prospective*

Wé	dei	káx̲		ku k̲agóot.					
wé	dei	ká	-x̲	w-	g-	g̲-	x̲-	$^{1}\sqrt{}$gut	-μH
MDST	road	HSFC-PERT		IRR-GCNJ-MOD-1SG·S-				$^{1}\sqrt{}$go·SG-VAR	

'I'm going to go along the road.'

DP-náx̲ (*n*; *yoo=i-...-k* repetitive) 'along DP'

The data in (184) illustrates the use of *yei=* 'down' for the g̲-conjugation in the progressive aspect. The g̲-conjugation form in (184a) has *yei=* 'down' in contrast with the *yaa=* in (184b) for the *n*-conjugation.

(184) a. *g̲-conj. motion progressive*

Wé	dei	káx̲		yei	nx̲agút.				
wé	dei	ká	-x̲	yei=	n-	x̲-	$^{1}\sqrt{}$gut	-μH	
MDST	road	HSFC-PERT		down=	NCNJ-1SG·S-		$^{1}\sqrt{}$go·SG-VAR		

'I'm going down along the road.'

b. *n-conj. motion progressive*

Wé	dei	káx̲		yaa	nx̲agút.				
wé	dei	ká	-x̲	ÿaa=	n-	x̲-	$^{1}\sqrt{}$gut	-μH	
MDST	road	HSFC-PERT		along=	NCNJ-1SG·S-		$^{1}\sqrt{}$go·SG-VAR		

'I'm going along the road.'

The same preverb *yei=* 'down' also occurs in the repetitive imperfective that is specified by the g̲-conjugation class motion derivations. The data in (185) illustrate the repetitive imperfectives of the same two motion derivations. The g̲-conjugation class form in (185b) features *yei=* whereas the corresponding *n*-conjugation class form in (185b) features the alternating preverb *yoo=* 'back-and-forth, to-and-fro'.

(185) a. *g̲-conj. repetitive imperfective*

Wé	dei	káx̲		yei	x̲agútch.				
wé	dei	ká	-x̲	yei=	x̲-	$^{1}\sqrt{}$gut	-H	-ch	
MDST	road	HSFC-PERT		down=	1SG·S-	$^{1}\sqrt{}$go·SG-VAR-REP			

'I'm repeatedly going down along the road.'

35. There is a very similar *ÿee* 'time' which may or may not be related: *yeedát* 'moment; now', *yéeyi* 'former, past', *taat yeen* 'middle of the night', etc.

b. Wé dei káx̲ yoo x̲ayagútk. *n-conj. repetitive imperfective*
wé dei ká -x̲ yoo=x̲- i- ¹√gut -H -k
MDST road HSFC-PERT ALT= 1SG·S-STV-¹√go·SG-VAR-REP
'I'm repeatedly going back and forth along the road.'

The *yei=* 'down' preverb might be expected to form a *g̲*-conjugation motion derivation given its meaning, but like the *kei=* 'up' (sec. 3.3.1) and *yoo=* 'back and forth' (sec. 3.3.3) preverbs, instead *yei=* occurs in a *∅*-conjugation motion derivation. Unlike *kei=* and *yoo=* the meaning of *yei=* is specialized in this context: it is only attested in expressions describing motion into or out of a boat. Although Leer gives it as meaning "getting out of canoe, boat, vehicle" (Leer 1991: 297) as in table 6.21, the data in (186) are ambiguous in whether it refers to entering or exiting. The perfective form in (186b) verifies the *∅*-conjugation class with the *u-* perfective (sec. 2.2.1) and *-H* stem variation (ch. 2 sec. 2.6.3).

(186) a. Yáat'át tóox̲ yei kg̲eegóot *∅-conj. yei= entering boat*
yá -t' -át tú -x̲ yei= w- g- g̲- i- ¹√gut -μH
PROX-LINK-thing inside-PNCT down=IRR-GCNJ-MOD-2SG·S-¹√go·SG-VAR
'Get into this thing' (orig. tr.) (Dauenhauer & Dauenhauer 1987: 114.101)

b. Áwé yei uwagút áwé yú.á *∅-conj. yei= exiting boat*
á -wé yei= u- i- ¹√gut -H á -wé yú.á
FOC-MDST down=ZPFV-STV-¹√go·SG-VAR FOC-MDST QUOT
'It's said he stepped out of the canoe' (orig. tr.) (Dauenhauer & Dauenhauer 1987: 240.442)

3.3.3. *N*-CONJUGATION IS HORIZONTAL

The *n*-conjugation class seems to be associated with horizontal motion, i.e. motion that proceeds horizontally in any direction from the origo: not up and not down. Unlike the *g-* and *g̲*-conjugation classes, there is no preverb associated with all *n*-conjugation class motion derivations, so the semantics of this class is not as obvious and needs more testing. There are more motion derivations that belong to the *n*-conjugation class than to the *g-* or *g̲*-conjugation classes. Leer (1991: 306–308) gives nine *n*-conjugation motion derivations; Edwards (2009: 610) lists ten but misses one of Leer's, so there are at least eleven as listed in table 6.20. Most of these motion derivations specify the *yoo=i-…-k* repetitive imperfective seen earlier in (178b) and (185b). But two do not have repetitive imperfectives, specifically the pair that Leer calls 'perambulatives' (Leer 1991: 307).

The *n*-conjugation motion derivations that specify the *yoo=i-…-k* repetitive imperfective are almost all differentiated only by their postposition. The imperatives in (187) and (188) illustrate each of these motion derivations, beginning with the form in (187a) that does not occur with a PP. The pair in (188) are distinct from the others because their PP refers to an entity rather than a location.

(187) a. Nagú! *n-conjugation motion derivations*
n- ¹√gut -⊗
NCNJ-2SG·S-¹√go·SG-VAR
'Go!'
(*n*; *yoo=i-…-k* repetitive) 'along laterally, horizontally'

Path Arg.	*Conj.*	*Rep. Type*	*Translation*
—	n	yoo=i-...-k	along laterally, horizontally
DP-x̲	n	yoo=i-...-k	along DP
DP-dé	n	yoo=i-...-k	toward DP
DP-dáx̲	n	yoo=i-...-k	away from DP
DP-náx̲	n	yoo=i-...-k	via, through DP
DP-nák̲	n	yoo=i-...-k	leaving DP behind
DP-g̲áa	n	yoo=i-...-k	going to obtain DP
yux̲=	n	yoo=i-...-k	out of house
DP-x' yux̲=	n	yoo=i-...-k	out of house at DP
DP-t	n	—	around, circling DP
á	n	—	around and about

Table 6.20: *N*-conjugation class motion derivations

b. Áx̲ nagú!
á -x̲ n- $\sqrt[1]{\text{gut}}$ -⊗
there-PERT NCNJ-2SG·S-$\sqrt[1]{\text{go}}$·SG-VAR
'Go along there!'
DP-x̲ (*n*; *yoo=i-...-k* repetitive) 'along DP'

c. Aadé nagú!
á -dé n- $\sqrt[1]{\text{gut}}$ -⊗
there-ALL NCNJ-2SG·S-$\sqrt[1]{\text{go}}$·SG-VAR
'Go toward there!'
DP-dé (*n*; *yoo=i-...-k* repetitive) 'toward DP'

d. Aadáx̲ nagú!
á -dáx̲ n- $\sqrt[1]{\text{gut}}$ -⊗
there-ABL NCNJ-2SG·S-$\sqrt[1]{\text{go}}$·SG-VAR
'Go away from there!'
DP-dáx̲ (*n*; *yoo=i-...-k* repetitive) 'away from DP'

e. Aanáx̲ nagú!
á -náx̲ n- $\sqrt[1]{\text{gut}}$ -⊗
there-PERL NCNJ-2SG·S-$\sqrt[1]{\text{go}}$·SG-VAR
'Go through there!'
DP-náx̲ (*n*; *yoo=i-...-k* repetitive) 'via, through DP'

(188) a. A nák̲ nagú! *n-conjugation motion derivations* (*entity*)
á nák̲ n- $\sqrt[1]{\text{gut}}$ -⊗
3N ABES NCNJ-2SG·S-$\sqrt[1]{\text{go}}$·SG-VAR
'Go away from it!', 'Leave it behind!'
DP nák̲ (*n*; *yoo=i-...-k* repetitive) 'leaving DP behind'

b. Aagáa nagú!
á -gáa n- ¹√gut -⊗
3N-ADES NCNJ-2SG·S-¹√go·SG-VAR
'Go for it!', 'Go get it!'
DP-gáa (*n*; *yoo=i-...-k* repetitive) 'going to obtain DP'

There is a unique preverb *yux=* 'out of house' that I have never encountered in conversation nor elicited, but which is attested in some stories as well as listed by Leer (1991: 307) in this motion derivation subclass. Most attestations seem to be in mythical stories about bears (e.g. *The Woman Who Married The Bear, Kaats'*), and so refer to a bear's den rather than a human habitation. Whether this is accidental or semantically significant is still unclear. I give three narrative examples of *yux=* in (189), one from an Inland Tlingit speaker *Yeilnaawú* Tom Peters in (189a), and two from Coastal Tlingit speakers *Naakil.aan* Frank Dick in (189b) and *Tseexwáa* J.B. Fawcett in (189c), showing that *yux=* is not dialect-specific.

(189) a. yá gáan áwé áa yux nalnúkch yóo. *n-conj. yux= hab.*
yá gáan á -wé á -μ yux=n- d- l- ²√nuk-H -ch yóo
PROX outside FOC-MDST there-LOC out= NCNJ-MID-XTN-²√feel -VAR-REP QUOT
'It's outside that she would grope her way out there, they say.'
(Dauenhauer & Dauenhauer 1987: 176.206)

b. Gáani yux yaa yanas.éini áwé *n-conj. yux= prog.*
gáan -í yux=ÿaa= ÿa- n- d- s- ¹√.a -eH-n -í á -wé
outside-LOC out= along=face-NCNJ-MID-CSV-¹√end·mv-VAR-NSFX-SUB FOC-MDST
has aawaják.
has=a- wu-i- ¹√jak-H
PLH= ARG-PFV-STV-²√kill -VAR
'It was as it was sticking out its face outside that they killed it.'
(Dauenhauer & Dauenhauer 1987: 210.336)

c. Áwé gáani yux woogoot, wé át. *n-conj. yux= pfv.*
á -wé gáan -í yux=wu-i- ¹√gut -μ wé át
FOC-MDST outside-LOC out= PFV-STV-¹√go·SG-VAR MDST thing
'So it went outside, that thing.' (Dauenhauer & Dauenhauer 1987: 220.54–55)

Leer (1991: 307) describes two *n*-conjugation class motion derivations which do not specify a repetitive imperfective form which are listed in table 6.20. He labels these derivations 'perambulative' because they seem to denote motion that wanders around. Although Leer lists two such motion derivations: "*PO-d* 'moving about PO'; with PO *ʔá*: 'moving about'"; his "PO" stands for "postpositional object" which is any DP. I previously misread his "PO *ʔá*:" as meaning *DP á-μ* where *-μ* is an allomorph of the locative that is realized as a long vowel. Instead he apparently means just *á* 'it' which is the independent third person nonhuman pronoun. I have not been able to confim this second derivation and have found no examples of it in searching texts; admittedly it is difficult to distinguish from other instances of *á*.

The datum in (190) illustrates the first of Leer's two *n*-conjugation motion derivations without repetitive imperfectives. This derivation, which is quite common, features the punctual postposition

-t 'at/to/around a point'. The punctual *-t* is also found in *Ø*-conjugation class as discussed in section 3.3.4 where it has a telic 'arriving at a point' interpretation, but with the *n*-conjugation class the punctual *-t* has an 'around a point' interpretation instead.

(190) Át nagú! *n-conjugation motion derivation*
á -t n- $^{1}\sqrt{}$gut -⊗
there-PNCT NCNJ-2SG·S-$^{1}\sqrt{}$go·SG-VAR
'Go around there!', 'Wander around there!'
DP-t (*n*; no repetitive) 'around DP'

The *n*-conjugation motion derivations that specify a repetitive imperfective all occur with the *yoo=i-...-k* repetitive imperfective form. The data in (191) contrasts the perfective, prospective, progressive, and repetitive imperfective aspect forms of the motion derivation *DP-dé* (*n*; *yoo=i-...-k* repetitive) 'to(ward) DP'. In each form the translation gives "to(ward)": this reflects that the motion event need not terminate at the destination. English *to* is ambiguous in this context, and although Tlingit speakers generally use English [±telic] *to* rather than [–telic] *toward* as a translation for *-dé*, discussion shows that they intend only the atelic sense of *to*. Telicity is discussed further in section 3.3.4 with the telic *Ø*-conjugation motion derivations.

(191) a. Wé héende xwaagoot. *n-conj. motion perfective*
wé héen-dé wu-x- i- $^{1}\sqrt{}$gut -μ
MDST river -ALL PFV-1SG·S-STV-$^{1}\sqrt{}$go·SG-VAR
'I went to(ward) the river.'

b. Wé héende kkwagóot. *n-conj. motion prospective*
wé héen-dé w- g- g- x- $^{1}\sqrt{}$gut -μH
MDST river -ALL IRR-GCNJ-MOD-1SG·S-$^{1}\sqrt{}$go·SG-VAR
'I will go to(ward) the river.'

c. Wé héende yaa nxagút. *n-conj. motion progressive*
wé héen-dé ÿaa= n- x- $^{1}\sqrt{}$gut -H
MDST river -ALL along=NCNJ-1SG·S-$^{1}\sqrt{}$go·SG-VAR
'I am going to(ward) the river.'

d. Wé héende yoo xaagútk. *n-conj. motion repetitive imperfective*
wé héen-dé yoo=x- i- $^{1}\sqrt{}$gut -H
MDST river -ALL ALT= 1SG·S-STV-$^{1}\sqrt{}$go·SG-VAR
'I am going back and forth to(ward) the river.'

The *ÿaa=* 'along' preverb in (191c) is not unique to the *n*-conjguation class progressive because it also occurs with *Ø*-conjugation class verbs as indicated in table 6.16 and shown later in section 3.3.4. This *ÿaa=* instead seems to be a kind of default preverb for the progressive aspect, appearing where the conjugation class does not otherwise supply one. Its particular association with the progressive and not with a conjugation class is emphasized by its persistence in secondary aspectual derivations (Leer's 'epiaspect', cf. Kari's 'superaspect') like the progressive prospective and the progressive potential (Leer 1991: 316), where it occurs with the *g-* conjugation prefix.

The *yoo=i-...-k* repetitive imperfective as in (191d) describes a state of alternating back and forth between two situations (ch. 3 sec. 3.2.2.1). In the context of motion, the state contains events of

moving towards some location followed by events moving away from the location (or vice versa). The sentence in (191d) explicitly describes motion toward the river with the PP *wé héende*; since no other direction is stated, motion in the opposite direction – away from the river – is entailed by the alternating preverb *yoo=* 'back and forth, to and fro'. I return to the association between the *n*-conjugation class and the alternating state repetitive imperfective in section 3.4.3.

Aside from the alternating *yoo=* there are no directional preverbs that are clearly associated with the *n*-conjugation. This makes it much harder to ascertain the spatial semantics of the *n*-conjugation class in contrast with the upward *g*-conjugation class (sec. 3.3.1) and the downward *g̲*-conjugation class (sec. 3.3.2). But judging from the various PPs in table 6.20, it seems that the *n*-conjugation describes motion that is neither upward nor downward, but rather horizontal. This claim is not especially strong because it rests on paradigms and translations. As I mentioned earlier, we need controlled semantic elicitation of all of the motion derivations to clarify their semantics.

3.3.4. Ø-CONJUGATION IS THE ELSEWHERE CASE

The Ø-conjugation class is not particularly associated with any spatial orientation. There are motion derivations within the Ø-conjugation class that describe upward, downward, and horizontal motion, as well as telic, inceptive, oscillating, and oblique motion. This semantic incoherency combined with the large inventory of Ø-conjugation motion derivations leads to my conclusion that the Ø-conjugation is the elsewhere case in the spatial partitioning of the conjugation classes. Thus the upward *g*-conjugation, downward *g̲*-conjugation, and horizontal *n*-conjugation completely partition the logical space of motion in Tlingit and the Ø-conjugation class is essentially a non-partition which can overlap with all of the others.

There are a large number of Ø-conjugation motion derivations; Edwards (2009: 604–609) lists 46 different exemplars, but Leer (1991: 296–306) has 50. Both researchers share a subclassification of these motion derivations based on the various repetitive imperfective forms specified by each derivation and secondarily based on path argument, along with proposed semantic generalizations for each subclass. I present the complete inventory in tables 6.21 and 6.22 on pages 600 and 601. I follow the same subclasses originally established by Leer, but I am suspicious of some of the semantic generalizations so I refer to the subclasses only by their paradigmatic features as in (192):

(192) a. with *DP-{t,x̲,dé}* and *-μ* repetitive imperfective (11 derivations)
b. with *-ch* repetitive imperfective (12 derivations)
c. with *-x̲* repetitive imperfective (13 derivations)
d. with *yoo=i-...-k* repetitive imperfective (2 derivations)
e. with *ÿa-u-* and *-ch* repetitive imperfective (9 derivations)
f. with *sha-ÿa-u-* and *-ch* repetitive imperfective (2 derivations)
g. with *a-ÿa-u-d-* and *-ch* repetitive imperfective (1 derivation)

Some subclasses of the Ø-conjugation motion derivations have repetitive imperfective forms that are found in the other three conjugation classes. Specifically, the subclasses listed in (192b) and (192e)–(192g) all have repetitive imperfectives with *-ch* like the *g-* and *g̲*-conjugation classes (secs. 3.3.1–3.3.2), though the Ø-conjugation forms do not usually include the *kei=* 'up' or *yei=* 'down' preverbs. The subclass in (192d) has the same *yoo=i-...-k* repetitive imperfective as the *n*-conjugation

Path Argument	*Prefixes*	*Conj.*	*Rep. Type*	*Translation*
DP-{t,x̲,dé}		Ø	-μ	arriving at DP
ÿán= ~ ÿáx̲= ~ ÿán-de=		Ø	-μ	ashore, finishing, terminating
DP-x' ÿán= ~ ÿáx̲= ~ ÿán-de=		Ø	-μ	coming to rest at DP
DP-náx̲ ÿán= ~ ÿáx̲= ~ ÿán-de=		Ø	-μ	across DP, other side of DP
ÿán= ~ ÿáx̲= ~ ÿán-de=	k'i-	Ø	-μ	setting up, erecting
ÿán= ~ ÿáx̲= ~ ÿán-de=	sha-	Ø	-μ	leaning against
kúx= ~ kúx-x̲= ~ kúx-de=		Ø	-μ	aground, into shallow water
neil(-t)= ~ neil-x̲= ~ neil-dé=		Ø	-μ	home, inside
DP-x' neil(-t)= ~ neil-x̲= ~ neil-dé=		Ø	-μ	inside at DP
haa-t= ~ haa-x̲= ~ haa(n)-dé=		Ø	-μ	here, hither
yóo-{t,x̲,dé}		Ø	-μ	off somewhere, away
kei=		Ø	-ch	up
ux̲=kei=		Ø	-ch	out of control, blindly, amiss
DP x̲'é-μ kei=		Ø	-ch	catching up with DP
yei=		Ø	-ch	disembarking, exiting boat
yeik̲=		Ø	-ch	beachward from land
héen-i yeik̲=		Ø	-ch	from shore into water
daak̲=		Ø	-ch	inland, back from open
dáag̲-i daak̲=		Ø	-ch	further inland
k̲wáak̲x̲ daak̲=		Ø	-ch	by mistake, wrongly
daak=		Ø	-ch	seaward, into open, from sky
k̲úx̲= ~ k̲úx̲-de=	d-	Ø	-ch	going back, returning directly
DP-x' k̲úx̲= ~ k̲úx̲-de=	d-	Ø	-ch	returning to DP
g̲unayéi=		Ø	-x̲	beginning, starting
DP-x'		Ø	-x̲	nearing DP
DP ÿá-x'		Ø	-x̲	approaching DP
DP g̲una-ÿá-x'		Ø	-x̲	separating from DP
DP jí-shá-x'		Ø	-x̲	getting ahead of DP
DP-x' ÿáx̲=		Ø	-x̲	turning over by NP
á-μ ÿáx̲=		Ø	-x̲	turning over
shú-μ ÿáx̲=		Ø	-x̲	turning end over end
gág-i		Ø	-x̲	emerging, out into open
dáag̲-i		Ø	-x̲	out of water
héen-i		Ø	-x̲	into water
éeg̲-i		Ø	-x̲	to beach
DP-x̲		Ø	-x̲	stuck at DP, in place at DP
ÿetx̲= ~ ÿedax̲=		Ø	-x̲	starting, taking off

Table 6.21: Some Ø-conjugation class motion derivations

Path Argument	*Prefixes*	*Conj.*	*Rep. Type*	*Translation*
yoo=		Ø	yoo=i-...-k	back and forth, to and fro
ÿán=yoo=		Ø	yoo=i-...-k	up and down (from surface)
DP-x̲ ÿaa=	~ ÿa-u-	Ø	-ch	obliquely, circuitously along DP
DP daa-x̲ ÿaa=	~ ÿa-u-	Ø	-ch	circling around DP
DP-dé ÿaa=	~ ÿa-u-	Ø	-ch	obliquely, circuitously toward DP
héi-dé ÿaa=	~ ÿa-u-	Ø	-ch	aside, out of the way
DP-dáx̲ ÿaa=	~ ÿa-u-	Ø	-ch	obliquely, circuitously away from DP
DP jí-ká-dáx̲ ÿaa=	~ ÿa-u-	Ø	-ch	out of DP's way
DP-nax̲ ÿaa=	~ ÿa-u-	Ø	-ch	obliquely, circuitously through DP
DP-x' ÿaa=	~ ÿa-u-	Ø	-ch	obliquely, circuitously at DP
DP daséi-x' ÿaa=	~ ÿa-u-	Ø	-ch	exchanging places with DP
DP-x̲	sha-ÿa-u-	Ø	-ch	hanging up at DP
ÿáx̲=	sha-ÿa-u-	Ø	-ch	hanging up
	a-ÿa-u-d-	Ø	-x̲	reverting, returning circuitously

Table 6.22: More Ø-conjugation class motion derivations

class (secs. 3.3.3). The subclass in (192c) has the same -x̲ repetitive imperfective associated with non-motion Ø-conjugation class verbs (sec. 3.4.4). And the subclass in (192a) with the the -μ repetitive imperfective is an unusual case of a repetitive imperfective without a repetitive suffix. This wide-ranging overlap with the other conjugation classes supports my argument that the Ø-conjugation class motion derivations are the elsewhere case.

Because of the large inventory of Ø-conjugation motion derivations I am not going to discuss every one. The following subsections give a few examples from each subclass listed in (192), noting significant morphosyntactic and semantic characteristics for the subclass.

3.3.4.1. Ø-conjugation with -μ

The Ø-conjugation motion derivations that specify a -μ repetitive imperfective are unique in at least three ways. First, they show a regular alternation between postpositions depending on aspectual inflection. Second, their repetitive imperfective lacks a repetitive suffix. Third, they have a distinct telic interpretation in some aspectual contexts. I detail each of these issues in turn below. The examples in (193) illustrate a few of these derivations as imperatives.

(193) a. *Ø-conj. DP-{t,x̲,dé} imperative*

Wé héent gú!
wé héen-t $\sqrt[1]{\text{gut}}$ -⊗
MDST river -PNCT ZCNJ 2SG·S $\sqrt[1]{\text{go}}$·SG-VAR
'Go to that river!'
DP-{t,x̲,dé} (Ø; -μ repetitive) 'arriving at DP'

b. Yan gú! *Ø-conj. ÿán-{Ø,x̲,dé} imperative*
ÿán= $^{1}\sqrt{}$gut -⊗
TERM=ZCNJ 2SG·S $^{1}\sqrt{}$go·SG-VAR
'Go ashore!', 'Finish going!'
ÿán= ~ ÿáx̲= ~ ÿán-dé= (Ø; *-μ* repetitive) 'ashore, finishing, terminating'

c. Neil gú! *Ø-conj. neil-{Ø,x̲,dé} imperative*
neil $^{1}\sqrt{}$gut -⊗
home ZCNJ 2SG·S $^{1}\sqrt{}$go·SG-VAR
'Go home!', 'Go inside!'
neil= ~ neil-x̲= ~ neil-dé= (Ø; *-μ* repetitive) 'home, inside'

d. Haat gú! *Ø-conj. haaⁿ-{t,x̲,dé} imperative*
haaⁿ-t $^{1}\sqrt{}$gut -⊗
CIS -PNCT ZCNJ 2SG·S $^{1}\sqrt{}$go·SG-VAR
'Come here!'
haa-t= ~ haa-x̲= ~ haa(n)-dé= (Ø; *-μ* repetitive) 'here, hither'

The form in (193d) is acceptable but rare. Usually the interjection *haagú* [hàː.ˈkʷú] 'c'mere!' is used instead; this is clearly derived from the imperative in (193d). Compare the plural imperative *haat yi.á* 'you guys come here!' which has no interjection counterpart.

All of the derivations in this subclass share a basic alternation where the postposition of the path argument PP varies between punctual *-t* 'to a point', pertingent *-x̲* 'at, contacting', and allative *-dé* 'toward'. This alternation – represented as *-{t,x̲,dé}* – is dependent on grammatical aspect. Specifically, the pertingent *-x̲* occurs with the repetitive imperfective, the allative *-dé* is occurs with the prospective and progressive, and the punctual *-t* occurs in all other contexts.

(194) a. Wé héent x̲waagút. *Ø-conj. DP-{t,x̲,dé} perfective*
wé héen-t wu-x̲- i- $^{1}\sqrt{}$gut -H
MDST river -PNCT PFV-1SG·S-STV-$^{1}\sqrt{}$go·SG-VAR
'I went to the river.'

b. Wé héenx̲ x̲agoot. *Ø-conj. DP-{t,x̲,dé} repetitive imperfective*
wé héen-x̲ x̲- $^{1}\sqrt{}$gut -μ
MDST river -PERT 1SG·S-$^{1}\sqrt{}$go·SG-VAR
'I repeatedly go to the river.'

c. Wé héende yaa nx̲agút. *Ø-conj. DP-{t,x̲,dé} progressive*
wé héen-dé ÿaa= n- x̲- $^{1}\sqrt{}$gut
MDST river -ALL along=NCNJ-1SG·S-$^{1}\sqrt{}$go·SG
'I am going to the river.'

The punctual *-t* has been lost with a few nouns (Leer 1991: 299 fn. 14). The preverb *ÿán=* 'ashore' in (193b) and the NP *neil* 'home, inside' in (193c) both show this.[36] The *ÿán=* preverb shows even more phonological reduction: instead of the expected *ÿán= + -x̲ → *yanx̲* [jànχ] we see the unique *yax̲* [jàχ] as shown in (195) where the coda /n/ of *ÿán=* is irregularly deleted.

36. Some speakers do have *-t* with *neil*, contra Leer. I am unsure if this is a retention or a restoration by analogy.

(195) a. *Yanx̲ x̲agoot. **retained coda [n]*
ÿán -x̲= x̲- ¹√gut -μ
ashore-PERT=1SG·S-¹√go·SG-VAR
intended: 'I repeatedly go ashore.'

b. Yax̲ x̲agoot. *deleted coda [n]*
ÿán -x̲= x̲- ¹√gut -μ
ashore-PERT=1SG·S-¹√go·SG-VAR
'I repeatedly go ashore.'

The repetitive imperfectives in (194b) and (195b) are morphologically unusual because they lack an overt repetitive suffix and have only the stem variation *-μ* (*-μH* with *√CVC'* and *√CV'C* roots). This was previously discussed in chapter 3 section 3.2.2.6; the structure must have a covert Adv for the iterative semantics that is also present in a rare repetitive state imperfective. These repetitive imperfectives have the morphological appearance of a lexical activity *Ø*-imperfective, but the iterative semantics is clearly shown by the infelicity in (196) with just *-μ* in (196a) and overt *-ch* in (196b).

(196) a. #Tleidahéen aanx̲ x̲agoot. *repetitive imperfective with semelfactive adverb*
tléix'-dahéen aan -x̲ x̲- ¹√gut -μ
one -time town-PERT 1SG·S-¹√go·SG-VAR
intended: 'I go to town once.', 'I am going to town once.'

b. #Tleidahéen daak̲ x̲agútch. *repetitive imperfective with semelfactive adverb*
tléix'-dahéen daak̲= x̲- ¹√gut -H -ch
one -time inland=1SG·S-¹√go·SG-VAR-REP
intended: 'I go inland once.', 'I am going inland once.'

At least some of the derivations in this subclass have a distinct telic interpretation in some aspects. The data in (197) contrasts two motion derivations in the perfective aspect. The form in (197a) denotes actual arrival at the destination whereas the form in (197b) does not entail arrival.

(197) a. Wé héent x̲waagút. *Ø-conj. DP-{t,x̲,dé} perfective*
wé héen-t wu-x̲- i- ¹√gut -H
MDST river -PNCT PFV-1SG·S-STV-¹√go·SG-VAR
'I got to the river.'

b. Wé héende x̲waagoot. *n-conj. DP-dé perfective*
wé héen-dé wu-x̲- i- ¹√gut -μ
MDST river -PNCT PFV-1SG·S-STV-¹√go·SG-VAR
'I went to the river (not necessarily arriving).'

The telicity in (197a) is dependent on aspect. Switching to the prospective aspect in (198), both forms have allative *-dé* and are thus morphologically indistinguishable.

(198) a. Wé héende kx̲wagóot. *Ø-conj. DP-{t,x̲,dé} prospective*
wé héen-dé w- g- g̲- x̲- i- $^{1}\sqrt{}$gut -H
MDST river -PNCT IRR-GCNJ-MOD-1SG·S-STV-$^{1}\sqrt{}$go·SG-VAR
'I will go to the river.'

b. Wé héende kx̲wagóot. *n-conj. DP-dé prospective*
wé héen-dé w- g- g̲- x̲- i- $^{1}\sqrt{}$gut -H
MDST river -PNCT IRR-GCNJ-MOD-1SG·S-STV-$^{1}\sqrt{}$go·SG-VAR
'I will go to the river.'

The telicity seen in (197a) does not rest solely in the punctual postposition *-t*. This postposition also occurs in an *n*-conjugation motion derivation, specifically the perambulative mentioned in section 3.3.3. Compare the *Ø*-conjugation and *n*-conjugation forms in (199), distinguished by *-H* versus *-μ* stem variation.

(199) a. Wé aant x̲waagút. *Ø-conj. NP-{t,x̲,dé} perfective*
wé aan -t wu-x̲- i- $^{1}\sqrt{}$gut -H
MDST town-PNCT PFV-1SG·S-STV-$^{1}\sqrt{}$go·SG-VAR
'I got to the town.'

b. Wé aant x̲waagoot. *n-conj. NP-t prospective*
wé aan -t wu-x̲- i- $^{1}\sqrt{}$gut -μ
MDST town-PNCT PFV-1SG·S-STV-$^{1}\sqrt{}$go·SG-VAR
'I went around the town (as an obstacle).', 'I wandered around in the town.'

The punctual *-t* in (199a) denotes a point at which the event terminates, but the same *-t* in (199b) denotes a point around which the event occurs but does not necessarily terminate. One interpretation of (199b) is that the speaker navigated around the town and then implicitly proceeded in some unspecified direction after having avoided it. Another interpretation of (199b) is that the speaker travelled around within the town, implicitly orbiting some point in the centre. Neither of these interpretations are telic even though *-t* occurs with perfective aspect.

Leer took the telicity above to mean that all *Ø*-conjugation motion derivations are inherently telic, and by extension that all verbs lexically or derivationally specified as members of the *Ø*-conjugation class are also telic. Thus he refers to the *Ø*-conjugation class as "Telic" in contrast with the "Atelic" *n-*, *g̲-*, and *g*-conjugation classes (Leer 1991: 295–296). But in fact *only* the specific *Ø*-conjugation motion derivations discussed in this section have any telicity entailment; telicity is not a property of the whole *Ø*-conjugation class. None of the other *Ø*-conjugation motion derivations are necessarily telic, and many non-motion verbs that are lexically specified for *Ø*-conjugation are apparently atelic. In the quote below Leer actually acknowledges that his "Telic" and "Atelic" labels are potentially misnomers.

> The choice of aspectual marker correlates to some extent with the category of boundedness. I therefore use the terms Telic and Atelic synonymously with *Ø*-aspect and non-*Ø*-aspect, even though these capitalized terms refer to lexicalized aspectual distinctions in Tlingit and cannot simply be equated with the non-capitalized terms. (Leer 1991: 77–78)

Subsequent descriptive work has replaced his unique terminology with the 'conjugation class' terms that I use here. But Leer's work is still an indispensable reference so I emphasize this point to ensure that readers are not misled.

The telicity of the *Ø*-conjugation motion derivations with *-μ* repetitives has contributed to the semantic evolution of the *ÿán=* 'ashore' preverb. As a noun *ÿán* means 'shore', from PT **ŋanʰ* < PND **ŋənʔ* 'ground'.[37] In motion derivations it may have its original meaning of 'ashore' or it may metaphorically refer to the completion or termination of motion in any context. This is because motion arriving at a shoreline is usually the termination of human travel on water. I gloss *ÿán=* as 'ashore' when the marine meaning is available and as TERM 'terminating, ending' otherwise; the marine contexts might be ambiguous but it is hard to tell.

(200) a. Wáa sáyá yan kawlihásh
wáa s-á -yá ÿán= k- wu-l- i- ¹√hash-H
how Q-FOC-PROX ashore=SRO-PFV-XTN-STV-¹√float -VAR
'Somehow it had floated ashore' (Dauenhauer & Dauenhauer 1987: 126.69)

b. Ax̲ téeli yan sané x'wán
ax̲ téel-í ÿán= s- ¹√ne -H x'wán
1SG·PSS shoe-PSS TERM=ZCNJ 2SG·S CSV-¹√happen-VAR IMP
'Get my shoes ready' (lit. 'Make my shoes happen')
(Dauenhauer & Dauenhauer 1987: 226.175)

The *ÿán=* ~ *ÿáx̲=* ~ *ÿán-dé=* (*Ø*; *-μ* repetitive) 'ashore, terminating, completing' motion derivation can be applied to non-motion verbs to express termination or completion of a non-motion eventuality, as seen in (200b). The same phenomenon has happened with *g̲unayéi=* (*Ø*; *-x̲* repetitive) 'beginning, starting' mentioned in section 3.3.4.3.

3.3.4.2. *Ø*-conjugation with *-ch*

The forms in (201) illustrate the *Ø*-conjugation motion derivation subclass that occurs with the *-ch* repetitive imperfective.

(201) a. Kei gú! *Ø-conj. kei= imperative*
kei= ¹√gut -⊗
up= 2SG·S-¹√go·SG-VAR
'Go up!'
kei= (*Ø*; *-ch* repetitive) 'up'

b. Yeik̲ gú! *Ø-conj. yeek̲= imperative*
ÿeik̲= ¹√gut -⊗
beach=2SG·S-¹√go·SG-VAR
'Go beachward!'
ÿeik̲= (*Ø*; *-ch* repetitive) 'beachward (from land)'

37. Cf. e.g. Navajo *ni'* (Young & Morgan 1980: 875), Ahtna *nen'* (Kari 1990: 513), and Tłı̨chǫ *ⁿdè* (Saxon & Siemens 1996: 86). Similarly English (*run*) *aground* < OE *ā-* 'on, at' + *grund* < PGmc **grunduz* 'ground, foundation'.

c. Daak gú! *Ø-conj. daak= imperative*
daak= $^{1}\sqrt{}$gut -⊗
ABMAR=2SG·S-$^{1}\sqrt{}$go·SG-VAR
'Go up from shore!', 'Go back from the open!'
daak= (*Ø*; *-ch* repetitive) 'up from shore, back from open area, off fire'

d. Daak gú! *Ø-conj. daak= imperative*
daak= $^{1}\sqrt{}$gut -⊗
ADMAR=2SG·S-$^{1}\sqrt{}$go·SG-VAR
'Go out seaward!', 'Go out into the open!'
daak= (*Ø*; *-ch* repetitive) 'seaward, out into open, falling from sky, onto fire'

e. Kux dagú! *Ø-conj. kux=d- imperative*
kúx= d- $^{1}\sqrt{}$gut -⊗
REV= 2SG·S-MID-$^{1}\sqrt{}$go·SG-VAR
'Go back!'
kúx=d- (*Ø*; *-ch* repetitive) 'back, returning, reverting'

The revertive *kúx=* seen in (201e) is the same preverb discussed in chapter 5 section 1.3.3 in the context of revertive motion. The requirement for *d-* in Voice is explained there as a kind of middle voice phenomenon applied to spatial semantics.

The *-ch* repetitive imperfective of this motion derivation is distinct from the similar *-ch* repetitive of the *g-* and *g*-conjugation classes in that it does not require the presence of a *kei=* 'up' or *yei=* 'down' directional preverb. This is shown in (202) which contrasts the *kei=* 'up' derivation with the *daak=* 'inland' derivation. Although the *kei=* derivation in (202a) does include the *kei=* preverb, this is because it is specified by the derivation and not because it is required for the repetitive imperfective form. Thus the *daak=* derivation in (202b) appears without the *kei=* preverb which would not be the case if it was required by the repetitive imperfective form.

(202) a. Kei xagútch. *Ø-conj. kei= repetitive imperfective*
kei=x- $^{1}\sqrt{}$gut -H -ch
up= 1SG·S-$^{1}\sqrt{}$go·SG-VAR-REP
'I repeatedly go up.'

b. Daak xagútch. *Ø-conj. daak= repetitive imperfective*
daak= x- $^{1}\sqrt{}$gut -H -ch
inland=1SG·S-$^{1}\sqrt{}$go·SG-VAR-REP
'I repeatedly go inland.'

The admarine preverb *daak=* is derived from the directional noun *dáak* 'seaward, offshore, open water' (Leer 1973a: 05/65, 1989: 584–587); it contrasts spatially and phonologically with the abmarine preverb *daak=* from *dáak* 'inland, up into woods' (Leer 1973a: 79–80, 1999: 584–587). These have also gained a metaphorical interpretation of 'open/bright area on land or water' versus 'closed/dark area on land or water', and thus connections with fire and light; see Kan's discussion of Tlingit spatial metaphysics for a conceptual framework (Kan 1989: chs. 2–3). The admarine *daak=* preverb has an additional meaning of 'down from sky' which is used with precipitation as in (203); note the *-H* stem confirming the *Ø*-conjugation class.

(203) Séew daak wusitán.
séew daak= wu-s- i- ¹√tan -H
rain ADMAR=PFV-XTN-STV-¹√move·long-VAR
'Rain fell.'

If the *Ø*-conjugation class were meaningful for spatial orientation then we would expect it to be incompatible with the 'down from sky' meaning found in (203) and instead would expect this *daak=* to occur with the *g̲*-conjugation class. But if the *Ø*-conjugation class is the meaningless elsewhere case then there is no incompatibility.

Other motion derivations in this subclass also militate against the telicity of the *Ø*-conjugation class as a whole. For example, upward motion in (201) cannot be reasonably interpreted as telic because there is no goal and no necessary completion: an entity simply moves upward and not to any defined endpoint. Atelicity is less obvious but still present in (201c) and (201d) where the motion likewise has no defined goal. Although the subclass in section 3.3.4.1 exhibits telicity, other *Ø*-conjugation subclasses like this one are not inherently telic.

3.3.4.3. *Ø*-conjugation with *-x̲*

The forms in (204) illustrate a couple of *Ø*-conjugation motion derivations subclass that occur with the *-x̲* repetitive imperfective.

(204) a. Wé héenx' gú! *Ø-conj. DP-x' imperative*
wé héen-x' ¹√gut -⊗
MDST river -LOC ZCNJ 2SG·S ¹√go·SG-VAR
'Go near the river!'
DP-x' (*Ø*; *-x̲* repetitive) 'nearing DP'

b. Gági gú! *Ø-conj. gági= imperative*
gági= ¹√gut -⊗
out= ZCNJ 2SG·S ¹√go·SG-VAR
'Emerge!', 'Come out of shadow!', 'Come out of hiding!'
gági= (*Ø*; *-x̲* repetitive) 'emerging, out into open'

c. G̲unayéi gú! *Ø-conj. g̲unayéi= imperative*
g̲unayéi= ¹√gut -⊗
INCEP= ZCNJ 2SG·S ¹√go·SG-VAR
'Start going!'
g̲unayéi= (*Ø*; *-x̲* repetitive) 'beginning, starting'

The motion derivation in (204b) is one of several similar motion derivations which are derived from a noun and a suffix *-í* of unclear meaning. Leer lists "*-i*" as an allomorph of the locative *-x'* ~ *-μ* (Leer 1991: 33), and so I generally gloss this *-i* as LOC. But I have reservations about this identification of *-í* as the locative postposition because it never alternates with other allomorphs and because the meaning of *-í* is still unclear due to its rarity. The preverb *gági=* 'out of shadow' specifically derives from *gáak* + *-í* with unexpected vowel shortening. The noun *gáak* 'open area' is documented (Leer 1973a: f05/43) but extremely rare. Other instances of *-í* are *dáag̲i=* 'out of water' from *dáak̲* 'inland' (sec. 3.3.4.2), *héeni=* 'into water' from *héen* '(fresh) water; river', and *éeg̲i=* from *éek̲* 'beach'. I have only encountered these preverbs with *-í* in texts. There is no attested **dáagi* nor a noun **dáak* 'offshore,

out to sea' which would be predicted from the *daak*= 'seaward' preverb, although the relational noun *ixdáak* 'close to the entrance' (*éex* 'downstream, south') suggests the historical existence of **dáak*.

The motion derivation in (204c) is the inceptive counterpart to the terminative with *ÿán*= discussed in section 3.3.4.2. The preverb *g̱unayéi*= is derived from *g̱una* 'other, different' (Leer 1973a: f02/206) and *yé* 'place, way, manner' (Leer 1973a: 03/177). It occurs regularly as a noun *g̱unayéi* 'other place, elsewhere' in various PPs like *g̱unayéide* 'to some other place' (Leer 1973a: 03/178). The *g̱unayéi*= preverb has a common contraction *g̱unéi*= that is found in most if not all dialects. Some speakers have semantically split *g̱unayéi* as a noun and *g̱unéi*= as the inceptive preverb, but most people seem to alternate between the two preverb forms freely. The sentences in (205) illustrate the use of both forms in successive utterances by the same speaker – *Kéet Yanaayí* Willie Marks from Hoonah – in a traditional narrative.

(205) a. Aandé g̱unayéi s uwak̲úx̲.
aan -dé g̱unayéi=has=u- i- ¹√k̲ux̲ -H
town-ALL INCEP= PLH= ZPFV-STV-¹√go·boat-VAR
'They began paddling to the village.' (orig. tr.) (Dauenhauer & Dauenhauer 1987: 154.33)

b. Ch'u yéi g̱unéi s k̲óox̲;
ch'u yéi g̱unéi=has= ¹√k̲ux̲-μH
just thus INCEP= PLH= ZCNJ ¹√k̲ux̲ -μH
'They had just begun to paddle;' (orig. tr.) (Dauenhauer & Dauenhauer 1987: 154.34)

c. ch'u l yei wuyáat'i áwé káx̲ daak̲ shaawaxíx
ch'u l yei= u- wu-¹√ÿat'-μH-í á -wé ká -x̲ daak̲= sha- wu-i- ¹√xix-H
just [CP NEG down=IRR-PFV-¹√long-VAR-SUB] FOC-MDST HSFC-PERT inland=head-PFV-STV-¹√fall -VAR
du digiygéide, a digiygéit áa aa.
du digeey-géi -dé a digeey-géi -t ¹√.a -μ aa
3H·PSS middle- against-ALL [CP 3N·PSS middle- against-PNCT ¹√sit·SG-VAR REL] PART
'they had not been going long when his midsection paddler keeled over, the one sitting in the midsection.' (orig. tr.) (Dauenhauer & Dauenhauer 1987: 154.35–36)

3.3.4.4. *Ø*-conjugation with *yoo=i-...-k*

Leer (1991: 303) lists two *Ø*-conjugation class motion derivations that occur with the preverb *yoo*= and with the suffix *-k* in their repetitive imperfective forms, which he describes as denoting "oscillatory motion". Edwards (2009: 607) says that she was unable to elicit either one of these motion derivations; I also have not confirmed them. There are many verbs that occur with *yoo=i-...-k* repetitive imperfective forms, but crucially to be identified as hosting one of these motion derivations they must also exhibit signs diagnostic of the *Ø*-conjugation class rather than the usual *n*-conjugation class, and the preverb *yoo*= must be present in forms other than the repetitive imperfective.

I analyze a few of Leer's examples in (206) below for illustration. He lists two derivations – *yoo*= (*Ø*; *yoo=i-...-k* repetitive) 'back and forth, to and fro' and *ÿán=yoo*= (*Ø*; *yoo=i-...-k* repetitive) 'up and down (from rest, from ground)' – but only gives data for the latter. Since there is only data for one motion derivation, I list several forms of this single derivation in (206).

(206) a. Yan yoo tán! *Ø-conj. ÿán=yoo= imperative*
ÿán= yoo= $^{2}\sqrt{}$tan -H
ground=ALT= 2SG·S-$^{2}\sqrt{}$hdl·wd/ec-VAR
'Lift it (wooden/empty) up and down!' (Leer 1991: 303)

b. Yan yoo x̲waatán. *Ø-conj. ÿán=yoo= perfective*
ÿán= yoo=u- x̲- i- $^{2}\sqrt{}$tan -H
ground=ALT= ZPFV-1SG·S-STV-$^{2}\sqrt{}$hdl·wd/ec-VAR
'I lifted it (wooden/empty) up and down.' (Leer 1991: 303)

c. Yan yoo x̲watánch. *Ø-conj. ÿán=yoo= habitual*
ÿán= yoo=u- x̲- i- $^{2}\sqrt{}$tan -H -ch
ground=ALT= PFV-1SG·S-STV-$^{2}\sqrt{}$hdl·wd/ec-VAR-REP
'I always lift it (wooden/empty) up and down.' (Leer 1991: 303)

d. Yan yoo x̲aatánk. *Ø-conj. ÿán=yoo= repetitive imperfective*
ÿán= yoo=x̲- i- $^{2}\sqrt{}$tan -H -k
ground=ALT= 1SG·S-STV-$^{2}\sqrt{}$hdl·wd/ec-VAR-REP
'I repeatedly lift it (wooden/empty) up and down.' (Leer 1991: 303)

The imperative in (206a) clearly shows that this is *Ø*-conjugation rather than *n*-conjugation because there is no overt conjugation prefix. The perfective and habitual also show *Ø*-conjugation morphology. But despite repeated evidence of *Ø*-conjugation class, the repetitive imperfective in (206c) is the *yoo=i-…-k* form that is usually found only with the *n*-conjugation class motion derivations (sec. 3.3.3).

One other unusual feature of the motion derivation shown in (206) is that the *ÿán=* 'ground' preverb does not exhibit different forms in the different aspects. With the *ÿán= ~ ÿáx= ~ ÿánde=* derivation detailed in section 3.3.4.1 the preverb changes appearance depending on aspect. Here however there is only a single form, and it is impossible to tell whether there is a covert punctual *-t* postposition on *ÿán=* or if the preverb is bare.

3.3.4.5. *Ø*-conjugation with *ÿa-u-* and *-ch*

The imperatives in (207) illustrate a few of the *Ø*-conjugation class motion derivations with the qualifier *ÿa-* and the irrealis *u-* that specify a *-ch* repetitive imperfective. Leer (1991: 304) describes these as denoting "oblique" or "circuitous" motion. Edwards (2009: 608) agrees with Leer on the inventory of motion derivations in this subclass.

(207) a. Wé nadáakw káx̲ wugú! *Ø-conj. DP-x̲ ÿa-u- imperative*
wé nadáakw ká -x̲ ÿa- u- $^{1}\sqrt{}$gut -⊗
MDST table HSFC-PERT QUAL-IRR-2SG·S-$^{1}\sqrt{}$go·SG-VAR
'Go over along the table!'
DP-x̲ ÿaa= ~ ÿa-u- (*Ø*; *-ch* repetitive) 'obliquely, indirectly along DP'

b. Wé nadáakw kaadé wugú! *Ø-conj. DP-dé ÿa-u- imperative*
wé nadáakw ká -dé ÿa- u- $^{1}\sqrt{}$gut -⊗
MDST table HSFC-ALL QUAL-IRR-2SG·S-$^{1}\sqrt{}$go·SG-VAR
'Move over toward the table!'
DP-dé ÿaa= ~ ÿa-u- (*Ø*; *-ch* repetitive) 'obliquely, indirectly toward DP'

c. Wé nadáakw kaadáx̱ wugú! *Ø-conj. DP-daxh ÿa-u- imperative*
wé nadáakw ká -dáx̱ ÿa- u- ¹√gut -⊗
MDST table HSFC-ABL QUAL-IRR-2SG·S-¹√go·SG-VAR
'Move over away from the table!'
DP-dé ÿaa= ~ *ÿa-u-* (*Ø*; *-ch* repetitive) 'obliquely, indirectly from DP'

All of the *Ø*-conjugation *ÿa-u-* motion derivations feature an alternation between *ÿa-u-* on the one hand and *ÿaa=* in the repetitive imperfective as illustrated in (208); hence the '~' in table 6.22. Leer suggests that the *ÿaa=* of the repetitive imperfective arose by phonological change of *ÿa-u-* which was then reinterpreted as morphologically identical to the *ÿaa=* preverb according to his Principle of Templatic Attraction (Leer 1991: 137). Regardless of its etymology, the alternation between *ÿa-u-* on the one hand and *ÿaa=* on the other is an essential diagnostic for this subclass of motion derivations.

(208) a. A daax̱ wooxx̱akx̱ooxch *Ø-conj. ÿa-u- habitual*
a daa -x̱ ÿ- u- u- x̱- ¹√kx̱ux̱ -μ -ch
3N·PSS around-PERT QUAL-IRR-PFV-1SG·S-¹√go·veh-VAR-REP
'I always drive around it.'
DP daa-x̱ ÿaa= ~ *ÿa-u-* (*Ø*; *-ch* repetitive) 'circling around DP'

b. A daax̱ yaa x̱akx̱úx̱ch *Ø-conj. ÿa-u- repetitive imperfective*
a daa -x̱ ÿaa= x̱- ¹√kx̱ux̱ -H -ch
3N·PSS around-PERT along=1SG·S-¹√go·veh-VAR-REP
'I repeatedly drive around it.'

The derivationally specified irrealis *u-* may or may not be present where it is predicted to occur. Some speakers lack *u-*, probably because of reanalysis based on the alternation between *ÿa-u-* and *ÿaa=*, but also probably influenced by perfectives where *u-* is normally obscured. The forms in (209) contrast an imperative with and without *u-*. If *u-* is present then some forms like (209a) can be misinterpreted as perfective because the *ÿa-* qualifier and the irrealis *u-* combine to form a syllable *wu* [wù] that looks like the perfective *wu-*.

(209) a. A daax̱ wux̱úx̱! *Ø-conj. ÿa-u- imperative*
a daa -x̱ ÿa- u- ¹√kx̱ux̱ -H
3N·PSS around-PERT QUAL-IRR-¹√go·veh-VAR
'Drive around it!' (Edwards 2009: 608)

b. A daax̱ yax̱úx̱! *Ø-conj. ÿa-(u-) imperative*
a daa -x̱ ÿa- ¹√kx̱ux̱ -H
3N·PSS around-PERT QUAL- ¹√go·veh-VAR
'Drive around it!'

Some of the motion derivations in this subclass have somewhat idiomatic interpretations with particular NPs, or in one case a deictic determiner. Three such derivations are shown in (210): the one in (210a) uses the deictic mesioproximal *hé* 'over here', the second in (210b) uses a relational noun *jiká* 'surface of hand', and the third in (210c) uses a relational noun *daséi* 'below around; exchange'.

(210) a. Héide wugú! *Ø-conj. hé-dé ÿa-u- imperative*
hé -dé ÿa- u- $^{1}\sqrt{}$gut -⊗
MPRX-ALL QUAL-IRR-2SG·S-$^{1}\sqrt{}$go·SG-VAR
'Move over!', 'Move aside!'
héi-dé ÿaa= ~ ÿa-u- (*Ø*; *-ch* repetitive) 'aside, out of the way'

b. Ax̲ jikaadáx̲ wugú! *Ø-conj. jikaadáx̲ ÿa-u- imperative*
ax̲ jín- ká -dáx̲ ÿa- u- $^{1}\sqrt{}$gut -⊗
1SG·PSS hand-HSFC-ABL QUAL-IRR-2SG·S-$^{1}\sqrt{}$go·SG-VAR
'Get out of my way!'
DP jín-kaa-dáx̲ ÿaa= ~ ÿa-u- (*Ø*; *-ch* repetitive) 'out of DP's way'

c. Ax̲ daséix' wugú! *Ø-conj. daséix' ÿa-u- imperative*
ax̲ daa- sé -x' ÿa- u- $^{1}\sqrt{}$gut -⊗
1SG·PSS around-below-LOC QUAL-IRR-2SG·S-$^{1}\sqrt{}$go·SG-VAR
'Switch places with me!'
DP daséi-x' ÿaa= ~ ÿa-u- (*Ø*; *-ch* repetitive) 'exchanging places with DP'

3.3.4.6. *Ø*-conjugation with *sha-ÿa-u-* and *-ch*

This subclass of *Ø*-conjugation motion derivations is itself derived from the *ÿa-u-* derivations above in section 3.3.4.5. It is distinguished by the addition of incorporated *sha-* 'head, top' from the inalienable noun *shá* 'head'. It is documented by Leer in two places (Leer 1991: 120, 134), but it does not appear in his main list of *Ø*-conjugation motion derivations (Leer 1991: 296–306). Both derivations are given in (211) with Leer's original examples.

(211) a. Áx̲ ashayaawatée. *Ø-conj. DP-x̲ sha-ÿa-u- perfective*
á -x̲ a- sha- ÿa- u- wu-i- $^{1}\sqrt{}$ti -μH
3N-PERT ARG-head-QUAL-IRR-PFV-STV-$^{1}\sqrt{}$handle-VAR
'He hung it on/over it (e.g. hanging fish to dry).' (Leer 1991: 120)

b. Yax̲ shawutí! *Ø-conj. yax̲=sha-ÿa-u- imperative*
ÿáx̲= sha- ÿa- u- $^{1}\sqrt{}$ti -H
TERM=head-QUAL-IRR-2SG·S-$^{2}\sqrt{}$handle-VAR
'Hang it up!' (Leer 1991: 315)

There are two more examples with the root $^{2}\sqrt{}$*ti* 'handle' given by Story & Naish (1973: 105.1351, 1352) but they are both perfectives like (211a) and so offer no additional information about the morphology of these derivations. I have only very rarely encountered examples of these motion derivations and I have never attempted to elicit any. In my experience speakers more often use verbs with the roots $^{1}\sqrt{}$*xwas'* 'suspend, hang' and $^{2}\sqrt{}$*ÿik̲* 'pull, draw' rather than motion verbs with these derivations, but presumably there are fine semantic distinctions which should differentiate these from the more common root-based structures for 'hang'.

3.3.4.7. *Ø*-conjugation with *a-ÿa-u-d-* and *-x̲*

The imperative form in (212) is a *Ø*-conjugation motion derivation that was discussed earlier in chapter 5 section 5.2.3. It denotes revertive motion along a path different from some prejacent motion event. It is morphologically related to the *ÿa-u-* motion derivations in section 3.3.4.5.

(212) Ayeedagú! *Ø-conj. a-ÿa-u-d- imperative*
a- ÿa- u- i- d- $^{1}\sqrt{}$gut -⊗
XPL-QUAL-IRR-2SG·S-MID-$^{1}\sqrt{}$go·SG-VAR
'Turn back!' (Leer 1991: 306)

The repetitive imperfective form for this motion derivation is shown in (213). This shows the repetitive *-x̲* suffix rather than the *-ch* of the other *ÿa-u-* motion derivations. Thus although this derivation shares the *ÿa-u-* prefixes, it is paradigmatically distinct from the other *ÿa-u-* derivations.

(213) Awux̲dagútx̲. *Ø-conj. a-ÿa-u-d- repetitive imperfective*
a- ÿa- u- x̲- d- $^{1}\sqrt{}$gut -H -x̲
XPL-QUAL-IRR-1SG·S-MID-$^{1}\sqrt{}$go·SG-VAR-REP
'I repeatedly turn back.' (Leer 1991: 306)

Semantically we can see a connection between the oblique or indirect motion of the *ÿa-u-* derivations in section 3.3.4.5 and this perambulative revertive motion derivation. Specifically, the perambulative meaning where the motion does not proceed along the path of the preceding motion event is probably connected to the oblique indirectness of motion with the *ÿa-u-* derivations. This strongly suggests that the derivational morphology is compositional, and so that the *ÿa-u-* prefixes are not meaningless. This reinforces my general claim that the verbal semantics is compositionally derived from the morphology, and thus that there is a principled syntax structuring the verb.

3.4. Lexically specified conjugation class

Motion verbs derive their conjugation class specification from motion derivations as detailed in section 3.3. This is not the case for many verbs whose roots are instead lexically specified for a conjugation class. For example, consider the root $^{2}\sqrt{}$*x̲a* 'eat' which is lexically specified as a member of the *Ø*-conjugation class. Because of this lexical specification, as shown in (214) its imperative form is only grammatical with the *Ø* conjugation prefix and not with any of the other three.

(214) a. X̲á! *Ø-conj. imperative*
$^{2}\sqrt{}$x̲a-H
ZCNJ 2SG·S $^{2}\sqrt{}$eat-VAR
'Eat it!'

b. *Nax̲á! **n-conj. imperative*
n- $^{2}\sqrt{}$x̲a-H
NCNJ-2SG·S $^{2}\sqrt{}$eat-VAR
intended: 'Eat it!'

c. *G̲ax̲á! **g̲-conj. imperative*
g̲- $^{2}\sqrt{}$x̲a-H
G̲CNJ-2SG·S $^{2}\sqrt{}$eat-VAR
intended: 'Eat it!'

d. *Gax̲á! **g-conj. imperative*
g- $^{2}\sqrt{}$x̲a-H
GCNJ-2SG·S $^{2}\sqrt{}$eat-VAR
intended: 'Eat it!'

The verb root $\sqrt[2]{hun}$ 'sell' is lexically specified as a member of the *n*-conjugation class. As such, the imperative data in (215) shows that only the form with the *n*- conjugation prefix is grammatical.

(215) a. *Hoon! **Ø-conj. imperative*
$\sqrt[2]{}$hun-μ
ZCNJ 2SG·S $\sqrt[2]{}$sell -VAR
intended: 'Sell it!'

b. Nahoon! *n-conj. imperative*
n- $\sqrt[2]{}$hun-μ
NCNJ-2SG·S $\sqrt[2]{}$sell -VAR
'Sell it!'

c. *Ǧahoon! **ǧ-conj. imperative*
ǧ- $\sqrt[2]{}$hun-μ
ǦCNJ-2SG·S $\sqrt[2]{}$sell -VAR
intended: 'Sell it!'

d. *Gahoon! **g-conj. imperative*
g- $\sqrt[2]{}$hun-μ
GCNJ-2SG·S $\sqrt[2]{}$sell -VAR
intended: 'Sell it!'

Likewise, the verb root $\sqrt[2]{xit'}$ 'sweep' is lexically specified as a member of the *ǧ*-conjugation class. The imperatives in (216) thus show that only the form with the *ǧ*- conjugation prefix is grammatical.

(216) a. *Xéet'! **Ø-conj. imperative*
$\sqrt[2]{}$xit' -μH
ZCNJ 2SG·S $\sqrt[2]{}$sweep-VAR
intended: 'Sweep it!'

b. *Naxéet'! **n-conj. imperative*
n- $\sqrt[2]{}$xit' -μH
NCNJ-2SG·S $\sqrt[2]{}$sweep-VAR
intended: 'Sweep it!'

c. Ǧaxéet'! *ǧ-conj. imperative*
ǧ- $\sqrt[2]{}$xit' -μH
ǦCNJ-2SG·S $\sqrt[2]{}$sweep-VAR
'Sweep it!'

d. *Gaxéet'! **g-conj. imperative*
g- $\sqrt[2]{}$xit' -μH
GCNJ-2SG·S $\sqrt[2]{}$sweep-VAR
intended: 'Sweep it!'

And finally, the verb root $\sqrt[2]{shi^h}$ 'sing' is lexically specified as a member of the *g*-conjugation class. Consequently, the imperative examples in (217) are ungrammatical except the form in (217d) with the *g*- conjugation prefix.

(217) a. *Shí! *Ø-conj. imperative*
$\sqrt[2]{\text{shi}^{\text{h}}}$-μH
ZCNJ 2SG·S $\sqrt[2]{\text{sing}}$ -VAR
intended: 'Sing it!'

b. *Nashí! **n-conj. imperative*
n- $\sqrt[2]{\text{shi}^{\text{h}}}$-μH
NCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
intended: 'Sing it!'

c. *Ǧashí! **ǧ-conj. imperative*
ǧ- $\sqrt[2]{\text{shi}^{\text{h}}}$-μH
ǦCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
intended: 'Sing it!'

d. Gashí! *g-conj. imperative*
g- $\sqrt[2]{\text{shi}^{\text{h}}}$-μH
GCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
'Sing it!'

We thus have the distribution of verb roots and conjugation classes shown in (218). Each of the roots in (214)–(217) is compatible with only one conjugation prefix in the imperative, and so each verb must be a dedicated member of one conjugation class.

(218) *lexically specified conjugation classes with four roots*

		Ø	*n*	*ǧ*	*g*
$\sqrt[2]{xa}$	'eat'	✓	*	*	*
$\sqrt[2]{hun}$	'sell'	*	✓	*	*
$\sqrt[2]{xit'}$	'sweep'	*	*	✓	*
$\sqrt[2]{shi^h}$	'sing'	*	*	*	✓

The assignment of particular roots to particular conjugation classes appears to be largely arbitrary. But we might see an association with spatial grammar if we squint just right at particular roots. For example we could say that "selling moves goods horizontally" since $\sqrt[2]{hun}$ 'sell' is *n*-conjugation in (215), "sweeping is a downward motion of a broom" since $\sqrt[2]{xit'}$ 'sweep' is *ǧ*-conjugation in (216), and "singing moves the voice up through the throat" since $\sqrt[2]{shi^h}$ 'sing' is *g*-conjugation in (217). But these associations are tenuous and unreliable across all the roots in each class. Why should $\sqrt[1]{.el'}$ 'salt' be *n*-conjugation, $\sqrt[2]{chux}$ 'mooch, freeload' be *ǧ*-conjugation, or $\sqrt[1]{ts'ik'}$ 'pinch' be *g*-conjugation, instead of any of these being in any of the other classes? It is thus customary to consider the conjugation classes to be entirely meaningless for non-motion verbs.

But the expectation that there should be some spatial meaning with the conjugation classes is still compelling and difficult to dismiss. One area where spatial semantics does seem to matter is among roots that show more than one conjugation class. Most non-motion verb roots only specify a single conjugation class, but there are a moderate number that are attested with more than one class. These roots also derive verbs that show more or less obvious signs of being spatially differentiated along the same lines as the conjugation classes of motion verbs. I review some examples below and suggest a solution from non-*Ø* conjugation class motion derivations after looking at the inceptive and terminative.

The root $\sqrt[2]{}$*.ix'* 'call, shout' in (219) shows two different interpretations depending on conjugation class, with the *n*-conjugation in (219a) perhaps translatable as "call horizontally toward" and the *g̲*-conjugation in (219b) perhaps like "call down". Similarly, the root $\sqrt[2]{}$*xash* 'cut, saw' shows three different interpretations, with the *∅*-conjugation in (220a) describing the removal of some amount, the *n*-conjugation in (220b) describing a cutting event that does not necessarily go through the object, and the *g̲*-conjugation in (220c) describing the division of the object into multiple pieces.

(219) a. Na.éex'! *n-conj. imperative*
n- $\sqrt[2]{}$.ix'-μH
NCNJ-2SG·S $\sqrt[2]{}$call-VAR
'Shout to, call out to him/her!'

b. G̲a.éex'! *g̲-conj. imperative*
g̲- $\sqrt[2]{}$.ix'-μH
G̲CNJ-2SG·S $\sqrt[2]{}$call-VAR
'Invite him/her!'

(220) a. Xaash! *∅-conj. imperative*
$\sqrt[2]{}$xash-μ
ZCNJ 2SG·S $\sqrt[2]{}$cut -VAR
'Cut it off!', 'Trim it!'

b. Naxaash! *n-conj. imperative*
n- $\sqrt[2]{}$xash-μ
NCNJ-2SG·S $\sqrt[2]{}$cut -VAR
'Cut it!', 'Saw it!'

c. Kag̲axaash! *g̲-conj. imperative*
k- g̲- $\sqrt[2]{}$xash-μ
QUAL-G̲CNJ-2SG·S $\sqrt[2]{}$cut -VAR
'Cut it apart!'

The occurrence of multiple conjugation classes with the same non-motion root is further complicated by the appearance of other morphology. This is seen in (220c) with the additional qualifier *k-* which could potentially indicate a small round object or perhaps the multipartite result entities. The extensional function of overt *v* (ch. 4 sec. 4) also enters into the phenomenon as seen with the root $\sqrt[2]{}$*x̲ut'* 'adze, chip' in (221) and the root $\sqrt[2]{}$*sha't* 'grab, catch' in (222), though there is no regular association between *g̲-* and *l-* ~ *s-* (cf. 220c).

(221) a. X̲út'! *∅-conj. imperative*
$\sqrt[2]{}$x̲ut'-H
ZCNJ S2SG·S $\sqrt[2]{}$adze-VAR
'Adze it!', 'Chip it out!'

b. Kax̲lax̲óot'! *g̲-conj. imperative*
k- g̲- l- $\sqrt[2]{}$x̲ut'-μH
QUAL-G̲CNJ-2SG·S XTN-$\sqrt[2]{}$adze-VAR
'Chop it!', 'Axe it!'

(222) a. Gasháat! *g-conj. imperative*
g- ²√sha't-μH
GCNJ-2SG·S ²√grab -VAR
'Grab it!', 'Catch it!', 'Snatch it!'

b. Ǧalsháat! *ǧ-conj. imperative*
ǧ- l- ²√sha't-μH
ǦCNJ-2SG·S XTN-²√grab -VAR
'Capture it!', 'Hold it!'

Another complication is that the lexically specified conjugation class may be modified by additional derivations. As noted in section 3.3, a few of the motion derivations have come to denote abstract event structure modifications and subsequently have been generalized to non-motion verbs (Leer 1991: 218–220). In particular, the inceptive and terminative motion derivations can be readily applied to nearly any event. These derivations also apply their conjugation classes to the verbs, supplanting the lexically specified conjugation classes. Both the inceptive *ǧunayéi=* ~ *ǧunéi=* (*∅*; *-x̲* repetitive) 'beginning, starting' and the terminative *ÿán=* ~ *ÿáx̲=* ~ *ÿánde=* (*∅*; *-μ* repetitive) 'ending, stopping, completing' are *∅*-conjugation derivations (secs. 3.3.4.3 and 3.3.4.1). This can be seen with the three non-*∅*-conjugation verbs illustrated in (223)–(225). Each triplet gives the lexically specified form, the inceptive derived form, and the terminative derived form in the imperative.

(223) a. Nahoon! *n-conj. imperative* (= 215b)
n- ²√hun-μ
NCNJ-2SG·S ²√sell -VAR
'Sell it!'

b. Ǧunéi hoon! *∅-conj. inceptive imperative*
ǧunéi= ²√hun-μ
INCEP= ZCNJ 2SG·S ²√sell -VAR
'Start selling it!'

c. Yan hún! *∅-conj. terminative imperative*
ÿán= ²√hun-H
TERM=ZCNJ 2SG·S ²√sell -VAR
'Finish selling it!'

(224) a. Ǧaxéet'! *ǧ-conj. imperative* (= 216c)
ǧ- ²√xit' -μH
ǦCNJ-2SG·S ²√sweep-VAR
'Sweep it!'

b. Ǧunéi xéet'! *∅-conj. inceptive imperative*
ǧunéi= ²√xit' -μH
INCEP= ZCNJ 2SG·S ²√sweep-VAR
'Start sweeping it!'

c. Yan xít'! *∅-conj. terminative imperative*
ÿán= ²√xit' -H
TERM=ZCNJ 2SG·S ²√sweep-VAR
'Finish sweeping it!'

(225) a. Gashí! *g-conj. imperative* (= 217d)
g- $\sqrt[2]{\text{shi}^{\text{h}}}$-μH
GCNJ-2SG·S $\sqrt[2]{\text{sing}}$ -VAR
'Sing it!'

b. G̱unéi shí! *∅-conj. inceptive imperative*
g̱unéi= $\sqrt[2]{\text{shi}^{\text{h}}}$-H
INCEP= ZCNJ 2SG·S $\sqrt[2]{\text{sing}}$ -VAR
'Start singing it!'

c. Yan shí! *∅-conj. terminative imperative*
ÿán= $\sqrt[2]{\text{shi}^{\text{h}}}$-H
INCEP=ZCNJ 2SG·S $\sqrt[2]{\text{sing}}$ -VAR
'Finish singing it!'

There are no ∅-conjugation motion derivations without a preverb or PP, so any application of such a derivation must be accompanied by an additional preverb or PP in the result. Hence the inceptives in (223b)–(225b) all have *g̱unéi=* and the terminatives in (223c)–(225c) all have *ÿán=*. This means that these derivations are signalled in every form by additional morphology as well as by the change in conjugation class.

But there are motion derivations in the other three *n-*, *g̱-*, and *g*-conjugation classes that are not accompanied by any additional morphology (secs. 3.3.1–3.3.3). Because of this, it may be that verb roots attested with more than one conjugation class are actually derived. If so then there could be one conjugation class lexically specified by the root and the other conjugation classes attested would actually be motion derivations. Given the absence of ∅-conjugation motion derivations without preverbs or PPs, a root attested with ∅-conjugation and no preverb or PP must be lexically specified as ∅-conjugation. Any other conjugation classes would then be motion derivations. Roots which are attested with only non-∅ conjugation classes could have any one of these classes lexically specified with the others derived.

If motion derivations can account for the apparent lexical specification of more than one conjugation class then the spatial semantics should be active in these cases of multiple conjugation class. This spatial meaning in some cases has been metaphorically transformed into an event structure meaning, but in others the purely spatial meaning is still clear. In lexically specified cases the spatial semantics may have become unclear because of historical change in meaning of the roots, or by increasing abstractness of the event structure metaphors, or both. The few cases where the lexically specified conjugation class shows a spatial meaning are where there has been no change or abstraction away from the meaning induced by the spatial partition. And given that the ∅-conjugation class is meaningless in motion derivations, we can reasonably expect it to be meaningless in non-motion verbs as well.

There is a straightforward analogy between the conjugation classes in Tlingit and the Germanic verb + preposition complexes as well as the Slavic prepositional prefixes on verbs. In these better known systems the spatial semantics of the prepositions has been metaphorically transferred to event structure. For example in English the prepositions *up* and *out* are often used to express telicity with verbs as in (226).

(226) a. Eat up your turnips!

b. We ran out of sugar.

In Russian many prepositions are prefixed on verbs to express a variety of event structure phenomena including telicity (Janda et al. 2013). For example, there is the preposition на *na* 'on' in the pair of писать *pisát'* 'write (atelic)' versus написать *napisát'* 'write (telic)', the preposition с(о) *s(o)* 'with' in есть *jest'* 'eat (atelic)' versus съесть *s"jest'* 'eat (telic)', and the preoposition от *ot* 'from, since' in полировать *polirovát'* 'polish (atelic)' versus отполировать *otpolirovát'* 'polish (telic)' (Janda et al. 2013: 3, 56). The forms in (227) illustrate the verb 'write' in both atelic and telic forms, showing the difference between a past imperfective and a past perfective.

(227) a. *Russian past imperfective*

Я	писал	письмо
ja	pisá -l	pis'm-ó
1SG	write-PAST	letter -ACC

'I was writing a letter.' (Cornyn 1950: 110)

b. *Russian past perfective*

Я	написал	письмо
ja	na-pisá -l	pis'm-ó
1SG	on- write-PAST	letter -ACC

'I have written a letter.' (Cornyn 1950: 111)

The data in (228) and (229) show the Russian telicity contrast in more detail with the verb 'eat' in both atelic and telic forms. The temporal adjunct with за *za* 'in' is ungrammatical in (228b) for the atelic verb, but it is grammatical in (229b) for the telic verb. This parallels the behaviour of the English temporal adverbials 'for ⟨*time*⟩' versus 'in ⟨*time*⟩' which can be seen in the translations (cf. Dowty 1979: 332–336).

(228) a. *Russian past imperfective without za*

Иван	ел	суп	десять	минут.
Ivan	je -l	sup -Ø	djésjat'	minút-Ø
Ivan	eat-PAST	soup-ACC	ten	minute-GEN.PL

'Ivan ate/was eating (the/some) soup for ten minutes.' (Filip 2004: 92)

b. **Russian past imperfective with za*

*Иван	ел	суп	за	десять	минут.
Ivan	je -l	sup -Ø	za	djésjat'	minút-Ø
Ivan	eat-PAST	soup-ACC	in	ten	minute-GEN.PL

intended: 'Ivan ate/was eating (the/some) soup in ten minutes.' (Filip 2004: 92)

(229) a. **Russian past perfective without za*

*Иван	съел	суп	десять	минут.
Ivan	s- je -l	sup -Ø	djésjat'	minút-Ø
Ivan	with-eat-PAST	soup-ACC	ten	minute-GEN.PL

intended: 'Ivan ate up (all) the soup for ten minutes.' (Filip 2004: 92)

b. *Russian past perfective with za*

Иван	съел	суп	за	десять	минут.
Ivan	s- je -l	sup -Ø	za	djesjat'	minut-Ø
Ivan	with-eat-PAST	soup-ACC	in	ten	minute-GEN.PL

'Ivan ate up (all) the soup in ten minutes.' (Filip 2004: 92)

Compare also the English *write* versus *write out* or *write up*, *eat* versus *eat up*, and *polish* versus *polish out* (e.g. a spot) or *polish up* (e.g. a table). The Tlingit case with conjugation classes is more limited because there are only three meaningful classes instead of the large inventory of prepositions in European languages. A consequence of this limitation is that Tlingit's conjugation classes appear to be more abstract and difficult to specify semantically because they are applied to much larger lexical spaces. Nevertheless, just like Germanic and Slavic prepositions, the spatial semantics is often vague or irrelevant for lexically specified conjugation class in Tlingit. For more discussion of the metaphorical mapping between space and time see section 3.5.

3.4.1. *G*-conjugation might be upward

The *g*-conjugation class may be associated with upward spatial orientation when it is lexically specified, but many verbs with lexically specified *g*-conjugation seem to be more or less arbitrary. In particular, there are a large number of state verbs that are lexically specified for *g*-conjugation with no apparent spatial semantics. The association between state verbs and *g*-conjugation is detailed later in this section.

Table 6.23 gives a somewhat arbitrary selection of lexically specified *g*-conjugation verbs that denote events. The selection process for this table is similar to that used for the tables in chapter 5: I looked through the lexical documentation (Story & Naish 1973; Leer 1973a, 1976a) and selected clear examples of verbs with lexically specified *g*-conjugation. As such, table 6.23 should not be taken as authoritatively representative, but it does give a good sense of the *g*-conjugation class. States have been excluded from table 6.23 for reasons that are explained later.

The '*v*' column in table 6.23 indicates the value of *v*, with '–' indicating that *v* is absent (unaccusatives) and '*∅*' indicating that *v* is present but covert (unergatives, transitives; see ch. 4 sec. 2.2). The '(Im)perfective' column gives an imperfective aspect form for activity verbs or else a perfective aspect form for achievements (ch. 2 sec. 1.3.1.1); arguments are third person. The 'Translation' column is a conventional translation of the imperfective or perfective form. The 'O' and 'S' columns indicate whether the verb takes an object or a subject or both. The 'Root' column is the root on which the verb is based. The 'Gloss' column is a short customary translation for the root. The 'Eventuality' column indicates the eventuality class of the root, and if it is an activity the lexically specified stem variation is given in parentheses (sec. 1.3.1.3). The 'Conjs.' column lists any other conjugation classes aside from *g*-conjugation that are documented as lexically specified for the root. Obvious applications of motion derivations have been excluded, but I have made no attempt to determine which of multiple conjugation class verbs could be the base one specified by the root, nor have I reviewed the kinds of derivations possible.

Of the activity and achievement verbs listed in table 6.23, a few seem to be more or less associated with an upward spatial orientation. The standing verbs *wudihaan* 's/he stood up' and *has wudinaak̲* 'they stood up' are particularly significant. The verbs *aawasháat* 's/he grabbed it', *aawat'ee* 's/he found it', and *aawayeek̲* 'it mouthed it up, picked it up by mouth' all involve picking something up. The verbs *woowáat* 's/he grew up', *wudli.aas* 'it got wooded', and *wulik̲oo* 'it got flooded' involve growth upwards. But it is hard to say how *asháa* 'it's barking at him/her', *agwáal* 's/he's beating it', *al.óox* 's/he is blowing on it', or *akagóok* 'it is pecking it' could be construed as upward, and verbs like *ashk̲eet* 's/he annoys him/her' and *aheich* 's/he accuses him/her' can only be metaphorically upward if at all. As such, the lexical specification of *g*-conjugation class among event-denoting verbs is often arbitrary,

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conjs.*
–	*kaawajoox*	'it rolled, spun'	+	–	$\sqrt[1]{jux}$	'roll'	achievement	
	woowáat	's/he grew up'	+	–	$\sqrt[1]{wa't}$	'grow up'	acheivement	
Ø	*akagóok*	'it pecks it'	+	+	$\sqrt[2]{gu'k}$	'peck'	activity (-μH)	*n*
	agwáal	's/he beats it'	+	+	$\sqrt[2]{gwal}$	'beat'	activity (-μH)	Ø
	g̲áax̲	's/he cries'	–	+	$\sqrt[1]{gax}$	'cry'	activity (-μ)	*n*
	wudihaan	's/he stood up'	–	+	$\sqrt[1]{han}$	'sg. stand'	achievement	
	ahées'	's/he borrows it'	+	+	$\sqrt[2]{his'}$	'borrow'	activity (-μH)	*n*
	aheich	's/he accuses him/her'	+	+	$\sqrt[2]{hech}$	'accuse'	activity (-μ)	
	has wudinaak̲	'they stood up'	–	+	$\sqrt[1]{nak}$	'pl. stand'	achievement	
	asháa	'it barks at him/her'	+	+	$\sqrt[2]{sha^h}$	'bark'	activity (-μH)	
	aawasháat	's/he grabbed it'	+	+	$\sqrt[2]{sha't}$	'grab'	achievement	*g̲*
	ashí	's/he sings it'	+	+	$\sqrt[2]{shi^h}$	'sing'	activity (-H)	
	aawat'ee	's/he found it'	+	+	$\sqrt[2]{t'i^h}$	'find'	achievement	
	ayáa	's/he packs it (on back)'	+	+	$\sqrt[2]{ya}$	'pack'	activity (-μH)	
	aawayeek̲	'it mouthed it up'	+	+	$\sqrt[2]{ÿik}$	'mouth'	achievement	
s-	*awsitáax'*	's/he bit it'	+	+	$\sqrt[2]{tax'}$	'bite'	achievement	Ø/*n*/*g̲*
	awsix̲eet	's/he bred it'	+	+	$\sqrt[2]{xit}$	'multiply'	achievement	
l-	*wudli.aas*	'it got wooded'	+	–	$\sqrt[0]{.as}$	'tree'	achievement	
	awlik'éi	's/he improved it'	+	+	$\sqrt[1]{k'e}$	'good'	achievement	*g*
	wulik̲oo	'it got flooded'	+	–	$\sqrt[0]{ku}$	'vomit'	achievement	*n*
	al.óox	's/he blows on it'	+	+	$\sqrt[2]{.ux}$	'blow'	activity (-μH)	*n*
l^s-	*alts'éek'w*	's/he pinches him/her'	+	+	$\sqrt[2]{ts'ik'w}$	'pinch'	activity (-μH)	Ø
	aklax'áas'	's/he slices it'	+	+	$\sqrt[2]{x'as'}$	'slice'	activity (-μH)	Ø/*g̲*
sh-	*ashk̲eet*	's/he annoys him/her'	+	+	$\sqrt[2]{kit}$	'annoy'	activity (-μ)	Ø

Table 6.23: Some non-stative *g*-conjugation verbs

though a subset of these verbs may have more or less frozen spatial semantics.

Although there are not many lexically specified *g*-conjugation verbs, the overwhelming number of verbs in this class are states because most state verbs are lexically specified as *g*-conjugation (Leer 1991: 254).[38] Because of this, it is likely though not necessary that any given *g*-conjugation verb is stative. Similarly, it is likely though not necessary that any given state verb is *g*-conjugation. This means that although there is a strong tendency for states to be *g*-conjugation and for *g*-conjugation verbs to be states, both directions of relationship are only implications and not entailments. The reasons for the bidirectional association between states and *g*-conjugation class remain stubbornly nebulous. Table 6.24 on page 621 gives a sampling of state verbs that are lexically specified members of the *g*-conjugation class.

38. The sizes of tables 6.23 and 6.24 are not representative of the lexical distribution of *g*-conjugation.

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conjs.*
	ya.éin	's/he is starving'	+	–	$\overset{1}{\surd}$*.en*	'starve'	state (-μH)	
	di.ék	's/he is frail'	+	–	$\overset{1}{\surd}$*.e'k*	'frail'	state (-H)	
	yadál	'it is heavy'	+	–	$\overset{1}{\surd}$*dal*	'heavy'	state (-H)	
	yagéi	'it is big, much'	+	–	$\overset{1}{\surd}$*ge*	'big, much'	state (-μH)	*n*
–	*yak'éi*	'it is good'	+	–	$\overset{1}{\surd}$*k'e*	'good'	state (-μH)	*g̲*
	yanéekw	's/he is sick'	+	–	$\overset{1}{\surd}$*nikw*	'sick'	state (-μH)	
	yatlei	'it is stout'	+	–	$\overset{1}{\surd}$*tla*	'stout'	state (-*e*)	*n*
	yatseen	'it is alive'	+	–	$\overset{1}{\surd}$*tsin*	'alive'	state (-μ)	Ø
	yawúx̲'	'it is wide'	+	–	$\overset{1}{\surd}$*wux̲'*	'wide'	state (-H)	*n*
	yayát'	'it is long'	+	–	$\overset{1}{\surd}$*ÿat'*	'long'	state (-H)	*n*
Ø	*ayatéen*	's/he can see it'	+	+	$\overset{2}{\surd}$*tin*	'see'	state (-μH)	Ø/*n*/*g̲*
	si.áat'	'it is cold'	+	–	$\overset{1}{\surd}$*.at'*	'cold'	state (-μH)	
	si.áax'w	'it is bitter'	+	–	$\overset{1}{\surd}$*.ax'w*	'bitter'	state (-μH)	
	sigóo	'it is enjoyable'	+	–	$\overset{1}{\surd}$*gu*	'enjoy'	state (-μH)	
s-	*oodzikáa*	's/he is lazy'	+	–	$\overset{1}{\surd}$*ka*	'lazy'	state (-μH)	
	sikáak	'it is thick'	+	–	$\overset{1}{\surd}$*kak*	'thick'	state (-μH)	*n*
	asix̲án	's/he loves him/her'	+	+	$\overset{2}{\surd}$*x̲an*	'near'	state (-H)	
	six̲'éi	'it has a mouth'	+	–	$\overset{1}{\surd}$*x̲'e*	'mouth'	state (-μH)	
	tuli.aan	's/he is kind'	+	–	$\overset{0}{\surd}$*.an*	'kind'	state (-μ)	
	ligéi	'it is bright'	+	–	$\overset{0}{\surd}$*ge*	'bright'	state (-μH)	
l-	*dliwóo*	's/he is pale'	+	–	$\overset{1}{\surd}$*wu*	'pale'	state (-μH)	
	akalidéix'	's/he shames him/her'	+	+	$\overset{2}{\surd}$*dex'*	'shame'	state (-μH)	*n*
	litéx̲	'it smells acrid'	+	–	$\overset{0}{\surd}$*tex̲*	'acrid'	state (-H)	
	liyék	'it is roomy'	+	–	$\overset{0}{\surd}$*yek*	'room'	state (-H)	
	lichán	'it is cold'	+	–	$\overset{0}{\surd}$*chan*	'stink'	state (-H)	
	lidzée	'it is difficult'	+	–	$\overset{0}{\surd}$*dzi*	'difficult'	state (-μH)	
	li.éil'	'it is salty'	+	–	$\overset{0}{\surd}$*.el'*	'salt'	state (-μH)	*n*
	ligaaw	'it is loud'	+	–	$\overset{0}{\surd}$*gaw*	'drum'	state (-μ)	
l^s-	*kadli.ít'ch*	'it is sparkling'	+	–	$\overset{0}{\surd}$*.it'ch*	'sparkle'	state (-H)	
	kulijée	'it is awful'	+	–	$\overset{1}{\surd}$*ji*	'awful'	state (-μH)	
	lishís'k̲	'it is raw'	+	–	$\overset{0}{\surd}$*shis'k̲*	'raw'	state (-H)	
	akawdliseek	's/he is shy of him/her'	+	+	$\overset{2}{\surd}$*sik*	'shy'	state (-μ)	
	lits'áa	'it smells good'	+	–	$\overset{0}{\surd}$*ts'a*	'aroma'	state (-μH)	
	li.oos	's/he is lively'	+	–	$\overset{1}{\surd}$*.us*	'lively'	state (-μ)	
	ashik'áan	's/he hates it'	+	+	$\overset{2}{\surd}$*k'an*	'hate'	state (-μH)	
sh-	*ashigóok*	's/he knows it (how)'	+	+	$\overset{2}{\surd}$*guk*	'know how'	state (-μH)	*g̲*
	shig̲eek̲	's/he is stingy'	+	–	$\overset{1}{\surd}$*g̲ik̲*	'stingy'	state (-μ)	

Table 6.24: Some stative *g*-conjugation verbs

There is not much evidence that the *g*-conjugation has a spatial meaning among states. Considering the verbs in table 6.24, it is hard to construe predicates like 'starve', 'alive', 'enjoyable', 'pale', or 'raw' as having anything to do with even a metaphoric application of upward direction. As such, the connection between states and *g*-conjugation class is apparently arbitrary. The *g*-conjugation class is not obviously cognate with any of the conjugation classes in Eyak or the Dene family, so there is no clear avenue for a historical explanation of the connection between states and *g*-conjugation.

3.4.2. *Ḡ*-CONJUGATION MIGHT BE DOWNWARD

The *ḡ*-conjugation class may be associated with downward spatial orientation when it is lexically specified, but once again many *ḡ*-conjugation verbs appear to be arbitrarily assigned to this conjugation class. Unlike the *g*-conjugation and its association with states, there is no obvious connection between eventuality categories and the *ḡ*-conjugation class. Thus verbs that are lexically specified for *ḡ*-conjugation are either downward or arbitrary.

The *ḡ*-conjugation class might be the smallest of the lexically specified conjugation classes. Among event verbs the *ḡ*- and *g*- classes seem to be roughly similar in size. But the *g*-conjugation class includes a large number of states as well, thus tipping the scales away from *ḡ*-conjugation verbs. Table 6.25 gives a selection of lexically specified *ḡ*-conjugation class verbs, following the same selection process as in the previous section and with the same organization. Since there are not very many *ḡ*-conjugation states, these have been folded in with the activities and achievements into the same table.

There are a number of more or less clear expressions of spatial orientation among the lexically specified *ḡ*-conjugation verbs. The most obvious are the state verb 'deep' and the achievement verbs that denote kinds of sitting. The state verb based on $\sqrt[1]{dlan}$ 'deep' is particularly significant because it is one of a small number of extensional states with a lexical state *CNJ*-imperfective form (sec. 2.1.2.1). It is unlikely to be a coincidence that the root $\sqrt[1]{dlan}$ 'deep' specifies *ḡ*-conjugation and describes depth which is a dimension oriented downward from the origo.

It also cannot be an accident that the verbs of sitting are lexically specified for the *ḡ*-conjugation class. The roots $\sqrt[1]{nuk}$ 'sg. sit', $\sqrt[1]{ḵi}$ 'pl. sit', and $\sqrt[1]{ḵaḵ}$ 'squat, perch' all describe events of lowering the body toward the ground and thus entail a downward spatial orientation. There are derivations of these roots that describe other spatial orientations and unsurprisingly have different conjugation classes, but their morphologically least marked forms are clearly downward. The data in (230) contrasts imperatives of $\sqrt[1]{nuk}$ 'sg. sit', with the least morphologically complex form in (230a) showing the *ḡ*- conjugation prefix.

(230) a. Ḡanú! *ḡ-conj. imperative*
ḡ- $\sqrt[1]{}$nuk -⊗
ḠCNJ-2SG·S $\sqrt[1]{}$sit·SG-VAR
'Sit down!'

b. Sheedanú! *∅-conj. imperative*
sha- i- d- $\sqrt[1]{}$nuk -⊗
head-ZCNJ 2SG·S-MID-$\sqrt[1]{}$sit·SG-VAR
'Sit up!'

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conjs.*
	g̲aadlaan	'it is deep'	+	–	$\sqrt[1]{dlan}$	'deep'	state (-μ)	
	k̲uyak'éi	'it is good weather'	+	–	$\sqrt[1]{k'e}$	'good'	state (-μH)	*g*
	wooneex̲	's/he got healed/safe'	+	–	$\sqrt[1]{nix}$	'safe'	achievement	
–	*kaawasóos*	'they fell'	+	–	$\sqrt[1]{su's}$	'pl. fall'	achievement	
	woos'éex̲'	's/he got diarrhea'	+	–	$\sqrt[1]{s'ix'}$	'diarrhea'	achievement	
	wooshaash	'it wore out'	+	–	$\sqrt[1]{shash}$	'wear out'	achievement	
	ayawditee	'it got stormy'	–	–	$\sqrt[1]{ti^h}$	'stormy'	achievement	
	oochoox̲	's/he mooches it'	+	+	$\sqrt[2]{chux}$	'mooch'	activity (-μ)	
	a.éex'	's/he invites him/her'	+	+	$\sqrt[2]{.ix'}$	'call'	activity (-μH)	*n*
	aawagaak̲	's/he visited him/her'	+	+	$\sqrt[2]{gak}$	'visit'	achievement	
	has wook̲ee	'they sat down'	+	+	$\sqrt[1]{ki}$	'pl. sit'	achievement	
	yaawajeich	's/he got surprised'	+	+	$\sqrt[1]{jech}$	'surprise'	achievement	
Ø	*woonook*	's/he sat down'	+	+	$\sqrt[1]{nuk}$	'sg. sit'	achievement	
	aawas'éil'	's/he tore it'	+	+	$\sqrt[2]{s'el'}$	'tear'	achievement	*n*
	akaawaxaash	's/he cut it apart'	+	+	$\sqrt[2]{xash}$	'cut'	achievement	Ø/*n*
	aawaxéet'	's/he swept it'	+	+	$\sqrt[2]{xit'}$	'sweep'	achievement	
	ax̲oox̲	's/he summons him/her'	+	+	$\sqrt[2]{xux}$	'summon'	activity (-μ)	
	oowayáa	'it resembles it'	+	+	$\sqrt[2]{ya^h}$	'resemble'	state (-μH)	*n*
	aksakei	's/he unravels it'	+	+	$\sqrt[2]{ke}$	'undo'	activity (-μ)	
s-	*awsineex̲*	's/he saved him/her'	+	+	$\sqrt[1]{nix}$	'safe'	achievement	
	k̲udzitee	'it exists'	–	+	$\sqrt[1]{ti^h}$	'be'	state (-μ)	Ø
	awsiteen	's/he saw it'	+	+	$\sqrt[2]{tin}$	'see'	achievement	Ø/*n*/*g*
	awlig̲oo	's/he wiped it'	+	+	$\sqrt[2]{gu}$	'wipe'	achievement	
l-	*wulixoon*	's/he got thin'	+	+	$\sqrt[1]{xun}$	'thin'	achievement	
	akawlix̲óot'	's/he chopped it'	+	+	$\sqrt[2]{xut'}$	'chop'	achievement	Ø
	alshát	's/he holds it'	+	+	$\sqrt[2]{sha't}$	'grab'	activity (-H)	*g*
l^s-	*wuliteesh*	's/he got lonely'	+	–	$\sqrt[0]{tish}$	'lonely'	achievement	
	kawlitlaa	'it precipitated'	+	–	$\sqrt[1]{tla}$	'precipitate'	achievement	
	alitsáakw	's/he saves it'	+	+	$\sqrt[1]{tsa'kw}$	'preserve'	state (-μH)	
	wushig̲áax̲'	's/he got skinny'	+	–	$\sqrt[1]{gax}$	'skinny'	achievement	
sh-	*wujik̲aak̲*	's/he squatted'	–	+	$\sqrt[1]{kak}$	'squat'	achievement	
	wushix̲'éel'	's/he slipped'	+	–	$\sqrt[1]{x'il'}$	'slide'	achievement	

Table 6.25: Some g̲-conjugation verbs

c. Shakeendanú! *n-conj. imperative*
sha- k- n- i- d- $^{1}\sqrt{}$nuk -⊗
head-QUAL-NCNJ-2SG·S-MID-$^{1}\sqrt{}$sit·SG-VAR
'Swell!', 'Expand!'

Other verbs in table 6.25 that probably exhibit downward spatial orientation include *aawas'éil'* 's/he tore it', *woos'éex'* 's/he got diarrhea', *awligoo* 's/he wiped it', *alshát* 's/he's holding it', and *wushix'éel'* 's/he slipped'. The verbs *a.éex'* 's/he invites him/her' and *axoox* 's/he summons him/her' could be construed as implying motion of the person invited or summoned down to the origo.

Despite the indication of downward spatial orientation for many lexically specified *g*-conjugation verbs, there are still many listed in table 6.25 that are difficult to construe as downward. Even derived *g*-conjugation verbs can be hard to discern spatially. The state verb *kuyak'éi* 'it is good weather' is based on the root $^{1}\sqrt{}$*k'e* 'good' which forms a basic state *yak'éi* 'it is good' which is *g*-conjugation. The weather verb has the areal *ku-* for weather, but there is no obvious reason why this should shift it from *g*-conjugation to *g*-conjugation. Thus not only some lexically specified *g*-conjugation instances, but also some derived *g*-conjugation forms appear to be arbitrary.

3.4.3. *N*-CONJUGATION HORIZONTALITY AND ALTERNATION

The *n*-conjugation class may be associated with a horizontal spatial orientation when it is lexically specified, but this is less clear than it is with the motion derivations detailed in section 3.3.3. The *n*-conjugation class is also characteristically associated with alternation; the alternating preverb *yoo=* 'back and forth, to and fro' occurs as the repetitive imperfective (iterative ∅-imperfective) form for all *n*-conjugation class verbs (sec. 2.1.1.2). There may be a semantic connection between horizontality and alternation but it is not trivial; instances of alternation with *yoo=* can describe vertically oriented phenomena (sec. 3.3.4.4). There are also many verbs with lexically specified *n*-conjugation class that appear to be arbitrarily included in this class, just as with the lexically specified *g-* and *g*-conjugation classes.

The *n*-conjugation class is one of the largest in terms of lexically specified verbs, perhaps second only to the ∅-conjugation class though we still have no definite statistics on the lexicon. Table 6.26 on page 623 illustrates a small sample of verbs that are lexically specified for the *n*-conjugation class. The organization and selection process are the same as tables 6.23–6.25 for the *g-* and *g*-conjugation classes. There are a large number of verbs without overt *v* in table 6.25, but this may be due to a selection bias. The lack of *sh-* in *v* is also probably an accident of the selection method, but since the number of verbs with *sh-* is fairly small (ch. 4 secs. 4.3 & 6.2) it is equally plausible that their absence is due to the limited inventory. In either case, the lack of *sh-* is probably not semantically or syntactically significant. There are also a considerable number of state verbs that are lexically specified for the *n*-conjugation class, and this is probably the second largest set of states after the *g*-conjugation class (sec. 3.4.1).

Just as with the *n*-conjugation motion derivations, it is not as easy to discern spatial semantics with the lexically specified *n*-conjugation as with the *g-* and *g*-conjugation classes. A few activity verbs hint at horizontality such as *al'óon* 's/he hunts it', *altl'éet* 's/he discards it', *asxéik'w* 's/he sips, slurps it', and *asxáat'* 's/he drags it', but these are merely speculation. We might also discern metaphoric horizontality in possession transfer verbs like *ahóon* 's/he sells it', *aawa.oo* 's/he bought it', and *ayaawadlaak* 's/he won it'. The verbs of sleeping – *tá* 's/he is sleeping' and *has xéix'w* 'they

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conjs.*
	kaawa.aa	'it grew'	+	–	$\sqrt[1]{.a}$	'end mv'	achievement	
	yakoo.áatl'	'it is insufficient'	+	–	$\sqrt[1]{.atl'}$	'insufficient'	state (-μH)	
	yagéi	'it is big, much'	+	–	$\sqrt[1]{ge}$	'big, much'	state (-μH)	*g*
–	*shayadihéin*	'it is many'	+	–	$\sqrt[1]{ha^h}$	'many'	state (-eH)	
	yéi yatee	'it is so'	+	–	$\sqrt[1]{ti^h}$	'be'	state (-μ)	
	woonaa	's/he died'	+	–	$\sqrt[1]{na}$	'die'	achievement	
	wootáax'w	'it sank'	+	–	$\sqrt[1]{tax'w}$	'sink'	achievement	
	akoo.aakw	's/he tries it'	+	+	$\sqrt[2]{.akw}$	'attempt'	activity (-μ)	
	kayadéix'	's/he is ashamed'	+	+	$\sqrt[1]{dex'}$	'shame'	state (-μH)	*g*
	ayaawadlaak	's/he won it'	+	+	$\sqrt[2]{dlak}$	'succeed'	achievement	
	ayahéin	's/he claims/owns it'	+	+	$\sqrt[2]{hen}$	'claim'	state (-μH)	
	ahóon	's/he sells it'	+	+	$\sqrt[2]{hun}$	'sell'	activity (-μH)	
	yéi oowajée	's/he thinks so of it'	+	+	$\sqrt[2]{ji^h}$	'think'	state (-μH)	
	akwdakaa	's/he copies him/her'	+	+	$\sqrt[2]{ka}$	'copy'	activity (-μ)	
	yéi x'ayaká	's/he says so'	+	+	$\sqrt[2]{ka}$	'say'	activity (-H)	
Ø	*aawal'éex'*	's/he broke it'	+	+	$\sqrt[1]{l'ix'}$	'break'	achievement	
	al'óon	's/he hunts it'	+	+	$\sqrt[2]{l'u'n}$	'hunt'	activity (-μH)	Ø
	aya.óo	's/he owns it'	+	+	$\sqrt[2]{.u}$	'own'	state (-μH)	Ø
	aawa.oo	's/he bought it'	+	+	$\sqrt[2]{u}$	'own'	achievement	Ø
	aawa.óos'	's/he washed it'	+	+	$\sqrt[2]{.us'}$	'wash'	achievement	
	ayasáakw	's/he calls, names it'	+	+	$\sqrt[2]{sa}$	'name'	state (-μH)	Ø
	atéew	's/he reads/counts it'	+	+	$\sqrt[2]{ti'w}$	'count'	activity (-μH)	
	tá	's/he sleeps'	–	+	$\sqrt[1]{ta^h}$	'sg. sleep'	activity (-μ)	
	axwéi	's/he teases him/her'	+	+	$\sqrt[2]{xwe}$	'tease'	activity (-μH)	
	akawsigaax	's/he made him/her cry'	+	+	$\sqrt[1]{gax}$	'cry'	achievement	*g*
s-	*asxáat'*	's/he drags it'	+	+	$\sqrt[2]{xat'}$	'drag'	activity (-μH)	*g*
	asxéik'w	's/he sips, slurps it'	+	+	$\sqrt[2]{xek'w}$	'slurp'	activity (-μH)	
	kawlikoox	'it went dry'	+	–	$\sqrt[1]{kux}$	'dry'	achievement	Ø
l-	*ilkú*	's/he vomits'	–	+	$\sqrt[1]{ku}$	'vomit'	activity (-H)	*g*
	akawlitéex'	's/he twisted it'	+	+	$\sqrt[2]{tix'}$	'twist'	achievement	Ø
	ashalxóot'	's/he rod-fishes for it'	+	+	$\sqrt[2]{xut'}$	'pull, drag'	activity (-μH)	
	al.éil'	's/he salts it'	+	+	$\sqrt[1]{.el'}$	'salt'	activity (-μH)	*g*
	awlik'oots	's/he broke it'	+	+	$\sqrt[2]{k'uts}$	'snap'	achievement	
	altl'éet	's/he discards it'	+	+	$\sqrt[2]{tl'it}$	'discard'	activity (-μH)	
l^s-	*alts'íxaa*	's/he sneezes'	+	+	$\sqrt[1]{ts'ix}$	'sneeze'	activity (-H)	
	alx'eesh	's/he skins it'	+	+	$\sqrt[2]{x'ish}$	'flay'	activity (-μ)	
	alxéis'	's/he wishes for it'	+	+	$\sqrt[2]{xes'}$	'wish'	activity (-μH)	
	awlix'wáas'	's/he dehaired it'	+	+	$\sqrt[2]{x'was'}$	'bald'	achievement	*g*

Table 6.26: Some *n*-conjugation verbs

are sleeping' – are plausibly horizontal because they denote laying flat in a sleeping position, and *woonaa* 's/he died' may be similar.

The verb *wootáax'w* 'it sank' is surprising since it seems like it should be a member of the *g*-conjugation class given the downward orientation of sinking. Likewise we might expect *ilkú* 's/he vomits' to be either upward *g*-conjugation with the movement of stomach contents upward, or instead *g*-conjugation with movement downward from the mouth. Finally, many lexically specified *n*-conjugation verbs appear to be arbitrary such as *aawal'éex'* 's/he broke it', *atéew* 's/he reads, counts it', *aawa.óos'* 's/he washed it', and essentially all of the *n*-conjugation states like *yagéi* 'it is big', *shayadihéin* 'it is many', and *ayahéin* 's/he claims it'.

3.4.4. Ø-CONJUGATION IS THE ELSEWHERE CASE

The Ø-conjugation class has no particular meaning among the lexically specified conjugation classes, just like its lack of meaning among motion derivations (sec. 3.3.4). As I argued in section 3.3.4.1, although Leer (1991) attributes telicity to the Ø-conjugation class I have found atelic verbs in the Ø-conjugation class as well as telic verbs in the other classes. For example, the activity root $\sqrt[2]{l'a^h}$ 'suck on' is lexically specified for the Ø-conjugation class but does not necessarily describe telic events like the imperfective *xal'áa* 'I suck on it; I'm sucking on it'. Similarly, it is difficult to identify any telicity with the state root $\sqrt[1]{t'a^h}$ 'hot' that is lexically specified as Ø-conjugation and forms imperfectives like *yat'aa* 'it is hot'. Furthermore, the verb root $\sqrt[2]{dlak}$ 'win' is lexically specified as *n*-conjugation, but it denotes an inherently telic achievement and is not Ø-conjugation. Thus Ø-conjugation verbs need not be telic and telic verbs need not be Ø-conjugation.

Table 6.27 on page 627 gives a selection of lexically specified Ø-conjugation class verbs, following the same selection process and organization as in tables 6.23–6.26. The largest lexically specified conjugation class is probably the Ø-conjugation class, so table 6.27 is only a tiny sample of the inventory. The most common grammatical aspect in texts is probably the perfective, and because the perfective aspect uniquely identifies the Ø-conjugation by stem variation it is relatively easy to document. As a consequence of the ease of identifying this class there could be an inherent lexicographic bias for Ø-conjugation;[39] whether a documentary bias actually exists is unclear, but I am inclined to believe that Ø-conjugation is really the most common lexically specified class. The majority of bivalent roots deriving basic activities seem to be in the Ø-conjugation class, so there is a strong but not deterministic correlation between Ø-conjugation and transitive activities; this is similar to the correlation between states and *g*-conjugation discussed in section 3.4.1. There are relatively few states that are lexically specified for Ø-conjugation, though any reasons for this are unknown.

The verbs in table 6.27 show no obvious signs of spatial semantics between them. This is not a large sample and is probably not statistically representative, but in general I have never noticed any indication of spatial meaning among Ø-conjugation verbs. I consider the Ø-conjugation class to be the elsewhere case for lexical specification just as for motion derivations (sec. 3.3.4). As Burge (2017: 36–37) has pointed out, since the Ø-conjugation class is the elsewhere case it should have no coherent meaning. I find that this is indeed the case.

39. For example, one might see a Ø-conjugation perfective and not check the availability of other conjugation classes.

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conjs.*
	yat'aa	'it's hot'	+	–	$\sqrt[1]{t'a^h}$	'hot'	state (-μ)	
	yéi dinook	's/he feels thus'	+	–	$\sqrt[2]{nuk}$	'feel'	state (-μ)	
–	*uwa.áx'w*	'it got cracked'	+	–	$\sqrt[1]{.ax'w}$	'crack'	achievement	
	uwa.ée	'it got cooked'	+	–	$\sqrt[1]{.i}$	'cook'	achievement	
	uwadút'	's/he hiccuped'	+	–	$\sqrt[1]{dut'}$	'hiccup'	achievement	
	a.áak	's/he weaves it'	+	+	$\sqrt[2]{.ak}$	'weave'	activity (-μH)	
	a.aa<u>x</u>w	's/he ties it'	+	+	$\sqrt[2]{.a\underline{x}w}$	'tie'	activity (-μ)	
	akadóox'	's/he knots it'	+	+	$\sqrt[2]{dux'}$	'knot'	activity (-μH)	
Ø	*a.een*	's/he kills them'	+	+	$\sqrt[2]{.in}$	'gather'	activity (-μ)	
	al'áa	's/he sucks on it'	+	+	$\sqrt[2]{l'a^h}$	'suck on'	activity (-μH)	
	axáas'	's/he scrapes it'	+	+	$\sqrt[2]{xas'}$	'scrape'	activity (-μH)	
	a<u>x</u>á	's/he eats it'	+	+	$\sqrt[2]{\underline{x}a}$	'eat'	activity (-H)	
	a<u>x</u>'aal	's/he crunches it'	+	+	$\sqrt[2]{\underline{x}'al}$	'crunch'	activity (-μ)	
	si.áat'	'it's cold'	+	–	$\sqrt[0]{.at'}$	'cold'	state (-μH)	
	asdáak	's/he steams it'	+	+	$\sqrt[1]{dak}$	'steam'	activity (-μH)	
	as.ée	's/he cooks it'	+	+	$\sqrt[1]{.i}$	'cook'	activity (-μH)	
s-	*awsikóo*	's/he came to know it'	+	+	$\sqrt[2]{ku^h}$	'know'	achievement	
	awsitáa	's/he boiled it'	+	+	$\sqrt[1]{ta}$	'boil'	achievement	
	aadé yaxát	'it extends there'	+	–	$\sqrt[1]{xa't}$	'fasten'	state (-H)	
	asxook	's/he dries it'	+	+	$\sqrt[1]{xuk}$	'dry'	activity (-μ)	
	akla<u>g</u>át	's/he sifts it'	+	+	$\sqrt[1]{\underline{g}at}$	'sift'	activity (-μH)	
l-	*altín*	's/he watches it'	+	+	$\sqrt[2]{tin}$	'see'	activity (-H)	Ø/<u>g</u>/g
	dliwóo	's/he is pale'	+	–	$\sqrt[1]{wu}$	'pale'	state (-μH)	
	alyé<u>x</u>	's/he builds/makes it'	+	+	$\sqrt[2]{ye\underline{x}}$	'build'	activity (-H)	
	akawli<u>k</u>éts'	's/he tickled him/her'	+	+	$\sqrt[1]{\underline{k}ets'}$	'tickle'	achievement	
l^{s}-	*alshées'*	's/he squeezes it out'	+	+	$\sqrt[2]{shis'}$	'squeeze'	activity (-μH)	
	alshéesh	's/he sips it'	+	+	$\sqrt[2]{shish}$	'sip'	activity (-μH)	
	awliyél	's/he deceived him/her'	+	+	$\sqrt[2]{yel}$	'deceive'	achievement	
	akawshi<u>g</u>íl'	's/he polished it'	+	+	$\sqrt[2]{\underline{g}il'}$	'polish'	achievement	
	awshikín	'it bothered him/her'	+	+	$\sqrt[2]{ki'n}$	'bother'	achievement	
sh-	*awshitít'*	's/he tensed it'	+	+	$\sqrt[2]{tit'}$	'tense'	achievement	
	wushi.útl	'it (fish) got boiled'	+	–	$\sqrt[1]{.u'tl}$	'boil fish'	achievement	
	akshaxeet	's/he writes it'	+	+	$\sqrt[2]{xit}$	'scratch'	activity (-μH)	

Table 6.27: Some Ø-conjugation verbs

3.5. Conjugation prefixes and grammatical aspect

The conjugation prefixes have two distinct functions as sketched earlier in section 3.1. These two functions are: (i) indicating conjugation class membership and (ii) indicating grammatical aspect. In sections 3.3 and 3.4 I detailed the conjugation class–indicating function of the conjugation prefixes for motion verbs and non-motion verbs. In this section I describe the grammatical aspect function of the conjugation prefixes, where they are used to indicate prospective and progressive aspect. I argue in this section, following Burge (2017), that the spatial semantics of the conjugation classes underlies the dedicated grammatical aspect functions of the conjugation prefixes.

The *g̲-* conjugation prefix is used to express prospective aspect and the *n-* conjugation prefix is used to express progressive aspect.[40] The examples in (231) illustrate the prospective and progressive aspects with a lexically specified *g̲*-conjugation verb based on the root $\sqrt[1]{ni\underline{x}}$ ~ $\sqrt[1]{ne\underline{x}}$ 'safe, recovered, rescued, healed'. These show the appearance of the *g̲-* prefix in (231b) for the prospective aspect and the *n-* prefix in (231c) for the progressive aspect even though the imperative in (231a) shows that the verb is *g̲*-conjugation.

(231) a. G̲aneex̲! *n-conj. imperative*
g̲- $\sqrt[1]{ni\underline{x}}$-μ
GCNJ-2SG·S $\sqrt[1]{\text{safe}}$-VAR
'Recover!', 'Get safe!'

b. Yei naníx̲. *g̲-conj. prospective aspect with g̲-*
yei= n- $\sqrt[1]{ni\underline{x}}$-H
down=NCNJ-$\sqrt[1]{\text{safe}}$-VAR
'S/he is recovering.', 'S/he is becoming safe.'

c. Yei kg̲wanéex̲. *g̲-conj. progressive aspect with n-*
yei= w- g̲- g̲- $\sqrt[1]{ni\underline{x}}$-μH
down=IRR-GCNJ-MOD-$\sqrt[1]{\text{safe}}$-VAR
'S/he will recover.', 'S/he will be safe.'

There is a problem that arises with the conjugation prefixes used as grammatical aspect markers, namely that the phenomena associated with conjugation class remain tied to the lexical or derivational class and do not reflect the prefixes used for grammatical aspect (sec. 3.1; ch. 2 sec. 1.3.1.4). This can be seen in (231b) and (231c) with the selection of the *yei=* 'down' preverb that reflects the *g̲*-conjugation class explicitly indicated by *g̲-* in (231a). I argued in section 1.3 that the *u*/*wu*-perfective aspect has a covert conjugation prefix which accounts for the sensitivity of both perfective prefix allomorphy and perfective stem variation to conjugation class. I then argued in section 2.1.1 that *CNJ*-imperfectives have a covert aspect prefix with an overt conjugation prefix, but that the non-iterative *∅*-imperfective aspect shows no signs of sensitivity to conjugation class and so is analyzed without a conjugation prefix. I extend this model further, suggesting that the prospective and progressive might actually have two 'conjugation' prefixes: an overt prefix expressing aspect just like perfective *u-* or *wu-* and a covert prefix that codes for conjugation class. This is illustrated by figure 6.22 which represents a progressive aspect form of a *g̲*-conjugation verb where the preverb *yei=* is determined by the conjugation class.

40. I have suggested in earlier work that the *∅* conjugation prefix could be the covert aspectual prefix in *∅*-imperfective aspect forms, but I argued in section 2.1.1 that the two covert prefixes must be structurally distinct.

Figure 6.22: Overt progressive aspect prefix and covert conjugation class prefix

The idea in figure 6.22 is that the overt prefix *n-* fills the role of encoding progressive aspect, and so conditions the value *-H* for V. There is also a covert conjugation prefix <*g̲-*> that encodes the conjugation class. The Adv probes the covert conjugation prefix to determine its realization as *yei=* in accord with the *g̲*-conjugation class. A problem with the model in figure 6.22 is that it is overly complex. The purpose of the covert complexity is to ensure that Adv has an appropriate value for the lexically or derivationally specified conjugation class. But his can be done just as well by the [G̲CNJ] feature in √ because the root is always within the c-command domain of Adv regardless of where it is merged. If however the conjugation class is specified by some other element, say by a path argument in a motion derivation, Adv might not be in the correct position to determine its conjugation class. This depends on where Adv is first merged relative to both Asp and the element that is the basis of the conjugation class, so I leave the elaboration of the machinery to future investigation of the conjugation class system.

The connection between conjugation prefixes and grammatical aspect is not arbitrary because it reflects a universal fact about human languages: space is used metaphorically to communicate information about time. Time is linguistically expressed through metaphors about space because we lack a coherent perception of time that we can easily communicate to others (e.g. Eagleman et al. 2005; Le Poidevin 2015) but we have a robust sense of space that is integrated from vision, touch, balance, and proprioception (Kandel et al. 2013: 374, 418, 870) for which we have a rich communicative repertoire in both language and gesture. Our spatial metaphors for time map our awareness that the world changes from one moment to the next onto our direct perceptions of things moving from place to place. Our perceptual mechanisms for time and space are neurological universals in our species, and our languages reflect this by the crosslinguistic universality of spatial metaphors for time. But even though the existence of a time → space mapping in language is universal, the details of this mapping in each language can vary due to syntactic and semantic constraints as well as historical change, language contact, and cultural factors like metaphysical philosophy.

English uses two basic spatial metaphors for time (see e.g. Kövecses 2010: 38–39): time is a space

through which the observer travels (⊖→), and time is a space which travels past the observer (·⇦). The difference between these two metaphors lies in whether the observer is fixed in place or not. Some examples of the observer-moving case (⊖→) are illustrated in (232) below, specifically showing references to future time. In (232a) the observer is not explicitly mentioned but the verb *getting close* denotes movement that approaches the metaphorical location of winter. In (232b) the verb *going* lexically denotes physical motion but here is used grammatically to express metaphorical movement toward a time in the future. And in (232c) the verb *headed* metonymically expresses the motion of a body part as the motion of the observer into a spatial region containing the new year.

(232) a. It's *getting close* to winter already. *observer moving through time* (⊖→)

b. I'm *going* to fire you if you don't get your work done.

c. We are *headed into* the new year.

A few examples of the observer-fixed case (·⇦) are illustrated in (233), again showing references to future time. In (233a) the winter season moves toward the observer, in (233b) the birthday moves toward the observer, and in (233c) the deadline goes past the observer. These expressions can either describe events as entities moving themselves through a 'time space' toward the observer or instead events as entities carried along in a 'time stream' that flows toward the observer, depending on whether we attribute volition to the motion of the event entities or not.

(233) a. Winter is *coming*. *time moving toward observer* (·⇦)

b. Her birthday will be *here* soon.

c. The deadline *raced by* while we argued over details.

For both the observer-moving case (⊖→) and the space-moving case (·⇦) in English, the future is forward with respect to the observer and the past is thus behind the observer. This organization is very common crosslinguistically but it is not universal. Aymara (Aymaran; Peru, Bolivia) is known for having the opposite organization where the future is behind the observer and the past is in front, with both linguistic and gestural indications (Núñez & Sweetser 2006). Hollenbach (1977) reports a similar system for Copala Trique (Oto-Manguean; Mexico), although some of her data can also be interpreted as a forward-future with a fixed observer. Mandarin Chinese is also well known for its temporal use of vertical space with the past upward and the future downward in various structures that use 上 *shàng* 'up' and 下 *xià* 'down' (Scott 1989; Yu 1998; Chen 2007).

The relationship between spatial and temporal expression was first mentioned for Tlingit by Burge (2017) in her analysis of the conjugation prefixes and aspect. This kind of relationship is rarely mentioned in the literature on tense and aspect, but it is certainly not a new idea. Linguists have long recognized the connection between time and space in both signed and spoken languages (Traugott 1975; Frishberg 1975; Hollenbach 1977; Cates et al. 2013), and the psycholinguistic and cognitive linguistic literature often focuses on the mapping of space to time as a prototypical example of conceptual metaphor (Núñez, Motz, & Teuscher 2006; Moore 2006; Huang 2016; Huumo 2017). Although metaphor is rarely modelled in formal semantics, there is a comparatively rich philosophical literature on the formalization of metaphor (e.g. Hintikka & Sandu 1994; van Genabith 2001; Steinhart 2001; Zemach 2001; Segerberg 2011). I do not offer a formal model of the mapping between space and time in Tlingit's grammatical aspect, but I believe one is within the reach of current semantic theory and would provide a novel approach for the crosslinguistic analysis of aspect and tense.

The conjugation class prefixes in Tlingit do not completely partition the logical space of aspect, unlike how they partition space. This is probably because the conjugation prefixes were adapted from a basic spatial meaning to an aspectual one, with the perfective/imperfective contrast already in place. This evolutionary direction is typical for the space → time metaphor crosslinguistically; no languages use an aspectual system to express spatial relationships, but many languages use spatial expressions for encoding aspect.

A thorny problem with the spatial metaphor analysis of conjugation-based grammatical aspect in Tlingit is that the system appears to be more or less frozen so that the spatial metaphor is no longer productive. There are only three directions available in the conjugation class system space because *Ø* is meaningless (secs. 3.3.4 & 3.4.4). Only two of those directions are exploited for aspect, namely upward *g-* for prospective aspect and horizontal *n-* for progressive aspect. The system may have been more productive in the past, or it may be still in the process of becoming productive. If it is becoming productive, we should find that some people are able to play with it. But preliminary probes suggest that it is largely unavailable for meaning play, so it is probably losing productivity. One area to test is the interaction between conjugation class and non-aspectual temporal PPs like those used for event sequencing in discourse. If the system is losing productivity then we expect interactions between the two to be minimal at best.

3.5.1. *G-* PREFIX: PROSPECTIVE ASPECT

The *g-* conjugation prefix is dedicated to the expression of prospective aspect, as described extensively by Burge (2017) and shown earlier. When used as a conjugation class indicator, the *g-* prefix is associated with upward spatial orientation as detailed in sections 3.3.1 and 3.4.1. I suggest here that the two functions are not accidental, but I do not yet have a coherent analysis that accounts for the relationship between them.

(234) a. Kei gaxtooyáa. *g-conj. prospective with g-*
kei=w- g- g- tu- ²√ya-μH
up= IRR-GCNJ-1PL·S-²√pack-VAR
'We will pack it (on back).'

b. Yei gaxtulasháat. *g-conj. prospective with g-*
yei= w- g- g- tu- lˢ- ²√sha't-μH
down=IRR-GCNJ-1PL·S-XTN-²√grab-VAR
'We will hold/capture it.'

c. Gaxtoohóon. *n-conj. prospective with g-*
w- g- g- tu- ²√hun-μH
IRR-GCNJ-1PL·S-²√sell-VAR
'We will sell it.'

d. Gaxtooxáa. *Ø-conj. prospective with g-*
w- g- g- tu- ²√xa-μH
IRR-GCNJ-1PL·S-²√eat-VAR
'We will eat it.'

The semantic contribution of the conjugation class has to be distinct from the grammatical aspect interpretation of the conjugation prefix. This is shown in (235) with the *g*-conjugation root ¹√*nix*

~ $^{1}\sqrt{ne\underline{x}}$ 'safe, recovered, rescued, healed'. The preverb *yei=* 'down' is required in (235a) because of the lexical specification of the root. Switching to *kei=* 'up' would match the *g*-conjugation class, but this is ungrammatical in (235b). Thus even though the *g-* prefix appears in prospective aspect forms, it does not code for *g*-conjugation class.

(235) a. Yei kg̲wanéex̲. *g̲-conj. prospective with yei=*
yei= w- g̲- g̲- $^{1}\sqrt{ni\underline{x}}$-μH
down=IRR-GCNJ-MOD-$^{1}\sqrt{}$safe-VAR
'S/he will recover.', 'S/he will be safe.'

b. *Kei kg̲wanéex̲. **g̲-conj. prospective with kei=*
kei=w- g̲- g̲- $^{1}\sqrt{ni\underline{x}}$-μH
up= IRR-GCNJ-MOD-$^{1}\sqrt{}$safe-VAR
intended: 'S/he will recover.', 'S/he will be safe.'

To explain the use of the *g-* conjugation prefix for prospective aspect, we can appeal to a spatial framework where the origo is the 'now' point and any point above the origo is temporally sequenced after the 'now'; thus the future is up. This is conceptually the reverse of the system in Mandarin Chinese, where 下 *xià* 'down' reflects a future (expected) eventuality and 上 *shàng* 'up' a past (experienced) eventuality (Scott 1989; Yu 1998; Chen 2007). Tlingit does not have a symmetric system however because *g̲-* is not used for past eventualities. This is additional evidence that the space → time mapping for grammatical aspect is more or less fossilized in Tlingit because otherwise we would expect analogous extension and generalization. Instead, given no evidence for either elaboration or loss in the last century or so, I suspect that the prospective prehistorically had a more salient spatial meaning that is now fixed and unproductive.

3.5.2. *N-* PREFIX: PROGRESSIVE ASPECT

The *n-* prefix is dedicated to the expression of progressive aspect. When used as a conjugation class indicator, the *n-* prefix is associated with horizontal spatial orientation as detailed in sections 3.3.3 and 3.4.3. As with the *g-* conjugation prefix which is used for prospective aspect (sec. 3.5.1), I suggest that horizontality and progressive aspect are semantically related through spatial metaphor for time, but I do not have a coherent formalization for this relationship.

(236) a. Kei ntooyéin. *g-conj. progressive with n-*
kei= n- tu- $^{2}\sqrt{}$ya -eH-n
up= NCNJ-1PL·S-$^{2}\sqrt{}$pack-VAR-NSFX
'We are packing it (on back).', 'We are packing it (on back) along.'

b. Yei ntulashát. *g̲-conj. progressive with n-*
yei= n- tu- lˢ- $^{2}\sqrt{}$sha't-H
down= NCNJ-1PL·S-XTN-$^{2}\sqrt{}$melt -VAR
'We are capturing it.', 'We are in the process of holding it.'

c. Yaa ntoohún. *n-conj. progressive with n-*
ÿaa= n- tu- $^{2}\sqrt{}$hun-H
along= NCNJ-1PL·S-$^{2}\sqrt{}$sell -VAR
'We are selling it.', 'We are in the process of selling it.'

d. Yaa ntooxéin. *Ø-conj. progressive with n-*
ÿaa= n- tu- $\sqrt[2]{}$xa-eH-n
along= NCNJ-1PL·S-$\sqrt[2]{}$eat-VAR-NSFX
'We are eating it.', 'We are going along eating it.', 'We are eating along it.'

The association between horizontality and progressive aspect is at once intuitively familiar and frustratingly nebulous. The use of the *ÿaa=* 'along' preverb in the progressive aspect is a major if not primary nexus between the spatial and temporal semantics, since it conveys both horizontal movement and the progression of time. We can envision a space through which an eventuality stretches, with the immediate moment progressively moving along through the space. But why should this be horizontal? If the prospective aspect is upward from the origo then it would be logical for progressive aspect to move upward toward the future. Instead the progressive seems to represent a distinct space → time mapping where eventualities (or times) move horizontally rather than vertically. This suggests that there may be more than one metaphysical framework for time embedded in the language; further work on testing aspectual distinctions might find areas where the different frameworks are in competition.

4. Irrealis *u-*

Irrealis in Tlingit is marked explicitly by a dedicated prefix *u-* in Asp⁰ with an allomorph *w-* in some contexts. The irrealis prefix may be phonologically obscured without change in meaning, but if it is otherwise absent then the absence of irrealis is effectively realis. Irrealis marking in Asp⁰ can be required by lexical specification, by derivational morphology, by grammatical aspect, mood, and modality, or by higher structural modification of the clause (e.g. negation). Although we still lack an adequate semantic account, irrealis essentially seems to involve possible worlds that are disjoint with the actual world. Tlingit irrealis reflects two semantic realms: unreality and negativity. Unreal phenomena include possibility, similarity (without identity), hope, intention, and doubt. Negative phenomena include absence, pejoration, prohibition, and propositional negation. I attempt to categorize all of Tlingit's irrealis phenomena into one of these two semantic realms.

An **irrealis trigger** is a syntactic and semantic phenomenon that requires irrealis marking and thus the appearance of an irrealis prefix in Asp⁰. There are four sets of irrealis triggers: (i) lexical specification, (ii) derivational specification, (iii) aspectual conditioning, and (iv) structural conditioning. Lexical specification in √ is a wholly unpredictable irrealis trigger that is associated with both unreal and negative phenomena (sec. 4.2). Derivational specification of irrealis (sec. 4.3) includes comparisons and pretend activities. Uniquely, derivational triggers only involve unreal phenomena and not negative phenomena. Aspectually conditioned irrealis (sec. 4.4) is particularly associated with the prospective aspect, the potential (possibility) modality, and the admonitive mood. Of these three aspectual contexts, the admonitive mood probably involves negative phenomena whereas the other two involve unreal phenomena. Structurally conditioned irrealis (sec. 4.5) involves the presence of syntactic elements outside of AspP and thus external to the verb word. The most well known of these is negation with *tléil* 'not', but the optative with *gu.aal* 'hopefully', prohibitive with *líl* 'don't', and dubitative with *gwál* 'maybe' also trigger irrealis marking. Negation is by definition a kind of negative phenomenon and the prohibitive is similar, but the optative and dubitative involve unreality instead.

Irrealis describes possible worlds that are disjoint with the actual world. The minimal pair in (237) illustrates this with the verb root $\sqrt[2]{hun}$ 'sell' that denotes an activity of selling. The realis form in (237a) denotes a real activity of selling whereas the irrealis form in (237b) denotes an unreal activity of selling that is not occurring at the time of utterance.

(237) a. Ahóon. *realis imperfective*
a- $\sqrt[2]{}$hun-μH
ARG-$\sqrt[2]{}$sell -VAR
'S/he sells it.', 'S/he is selling it.'

b. Oohóon. *irrealis admonitive*
a- u- $\sqrt[2]{}$hun-μH
ARG-IRR-$\sqrt[2]{}$sell -VAR
'Lest s/he sell it.'

In (237b) the irrealis is specified by the aspectual category; specifically, the combination of irrealis *u-*, conjugation prefix *CNJ-* (here *Ø*), and *-μH* stem variation together form the admonitive (sec. 2.2.3.1). But irrealis marking can also be triggered syntactically by negation as illustrated in (238). The imperfective aspect form in (238a) denotes a state as indicated by *i-* in Ɛ. The negation in (238b) has the negative particle *tléil* 'not' merged in Neg above AspP. Concomitant with the negative particle are the irrealis *u-* in Asp⁰, the suppression of *i-* in Ɛ, and *-μ* stem variation in V. The *-μ* stem variation rather than *-μH* is due to V-agreement with Neg superseding V-agreement with Asp⁰ (ch. 2 sec. 2.7).

(238) a. Ixshik'áan. *affirmative realis state Ø-imperfective*
i- x- sh- i- $\sqrt[2]{}$k'an-μH
2SG·O-1SG·S-PEJ-STV-$\sqrt[2]{}$hate -VAR
'I hate you (sg.).'

b. Tléil ixwshak'aan. *negative irrealis state Ø-imperfective*
tléil i- u- x- sh-$\sqrt[2]{}$k'an-μ
NEG 2SG·O-IRR-1SG·S-PEJ-$\sqrt[2]{}$hate -VAR
'I don't hate you (sg.).'

Irrealis can also occur as part of a complex of derivational morphology added to the basic verbal structure. One context for this is the comparative derivation that can be applied to states denoting dimensional properties like 'long' or 'heavy'. The data in (239) illustrate the contrast between an ordinary dimension and a comparative dimension. The comparative form in (239b) shows the addition of the comparative prefix *k-*, the irrealis *u-*, and the *-μH* stem variation. Unlike the negation above in (238b), the stative *i-* in Ɛ is unaffected by the addition of comparative morphology, so suppression of *i-* is not required by irrealis status.

(239) a. Yayát'. *realis state Ø-imperfective*
i- $\sqrt[1]{}$ÿat'-H
STV-$\sqrt[1]{}$long-VAR
'It's long.'

b. Ax̲ yáanáx̲ koowáat'. *comparative irrealis state Ø-imperfective*
ax̲ yáanáx̲ k- u- i- $^{1}\sqrt{}$ÿat'-μH
1SG more CMPV-IRR-STV-$^{1}\sqrt{}$long-VAR
'It's longer than me.'

Finally, irrealis can be lexically specified by the root. This is shown by the minimal pair in (240a). The root $^{2}\sqrt{}$*ÿa*ʰ 'resemble, look like' is lexically specified for irrealis so the realis state imperfective in (240a) is ungrammatical and the grammatical form has irrealis *u-* in (240b).

(240) a. *Ax̲ kéek' x̲at yayáa. **realis state Ø-imperfective*
ax̲ kéek' x̲at= i- $^{2}\sqrt{}$ÿaʰ -μH
1SG·PSS y·sister 1SG·O= STV-$^{2}\sqrt{}$resemble-VAR
'My younger sister looks like me.'

b. Ax̲ kéek' x̲at uwayáa. *lexical irrealis state Ø-imperfective*
ax̲ kéek' x̲at= u- i- $^{2}\sqrt{}$ÿaʰ -μH
1SG·PSS y·sister 1SG·O=IRR-STV-$^{2}\sqrt{}$resemble-VAR
'My younger sister looks like me.'

Irrealis marking does not stack in Tlingit, so that a verb can lack irrealis or can be marked for irrealis but cannot have more than one instance of irrealis marking. This can be shown by combining different structures that each require irrealis marking. The data in (241) illustrate a lexical irrealis with its negation where the negative does not show additional irrealis morphology. The grammatical negative form in (241b) is identical to the affirmative in (241a), with only one irrealis prefix. The ungrammatical form in (241c) shows that the negation does not add a second irrealis prefix in addition to the one specified by the lexical entry. Similarly, the ungrammatical form in (241d) shows that irrealis is not polar, so that one irrealis trigger does not cancel out another irrealis trigger. Similar facts obtain for other contexts where multiple sources of irrealis marking are present.

(241) a. X̲at utee. *affirmative irrealis activity Ø-imperfective*
x̲at= u- $^{2}\sqrt{}$tiʰ -μ
1SG·O=IRR-$^{2}\sqrt{}$imitate-VAR
'S/he is imitating me.'

b. Tléil x̲at utee. *negative irrealis activity Ø-imperfective*
tléil x̲at= u- $^{2}\sqrt{}$tiʰ -μ
NEG 1SG·O=IRR-$^{2}\sqrt{}$imitate-VAR
'S/he isn't imitating me.'

c. *Tléil x̲at ootee. **negative with additional u-*
tléil x̲at= u- u- $^{2}\sqrt{}$tiʰ -μ
NEG 1SG·O=IRR-IRR-$^{2}\sqrt{}$imitate-VAR
intended: 'S/he isn't imitating me.'

d. *Tléil x̲at tee. **negative without u-*
tléil x̲at= $^{2}\sqrt{}$tiʰ -μ
NEG 1SG·O=$^{2}\sqrt{}$imitate-VAR
intended: 'S/he isn't imitating me.'

Since irrealis marking does not stack, this effectively means that all verbal clauses are either realis (not irrealis-marked) or irrealis (irrealis-marked). We can represent this schematically in (242), with the symbol realis standing for absence of irrealis morphology and the symbol irrealis standing the presence of irrealis morphology.

(242) a. [$_{CP}$ realis] *realis clause*

b. [$_{CP}$ irrealis] *irrealis clause*

c. *[$_{CP}$] **neither realis nor irrealis*

Irrealis is not only a property of whole clauses, it is also limited to single clauses. A matrix clause can be irrealis without requiring its complement or adjunct to be irrealis, and vice versa. Irrealis thus does not transcend clause boundaries, and so it does not exhibit cross-clausal interactions (compare sequence of tense). This is shown by the data in (243)–(245). First, the sentence in (243) is a baseline example with a realis matrix clause and a realis complement clause, both verbs of which denote imperfective activities.

(243) Yéi x̲'ayak̲á has ahóon. [$_{CP}$ realis [$_{CP}$ realis]]
yéi= x̲'e- ÿ- ²√k̲a-H has=a- ²√hun-μH
thus=mouth-QUAL-²√say-VAR [$_{CP}$ PLH=ARG-²√sell -VAR]
'S/he says [that they sell it].'

The data in (244) shows that irrealis status does not sink down from the matrix clause into the complement clause since (244b) is ungrammatical.

(244) a. Tléil yéi x̲'awuk̲á has ahóon. [$_{CP}$ irrealis [$_{CP}$ realis]]
tléil yéi= x̲'e- ÿ- u- ²√k̲a-H has=a- ²√hun-μH
NEG thus=mouth-QUAL-IRR-²√say-VAR [$_{CP}$ PLH=ARG-²√sell -VAR]
'S/he doesn't say [that they sell it].'

b. *Tléil yéi x̲'awuk̲á has oohóon. *[$_{CP}$ irrealis [$_{CP}$ →irrealis]]
tléil yéi= x̲'e- ÿ- u- ²√k̲a-H has=a- u- ²√hun-μH
NEG thus=mouth-QUAL-IRR-²√say-VAR [$_{CP}$ PLH=ARG-IRR-²√sell -VAR]
intended: 'S/he doesn't say [that they sell it].'

The data in (245) shows that irrealis status does not float up from the complement clause into the matrix clause since (245b) is ungrammatical.

(245) a. Yéi x̲'ayak̲á tléil has oohóon. [$_{CP}$ realis [$_{CP}$ irrealis]]
yéi= x̲'e- ÿ- ²√k̲a-H tléil has=a- u- ²√hun-μH
thus=mouth-QUAL-²√say-VAR [$_{CP}$ NEG PLH=ARG-IRR-²√sell -VAR]
'S/he says [that they don't sell it].'

b. *Yéi x̲'awuk̲á tléil has oohóon. *[$_{CP}$ irrealis← [$_{CP}$ irrealis]]
yéi= x̲'e- ÿ- u- ²√k̲a-H tléil has=a- u- ²√hun-μH
thus=mouth-QUAL-IRR-²√say-VAR [$_{CP}$ NEG PLH=ARG-IRR-²√sell -VAR]
intended: 'S/he says [that they don't sell it].'

As noted above, irrealis seems to denote possible worlds that are disjoint with the actual world. There is no crosslinguistic consensus about whether irrealis is a real category or an emergent phenomenon arising from other semantic operations (Portner 2018: 243). Many authors have decried a confusion in the literature between grammatical phenomena and semantic functions qua irrealis, often arguing that irrealis does not actually exist (e.g. de Haan 2012; Cristofaro 2012).[41] Burge (2017) argues that irrealis is not meaningless, not subjunctive, and not redundant, so that it has a semantic function distinct from other phenomena in the language. Since irrealis is represented by a prefix in Tlingit it demands a unique semantic interpretation in a compositional semantics. Exactly what this should be is still unknown, but hopefully the descriptive account presented in this section should provide a basis for further analysis of the irrealis category in Tlingit.

There are several of morphemes outside of the verb which contain a vowel /u/ or labialization and which may be related to the irrealis morpheme. The complex of particles with *gu* or *gw* might be etymologically decomposable into *gí* ~ *gé* 'yes/no' with irrealis **u*: *gu.aal* 'hopefully', *gushí* 'perhaps', *gwál* 'maybe', *gwáa* 'oh really'. In addition *óosh* 'hypothetically; if only' and *k̲aju* 'actually, in fact' may also be connected. None of these particles are synchronically derived from irrealis marking, but all are still involved in possible worlds semantics.

4.1. Some irrealis morphophonology

I have described the irrealis prefix as two contextual allomorphs *u-* and *w-*. Leer instead analyzes three distinct prefixes *u-*, *w-*, and *oo-* – his symbols "*u-*", "*ŭ-*", and "*u·-*" – that are associated with irrealis marking and that are in complementary distribution despite not being allomorphs (Leer 1991: 110–112, 176–182, 478–483).[42] Leer's argument for the distinct *oo-* prefix is based solely on vowel phonology in the Tongass dialect, specifically the realization of [Cuː] for *oo-* vs. [Cuʰ] for *u-* after a *C*(*V*)- prefix (Leer 1991: 178 rules 10c & 10d). This *oo-* allmorph does not seem to be distinct from *u-* in other dialects so I have abandoned it, leaving only the *u-* versus *w-* distinction. The *u-* is the more general prefix and the *w-* only occurs in some specific contexts, most notably prospective aspect.

Arguably the two *u-* and *w-* allomorphs could be unified into a single underlying form, but the consequences of this are still unexplored. Following her study of labial spreading (Weber 2012), Weber (p.c.) has suggested that the irrealis prefix may be better analyzed as an abstract labial feature [LAB] with an associated mora *μ*. Metrical constraints on the realization of the Conjunct domain could then account for the variety of surface forms for irrealis; outputs would reflect deletion of the mora, spreading of the feature, or coalescence with another vowel and deletion of the feature, among other possibilities. This approach presupposes a more general analysis of phonology in the Conjunct domain, so I leave it as a suggestion for future work and I maintain the traditional *u-* versus *w-* allomorphy with the caveat that it is likely artificial.

One substantial problem in the morphophonology of irrealis marking is that it can be obscured or deleted in certain phonological contexts. In such cases I continue to analyze an irrealis prefix as present in the underlying form. This is justified partly from paradigmatic patterns and partly from secondary effects of irrealis morphosyntax such as changes in stem variation. One context where the irrealis prefix is phonologically deleted is the prospective aspect, as illustrated by the forms in

41. Ironically, if irrealis is not a real semantic category this means that irrealis is irrealis.
42. Leer actually only considers the *u-* prefix associated with negation to be a real indicator irrealis and gives no meaning for the other two (Leer 1991: 110). I have found no justification for this distinction.

(246). The first person singular subject form in (246) shows labialization of consonants and the third person subject form in (246b) shows a labialized vowel [ù]. In contrast, the second person singular subject form in (246d) and the first person plural subject form in (246d) both lack labialization and so do not show overt irrealis.

(246) a. At kk̲wasa.ée. *1sg subj. prospective*
[ʔàt‿ kʷ.qʰʷà.sà.ˈʔíː]
at= w- g- g̲- x̲- s- ¹√.i
4N·O=IRR-GCNJ-MOD-1SG·S-CSV-¹√cook
'I will cook something.'

b. At gux̲sa.ée. *3 subj. prospective*
[ʔàt.‿ kʷùχʷ.sà.ˈʔíː]
at= w- g- g̲- s- ¹√.i
4N·O=IRR-GCNJ-MOD-3·S-CSV-¹√cook
'S/he will cook something.'

c. At kg̲isa.ée. *2sg subj. prospective*
[ʔàt.‿ k.qì.sà.ˈʔíː]
at= w- g- g̲- i- s- ¹√.i -μH
4N·O=IRR-GCNJ-MOD-2SG·S-CSV-¹√cook-VAR
'You will cook something.'

d. At gax̲tusa.ée. *1pl subj. prospective*
[ʔàt.‿ kàχ.tʰù.sà.ˈʔíː]
at= w- g- g̲- tu- s- ¹√.i -μH
4N·O=IRR-GCNJ-MOD-1PL·S-CSV-¹√cook-VAR
'We will cook something.'

There is no evidence that irrealis has any semantic interactions with subjects that would lead to its disappearance, and there is ample evidence that the phonology of prefixes in the Conjunct domain is driven by severe metrical constraints as well as cooccurrence constraints on particular phonological features like [LAB] and [ANT]. My analysis assumes an irrealis prefix in all prospective aspect forms even when it is not present on the surface because I believe that the lack of surface irrealis morphology can be explained wholly by phonology.

The same argument extends to a more difficult problem: irrealis *u-* is universally absent in the surface forms of the perfective aspect where it would otherwise be predicted. Leer suggests that irrealis is simply absent in such forms, but this cannot be possible if the irrealis prefix participates in compositional semantics. To illustrate the problem, the data in (247) show contrasting affirmative and negative forms of an imperfective, with the corresponding perfective forms in (248).

(247) a. At sa.ée. *affirmative activity Ø-imperfective*
[ʔàt.‿ sà.ˈʔíː]
at= s- ¹√.i -μH
4N·O=CSV-¹√cook-VAR
'S/he is cooking something.'

b. Tléil at us.ee. *negative activity Ø-imperfective*
[tɬʰéːɬ ʔàt.ˬ ʔùs.ˈʔìː]
tléil at= u- s- ¹√.i -μ
NEG 4N·O=IRR-CSV-¹√cook-VAR
'S/he isn't cooking something.'

(248) a. At wusi.ée. *affirmative wu-perfective*
[ʔàt.ˬ wù.sì.ˈʔíː]
at= wu-s- i- ¹√.i -μH
4N·O=PFV-CSV-STV-¹√cook-VAR
'S/he cooked something.'

b. Tléil at wus.í. *negative wu-perfective*
[tɬʰéːɬ ʔàt.ˬ wùs.ˈʔìː]
tléil at= u- wu-s- ¹√.i -H
NEG 4N·O=IRR-PFV-CSV-¹√cook-VAR
'S/he didn't cook something.'

The irrealis prefix is predicted to occur in all contexts with negation (sec. 4.5.1). But in (248b) the surface form lacks overt indication of the irrealis prefix. There is some variation in the transcription and orthographic representation of forms like (248b) where the sequence *u-wu-s-* is given as e.g. *woos* implying a long vowel [wùːs] (cf. e.g. Story & Naish 1973). If there is in fact a long vowel then this could be explained phonologically by the coalescence of monomoraic *wu-* and monomoriaic *u-* as bimoraic *woo* [wùː]. Phonetic studies of affirmative versus negative perfectives are lacking, but they are well reflected in archival recordings and should be relatively straightforward to quantify.

The preceding contexts of irrealis *u-* disappearance have had plausible phonological explanations. This is not the case for certain combinations of *u-* and subject prefixes in *Ø*-imperfective forms when there are no other prefixes (excluding proclitics) to the left of the irrealis prefix. As shown in (249)–(251), there are three subject prefixes involved: first person plural *tu-* 'we', second person plural *ÿi-* 'you guys', and fourth person human *du-* 'somebody, people' (Leer 1991: 110).

(249) a. *Tléil utoox̱á. **irrealis 1sg subj. activity Ø-imperfective*
[tɬʰéːɬ ʔù.tʰùː.ˈχá]
tléil u- tu- ²√x̱a-H
NEG IRR-1PL·S-²√eat-VAR
intended: 'We don't eat it.', 'We aren't eating it.'

b. Tléil toox̱á. *irrealis 1sg subj. activity Ø-imperfective*
[tɬʰéːɬ tʰùː.ˈχá]
tléil u- tu- ²√x̱a-H
NEG IRR-1PL·S-²√eat-VAR
'We don't eat it.', 'We aren't eating it.' (Eggleston 2017)

(250) a. *Tléil uyixá̱. *irrealis 2pl subj. activity Ø-imperfective
[tɬʰéːɬ ʔù.jì.ˈχá]
tléil u- ÿi- ²√xa̱-H
NEG IRR-2PL·S-²√eat-VAR
intended: 'You (pl.) don't eat it.', 'You (pl.) aren't eating it.'

b. Tléil yixá̱. *irrealis 2pl subj. activity Ø-imperfective
[tɬʰéːɬ jì.ˈχá]
tléil u- ÿi- ²√xa̱-H
NEG IRR-2SG·S-²√eat-VAR
'You (pl.) don't eat it.', 'You (pl.) aren't eating it.' (Eggleston 2017)

(251) a. *✓Tléil uduxá̱. *✓irrealis 4hum subj. activity Ø-imperfective
[tɬʰéːɬ ʔù.tù.ˈχá]
tléil u- du- ²√xa̱-H
NEG IRR-4H·S-²√eat-VAR
'People don't eat it.', 'People aren't eating it.'

b. Tléil duxá̱. *irrealis 4hum subj. activity Ø-imperfective
[tɬʰéːɬ tù.ˈχá]
tléil u- du- ²√xa̱-H
NEG IRR-4H·S-²√eat-VAR
'People don't eat it.', 'People aren't eating it.' (Eggleston 2017)

The forms in (249a) and (250a) show that the irrealis *u-* is effectively deleted with the first plural *tu-* and the second plural *ÿi-*. The situation is more complex with the fourth human *du-* in (251a). According to Leer "this deletion may optionally not apply with *du-* in forms where there is no prefix" *wu-*, *g̱-*, *n-*, or *g-* (Leer 1991: 110). He does not provide details on the dialectal or idiolectal distribution of this variation, but I can at least confirm that I have heard both kinds of forms in Coastal Northern Tlingit.

Leer claims that the irrealis *u-* also disappears with second singular *i-* 'you' (Leer 1991: 110), but I suspect this is incorrect. I think that the realization of the sequence *u-i-* is a long vowel [ʔìː], with one mora contributed by each prefix. Leer's underlying form for the second singular subject is long "*i-*" /iː/ but I instead analyze it as monomoraic *i-* /i/, leaving one mora of the surface form to be matched with the irrealis prefix as shown in (252a).

(252) a. Tléil eexá̱. *irrealis 2sg subj. activity Ø-imperfective
[tɬʰéːɬ ʔìː.ˈχá]
tléil u- i- ²√xa̱-H
NEG IRR-2SG·S-²√eat-VAR
'You (sg.) don't eat it.', 'You (sg.) aren't eating it.' (Eggleston 2017)

b. Tléil ixá̱. *irrealis 2sg subj. activity Ø-imperfective
[tɬʰéːɬ ʔì.ˈχá]
tléil u- i- ²√xa̱-H
NEG IRR-2SG·S-²√eat-VAR
'You (sg.) don't eat it.', 'You (sg.) aren't eating it.'

But there is also some variation in length not reported by Leer so that the forms in (252b) is also possible. This is exactly the form predicted by deletion of the irrealis prefix. A similar variation in length also occurs in *u*-perfective aspect forms with the second person singular subject *i-* (sec. 2.2.1). And this variation is part of a more widespread problem with variation in the realization of the verb prefix complex in Tlingit; the whole system needs review with acoustic analysis because all previous descriptions are based on impressionistic phonetics with no empirical analysis.

There is much more to be said about the phonology and phonetics of the irrealis prefix in Tlingit. This short summary only highlights some of the most common patterns of variation in its realization. As with the rest of the phonology of the verb word, more investigation is needed.

4.2. Lexically specified irrealis

Lexically specified irrealis is an irrealis trigger that is encoded in the lexical entry. As established in chapter 2 section 1.4, some roots in Tlingit may be lexically specified for an irrealis feature [IRR]. This lexical specification is realized by the mandatory presence of the irrealis prefix in Asp⁰. Most cases of lexical irrealis are clearly associated with a particular root and all verbs built upon that root require irrealis marking. There are exceptions where a root appears in some verbs with mandatory irrealis marking and in other verbs where irrealis marking is not present. These cases of 'lexical' irrealis are probably remnants of formerly productive irrealis derivations (see sec. 4.3) that have become frozen with particular roots.

The semantics of lexically specified irrealis is not yet clear, but it is apparently meaningful rather than vacuous because it is associated with certain lexical meanings. I have divided lexical irrealis into five semantic classes: mental, conative, resemblance, pejorative, and lexicalized negation. The irrealis mental state verbs (sec. 4.2.1) all describe mental states and include lexically specified irrealis marking. Conative verbs (sec. 4.2.2) describe attempts to engage in an event or bring about a state; by implication the attempt is unsuccessful and so the eventuality is unrealized. Resemblance verbs (sec. 4.2.3) represent the speaker's evaluation of an entity or eventuality as similar to some other entity or eventuality; only $\sqrt[2]{}$*ÿa*ʰ 'resemble' and $\sqrt[2]{}$*ti* 'imitate' fall unequivocally in this class. Pejorative verbs (sec. 4.2.4) denote states and activities that are conventionally disapproved of in Tlingit society, such as being lazy or mooching (begging, sponging). The lexicalized negative verbs (sec. 4.2.5) are verbs that cannot occur without a negative particle and so entail irrealis marking via negation (cf. sec. 4.5.1).

The five classes of lexical irrealis sort into the two semantic realms of unreality and negativity. The mental, conative, and resemblance verbs are all kinds of unreality. The pejorative and inherently negative verbs fit into the negativity realm. At present this is a purely descriptive distinction, but I suggest it as a basis for further formalization of irrealis semantics in Tlingit.

Some of the lexical irrealis verbs are in the process of losing their irrealis status, with individual speakers varying in whether they include an overt irrealis prefix *u-* or not. The variation is individually all or nothing: a speaker will either treat the verb as lexically irrealis in all contexts or treat it as a regular verb in all contexts. Each verb is apparently separately specified for irrealis status, so an individual speaker may preserve lexical irrealis for one verb but not for another in the same class. This suggests that, although the classes I have proposed are a convenient tool for studying lexical irrealis, they may not be coherent structures in a speaker's mental lexicon. Speakers may also have non-irrealis lexical entries but still preserve older irrealis forms in songs or set phrases, so lexical

(Im)perfective	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
ák' oowaheen	's/he believes it'	–	+	$\sqrt[2]{hin}$	'believe'	state (-μ)	*Ø/n*
oowahéin	's/he claims him/her/it'	+	+	$\sqrt[2]{hen}$	'claim'	state (-μH)	*n*
akwlik̲éi	's/he is shy of him/her	+	+	$\sqrt[2]{k̲e}$	'shy'	state (-μH)	*g*
yéi oowajée	's/he thinks so of it	+	+	$\sqrt[2]{ji^h}$	'think'	state (-μH)	*n*
akwlineekw	's/he doubts his/her abillity'	+	+	$\sqrt[1]{nikw}$	'doubt ability'	state (-μ)	*n*
du yáa awuwanéi	's/he respects him/her'	–	+	$\sqrt[2]{ne}$	'respect'	state (-μH)	*g*
awuwawóok̲	's/he lacks confid. in him/her'	+	+	$\sqrt[2]{wuk̲}$	'lack confid.'	state (-μH)	*n/g*
áa akwdlix̲éetl'	's/he fears him/her/it'	–	+	$\sqrt[2]{x̲itl'}$	'fear'	state (-μH)	*g*

Table 6.28: Irrealis mental state verbs

irrealis can also be idiomatic. We lack studies of an individual speaker's lexical irrealis distribution so we cannot say if there are any patterns in the retention or loss of lexical irrealis.

The following subsections show a notable dearth of achievements, but this is probably an accident of the documentation. Specifically, much of the lexical documentation lists verbs only in the *Ø*-imperfective and *u*/*wu*-perfective aspects. Achievements lack *Ø*-imperfective forms and the morphophonology of perfective aspect obscures the presence of irrealis marking (sec. 4.1). Lacking forms other than the perfective, it is then impossible to say whether an achievement verb is lexically irrealis or not.

4.2.1. Irrealis mental state verbs

Some mental state verbs include a lexically specified irrealis while others do not. Table 6.28 lists all of the mental state verbs including irrealis that I have encountered in the lexical documentation though there may be more which I have not noticed. There are mental state verbs that do not include an irrealis prefix *u-* such as *asayahéi* 's/he is willing for it' with $\sqrt[2]{ha}$ 'willing', *yoo tuwatánk* 's/he thinks' with $\sqrt[2]{tan}$ 'handle wooden/empty', *ashusitee* 's/he expects him/her/it' with $\sqrt[1]{ti^h}$ 'exist'. There are also a variety of achievement verbs that describe mental phenomena such as *awsikóo* 's/he has come to know it' with $\sqrt[2]{ku^h}$ 'know' and *át awdishée* 's/he has hoped for it' with $\sqrt[2]{shi}$ 'reach, feel'. Thus not all mental phenomena are associated with irrealis.

Several of the lexically irrealis mental state verbs in table 6.28 seem to involve a lack of certainty on the part of the experiencer. Thus *ák' oowaheen* 's/he believes it' and *yéi oowajée* 's/he thinks so of it' are not *awsikóo* 's/he knows it', and *oowahéin* 's/he claims it' is not *aya.óo* 's/he owns, possesses it'. It is difficult to extend this to *du yáa awuwanéi* 's/he respects him/her' and *áa kawdlix̲éetl'* 's/he fears, is afraid of him/her/it'. It is possible that the latter is actually pejorative (sec. 4.2.4) instead. But 'respect' is not conative (sec. 4.2.2), resemblance (sec. 4.2.3), pejorative (sec. 4.2.4), or negative (sec. 4.2.5). It is entirely possible that this belongs to a still unidentified lexical irrealis subclass.

The canonical example of a lexically irrealis mental state verb is 'think', illustrated by the imperfective in (253). This is universally marked for irrealis among all Tlingit speakers, presumably because it is high frequency and so is acquired early.

(253) a. Yéi x̱waajée. *irrealis state Ø-imperfective*
yéi= u- x̱- i- $\sqrt[2]{\text{ji}^{\text{h}}}$ -μH
thus=IRR-1SG·S-STV-$\sqrt[2]{\text{think}}$-VAR
'I think it is so.'

b. *Yéi x̱aajée. **realis state Ø-imperfective*
yéi= x̱- i- $\sqrt[2]{\text{ji}^{\text{h}}}$ -μH
thus= 1SG·S-STV-$\sqrt[2]{\text{think}}$-VAR
intended: 'I think it is so.'

The negated imperfective in (254) has the same irrealis marking as the affirmative form in (253a). But they can still be told apart in two other ways: the *i-* in Ɛ is suppressed in the negative form resulting in a short vowel [χʷà] in (254) rather than a long vowel [χʷà:] in (253a), and the stem variation isa short high *-H* in (254) rather than a long high *-μH* in (253a).

(254) Tléil yéi x̱wají. *negative state Ø-imperfective*
tléil yéi= u- x̱- $\sqrt[2]{\text{ji}^{\text{h}}}$ -H
NEG thus=IRR-1SG·S-$\sqrt[2]{\text{think}}$-VAR
'I don't think it is so.'

Forms like (253a) can be mistakenly analyzed as perfectives since the phonological realization of irrealis *u-* may be the same as perfective *wu-* or *u-*. But stem variation is usually distinct between the imperfective and perfective aspects. Thus the imperfective in (253a) has a long high tone stem *-μH* whereas the perfective in (255) has a long low tone *-μ* stem. The *-μ* stem in the perfective is predictable because this verb is lexically specified for the *n*-conjugation class.

(255) Yéi x̱waajee. *irrealis wu-perfective*
yéi= u- wu-x̱- i- $\sqrt[2]{\text{ji}^{\text{h}}}$ -μ
thus=IRR-PFV-1SG·S-STV-$\sqrt[2]{\text{think}}$-VAR
'I have come to think it is so.'

As noted earlier, some verbs have lost their irrealis specification for particular speakers. It is common to encounter *ayahéin* 's/he claims it' instead of *oowahéin* for example, and similarly *ák' ayaheen* 's/he believes it' instead of *ák' oowaheen*. The motivations for the loss of lexical irrealis are unclear; the semantics could be at play, or frequency of forms like the perfective where irrealis is obscured could lead to irrealis loss. High frequency and early acquired verbs like *yéi oowajée* 's/he thinks so of it' retain their irrealis status across all dialects and speakers.

4.2.2. Irrealis conative activity verbs

Conation is the process of attempting or striving to do something without necessarily achieving it.[43] Conative verbs in Tlingit include a lexically specified irrealis prefix *u-* and describe situations where a person attempts to bring about some eventuality. Table 6.29 lists the conative verbs I have gleaned from the lexical documentation; this list is extensive but probably not exhaustive.

43. This definition reflects the typical linguistic usage. In philosophy the term instead denotes the mental faculty of will or volition, or the desire to perform an action. The philosophical definition can be thought of as describing a person's disposition before engaging in the attempt as described by the linguistic definition. The term is from Latin *cōnātiō* 'endeavour' < *cōnor* 'try' < PIE **ken-* 'strain, strive, set self in motion'.

(Im)perfective	Translation	O	S	Root	Gloss	Eventuality	Conj.
akoo.aak̲w	's/he tries, attempts it'	+	+	$\sqrt[2]{}$*.ak̲w*	'try'	activity (-*μ*)	*n*
át ajikoo.aak̲w	's/he directs him/her to do it'	+	+	$\sqrt[2]{}$*.ak̲w*	'try'	activity (-*μ*)	*n*
akoodlénx̲aa	'it tests, tempts him/her'	+	+	$\sqrt[2]{}$*dlen*	'tempt'	activity (-*H*)	*n*
akwladootl	's/he lures him/her/it'	+	+	$\sqrt[2]{}$*dutl*	'lure'	activity (-*μ*)	*n*
akoo.éits'	's/he handles it carefully'	+	+	$\sqrt[2]{}$*.ets'*	'hdl. careful'	activity (-*μH*)	*n*
akool.éex'	's/he tries to call him/her'	+	+	$\sqrt[2]{}$*.ix'*	'call'	activity (-*μH*)	*n*
akoo.éikw	's/he whistles at him/her'	+	+	$\sqrt[2]{}$*.ekw*	'whistle'	activity (-*μH*)	*n*
akwdakaa	's/he signs, hand-signals'	–	+	$\sqrt[2]{}$*ka*	'signal'	activity (-*μ*)	*n*
ayakwdakaa	's/he makes faces at him/her'	+	+	$\sqrt[2]{}$*ka*	'signal'	activity (-*μ*)	*n*
akookáÿaa	's/he tries to do it'	+	+	$\sqrt[2]{}$*kaÿ*	'measure'?	activity (-*H*)	*n?*
akoonáa(y)	's/he orders him/her'	+	+	$\sqrt[2]{}$*na*$^{(y)}$	'order'	activity (-*μ*)	*n*
awoonéi	's/he restrains him/her'	+	+	$\sqrt[2]{}$*ni*	'work'?	activity (-*μH*)	*g̲?*
akootláak	's/he tries to quiet him/her'	+	+	$\sqrt[2]{}$*tlak*	'quiet'?	activity (-*μH*)	*n?*
ootsáay	's/he asks to go with him/her	+	+	$\sqrt[2]{}$*ts'aÿ*	'ask to'	activity (-*μH*)	*g̲*
oowóos'	's/he asks about him/her'	+	+	$\sqrt[2]{}$*wůs'*	'ask'	activity (-*μH*)	*n*
ax̲'eiwóos'	's/he asks him/her'	+	+	$\sqrt[2]{}$*wůs'*	'ask'	activity (-*μH*)	*n*

Table 6.29: Irrealis conative activity verbs

All of the conative verbs I have identified in table 6.29 are activities, and the vast majority are lexically specified members of the *n*-conjugation class. Nearly all are transitive based on bivalent roots, and nearly all include the qualifier *ka-* which in these contexts has no obvious semantic contribution. The significance of these lexical properties for conation are unknown. The verb *akookáÿaa* 's/he tries to do it' is extremely rare and is only attested from Leer's notes on Tongass Tlingit (Leer 1973a: f06/22). The other verbs in table 6.29 are relatively well attested. The verb *akwdakaa* 's/he signs, makes hand-signals' has an expletive *a-* but is also attested with an indefinite nonhuman object in *has at kudakaa* 'they talk by signalling' (Leer 1973a: f06/16) and can occur with an instrumental interlocutor PP as in *hasdu een akwdakaa* 'they talk with them by signals' (Leer 1973a: f06/16). The root $\sqrt[2]{}$*wůs'* 'ask' usually occurs with /u/ but instead has /a/ in some forms without any obvious difference in meaning (Story & Naish 1973: 22; Leer 1976a: 232). Leer represents this root as *was'* which can be confusing because forms with /a/ are less common.

The canonical conation verb in Tlingit is based on $\sqrt[2]{}$*.ak̲w* 'try, attempt'. As illustrated in (256), this verb requires the irrealis *u-* to be present in the lexical activity *∅*-imperfective form.

(256) a. Akoo.aak̲w. *irrealis activity ∅-imperfective*
a- ka- u- $\sqrt[2]{}$.ak̲w-μ
3·O-QUAL-IRR-$\sqrt[2]{}$try -VAR
'S/he is trying, attempting it.'

b. *Aka.aak̲w. **realis activity ∅-imperfective*
a- ka- $\sqrt[2]{}$.ak̲w-μ
3·O-QUAL- $\sqrt[2]{}$try -VAR
intended: 'S/he is trying, attempting it.'

The negative counterpart in (257) has the same form as the affirmative in (256a) because negation requires the presence of irrealis *u-* and the negation-specified stem variation *-μ* is identical to the lexically specified *-μ* in the affirmative. Since this verb denotes an activity there is no *i-* in Ɛ for negation to suppress that would distinguish it from the affirmative. Only the presence of the negative particle distinguishes the negative form from the affirmative.

(257) Tléil akoo.aakw. *negative activity Ø-imperfective*
tléil a- ka- u- ²√.akw-μ
NEG 3·O-QUAL-IRR-²√try -VAR
'S/he is not trying it.'

Leer says that the verb based on ²√*wůs'* 'ask' can occur both with and without an irrealis *u-* (Leer 1991: 275). I have not seen the form with irrealis in use, but I repeat his two contrasting imperfective forms here for reference. The prefix *x̲'e-* 'mouth' underlyingly has /e/ which as a front vowel blocks [LAB] so that only the mora remains from the irrealis prefix *u-*. Thus regularly *x̲'e-* + *u-* → *x̲'ei* [χ'e:] which is distinct from lone *x̲'e-* → *x̲'a* [χ'a].

(258) a. X̲'eix̲awóos'. *irrealis activity Ø-imperfective*
x̲'e- u- x̲- ²√wus'-μH
mouth-IRR-1SG·S-²√ask -VAR
'I'm asking him/her.'

b. X̲'ax̲awóos'. *realis activity Ø-imperfective*
x̲'e- x̲- ²√wus'-μH
mouth- 1SG·S-²√ask -VAR
'I'm asking him/her.'

The conative derivation in Dene languages is reported to include a **u-* prefix (Kari 1989: 438; Axelrod 1993: 104; Rice 2000a: 260–262, 370–371). I suspect that this is cognate with the irrealis prefix in Tlingit's conative verbs. It may be that Tlingit has an undocumented conative derivation, or more likely had one in the past that today is reflected only by the handful of verbs in this subclass of lexical irrealis. The root ²√*.ix'* 'call' offers some support because it uniquely appears in different verbs with and without lexical irrealis marking. The data in (259) illustrate the contrast between a non-irrealis form in (259a) and an irrealis form in (259b) which includes the qualifier *ka-* and the extensional *l-* in *v*.

(259) a. A.éex'. *realis activity Ø-imperfective*
a- ²√.ix'-μH
ARG-²√call-VAR
'S/he calls him/her.' (Eggleston 2017)

b. Akool.éex'. *irrealis activity Ø-imperfective*
a- ka- u- l- ²√.ix'-μH
ARG-QUAL-IRR-XTN-²√call-VAR
'S/he tries to call him/her.'

Leer's entry for the verb in (259b) includes an annotation by *Kóox'* Johnny Marks that clarifies its meaning: "calling of someone that seemingly doesn't hear the call, or is avoiding the person that's

(Im)perfective	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
ootee	's/he imitates him/her/it'	+	+	$\sqrt[2]{ti}$	'imitate'	activity (-μ)	*n*
ax̲'eitee	's/he imitates his/her speech'	+	+	$\sqrt[2]{ti}$	'imitate'	activity (-μ)	*n*
oowayáa	's/he/it resembles him/her/it'	+	+	$\sqrt[2]{ÿa^h}$	'resemble'	state (-μH)	*Ø*
akoowayáa	's/he looks somewhat like it'	+	+	$\sqrt[2]{ÿa^h}$	'resemble'	state (-μH)	*Ø*
awoowayáa	's/he has a face like him/her'	+	+	$\sqrt[2]{ÿa^h}$	'resemble'	state (-μH)	*Ø*

Table 6.30: Irrealis resemblance verbs

calling him/her" (Leer 1976a: 139–140). I believe the *l-* is extensional, perhaps adding the meaning 'go around doing' like in *ahóon* 's/he sells it' versus *alhóon* 's/he peddles it' (ch. 4 sec. 4.2). This leaves the *ka-u-* morphology as the remaining material to be associated with the addition of conativity. The function of *ka-* here is unknown, but I note that the combination *ka-u-* is strikingly similar to the comparative derivation (sec. 4.3.1) which suggests that they may have the same semantic origin.

4.2.3. Irrealis resemblance verbs

There are only two roots which occur with lexical irrealis and which denote resemblance. The small number of verbs based on these roots are listed in table 6.30. The most common way to express resemblance is with the similative postposition *yáx̲* 'like, similar to, resembling'. If the resemblance is one of form or appearance then this postposition is combined with an existence verb as in (260a), but if the resemblance involves some more specific eventuality then the postposition can be combined with an appropriate verb as an adjunct as in (260b).

(260) *examples of resemblance PPs with yáx̲*

a. Jeewdinátl'i k̲áa yáx̲ x̲at yatee. *state Ø-imperfective with yáx̲*
ji- wu-d- i- $^{1}\sqrt{}$natl'-H -i k̲áa yáx̲ x̲at= i- $^{1}\sqrt{}$ti^{h}-μ
[PP hand-PFV-MID-STV-$^{1}\sqrt{}$soak -VAR-REL man SIM] 1SG·O=STV-$^{1}\sqrt{}$be -VAR
'I'm like a real clumsy person.' (orig. tr.) (Story & Naish 1973: 50.549)

b. Ax̲ kinaak.ádi x̲'aan yáx̲ kax̲wliyés'. *u-perfective with yáx̲*
ax̲ kinaak.át-í x̲'aan yáx̲ ka- u- x̲- l- i- $^{1}\sqrt{}$yes'-H
1SG·PSS coat -PSS [PP fire SIM] HSFC-ZPFV-1SG·S-CSV-STV-$^{1}\sqrt{}$dye -VAR
'I dyed my coat red.' (Story & Naish 1973: 77.930)

The resemblance verbs in table 6.30 are thus more specialized than the general expression of resemblance with *yáx̲*. Both roots are probably related to other roots, so it may be that both sets of verbs originally had their irrealis introduced by derivational processes that are now lost. The root $^{2}\sqrt{ti}$ 'imitate' is suspiciously similar to the roots $^{1}\sqrt{ti^{h}}$ 'be, exist' and $^{2}\sqrt{ti}$ 'handle' as illustrated by the forms in (261).

(261) a. Yéi x̲at yatee. *be, exist*
yéi= x̲at= i- $^{1}\sqrt{}$ti^{h}-μ
thus=1SG·O=STV-$^{1}\sqrt{}$be -VAR
'I am so.', 'I am that way.'

b. A kát at uwatée. *handle*
a ká -t at= u- i- $\sqrt[2]{}$ti -μH
3N·PSS HSFC-PNCT 4N·O=ZPFV-STV-$\sqrt[2]{}$handle-VAR
'S/he put something there.'

c. X̱at utee. *imitate*
x̱at= u- $\sqrt[2]{}$ti -μ
1SG·O=IRR-$\sqrt[2]{}$imitate-VAR
'S/he is imitating me.'

The $\sqrt[2]{}$*ÿa*^{h} 'resemble' verb may also be related to the roots $\sqrt[2]{}$*ÿa*^{h} 'move, happen' and $\sqrt[1]{}$*ÿa* 'face'. The 'face' root is not normally found as a verb, but the 'move, happen' verb is well attested with some interesting variation in its interpretation as shown in (262). The examples include commentary by *Kóox'* Johnny Marks from Leer's manuscript that elucidate the interpretations.

(262) a. Yéi yan kawdiyáa.
yéi= ÿán= ka- u- d- i- $\sqrt[2]{}$ÿa^h -μH
thus=TERM=QUAL-ZPFV-PASV-STV-$\sqrt[2]{}$happen-VAR
'It happened like that.' (L) "It has already moved in that direction, why should we try to change it." (JM) (Leer 1976a: 187)

b. Kawdiyaa.
ka- wu-d- i- $\sqrt[2]{}$ÿa^h -μ
QUAL-PFV-APSV-STV-$\sqrt[2]{}$move-VAR
'S/he travelled, went (means unspecified).' (L) "Leave, and no one knows when you'll return. Travel with no particular place in mind to go to." (JM) (Leer 1976a: 187–188)

c. Haat aawayáa.
haa^n-t a- u- i- $\sqrt[2]{}$ÿa^h -μH
CIS -PNCT ARG-ZPFV-STV-$\sqrt[2]{}$move-VAR
"Brought it all, fish, firewood, groceries, and so forth." (JM) (Leer 1976a: 187)

If both the $\sqrt[2]{}$*ti* 'imitate' and $\sqrt[2]{}$*ÿa*^{h} 'resemble' roots could be connected to other lexical entries then the lexical irrealis specification for them could instead be analyzed as derivational. This would go a long way toward clarifying the semantics of the irrealis prefix because it would provide another context for compositional interpretation, namely ireallis as similarity: 'like but not actually identical'.

4.2.4. Irrealis pejorative verbs

Irrealis pejorative verbs describe phenomena that are generally disapproved of in Tlingit culture. Table 6.31 lists all such verbs that I have identified in the lexical documentation. There are many verbs that describe disapproved of phenomena which do not feature lexical irrealis, and there is the distinct pejorative *sh-* in *v* that is also used to indicate disapproval (ch. 4 sec. 4.3). So lexical irrealis is not necessary to express pejoration and it is not the only mechanism for expressing pejoration. But the verbs in table 6.31 do not obviously fall into any of the other lexical irrealis subclasses and all describe phenomena that frequently receive disapprobation among Tlingit people.

The verb *yakoo.áatl'* 'it is insufficient, not enough' has several different forms which vary in the fricative articulation of the coda affricate. The form documented by Story & Naish is $\sqrt[1]{}$*.atl'* with

(Im)perfective	Translation	O	S	Root	Gloss	Eventuality	Conj.
yakoo.áatl'	'it is insufficient'	+	–	$\sqrt[1]{}$*.atl'*	'insufficient'	state (-*μH*)	*n*
oochoox̲	's/he mooches it'	+	+	$\sqrt[2]{}$*chux̲*	'mooch'	activity (-*μ*)	*g*
akuldéix'	's/he shames him/her'	+	+	$\sqrt[1]{}$*dex'*	'shame'	activity (-*μH*)	*n*
ooheexw	's/he bewitches him/her'	+	+	$\sqrt[2]{}$*hixw*	'witchcraft'	activity (-*μ*)	*Ø*
kooheish	's/he/it is disgraceful'	+	–	$\sqrt[1]{}$*hesh*	'disgraceful'	state (-*μ*)	*n*
kulijée	'it is awful, eerie'	+	–	$\sqrt[0]{}$*ji*	'awful'	state (-*μH*)	*g*
yakwlijée	's/he/it is ugly'	+	–	$\sqrt[0]{}$*ji*	'awful'	state (-*μH*)	*g*
awoojee	's/he punishes him/her'	+	+	$\sqrt[2]{}$*jiʰ*	'punish'	activity (-*μ*)	*n*
oodzikaa	's/he is lazy'	–	+	$\sqrt[2]{}$*kaʰ*	'lazy'	state (-*μ*)	*g*
oowasháak̲	's/he denies it'	+	+	$\sqrt[2]{}$*shak̲*	'deny'	state (-*μH*)	*n*
akwshitán	's/he has (bad) habit of it'	+	+	$\sqrt[2]{}$*tan*	'habit'	state (-*H*)	*g*
áa akwdlix̲éetl'	's/he fears him/her/it'	–	+	$\sqrt[2]{}$*x̲itl'*	'fear'	state (-*μH*)	*g*
áx̲ akwliyáakw	's/he denies it'	–	+	$\sqrt[2]{}$*ÿakw*	'deny'	state (-*μH*)	*n*
uyéx̲	's/he/it is absent, lacking'	+	–	$\sqrt[1]{}$*yex̲*	'lack'	activity (-*H*)	*n*

Table 6.31: Irrealis pejorative verbs

coda /tɬ'/ (Story & Naish 1973: 115.1505–1506). Leer gives forms with $\sqrt[1]{}$*.ats'* for Tongass Tlingit, one form shown in (263a) with $\sqrt[1]{}$*.ach'* for an unspecified dialect, and another form with $\sqrt[1]{}$*.ats'* shown in (263b) for an unspecified dialect that is not Tongass Tlingit. The reason for this variation is unknown, but there does not seem to be any difference in meaning.

(263) a. Yakoo.áach'.
ÿa- ka- u- i- $\sqrt[1]{}$.ach' -μH
QUAL-QUAL-IRR-STV-$\sqrt[1]{}$insufficient-VAR
'Too few.' (orig. tr.) (Leer 1973a: 02/126)

b. K̲uyakoo.áats'.
k̲u- ÿa- ka- u- i- $\sqrt[1]{}$.ats' -μH
4H·O-QUAL-QUAL-IRR-STV-$\sqrt[1]{}$insufficient-VAR
'There aren't enough people.' (orig. tr.) (Leer 1973a: 02/126)

The verbs *kulijée* 'it is awful, eerie' and *yakwlijée* 's/he/it is ugly' are based on a root $\sqrt[0]{}$*ji* 'awful' that is suspiciously similar to the root $\sqrt[2]{}$*jiʰ* 'punish' in the verb *awoojee* 's/he punishes him/her'. The latter root is clearly bivalent in contrast with the apparent nullivalency of the former. The two roots also reportedly differ in their phonological behaviour with an obstruent suffix, but I have not been able to confirm this.

4.2.5. Inherently negative verbs

Inherently negative verbs are verbs that only occur as negative forms with an accompanying negative particle (cf. sec. 4.5.1). Table 6.32 lists all of the inherently negative verbs that I have been able to identify. Because these verbs are always negated it is theoretically impossible to tell whether the irrealis prefix is lexically specified or if it is triggered by negation. There are however some verbs

(Im)perfective	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
tl. udagaa	's/he/it is unmoving'	+	–	$\sqrt[1]{ga}$	'moving'?	state (-*μ*)	*g*
tl. x̲'eidagaa	's/he/it is unspeaking'	+	–	$\sqrt[1]{ga}$	'moving'?	state (-*μ*)	*g*
tl. awugóon	's/he got no chance'	–	+	$\sqrt[2]{gu'n}$	'opportunity'	achievement	*Ø*
tl. x̲'awugóon	's/he didn't get to eat/speak'	–	+	$\sqrt[2]{gu'n}$	'opportunity'	achievement	*Ø*
tl. jiwugóon	's/he didn't get to take it'	+	+	$\sqrt[2]{gu'n}$	'opportunity'	achievement	*Ø*
tl. goohóa	'it is not unobvious'	+	–	$\sqrt[1]{ha}$	'unobvious'	state (-*μH*)	*g*
tl. koohél'k	's/he is weak'	+	–	$\sqrt[1]{hel'}$	'unweak'?	state (-*H*)	*g*
tl. uxwáchk	's/he is paralyzed'	+	–	$\sqrt[1]{xwach}$	'limber'	state (-*H*)	*g*

Table 6.32: Inherently negative verbs

that appear to include related – or possibly identical – roots so that the negation could be analyzed productively rather than lexically specified.

The verb *tléil goohóa* 'it is not unobvious' is probably the most frequently encountered of the verbs in table 6.32. It is regularly used to describe things and situations that are self-evident or obvious and is often translated as 'it's clear', 'it's plain to see', 'it's visible', or 'it's obvious' depending on context. The form in (264a) shows that it is *g*-conjugation since the prospective aspect requires *kei*= 'up' (sec. 3). This implies that the *g*- in (264b) is the *g*- conjugation prefix and thus that the imperfective form is a *CNJ*-imperfective (sec. 2.1.2).

(264) a. Tléil kei kakg̲wahóa. *negative g-conj. prospective*
tléil kei=w- g- g̲- $\sqrt[1]{ha}$ -μH
NEG up= IRR-GCNJ-MOD-$\sqrt[1]{}$unobvious-VAR
'It will be obvious.' (orig. tr.) (Eggleston 2017)

b. Tléil goohóa. *negative state CNJ-imperfective*
tléil g- u- $\sqrt[1]{ha}$ -μH
NEG GCNJ-IRR-$\sqrt[1]{}$unobvious-VAR
'It's plain, clear.' (orig. tr.) (Leer 1973a: 01/28)

c. Tléil goohóa. nooch shaltláax̲. *negative hab. state CNJ-imperfective*
tléil g- u- $\sqrt[1]{ha}$ -μH =nooch shaltláax̲
NEG GCNJ-IRR-$\sqrt[1]{}$unobvious-VAR =HAB·AUX reef
'A reef can usually be seen easily.' (orig. tr.) (Leer 1973a: 01/28)

If (264b) is really a *CNJ*-imperfective then we expect it to be like other extensional states: either based on a dimension root or a motion root. Leer suggests this by listing it under the root $\sqrt[1]{ha}$ 'become located, get into position, fit' (Leer 1973a: 01/28, 1976a: 26, 1978c: 1) which is a motion root. I suspect it is probably better related to $\sqrt[1]{ha}$ 'move imperceptibly, invisibly; appear' (Leer 1973a: 01/4, 1976a: 4, 1978c: 1) and then the interpretation could be relatively compositinonal as something like 'it isn't going along invisibly' or 'it isn't stretched out invisibly along a path'.

The verb *tléil oodagaa* 's/he/it is unmoving' and its derived relative *tléil x̲'eidagaa* 's/he is unspeaking' appear to be state *Ø*-imperfectives based on a root $\sqrt[1]{ga}$ 'moving'. Leer suggests a rare verb

aadé sh kawdzigáy 's/he went there storming noisily' (Leer 1976a: 643) that could be related. The root $^{1}\sqrt{ga}$ 'paused, delayed' also might to be related, but paradoxically the affirmative forms would be semantically similar to the inherent negative as shown by the comparison between (265) and (266).

(265) a. Tléil udagaa. *negative state Ø-imperfective*
tléil u- d- $^{1}\sqrt{ga}$ -μ
NEG IRR-MID-$^{1}\sqrt{moving}$-VAR
'He doesn't move.' (orig. tr.) (Leer 1973a: f05/8)

b. Tléil x̲'eidagaa. *negative state Ø-imperfective*
tléil x̲'e- u- d- $^{1}\sqrt{ga}$ -μ
NEG mouth-IRR-MID-$^{1}\sqrt{moving}$-VAR
'He's taciturn.' (orig. tr.) (Leer 1973a: f05/8)

(266) a. Wuduwagáa. *Ø-conj. wu-perfective*
wu-du- i- $^{1}\sqrt{ga}$ -μH
PFV-4H·S-STV-$^{1}\sqrt{delay}$-VAR
'The tide is slack.', 'It is slack tide.' (orig. tr.) (Leer 1973a: f05/2)

b. Ch'a yáax̲ x̲at kakg̲wagáa tléix' sándi. *prospective*
ch'a yá -x̲ x̲at= ka- w- g- g̲- $^{1}\sqrt{ga}$ -μH tléix' sándi
just PROX-PERT 1SG·O=QUAL-IRR-GCNJ-MOD-$^{1}\sqrt{delay}$-VAR one week
'I'm going to be detained one week.' (orig. tr.) (Story & Naish 1973: 65.763)

c. L áa uteeyích áwé yax̲ x̲at tukaawagaa. *n?-conj. wu-pfv.*
l á -μ u- $^{1}\sqrt{ti^{h}}$-μ -í -ch á -wé ÿáx̲=x̲at= tu- ka- wu-i- $^{1}\sqrt{ga}$ -μ
NEG 3N-LOC IRR-$^{1}\sqrt{be}$ -VAR-SUB-ERG FOC-MDST ??= 1SG·O=mind-QUAL-PFV-STV-$^{1}\sqrt{delay}$-VAR
'Because he's not there, I hesitate (to do something).' (orig. tr.) (Story & Naish 1973: 108.1406)

Further investigation of these inherently negative verbs should help clarify whether they are lexically specified – and thus idiomatic – or if instead they can be productively derived from affirmative forms by negation. Eliminating the lexical specification would be a net benefit because these verbs would otherwise be irregular but, except for only occurring with negation, they do not seem to be especially unusual.

4.3. Derivationally specified irrealis

Derivational irrealis is irrealis status specified by derivational operations. In these structures it is not entirely clear where the specification for irrealis lies, and the semantic contribution of the irrealis is obscure in some cases. The morphology of the irrealis in these structures is quite clear however, so more work needs to be done on their syntax and semantics.

I divide derivational irrealis into four classes based on their associated event structures and meanings: comparative dimension states (4.3.1), indirect motion (4.3.2), pretend activities (4.3.3), and extraordinary states (4.3.4). The relation between irrealis and comparative dimensions seems to involve a lack of identity similar to the irrealis resemblance verbs discussed earlier in section 4.2.3. The indirect motions all describe oblique or circuitous movement and so could be analyzed as failing to follow the direct or 'real' path between locations. The pretend activities include irrealis because

they denote pretending to engage in an event without an actual goal or result. The extraordinary states include irrealis presumably because they describe phenomena that are so unusual that they are perceived as unreal.

So far there do not seem to be any achievements arising from derivational irrealis. This could be due to phonological acccident: achievements would normally be documented as perfective aspect forms and perfective aspect obscures irrealis morphology. But there could potentially be some kind of semantic constraint on the combination of derivational irrealis and achievements which would be surprising given what we know of these two categories. We need empirical tests of the documented derivations with attested nondurative roots and a more careful review of the lexical documentation.

4.3.1. Derived comparative dimension states

A comparative dimension state is a state that describes some kind of dimension and which compares the dimension against some other dimensional quantity of the same kind. They are indicated by the comparative derivation which consists of the comparative prefix *k-* (sometimes *g-*) in the qualifiers and the irrealis *u-* in Asp⁰. The comparative derivation also changes V-agreement in the *∅*-imperfective to be *-μH* and usually shifts the conjugation class to *n-*: *yéi=ka-u-* (*n*; *-μH* state) 'comparatively, relatively'.

Comparative dimension states are derived from dimension states. Dimension states are a subset of states that "denote a quantifiable physical attribute" (Leer 1991: 256); examples include length, thickness, and weight. Not all quantifiable physical attributes are expressed by dimension states however, so the category is actually lexically specified. The comparative derivation applies only to dimension states and indicates that there is a basis of comparison for the dimension of the entity. The basis of comparison may be an overt PP headed by *yáanáx̲* 'more than, exceeding' or *x̲ín* 'less than, lacking', or it can be a nonspecific dummy manner argument *yéi=* 'thus'. A possibly exhaustive list of dimension verbs with comparative derivations is given in table 6.33.

The data in (267) illustrates a comparative dimension state with the canonical example of *√¹ÿat'* 'long'. The base form in (267a) an ordinary imperfective state without comparative morphology. The form in (267b) is a comparative with the overt PP *ax̲ yáanáx̲* 'more than me' as the basis of comparison. The form in (267c) is a comparative with the manner argument *yéi=* 'thus'; note the interesting parallel with colloquial English *yay*. The *yéi=* in (267c) is the basis of comparison required when no other basis like *ax̲ yáanáx̲* in (267b) is present (Bogal-Albritten 2010: 14).

(267) a. Yayát'. *dimension state imperfective*
i- √¹ÿat'-H
STV-√¹long-VAR
'It is long.'

b. Ax̲ yáanáx̲ koowáat'. *comparative dimension state imperfective*
ax̲ yáanáx̲ ka- u- i- √ÿat'-μH
1SG more CMPV-IRR-STV-√long-VAR
'It is longer than me.'

c. Yéi koowáat'. *comparative dimension state imperfective*
yéi= ka- u- i- √ÿat'-μH
thus=CMPV-IRR-STV-√long-VAR
'It is comparatively long.', 'It is yay long.'

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	yéi koodáal	'it is comparatively heavy'	+	–	$\sqrt[1]{dal}$	'heavy'	state (-*μH*)	*n*
	yéi koodáas	'it is comparatively light'	+	–	$\sqrt[1]{das}$	'light'	state (-*μH*)	*n*
	yéi kwg̱aadláan	'it is comparatively deep'	+	–	$\sqrt[1]{dlan}$	'deep'	state (-*μH*)	*g̱*
	yéi koogéi	'it is comparatively big'	+	–	$\sqrt[1]{ge^h}$	'big'	state (-*μH*)	*n*
	yéi googéink'	'it is comparatively small'	+	–	$\sqrt[1]{ge^n\text{-}k'}$	'big'	state (-*μH*)	*n*
	yéi kook'áa	'it is too small'	+	–	$\sqrt[1]{k'a^h}$	'too small'	state (-*μH*)	*n*
∅	*yéi kunaaléi*	'it is comparatively far'	+	–	$\sqrt[1]{le^h}$	'far'	state (-*μH*)	*n*
	yéi kunaaséi	'it is comparatively near'	+	–	$\sqrt[1]{se^h}$	'near'	state (-*μH*)	*n*
	yéi kwditláa	'it is comparatively girthy'	+	–	$\sqrt[1]{tla^h}$	'big around'	state (-*μH*)	*n*
	yéi kwg̱aats'áan	'it is comparatively shallow'	+	–	$\sqrt[1]{ts'an}$	'shallow'	state (-*μH*)	*g̱*
	yéi koowóox̱'	'it is comparatively wide'	+	–	$\sqrt[1]{wux̱'}$	'wide'	state (-*μH*)	*n*
	yéi koowáach'	'it is too short'	+	–	$\sqrt[1]{ÿach'}$	'too short'	state (-*μH*)	*n*
	yéi koowáat	'it is comparatively long'	+	–	$\sqrt[1]{ÿat'}$	'long'	state (-*μH*)	*n*
	yéi goowáatl'	'it is comparatively short'	+	–	$\sqrt[1]{ÿatl'}$	'short'	state (-*μH*)	*n*
s-	*yéi kwsikáak*	'it is comparatively thick'	+	–	$\sqrt[1]{kak}$	'thick'	state (-*μH*)	*n*
l^s-	*yéi kwliyáatl'*	'it is comparatively short'	+	–	$\sqrt[1]{ÿatl'}$	'short'	state (-*μH*)	*n*
	yéi kwlisáa	'it is comparatively narrow'	+	–	$\sqrt[1]{sa}$	'narrow'	state (-*μH*)	*n*
l-	*yéi kwliyáat'*	'it is comparatively long'	+	–	$\sqrt[1]{ÿat'}$	'long'	state (-*μH*)	*n*

Table 6.33: Derived comparative dimension states

The comparative derivation is often called 'comparative aspect' in the Na-Dene literature, but this label is misleading because it has nothing to do with lexical or grammatical aspect aside from its restriction to states. The comparative derivation in Tlingit is compatible with other aspects besides the *∅*-imperfective, such as the *wu*-perfective demonstrated in (268).

(268) a. Woowáat'. *dimension result state perfective*
wu-i- $\sqrt[1]{}$ÿat'-μH
PFV-STV-$\sqrt[1]{}$long-VAR
'It became long.'

b. Ax̱ yáanáx̱ kaawawáat'. *comparative dimension result state perfective*
ax̱ yáanáx̱ ka- wu-u- i- √ÿat'-μH
1SG more CMPV-PFV-IRR-STV-√long-VAR
'It got longer than me.'

The appearance of irrealis in the comparative might be because a comparison denotes an eventuality where some entity approximates some other entity, but there is not a true identity between the entities. Comparison could then be a kind of resemblance which is essentially an unrealized equality: *A* is like *B* but *A* is not actually *B*. This would then be effectively the same semantic justification for irrealis marking as in the resemblance verbs discussed in section 4.2.3, where the same relation holds: *A* appears or pretends to be *B* but is not actually *B*.

4.3.2. Derived indirect motions

Indirect motion, also known as oblique motion, is formed with motion derivations that include irrealis *u-* and that describe motion indirectly toward some goal or at some oblique, sidelong angle to the origo. All of the indirect motions belong to the ∅-conjugation class (sec. 3.3.4). There are three subclasses of indirect motion derivations listed in (269), distinguished by repetitive imperfective suffix and by prefix morphology. See sections 3.3.4.5–3.3.4.7 and table 6.22 (p. 601) for details on the formation and structure of these three subclasses of ∅-conjugation motion derivations.

(269) a. ∅-conjugation with *ÿa-u-* and *-ch* (sec. 3.3.4.5)

b. ∅-conjugation with *sha-ÿa-u-* and *-ch* (sec. 3.3.4.6)

c. ∅-conjugation with *a-ÿa-u-d-* and *-x̲* (sec. 3.3.4.7).

The presence of irrealis *u-* in all of these motion derivations is as yet unexplained. There is no sign that these describe unreal events of motion because they can be used for everyday events just like other motion derivations. But the perambulative revertive motion derivation listed in (269c) has a contrast that might clarify the semantic contribution of the irrealis *u-*. As detailed in chapter 5 sections 5.2.2 and 5.2.3, there are two kinds of revertive motion: linear with *k̲ux̲=* and perambulative with *a-ÿa-u-*. The linear revertive motion, as its name implies, describes a motion event where the entity retraces the path of some prejacent motion, arriving at the start of the prejacent motion. The perambulative revertive motion also returns to the start of some prejacent motion but the path followed in the revertive is different.

The introduction of irrealis in the perambulative revertive motion derivation could have an explanation similar to the irrealis of resemblance verbs (sec. 4.2.3) and comparatives (sec. 4.3.1). The linear revertive motion describes a path from B to A where A was the start of a prejacent motion event and B was its destination. There are an infinite number of paths between A and B, but the linear revertive motion entails that the path $B \rightarrow A$ must be the same as the path $A \rightarrow B$, and thus that the entity retraces the same path taken in the prejacent event. The perambulative revertive motion instead says that the path $A \rightarrow B$ is not the same as $B \rightarrow A$ so that there are points along $A \rightarrow B$ that are not found along $B \rightarrow A$ or vice versa. The path $B \rightarrow A$ is like $A \rightarrow B$ because both paths have the same endpoints, but there is only a resemblance between them because they are not identical. Thus like the approximate appearance of resemblance verbs and the approximate dimension of comparatives, perambulative revertive motion describes an approximate but unequal return path. The approximation of identity is not actual identity and thus identity is unrealized.

If the above explanation for the perambulative revertive motions it might be extended to the other two subclasses of motion derivations that include irrealis *u-*. In these cases there is no prejacent motion event that would provide a prior path for a basis of comparison. Instead, the other two indirection motion derivation subclasses could entail a direct path that is possible but not taken, and the path taken is different enough from this direct path for identity to be unrealized. This all is merely speculation at this point and I am unsure how to go about testing the hypothesis empirically. It may in fact be impossible to empirically verify, in which case it must be a purely theoretical claim about the metaphysics of Tlingit spatial semantics.

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
Ø	*ash koodlénaa*	's/he plays touch game'	–	+	$\sqrt[2]{dlen}$	'tempt'	activity (*-H*)	
	ash koodat'ájaa	's/he swims for fun'	–	+	$\sqrt[2]{t'ach}$	'slap'	activity (*-H*)	
s-	*ash kooskúxaa*	's/he plays toy boat'	–	+	$\sqrt[1]{kux}$	'go boat'	activity (*-H*)	
l^{s}-	*ash koolch'éet'aa*	's/he plays basketball'	–	+	$\sqrt[1]{ch'it'}$	'dip?'	activity (*-μH*)	
	ash koolgíx'jaa	's/he plays bowed instr.'	–	+	$\sqrt[0]{gix'}$	'creak'	activity (*-H*)	
	ash koolkíts'aa	's/he seesaws'	–	+	$\sqrt[2]{kits'}$	'tip, rock'	activity (*-H*)	
	ash koolk'íshaa	's/he plays baseball'	–	+	$\sqrt[2]{k'ish}$	'swat'	activity (*-H*)	
l-	*ash koolgeigách'*	's/he plays on swing'	–	+	$\sqrt[1]{gik}$	'swing'	activity (*-μ*)	
	ash koolk'éinaa	's/he plays jumping'	–	+	$\sqrt[1]{k'e'n}$	'jump'	activity (*-μH*)	
	ash kooltágaa	's/he plays pool'	–	+	$\sqrt[2]{tak}$	'poke'	activity (*-H*)	
	ash koolt'áax'aa	's/he plays marbles'	–	+	$\sqrt[2]{t'ax'}$	'flick'	activity (*-μH*)	
	ash koolyát	's/he plays'	–	+	$\sqrt[1]{yat}$	'child'	activity (*-H*)	*n*
sh-	*ash kooshgóol'aa*	's/he winks'	–	+	$\sqrt[1]{gul'}$	'one eye'	activity (*-μH*)	
	ash kooshx'íl'aa	's/he sleds'	–	+	$\sqrt[1]{x'il'}$	'slide'	activity (*-H*)	

Table 6.34: Derived pretend activity verbs

4.3.3. Derived pretend activities

Pretend activities are activities that one does for entertainment and recreation rather than for a purpose or desired outcome. They are associated with irrealis probably because recreation is dissimulative: a pretend activity is unreal because there is no expected result. For example, recreational swimming is done without the intent of locomotion, and so is not swimming along a path. A recreational swimmer goes through the motions of swimming but does not actually travel anywhere. Tlingit has a possibly productive derivation to create pretend activities from a variety of roots. Table 6.34 lists all of the verbs attested with the pretend activity derivation. Conjugation classes for most of these verbs are unknown because of their limited documentation.

The morphology of pretend activity derivations is relatively complex. The derivation consists of the proximate third person human object *ash=*, the qualifier *ka-*, and the irrealis *u-* in Asp⁰. Stem variation is apparently unpredictable but there is not much data to determine this unequivocally. Most of the verbs in table 6.34 include a suffix *-aa* but *ash koolyát* 's/he plays' does not. Also most of the verbs include *d-* in Voice but *ash koodlénaa* 's/he plays touching game; playing hopscotch' (Leer 1973a: 08/98, 1976a: 463) does not. The preponderance of *l-* in *v* is interesting; it may reflect causativity with monovalent roots, but with bivalent roots like $\sqrt[2]{tak}$ 'poke, spear' it may instead reflect spatial extension (ch. 4 sec. 4.2).

The pronoun *ash=* is unusual in pretend activities and appears to have no synchronic interpretation. Because *ash=* may originally derive from a reflexive (cf. *sh=* reflexive object) it may be a frozen instance of a reflexive; see chapter 7 section 1.2.3.3 for further discussion of *ash=* in this context. The presence of *d-* in some forms looks like antipassivization, but it may be middle voice associated with *ash=* if the latter is reflexive. The absence of *d-* in *ash koodlénaa* is particularly interesting since it is

v	*(Im)perfective*	*Translation*	*O*	*S*	*Root*	*Gloss*	*Eventuality*	*Conj.*
	kuli.éits'shán	'it is delicate, fragile'	+	–	$\sqrt[2]{}$*.ets'*	'hdl. careful'	state (*-μH*)	
lˢ-	*kulitées'shán*	'it is fascinating to watch'	+	–	$\sqrt[2]{}$*tis'*	'stare'	state (*-μH*)	
	kulix̲éetl'shán	'it is dangerous, fearsome'	+	–	$\sqrt[2]{}$*x̲itl'*	'fear'	state (*-μH*)	
	kuli.áax̲ch'án	'it is fascinating to hear'	+	–	$\sqrt[2]{}$*.ax̲*	'hear'	state (*-μH*)	
l-	*x̲'akwli.áax̲ch'án*	'it is fascinating speech'	+	–	$\sqrt[2]{}$*.ax̲*	'hear'	state (*-μH*)	
	kulinéekch'án	'it is easy to tell'	+	–	$\sqrt[2]{}$*nik*	'tell'	state (*-μH*)	

Table 6.35: Derived extraordinary state verbs

the only form without *d-*.

The *-aa* suffix is found in a wide variety of other verbal structures as well as the pretend derivation. Because so little is known about the individual affixes in the pretend derivation it is difficult to say what the semantic contribution of *-aa* should be. It may be etymologically related to the partitive pronoun *aa* 'one of, some of'. A similar *-aa* is seen in a large number of nouns derived from verb roots where the resulting noun often denotes an instrument or tool: *s'ísaa* 'sail, cloth' with $\sqrt[1]{}$*s'is* 'windblown', *xít'aa* 'broom' with $\sqrt[2]{}$*xit'* 'sweep', *xáshaa* 'saw' with $\sqrt[2]{}$*xash* 'cut', *gúx'aa* 'cup' with $\sqrt[2]{}$*gux'* 'dip', *yélaa* 'subterfuge' with $\sqrt[2]{}$*yel* 'deceive', etc. Other nouns with repetitive *-ch* and *-aa* refer to environmental phenomena: *óoxjaa* 'wind' with $\sqrt[1]{}$*.ux* 'blow', *tíxwjaa* 'stomping noise' with $\sqrt[1]{}$*tixw* 'stomp', *kax'áasjaa* 'cascade of water' with $\sqrt[1]{}$*x'as* 'cascade', *kasáyjaa* 'heat' with $\sqrt[1]{}$*say* 'radiate, sweat', etc.

The combination of *ka-* and *u-* is suspiciously similar to the same pair found in the conative activity verbs (sec. 4.2.2) and the comparative dimension state derivation (sec. 4.3.1). It is plausible that the pretend activity derivation is historically based on the conative derivation with the addition of the reflexive *ash=* and *d-* and the enigmatic *-aa* suffix.

4.3.4. Deriving extraordinary states

Extraordinary states are states that are out of the ordinary from the speaker's perspective and which by extension capture people's attention. Table 6.35 lists the six examples I have found in the lexical documentation. Typical examples of extraordinary states are given in (270) and (271), contrasting an ordinary form with an extraordinary form. The extraordinary state derivation features the qualifier *k-*, the irrealis *u-*, imperfectivity as shown by the lack of an overt aspect prefix, stativity with *i-* in Ɛ, always *-μH* stem variation, and the intensifying *-ch'án* ~ *-shán* suffix.

(270) a. Wutuwa.áx̲. *Ø-conj. wu-perfective*
wu-tu- i- $\sqrt[2]{}$.ax̲ -H
PFV-1PL·S-STV-$\sqrt[2]{}$hear-VAR
'We heard it.'

b. Kuli.áax̲ch'án. *extraordinary state Ø-imperfective*
k- u- l- i- $\sqrt[2]{}$.ax̲ -μH-ch'án
QUAL-IRR-XTN-STV-$\sqrt[2]{}$hear-VAR-INTNS
'It is fascinating, interesting, nice to listen to.'

(271) a. Kaxa.éits'. *lexical activity state Ø-imperfective*
k- x- $^{2}\sqrt{}$.ets' -μH
QUAL-1SG·S-$^{2}\sqrt{}$handle·care-VAR
'I am handling it carefully.'

b. Kuli.éits'shán. *extraordinary state Ø-imperfective*
k- u- l- i- $^{2}\sqrt{}$.ets' -μH-shán
QUAL-IRR-XTN-STV-$^{2}\sqrt{}$handle·care-VAR-INTNS
'It is delicate, fragile.'

The intensifying suffix *-ch'án* ~ *-shán* is uncommon but it is documented in other contexts besides the extraordinary state derivation. The *-shán* [ʃán] form is an allomorph of *-ch'án* [tʃ'án] that occurs only after ejective consonants (Story 1966: 56). This suffix seems to denote something like the ease of engaging in an eventuality like English *easy to*; Story describes it as denoting "a degree of pleasurable or fearful reaction" (Story 1966: 56).[44] Forms with the intensifying suffixes are not terribly common but neither are they exceedlingly rare; they seem to reflect a poorly documented but probably productive derivational process. Examples of *-ch'án* ~ *-shán* are shown in (272) and (273); all forms with this suffix always include *l-* in *v* for unclear reasons.

(272) a. Yat'aa. *imperfective state*
i- $^{1}\sqrt{}$t'a^{h}-μ
STV-$^{1}\sqrt{}$hot -VAR
'It (thing) is hot.'

b. Lit'áaych'án. *'easy to' imperfective state*
l- i- $^{1}\sqrt{}$t'a^{h}-μH-ÿ -ch'án
XTN-STV-$^{1}\sqrt{}$hot -VAR-ŸSFX-INTNS
'It is easy to heat up.'

(273) a. Uwawál'. *perfective of achievement*
u- i- $^{1}\sqrt{}$wal'
ZPFV-STV-$^{1}\sqrt{}$break
'It became broken, chipped.'

b. Liwáal'shán. *'easy to' imperfective state*
l- i- $^{1}\sqrt{}$wal' -μH-shán
XTN-STV-$^{1}\sqrt{}$break-VAR-INTNS
'It is easily broken.'

The intensifying suffix is independent of the irrealis prefix in extraordinary states, so the irrealis in this derivation must have some other explanation. Following a suggestion by Burge (p.c. 2018), I suggest that the extraordinary states are irrealis because they describe phenomena that are experientially unreal. The intensity of experience somehow exceeds a threshold of reality, akin to how

44. Story actually suggests a separate *-ch'* ~ *-sh* with another suffix *-án*, citing instances of *-án* alone and the form *kawdudliséewch'áḵw* 'they're full of rain (tasteless berries)' from *séew* 'rain' which combines *-ch'* and another suffix *-áḵw*. The *-áḵw* is actually the deprivative denoting the removal or lack of something, and the *-án* alone appears to denote restoration of a previous or normal situation, but the *-ch'* ~ *-sh* is enigmatic and never appears alone.

English speakers might respond to an extraordinary event with an exclamation like *Unreal!*. A similar exclamation in Tlingit is *Ch'a tlaagú!* 'Just legendary!' which is derived from the root $^{1}\sqrt{}$*tlakw* 'myth, legend' (Leer 1973a: 08/131).

4.4. Aspectually conditioned irrealis

Aspectually conditioned irrealis is the presence of irrealis in Asp⁰ due to other material in Asp⁰. There are three contexts in the temporal category system that require irrealis: prospective (sec. 4.4.1), potential (sec. 4.4.2), and admonitive (sec. 4.4.3). The mechanisms for this kind of irrealis trigger are still unclear. It could be modelled as a kind of selectional process, but the elements that form these aspect and modality categories also appear in other categories without irrealis. I leave the syntactic machinery for these irrealis triggers unspecified for now, only speculating on possibilities in the sections below.

4.4.1. Prospective includes irrealis

As detailed earlier in section 3.5.1, prospective aspect is expressed by the *g-* conjugation prefix accompanied by the *g̲-* modal prefix and the *w-* irrealis prefix. There are cases presented in section 4.1 where the irrealis prefix is obscured by morphophonology, but its presence is maintained in the underlying forms despite phonological interference. Burge (2017) argues that the presence of irrealis in the prospective aspect is not semantically vacuous, and that it probably encodes the same meaning as it does in other contexts: possible worlds that are disjoint with the actual world. In the case of the prospective aspect the possible worlds in which the eventuality occurs should be accessible in the future from the actual world. This is distinct from the irrealis in for example a resemblance verb (sec. 4.2.3) where the possible world of identity can never be accessible from the actual world: an entity *A* resembling but not actually equal to an entity *B* cannot ever be identical to *B*.

The prospective aspect is ungrammatical without the irrealis *w-*. This is shown by the pairs in (274) and (275). The forms with overt irrealis *w-* realized in the surface phonology are grammatical, but the forms without overt irrealis are ungrammatical. As discussed in section 4.1 there are cases where the irrealis prefix is obscured by phonology, but in cases like (274) and (275) the necessity for irrealis *w-* is unarguable.

(274) a. Yei ikk̲wasatéen. *1sg. subj. prospective with w-*
yei= i- w- g- g̲- x̲- s- $^{2}\sqrt{}$tin-μH
down=2SG·O-IRR-GCNJ-MOD-1SG·S-XTN-$^{2}\sqrt{}$see -VAR
'I will see you.'

b. *Yei ikk̲asatéen. **without w-*
yei= i- g- g̲- x̲- s- $^{2}\sqrt{}$tin-μH
down=2SG·O- GCNJ-MOD-1SG·S-XTN-$^{2}\sqrt{}$see -VAR
intended: 'I will see you.'

(275) a. Dleit daak gux̲satáan. *3rd subj. prospective with w-*
dleit dáak=w- g- g̲- s- $^{1}\sqrt{}$tan -μH
snow down=IRR-GCNJ-MOD-XTN-$^{2}\sqrt{}$hdl·long-VAR
'Snow will fall.', 'It will snow.'

b. *Dleit daak gaxsatáan. *without w-
dleit dáak= g- g- s- $^{1}\sqrt{}$tan -μH
snow down= GCNJ-MOD-XTN-$^{2}\sqrt{}$hdl·long-VAR
'Snow will fall.', 'It will snow.'

The prospective *w-* is allomorphically distinct from the usual irrealis prefix *u-*. Its identification is due to Leer who represents it as "*ŭ-*" and says that "The prefix *ŭ-* occurs only in the Future mode … and as a component of the Comparative derivational string" (Leer 1991: 110). He notes that it is only found together with a prefix of the form *g*(*a*)- or *k*(*a*)- and so it can only be distinguished from *u-* with these prefixes. Leer analyzes most prefixes as syllabic including those with an apparently epenthetic [a] and neglects metrical phenomena. His morphophonological rules for three irrealis prefixes *u-*, *u:-*, and *w-* are shown in (276) together with a preceding *Ca-* prefix (i.e. any *g-* or *k-*) and *i-* in Ɛ (Leer 1991: 111). The realizations include the [Cu^{h}] with a laryngealized vowel that is unique to Tongass Tlingit and which would be identical with [Cu:] in Northern Tlingit.

(276) *Leer's rules for irrealis phonology*

	prefix	+	IRR	+	Ɛ	→	*form*
a.	Ca-		u-				Cu^{h}
b.	Ca-		u:-				Cu:
c.	Ca-		w-				Cu
d.	Ca-		w-		i-		Cu^{h}

Since the prospective aspect never includes *i-* (ch. 3 sec. 4.3), the rule in (276d) is inapplicable and should only occur with comparatives. Thus only the rule in (276c) applies to the prospective with its *w-* allomorph, and so all realizations of the prospective are based on a form with [Cu] with later modifications to include forms like [C^{w}]. This does appear to be the case, but it is still unclear if there must be an underlying difference between *w-* and *u-* to capture the surface phonological forms, or if instead the differences in realization could be accounted for by interactions with syllable structure, metrical structure, and the underlying representations of other prefixes. Regardless of its unusual underlying representation, the irrealis *w-* of the prospective seems to be semantically identical with the other instances of irrealis prefixes.

4.4.2. Potential includes irrealis

The potential is composed of the irrealis prefix *u-*, a conjugation prefix *CNJ-* reflecting the lexically or derivationally specified conjugation class (including *∅*), and the modal *g̲-* prefix together with *i-* in Ɛ and stem variation as described in chapter 2 section 2.6.7. Leer says that its meaning "may be characterized as specifying that in one among several alternative future 'possible worlds', the speaker has reason to expect a certain outcome" (Leer 1991: 388). Burge argues that the potential specifically denotes circumstantial or deontic possibility, in contrast with the deontic weak necessity of the prospective aspect (Burge 2017: 50).

Morphosyntactically the potential can be thought of as the *CNJ-* counterpart of the prospective since both apparently refer to future time: the prospective has *w-g-g̲-* and the potential has *u-CNJ-g̲-*. This would form a parallel to the *∅*-imperfective versus *CNJ*-imperfective contrast and the *u*/*wu*-perfective versus *CNJ*-perfective contrast. The potential may also be seen as the irrealis counterpart of the hortative: hortatives are formed with *CNJ-g̲-* and potentials with *u-CNJ-g̲-*. In addition, hortatives and potentials have identical stem variation paradigms (ch. 2 secs. 2.6.6 and 2.6.7). Both of these comparisons do not account for the unusual presence of *i-* in the potential, however.

The interpretation of the potential as a possibility modality could be taken as a straightforward justification for its inclusion of the irrealis prefix. But Burge shows that the hortative – notably lacking irrealis *u-* – has a circumstantial possibility interpretation just like the potential (Burge 2017: 50). It is thus unclear that possibility modality is the trigger for irrealis marking.

Burge shows that some speakers require a dubitative particle *gwál* 'maybe' together with the potential (Burge 2017: 40). Since this same dubitative can select irrealis in other contexts (sec. 4.5.2), it could be argued that this is the source of irrealis in the potential, further suggesting that the potential is the irrealis form of the hortative since hortatives are not attested with *gwál*. But Leer gives a variety of examples of the potential without *gwál*, and indeed without any other usual trigger of irrealis (Leer 1991: 386–388, 390–392), and similarly Cable gives several potentials without dubitatives (Cable 2017a). The examples in (278)–(279) illustrate potentials without dubitatives.

(277) Ṛā′q!gwa axhu′nxo-has qâkxasîtī′n. *potential without dubitative*
Yáax' gwáa ax̱ húnx̱u hás k̲waak̲asiteen.
yá -x' gwáa ax̱ húnx̱w=hás u- g̲- g̲- x̱- s- i- ²√tin-μ
PROX-LOC MIR 1SG·PSS eld·bro =PLH IRR-G̲CNJ-MOD-1SG·S-XTN-STV-²√see -VAR
'Here amazingly I can see my elder brothers.' (Swanton 1909: 405.61.4)

(278) Ha k̲ushtuyáx̱ g̲áa yatee; ch'a ax̱ jinák̲ tsá g̲waalaaxw. *pot. s̄ dub.*
ha k̲ushtuyáx̱ g̲áa i- ¹√tiʰ-μ ch'a ax̱ jín -nák̲ tsá u- g̲- i- ¹√laxw -μ
well don't·care okay STV-¹√be -VAR just 1SG·PSS hand-ABES EMPH IRR-ZCNJ MOD-STV-¹√starve-VAR
'Well I don't care, it's okay; she can starve on me.' (Nyman & Leer 1993: 100.33–34)

(279) I jeeyís áyá yéi nk̲wasaneiyín. *potential without dubitative*
i jee -yís á -yá yéi= u- n- g̲- x̱- s- ¹√neʰ -μ -ín
2SG·PSS poss'n-BEN FOC-PROX thus=IRR-NCNJ-MOD-1SG·S-CSV-¹√happen-VAR-PAST
'I could have done it for you.' (Cable 2017a: 671)

Burge (p.c. 2018) suggests that context can supply the doubt necessary for a potential so that explicit dubitative indication with the potential need not be required, and that the apparent requirement for dubitative particles may be partly a consequence of elicitation strategies. Variation between the presence and absence of dubitatives may also reflect explicitness preferences, discourse dependency, or other phenomena not directly related to irrealis triggers. As such, the potential is probably best analyzed as internally requiring irrealis rather than a dubitative element being a realis trigger for what would otherwise be a hortative. Nonetheless, the connection between the potential and hortative is interesting and deserves further investigation, particularly testing the hortative for its compatibility with dubitative expressions.

4.4.3. Admonitive includes irrealis

The admonitive appears to be an irrealis form of the realizational which, as I have argued in section 2.2.3.1, is a *CNJ*-perfective aspect form. This means that the admonitive should have a perfective interpretation with the addition of unreality. In the earlier discussion I noted that the admonitive – often translated as "lest *V*" – seems to denote future times rather than past times. But this apparent futurity could possibly be explained by the irrealis. An alternative analysis is that the admonitive is

actually a *CNJ*-imperfective state with the addition of irrealis, coincidentally sharing its morphology with the *CNJ*-perfective qua realizational. The forms in (280) give a couple of examples of admonitives from texts, one from *Chalyee Éesh* Andrew Wanamaker and one from *Ǵooch Éesh* Johnny C. Jackson.

(280) a. Áwé neilx̲ akawligwáatl
á -wé neil -x̲ a- ka- wu-l- i- ¹√gwa'tl-μH
FOC-MDST inside-PERT ARG-SRO-PFV-CSV-STV-¹√roll -VAR
du léelk'uch unak̲éet ǵaa áwé.
du léelk'w-ch u- n- ²√k̲it -μH ǵaa á -wé
[CP 3H·PSS grandpt-ERG IRR-NCNJ-²√suspect-VAR SUB] =ADES FOC-MDST
'He rolled it around inside, lest his grandfather suspect him.' (Leer 1969: 7.58)

b. K̲wáak̲t tsé aa wnée, yeewháan.
k̲wáak̲ -t tsé aa= u- ¹√niʰ -μH yeewháan
wrongly-PNCT PCL PART=IRR-ZCNJ ¹√happen-VAR 2PL
'Please don't let anything happen to any one of you.' (orig. tr.)
(Dauenhauer & Dauenhauer 1990: 164.47–48)

The semantic contribution of the irrealis in admonitives is apparent even if not exactly clear from the small number of unambiguous examples I have encountered alongside of the examples cited by Leer (1991: 430–432). It seems to describe something like bouletic impossibility, i.e. eventualities that are desired to not be true, and hence includes a sense of negation. The irrealis could be associated with a kind of implicit negation as suggested by Leer (1991: 430), but it does not require a negative or dubitative particle. In any case, admonitives are never used to describe eventualities that are realized at the time of reference.

4.5. Structurally conditioned irrealis

Structurally conditioned irrealis is a syntactic context where an irrealis prefix is triggered by a particle merged above AspP. There are four well documented cases: (i) negative, (ii) dubitative, (iii) optative, and (iv) prohibitive. Negatives involve propositional negation and are addressed in section 4.5.1. Dubitatives mark eventualtiies that are doubtful in the speaker's evaluation and are addressed in section 4.5.2. Optatives describe desire for an eventuality and are addressed in section 4.5.3. Prohibitives describe desire against an eventuality and are addressed in section 4.5.4. Optatives and prohibitives share a unique verb suffix *-k̲* that is glossed either as OPT or PHIB depending on the context; negatives and dubitatives do not have an associated suffix. The irrealis prefix is always *u-* in all four cases except when it is blocked by a previously existing *w-* (e.g. prospective aspect).

All four kinds of structurally conditioned irrealis are reliably attested across all dialects, but there is some variation in their realization and productivity. Dubitatives in particular do not invariably require irrealis marking unlike the other three cases, and irrealis is apparently always absent in dubitatives for some people. Prohibitives and optatives both invariably require irrealis, but the distinct prohibitive particle has been replaced by the ordinary negative particle for many speakers and thus appears to be derived from negation. In no case is there irrealis stacking so that the combination of a lexically (sec. 4.2), derivationally (sec. 4.3), or aspectually specified irrealis (sec. 4.4) together with structurally conditioned irrealis does not result in more than one irrealis prefix in Asp⁰.

Every case of structurally conditioned irrealis features an overt particle in the left periphery of the sentence. The negative particle is canonically represented as *tléil* [tɬʰéːɬ] 'not' but it shows extensive variation that is partly phonological, partly dialectal, and partly idiosyncratic. The dubitative particle is *gwál* [kʷáɬ] 'maybe' and this particle is essentially invariant across all dialects of Tlingit. The optative particle is *gu.aal* [kʷù.ˈʔàːɬ] 'hopefully' with only minor variation; it is often accompanied by a dubitative *gushí* [kʷù.ˈʃí] ~ *kwshí* [kʷʃí] 'perhaps'[45] but this is not necessary. The prohibitive particle is *líl* [ɬíɬ] 'don't' but as noted this has often been replaced by forms of the negative particle for many speakers. See the individual sections below for further discussion of each particle.

The data in (281) illustrate each of the four structurally conditioned irrealis contexts, highlighting the particle, the associated irrealis prefix, and the *-x̲* suffix if present. The form in (281a) is the basis case of an affirmative activity Ø-imperfective on which the other four are built.

(281) a. X̲ax̲á *activity Ø-imperfective*
x̲- ²√x̲a-H
1SG·S-²√eat-VAR
'I eat it.', 'I am eating it.'

b. Tléil x̲wax̲á. *negative activity Ø-imperfective*
tléil u- x̲- ²√x̲a-H
NEG IRR-1SG·S-²√eat-VAR
'I don't eat it.', 'I'm not eating it.' (Leer 1991: 221)

c. Gwál x̲wax̲á. *dubitative activity Ø-imperfective*
gwál u- x̲- ²√x̲a-H
DUB IRR-1SG·S-²√eat-VAR
'Maybe I eat it.', 'Maybe I'm eating it.' (Leer 1991: 221 fn. 15)

d. Gu.aal x̲wax̲áak̲. *optative activity Ø-imperfective*
gu.aal u- x̲- ²√x̲a-μH-k̲
OPT IRR-1SG·S-²√eat-VAR-OPT
'Hopefully I eat it.', 'Hopefully I'm eating it.' (Leer 1991: 222)

e. Líl x̲wax̲áak̲. *prohibitive activity Ø-imperfective*
líl u- x̲- ²√x̲a-μH-k̲
PHIB IRR-1SG·S-²√eat-VAR-PHIB
'Let me not eat it.', 'Let me not be eating it.' (Leer 1991: 222)

There is no evidence that any of the four particles can stack. The most likely candidates for stacking are the negative and dubitative to mean something like 'maybe not'. I have found only one example in (282) that comes close to stacking, but the *gwál* seems to be modifying the adverbial *yé* 'thus, so' rather than the clause.

(282) Gwál yé tlél i een yoo akoolneekk. *dubitative + negative?*
gwál yé tlél i ee -n yoo=a- ka- u- l- ²√nik-μ -k
DUB thus NEG 2SG BASE-INSTR ALT= ARG-QUAL-IRR-XTN-²√tell -VAR-REP
'Maybe it's that she doesn't tell it to you.' (Dauenhauer & Dauenhauer 1987: 250.129)

45. Many Northern dialects have *gushé* [kʷù.ˈʃé] ~ *kwshé* [kʷʃé] with final lowering of /i/; compare *gí* vs. *gé*.

Figure 6.23: Negative as RP head

Figure 6.24: Prohibitive as RP head with -k as Mod

Elicitation of various combinations of negatives and dubitatives is thus a priority for future work on negation and its relatives. There are other mechanisms for expressing doubt and the like such as the particles *gushí* 'perhaps', *shákwdé* 'possibly', and *óosh* 'hypothetically; if only' as well as the polar yes/no particle *gí* ~ *gé* in its non-questioning function. As shown in section 4.5.2, these other doubt-expressing particles do not trigger irrealis marking and so are not part of the negation-like complex of particles. Presumably negative doubt can be expressed by combining these other particles with negation, though data for this is lacking.

The four particles *tléil* 'not', *gwál* 'maybe', *gu.aal* 'hopefully', and *lál* 'don't' could be functional heads that select the irrealis *u-* in Asp⁰. This approach fits well with the *tléil* 'not' particle because negative particles are often analyzed as functional heads of a NegP (cf. e.g. Pollock 1989; Zanuttini 2001; Cable 2008). The prohibitive *lál* could plausibly be analyzed as a flavour of Neg especially given that it contains frozen negative morphology (see sec. 4.5.4.2). But it is difficult to extend Neg to the dubitative or optative because neither clearly involves any kind of negation semantics. Yet all four of these particles do seem to form some kind of cohesive morphosyntactic group.

I suggest a generalization of NegP with a functional phrase RP that takes AspP as its complement and requires the presence of irrealis in Asp⁰. The symbol R is for 'realis' since I is already in common use for 'inflection' following developments in Government and Binding Theory (Haegeman 1994). There are potential analyses for RP, one where R is the irrealis triggering particle and another where R is either a covert element or the -k suffix of the optative and prohibitive. The analysis where R is the irrealis-triggering particle is shown in figure 6.23 for a negative structure like in (281b).

The analysis in figure 6.23 does not account for the appearance of the -k suffix in optatives and prohibitives like (281d) and (281e). In chapter 2 section 2.8 I analyzed -k as a functional head Mod, but if optatives and prohibitives are to be unified with negatives and dubitatives then presumably -k should be incorporated into the same phrase as the left edge particle. One straightforward approach is to merge -k in RP as a kind of modifier. Figure 6.24 shows the resulting structure for a prohibitive like in (281e).

Figure 6.25: Prohibitive with -k as RP head

Figure 6.26: Negative with covert RP head

An alternative approach is to model the -k suffix as the head R, merging the left edge particle as a modifier of RP. The negative and dubitative would then have a covert R. The structure of a prohibitive in this analysis is shown in figure 6.25 and the corresponding negative structure is in figure 6.26.

I have not explored the theoretical or empirical ramifications of either approach in enough depth to determine whether there are empirical facts that could rule out one or the other. It may be possible to differentiate them with semantic scope tests, but it is also possible that they are empirically indistinguishable. One theoretical difference is that if particle stacking is possible – e.g. dubitative + negative – then the approach with a head final RP would be structurally simpler because there could simply be two particles merged in RP rather than separate, recursive RPs with each particle heading its own phrase. It is not yet clear what empirical consquences fall out of this difference.

The relationship between RP, TP, and CP is still unclear. Presumably both RP and TP are below CP, but we cannot yet say whether RP is above or below TP. Suffixation order should be a diagnostic for hierarchical structure, but at least the past tense *-ín* suffix and the clause type suffixes cannot occur together in the verb word (Leer 1991: 212) as is illustrated by the data in (283) and (284). There is no positive evidence for the cooccurrence of -k with either past tense *-ín* or the clause type suffixes, nor is there negative evidence showing that they cannot cooccur, though it is implicit from the description in Leer 1991 that -k cannot occur with either T or C.

(283) a. Xwaaxáa. *main clause non-past wu-perfective*
wu-x- i- ²√xa-μH
PFV-1SG·S-STV-²√eat-VAR
'I ate it.'

b. Xwaxáayin. *past tense*
wu-x- ²√xa-μH-ín
PFV-1SG·S-²√eat-VAR-PAST
'I had eaten it.'

c. Xwaxaayí… *subordinate clause*
wu-x- $^{2}\sqrt{}$xa-μ -í
PFV-1SG·S-$^{2}\sqrt{}$eat-VAR-SUB
'When/while I ate it…'

(284) a. *Xwaaxáayiní… **subordinate clause + past tense*
wu-x- $^{2}\sqrt{}$xa-μH-ín -í
PFV-1SG·S-$^{2}\sqrt{}$eat-VAR-PAST-SUB
intended: 'When/while I had eaten it…'

b. Xwaxaayí yéeyi… *subordinate clause + past tense*
wu-x- $^{2}\sqrt{}$xa-μ -í =yéeyi
PFV-1SG·S-$^{2}\sqrt{}$eat-VAR-SUB =PAST
'When/while I ate it…'

Setting aside the optative and prohibitive with *-k*, at least negation has no direct effect on the realization of either C or T. There does not seem to be any sign of dubitatives influencing C or T either, but coherent data for this is still lacking. The lack of effects on C are shown in (285) where there is no substantive difference between the affirmative or negative forms of the subordinate clause.

(285) a. At xwasateení aadé xwajixeex. *affirmative subord. clause*
at= wu-x- s- $^{2}\sqrt{}$tin-μ -í á -dé wu-x- d- sh- i- $^{1}\sqrt{}$xix-μ
[$_{CP}$ 4N·O=PFV-1SG·S-XTN-$^{2}\sqrt{}$see -VAR-SUB] 3N-ALL PFV-1SG·S-MID-PEJ-STV-$^{1}\sqrt{}$fall -VAR
'[When I saw something] I ran there.'

b. Tléil at xwasateení aadé xwajixeex. *negative subord. clause*
tléil at= wu-x- s- $^{2}\sqrt{}$tin-μ -í á -dé wu-x- d- sh- i- $^{1}\sqrt{}$xix-μ
[$_{CP}$ NEG 4N·O=PFV-1SG·S-XTN-$^{2}\sqrt{}$see -VAR-SUB] 3N-ALL PFV-1SG·S-MID-PEJ-STV-$^{1}\sqrt{}$fall -VAR
'[When I didn't see something] I ran there.'

Similarly, the lack of effects on T by negation are shown in (286). Once again there is no substantive difference between the affirmative in (286a) and the negative in (286b).

(286) a. Wé káa xwasakóowun. *affirmative past tense*
wé káa wu-x- s- $^{2}\sqrt{}$ku^{h} -μ -ín
MDST man PFV-1SG·S-XTN-$^{2}\sqrt{}$know-VAR-PAST
'I had known that man.', 'I used to know that man.'

b. Wé káa tléil xwasakóowun. *negative past tense*
wé káa tléil wu-x- s- $^{2}\sqrt{}$ku^{h} -μ -ín
MDST man NEG PFV-1SG·S-XTN-$^{2}\sqrt{}$know-VAR-PAST
'I hadn't known that man.', 'I didn't used to know that man.'

4.5.1. Negative selects irrealis

Negation in Tlingit is expressed with a negative particle *tléil* or one of its variants (sec. 4.5.1.2). Negation also interacts with several different phenomena below AspP inside the verb word. In particular, negation conditions stem variation values in V, it may suppress state marking with *i-* in Ɛ, it requires irrealis *u-* in Asp⁰, and it can interact with other material in Asp⁰. The data in (287) illustrate the contrast between an affirmative and a negative imperfective state.

(287) a. Ixaatéen. *affirmative imperfective state*
i- x- i- ²√tin-μH
2SG·O-1SG·S-STV-²√see-VAR
'I can see you (sg.).'

b. Tléil ixwateen. *negative imperfective state*
tléil i- u- x- ²√tin-μ
NEG 2SG·O-IRR-1SG·S-²√see-VAR
'I can't see you (sg.).'

Negation requires the presence of the irrealis prefix *u-* in Asp⁰ if there is no irrealis prefix already present in the derivation. The canonical example of this is in imperfective aspect where the presence of the irrealis prefix *u-* is ungrammatical in the affirmative form in (288) but is obligatory in the negative form in (289).

(288) a. Xaxá. *affirmative without irrealis u-*
x- ²√xa-H
1SG·S-²√eat-VAR
'I eat it.', 'I'm eating it.'

b. *Xwaxá. **affirmative with irrealis u-*
u- x- ²√xa-H
IRR-1SG·S-²√eat-VAR
intended: 'I eat it.', 'I'm eating it.'

(289) a. *Tléil xaxá. **negative without irrealis u-*
tléil x- ²√xa-H
NEG 1SG·S-²√eat-VAR
intended: 'I don't eat it.', 'I'm not eating it.'

b. Tléil xwaxá. *negative with irrealis u-*
tléil u- x- ²√xa-H
NEG IRR-1SG·S-²√eat-VAR
intended: 'I don't eat it.', 'I'm not eating it.'

Because of the lack of irrealis stacking (sec. 4.5.1.1), it is impossible to empirically determine whether negation introduces irrealis in forms that already include irrealis marking. Likewise the obscuring of irrealis in perfectives (sec. 4.1) makes it impossible to say if negation introduces irrealis in the perfective aspect. In the latter case I assume that irrealis is actually introduced, but in the former it seems plausible that the existing irrealis marking satisfies the syntactic requirement for irrealis with negation.

4.5.1.1. Negative irrealis does not stack

The irrealis triggered by negation does not stack with irrealis from other sources. An already-irrealis form may show other effects of negation such as Ɛ-suppression or a change in V-agreement, but the irrealis prefix present in Asp⁰ is not modified and no additional irrealis prefix is introduced. The data in (290)–(295) illustrate this for three selected contexts: (i) lexical irrealis in an activity

∅-imperfective form, (ii) derivational irrealis in a comparative dimension state ∅-imperfective form, and (iii) aspectual irrealis in a prospective aspect form.

The data in (290) and (291) demonstrate that negation does not add irrealis to a lexically specified irrealis. The form in (290) is a baseline activity ∅-imperfective. The negated form in (291a) has the same appearance and the form in (291b) shows that the probable phonological result of two irrealis prefixes is ungrammatical.

(290) At koo.éits'. *activity ∅-imperfective with lexical u-*
at= k- u- $^{2}\sqrt{}$.ets' -μH
4N·O=QUAL-IRR-$^{2}\sqrt{}$hdl·care-VAR
'S/he is careful with things.' (Leer 1973a: 02/203)

(291) a. Tléil at koo.éits'. *negative with one u-*
tléil at= k- u- $^{2}\sqrt{}$.ets' -μH
NEG 4N·O=QUAL-IRR-$^{2}\sqrt{}$hdl·care-VAR
'S/he is not careful with things.' (Story & Naish 1973: 176)

b. *Tléil at kuwu.éits'. **negative with u- + u-*
tléil at= k- u- u- $^{2}\sqrt{}$.ets' -μH
NEG 4N·O=QUAL-IRR-IRR-$^{2}\sqrt{}$hdl·care-VAR
intended: 'S/he is not careful with things.'

The data in (292) and (293) show that negation does not add irrealis to a derivationally specified irrealis. The form in (290) is a baseline state ∅-imperfective with the comparative derivation. The negated form in (293a) shows the same prefix realization and the form in (293b) shows that two irrealis prefixes is again ungrammatical.

(292) Yéi koowáat'. *comparative state ∅-imperfective with derivational u-*
yéi= ka- u- i- $^{1}\sqrt{}$ÿat'-μH
thus=CMPV-IRR-STV-$^{1}\sqrt{}$long-VAR
'It is comparatively long.' (Eggleston 2017)

(293) a. Tléil yéi kooyáat'. *negative with only u-*
yéi= ka- u- $^{1}\sqrt{}$ÿat'-μH
thus= CMPV-IRR-$^{1}\sqrt{}$long-VAR
'It is not comparatively long.' (Eggleston 2017)

b. *Tléil yéi kuwuwáat'. **negative with u- + u-*
yéi= ka- u- u- $^{1}\sqrt{}$ÿat'-μH
thus= CMPV-IRR-IRR-$^{1}\sqrt{}$long-VAR
intended: 'It is not comparatively long.'

The data in (294) and (295) show that negation does not add irrealis to an aspectually specified irrealis. The form in (290) is a baseline prospective aspect form with the *w-* irrealis prefix. The negated form in (295a) shows the same prefix realization and the form in (295b) shows that two irrealis prefixes is ungrammatical.

onset C	/tɬʰ/		/tʰ/		/h/		/ɬ/	
	orth.	*IPA*	*orth.*	*IPA*	*orth.*	*IPA*	*orth.*	*IPA*
long vowel	tléil	[tɬʰéːɬ]	téil	[tʰéːɬ]	héil	[héːɬ]		
short vowel	tlél	[tɬʰéɬ]	tél	[tʰéɬ]	hél	[héɬ]		
no vowel							l	[ɬ]

Table 6.36: Negative particle forms

(294) Kukaxáa. *baseline prospective with aspectual w-*
w- g- g- x- ²√xa-μH
IRR-GCNJ-MOD-1SG·S-²√eat-VAR
'I will eat it.'

(295) a. Tléil kukaxaa. *negative with only w-*
tléil w- g- g- x- ²√xa-μ
NEG IRR-GCNJ-MOD-1SG·S-²√eat-VAR
'I won't eat it.'

b. *Tléil kookaxáa. **negative with u- + w-*
tléil u- w- g- g- x- ²√xa-μ
NEG IRR-IRR-GCNJ-MOD-1SG·S-²√eat-VAR
'I won't eat it.'

There are many more possible combinations of irrealis and negation, but none are attested with more than one irrealis prefix. There is ample evidence of negation in texts, lexical documentation, and language description and in no case is there any sign of irrealis stacking. I conclude that irrealis marking for negation is semelfactive: if irrealis precedes negation in the derivation then this preexisting irrealis is unmodified.

4.5.1.2. The negative particle *tléil*

The negative particle has a large variety of phonological forms depending on speech rate, dialect, and other less well understood conditions. The usual written representation of the negative particle is *tléil* [tɬʰéːɬ] 'not'. The orthography distinguishes a number of other forms which are organized in table 6.36 by their phonological properties; there may be others yet to be identified but this represents the vast majority of variation. I exemplify and discuss each example below and then summarize the etymology of the negative particle.

There are no obvious semantic or syntactic differences between any of the forms of the negative particle in table 6.36, although there is a tendency among some speakers for the monosegmental *l* [ɬ] to occur more often than other forms in relative clauses. Speakers show various personal or community preferences for particular forms, and a very few use one or two forms exclusively, but speakers will generally accept all forms without comment. The only exception to this is the *téil* and *tél* forms; both apparently occur only in Inland Tlingit and they strike some Coastal speakers as odd. The difference between long and short vowels across the paradigm is probably conditioned by phonological phrasing but the details are still unknown.

The citation form of the negative particle is *tléil* [tɬʰéːɬ]. The example in (296) illustrates this form as used in a narrative. The short vowel counterpart *tlél* [tɬʰéɬ] is illustrated in (297).

(296) Tléil yeik̲ woogoot. *long negative tléil*
tléil yeik̲= u- wu-√gut -μ
NEG beach=IRR-PFV-√go·SG-VAR
'He didn't go down to the beach.' (Dauenhauer & Dauenhauer 1987: 74.65)

(297) Wé yánx' k̲u.aa tlél has awusnei x̲. *short negative tlél*
wé yán -x' k̲u.aa tlél has=a- u- wu-s- √ne x̲-μ
MDST shore-LOC CONTR NEG PLH= 3·O-IRR-PFV-CSV-√safe -VAR
'But on the shore they didn't rescue/save him.' (Dauenhauer & Dauenhauer 1987: 112.49–50)

The *téil* [tʰéːɬ] form is found only in Inland Tlingit dialects, primarily from Teslin speakers but also sometimes from Carcross/Tagish speakers; it is not attested from Atlin speakers in the written record. All Inland speakers apparently vary between *tléil* ~ *tlél* and *téil*, with the latter used more or less often depending on the speaker, family lineage, and place of residence. Inlanders sometimes accomodate Coastal speakers by avoiding *téil*. There is a homophonous noun *téil* 'tree pitch; pitchy torchwood' that exists in all dialects; among other distinct properties it is distinguished by the lack of morphosyntactic phenomena associated with negation.

(298) Tléik', téil udál. *long negative téil*
tléik' téil u- √dal -H
no NEG IRR-√heavy-VAR
'No, it's not heavy.' (*Keiyishí* Bessie Cooley)

The *tél* form is a possible variant according to discussions I have had with speakers of Inland Tlingit dialects, although I have not yet encountered it in conversation or other contexts and have not found it in writing. My Teslin consultants have suggested that *tél* can occur in rapid speech but that it is not used in careful speech, unlike *téil* which is even used in L2 language teaching.

The *héil* [héːɬ] form of the negative particle is shown in (299) and its short vowel counterpart in (300). Both appear to be derived from the *tléil* forms by onset lenition (debuccalization), though as mentioned below this is not settled. The short form seems to be more common than the long form, perhaps because they are associated with unstressed and unaccented environments.

(299) Héil a x̲ tuwáa ushgú. *long negative héil*
héil a x̲ tú- ÿá -μ u- sh- √gu -H
NEG 1SG·PSS mind-face-LOC IRR-PEJ-√enjoy-VAR
'I don't like it.' (*K̲aachku.aak̲w* Helen Sarabia)

(300) Hél k̲u.aa ikk̲wajaak̲. *short negative hél*
hél k̲u.aa i- w- g- g̲- x̲- √jak̲ -μ
NEG CONTR 2SG·O-IRR-GCNJ-MOD-1SG·S-√kill·SG-VAR
'But I'm not going to kill you.' (Dauenhauer & Dauenhauer 1987: 200.118)

The monosegmental *l* [ɬ] is found in every dialect. An early 20th century example is given in (301) from a narrative by *K̲aadishaan* John Kadishan of Wrangell. This form seems to most often occur in embedded clauses, and it has been lexicalized in some nominalizations such as *l.uljíni* [ɬ(.)ʔùɬ.ˈtʃí.nì] 'vest' (lit. 'not armed') where forms like **hél uljíni* and **tlél uljíni* are unacceptable.

(301) LēŁ hAs At uxwa′ tc!u hAsduy̱ī′t łqō′wustīy̱î dAx. *monosegmental negative l*

Tléil has at u x̱á ch'u hasdu ÿéet
tléil has=at= u- √x̱a-H ch'u has-du ÿéet
NEG PLH= 4N·O=IRR-√eat-VAR just PL- 3H·PSS son

l k̲uwusteeÿídáx̱.
l k̲u- u- wu-d- s- √tiʰ-μ -í -dáx̱
[CP NEG AREAL-IRR-PFV-APSV-APPL-√be -VAR NMZ] -PSS-ABL

'They didn't eat anything after their son's disappearance.' (Swanton 1909: 312.5–6)

Leer (2000: 111) implies that *l* is always used instead of *tléil* for embedded clauses, but he gives no evidence for this. I have encountered *tléil* ~ *tlél* in embedded clauses, but only occasionally in conversation and elicitation; *l* does seem to be more common under embedding but it is probably not mandatory or syntactically conditioned. Instead, I suspect that the selection of *l* in embedded clauses is driven by (as yet undefined) prosodic constraints.

There are no forms of the negative particle with /ɬ/ as the onset consonant. They might be expected to exist given the patterns of onset reduction in table 6.36 where /tɬʰ/ is reduced to /t/ on the one hand and /h/ on the other. I suspect the absence of **léil* [ɬéːɬ] and *lél* [ɬéɬ] is due to three conspiring factors. One is that a form like **lél* [ɬéɬ] would nearly overlap with the prohibitive *líl* (sec. 4.5.4.2). A second is that the origin of *héil* and *hél* is plausibly from lenition of *tléil* and *tlél* by way of an intermediate but unattested **léil* and **lél*. A third is that there is a noun *leil* 'scrotum, testicles' (< **łeʰł* < **łaył*; cf. $\sqrt[1]{lel}$ 'baggy, loose') that might have justified taboo avoidance.

Leer says that Tlingit's *tléil* derives from *l* [ɬ] cliticized to the interjection *tléik'* [tɬʰéːkʼ] 'no', mentioning – though not citing – early archaic sources and songs which feature *tléik'=l* (Leer 2000: 111). He further suggests that *tléik'* 'no' is a doublet with *tléix'* [tɬʰéːxʼ] 'one', and says:

> assuming this meaning [*tléix'* = 'all together'] was inherited from [Proto-Na-Dene], Tlingit *tlé·ł* < *tłé·k'=ł* 'not' may once have been structurally analogous to French 'pas (=*ł*) du tout (*tlé·k'*)'.
> (Leer 2000: 135 n. 11)

There is an adverb *tle* 'then, just' which could instead be the host of *l* so that *tléil* < **tłe* + **ł* and also *tléik'* < **tłe* + **-k'* and *tléix'* < **tłe* + **-x'*. The Eyak negative *dik'* [tikʼ] is similarly a left-edge particle (Krauss 1965a: 183, 1970: 140) and its *-k'* could be conceivably related to Tlingit *tléik'* 'no'. Krauss suggests that Eyak *dik'* is etymologically from **də* 'ipse, just' + **-k'* where the suffix is related to a negative prefix *k'u-* in e.g. *k'ude:* 'nothing', *k'udəx̣* 'impossible' (Krauss 1970: 140). Thus Eyak's *dik'* lends support to the idea that Tlingit *tle* 'just' is involved in *tléil* 'not' and *tléik'* 'no'.

Both *tléil* 'not' and *tléik'* 'no' are predicted to derive from forms like **tłaył* and **tłayk'* following the internal reconstruction of *e* < **ay*. There is no synchronic evidence for **tłaył* but there is for **tłayk'*. Some Northern speakers in various communities – including at least Angoon, Hoonah, Sitka, and Yakutat – have an alternative pronunciation of *tléik'* as [tɬʰǽːkʼ] or [tɬʰájkʼ] which is said to be

'slangy' or 'casual'. The latter pronunciation matches the expected pronunciation of **tłayk'* without **ay* > *éi* and so may actually be the retention of an otherwise extinct form.

The *héil* form of the negative particle is generally thought to derive from lenition of *tléil*, though it could also derive from the mesioproximal deictic *hé* 'this here' with monosegmental *l*. But I am unaware of similar examples of D+Neg in other Na-Dene languages, and there are no examples of **yáal*, **wéil*, or **yóol* with the other Ds in Tlingit, so this etymology of *héil* < **he* + **ł* is suspicious.

A few Dene languages have negative particle forms that might show some historical relationship to the monosegmental negative particle *l* [ɬ] in Tlingit. Leer mentions that a number of Dene languages have a negative particle or verb proclitic that occurs with negative morphology on the verb and which happens to contain a voiceless lateral fricative /ɬ/ or voiced lateral approximant /l/ (Leer 2000: 102). Later in the same paper Leer attempts to reconstruct a negative particle for Proto-Na-Dene (Leer 2000: 123–125), suggesting a PND **ʔiłeʔ* derived from a verb root **√łe* 'be' and connecting this to the Tlingit prohibitive interjection *ilí* [ʔìɬí] 'don't' (cf. prohibitive *líl* [ɬíɬ] in sec. 4.5.4.2). It is unclear if his proposed PND **ʔiłeʔ* should evolve into the attested Tlingit forms, and he does not present any evidence supporting the existence of **√łe* 'be'. The resulting lack of reflections in Eyak is also problematic. I consider the reconstruction of PND negation to still be an open question.

4.5.2. Dubitative selects irrealis

Leer says that the dubitative particle *gwál* triggers irrealis in the verb (Leer 1991: 478). His presentation implies that irrealis is mandatory, but he states in a footnote "some speakers can also use realis forms" (Leer 1991: 479 fn. 75). Likewise in his later paper on negatives in Na-Dene, Leer presents Tlingit *gwál* as requiring irrealis, but hedges that "for many Tlingit speakers, however, realis verb forms can be used instead of irrealis forms" (Leer 2000: 112–113). My experience is something like the opposite of what Leer describes: *gwál* does not normally require irrealis, and for speakers who do combine *gwál* and irrealis it is not obligatory. Also for a few speakers *gwál* + irrealis is ungrammatical.

A quick search of a limited corpus[46] turned up 35 instances of *gwál*. Among the matches there were only two unambiguous instances of *gwál* with irrealis in the verb. There were also 13 instances of *gwál* in contexts where it would not trigger irrealis (either without a verb or after a verb), four instances of *gwál* where the presence or absence of irrealis was ambiguous, and 16 instances of *gwál* where the verb showed no sign of irrealis marking either with overt *u-* or with related phenomena (Ɛ-suppression, V-agreement). I explain the two unambiguous instances and the four ambiguous instances below along with two examples of the unambiguous lack of irrealis.

The two sentences in (302) clearly show irrealis marking. The form in (302a) is a state *Ø*-imperfective which has overt *u-*, lacks overt *i-*, and has *-H* stem variation. The latter two properties are Ɛ-suppression and V-agreement that would also be expected with negation; the realis form is *sitee*. The form in (302b) is a *u*-perfective of a *Ø*-conjugation verb which lacks overt *i-* and has *-H* stem variation. These again are both properties expected with negation; the realis form is *awdiwóo*.

(302) a.

Gwál	jinkaat	táakw	ka	nas'gadooshóox	gí	ustí,			yá	kík'i	aa.
gwál	jinkaat	táakw	ka	nas'gadooshú-x	gí	u-	s-	^{1}√ti^{h}-H	yá	kík' -í	aa
DUB	ten	winter	and	eight	-PERT	YN	IRR-APPL-	^{1}√be -VAR	PROX	yg·sib-PSS	PART

'He is maybe eighteen years old, the youngest one.' (Dauenhauer & Dauenhauer 1987: 76.69)

46. See https://github.com/jcrippen/tlingit-corpus as of 25 May 2019.

b. Gwál wudawú gé, a x̲'eis.
gwál u- u- d- ²√wu -H gé a x̲'é -ÿís
DUB IRR-ZPFV-MID-²√send-VAR YN 4H·PSS mouth-BEN
'Maybe she brought food for them.' (orig. tr.) (Dauenhauer & Dauenhauer 1987: 198.96–97)

The sentences in (303) are ambiguous with respect to irrealis triggered by *gwál*. Both (303) and (303b) are non-*Ø*-conjugation *wu*-perfectives where the presence of irrealis *u-* or stative *i-* give the same forms together with identical *-μ* stem variation. The verb in (303c) is an iterative activity *Ø*-imperfective with a fourth human subject *du-* that predictably (but still inexplicably) blocks the appearance of irrealis *u-* (sec. 4.1) and has the ictive repetitive suffix *-t* that prevents stem variation from being distinct. The verb in (303d) is an iterative state *Ø*-imperfective which has irrealis marking triggered by negative *tléil* so any irrealis triggered by *gwál* is undetectable (sec. 4.5.2.1).

(303) a. Gwál has aa woo.een.
gwál has=aa= u-? wu-i-? ²√.in -μ
DUB PLH= PART·O=IRR-PFV-STV-²√kill·PL-VAR
'Perhaps they killed some.' (orig. tr.) (Dauenhauer & Dauenhauer 1987: 152.21)

b. GwAł a kao-uxʼīʼx̣ yuqāʼwag̣ê.
Gwál a káa wooxeex yú k̲áa waag̲í.
gwál a ká -μ u-? wu-i-? ¹√xix-μ yú k̲áa waak̲-í
DUB 3N·PSS HSFC-LOC IRR-PFV-STV-¹√fall -VAR DIST man eye -PSS
'Perhaps it fell there, that man's eye.' (Swanton 1909: 73)

c. Gwál tle du een duch'éx̲'t.
gwál tle du ee -n u-? du- ²√ch'ex̲'-H -t
DUB then 3H BASE-INSTR IRR-4H·S-²√point -VAR-ICT
'Perhaps they pointed her out to him.' (orig. tr.) (Dauenhauer & Dauenhauer 1987: 120)

d. Gwál yé tlél i een yoo akoolneekk.
gwál yé tlél i ee -n yoo=a- ka- u- l- ²√nik-μ -k
DUB thus NEG 2SG BASE-INSTR ALT= ARG-QUAL-IRR-XTN-²√tell -VAR-REP
'(She) maybe doesn't tell it to you.' (Dauenhauer & Dauenhauer 1987: 250.129)

Finally, the three sentences in (304) show unambiguous cases where *gwál* is present without irrealis marking. The verb in (304a) is an activity *Ø*-imperfective which would have the form *adaa.uné* if it were irrealis (Eggleston 2017). The verb in (304b) is a *Ø*-conjugation *u*-perfective which would have the form *awu.aat* if it were irrealis (Eggleston 2017). The verb in (304c) is also a *Ø*-conjugation *u*-perfective which would have the form *wook̲oox̲* if it were irrealis.

(304) a. Tle áwé gwál ch'a act gíwé yéi adaané.
tle á -wé gwál ch'a act gí -wé yéi= a- daa- ²√neʰ -H
then FOC-MDST DUB just act YN-MDST thus=ARG-around-²√occur-VAR
'Then he probably just put on an act.' (orig. tr.) (Dauenhauer & Dauenhauer 1987: 89)

b. Gwál de a shakéex' áwé
gwál de a shakée-x' á -wé
DUB already 3N·PSS top -LOC FOC-MDST

du een kei aawa.át tsu wé eech.
du ee -n kei=a- wu-i- $^{1}\sqrt{}$.at -H tsu wé eech
3H BASE-INSTR up= 4H·S-PFV-STV-$^{1}\sqrt{}$go·PL-VAR again MDST reef
'They probably took him to the surface again, to the reef.' (orig. tr.)
(Dauenhauer & Dauenhauer 1987: 100)

c. Gwál x'oondahéen sáwé aadé yan uwakúx.
gwál x'oon -dahéen s-á -wé á -dé ÿán= u- i- $^{2}\sqrt{}$kux -H
DUB how·many-times Q-FOC-MDST 3N-ALL ashore=ZPFV-STV-$^{2}\sqrt{}$go·boat-VAR
'He made many trips across.' (orig. tr.) (Nyman & Leer 1993: 80.820)

Leer claims that, just like dubitative *gwál*, the polar yes/no question particle *gí ~ gé* is an irrealis trigger when it precedes the verb (Leer 2000: 112). He gives three examples repeated in (305) below with my segmentation and gloss. None of the speakers I have worked with have ever used irrealis with *gí ~ gé*, though I have never tested it as a possibility and I have not searched textual data for any instances of it. Certainly *gí ~ gé* often functions as a dubitative rather than forming an actual question, and it is frequently found in association with *gwál* as in (302), but these facts alone do not entail irrealis marking because there are several other dubitative particles without irrealis (sec. 4.5.2.2) and *gwál* could be the irrealis trigger when it occurs together with *gí ~ gé*.

(305) *examples of polar gí ~ gé with irrealis from Leer 2000*

a. Yéi gíwé utí.
yéi gí -wé u- $^{1}\sqrt{}$ti^{h}-H
thus YN-MDST IRR-$^{1}\sqrt{}$be -VAR
'I guess it is so.' (orig. tr.) (Leer 2000: 112)

b. Awsikóo gíwé.
a- wu-s- i- $^{2}\sqrt{}$ku^{h} -μHgí -wé
ARG-PFV-XTN-STV-$^{2}\sqrt{}$know-VARYN-MDST
'I guess he/she knows him/her/it.' (orig. tr.) (Leer 2000: 112)

c. Wé shaawát gíwé awsikóo
wé shaawát gí -wé a- wu-s- i- $^{2}\sqrt{}$ku^{h} -μH
MDST woman YN-MDST ARG-PFV-XTN-STV-$^{2}\sqrt{}$know-VAR
'I guess he/she knows the woman.' (orig. tr.) (Leer 2000: 112)

4.5.2.1. Dubitative irrealis does not stack

Because *gwál* does not necessarily require irrealis it is impossible to tell from corpus data like (306) whether a given form fails to show irrealis stacking or instead simply lacks a second irrealis because *gwál* has not triggered irrealis marking.

(306) Tle gwál yéi kwsikaak wé haaw.
tle gwál yéi= k- u- s- i- ¹√kak -μ wé haaw
just DUB thus=CMPV-IRR-XTN-STV-¹√thick-VAR MDST bough
'The boughs were perhaps this thick.' (Nyman & Leer 1993: 68.556)

Once we better understand the parameters that trigger irrealis with *gwál* we can empirically verify that irrealis does not stack with *gwál*. But for now I assume that it does not stack given the facts for the lack of stacking with negation in section 4.5.1.1.

4.5.2.2. The dubitative particle *gwál*

The dubitative particle *gwál* [kʷáł] is the same in Northern and Southern dialects of Tlingit; in Tongass Tlingit it is *gwal* [kʷał] with a short vowel and no laryngeal modification. Unlike the negative particle, the dubitative *gwál* does not show any substantial variation in form. The dubitative *gwál* is not the only particle associated with doubt in Tlingit, but it is the only one whose presence is reported to trigger irrealis. Other possibility-expressing particles include *gushí* 'perhaps' as in (307), *shákdé* 'possibly' as in (308), *óosh* 'hypothetically; if only' as in (309a), and the polar yes/no *gí* ~ *gé* when not used for questions as in (309b).

(307) Tle gushí tle something like crazy yáx̱ naneich yóo kdunéek.
tle gushí tle something like crazy yáx̱ n- ¹√neʰ -μ -ch yóo= k- du- ²√nik-μH
just DUB just something like crazy SIM NCNJ-¹√occur-VAR-HAB QUOT=QUAL-4H·S-¹√tell -VAR
'Maybe it was something that made you crazy, they say.' (orig. tr.)
(Dauenhauer & Dauenhauer 1987: 175.171)

(308) Xóots shákdé sax̱waa.áx̱.
xóots shákdé se- wu-x̱- i- ²√.ax̱ -H
br·bear DUB voice-PFV-1SG·S-STV-²√hear-VAR
'Maybe I heard a bear's voice.' (orig. tr.) (Story & Naish 1973: 107.1393)

(309) a. Daa sá óosh, x̱'aan óosh i séi yaa yadultsák̲ch
daa sá óosh, x̱'aan óosh i sé -μ ÿaa= ÿa- du- d- l- ²√tsak̲-H -ch
what Q HYP fire HYP 2SG·PSS throat-LOC along=QUAL-4H·S-MID-XTN-²√poke-VAR-REP
'It was as if, as if someone kept thrusting fire at your throat' (orig. tr.)
(Nyman & Leer 1993: 112.240)

b. yéi gíyá sh tux̱danook.
yéi gí -yá sh= tu- x̱- d- ²√nuk-μ
thus YN-PROX RFLX·O=inside-1SG·S-MID-²√feel -VAR
'perhaps that is how I felt.' (orig. tr.) (Nyman & Leer 1993: 112.241)

As quoted below, Leer claims that the dubitative particle *gwál* is composed of an element **gʷa* together with the negative *l* (sec. 4.5.1.2):

> [It is] to be analyzed *gʷá=ł*, where *=ł* is the negative particle cliticized to the particle *gʷá* (perhaps 'How could it be?', probably an allomorph of the interjection and enclitic *gwá·* 'Wow!; is that so?!'); like *tłé·ł* (etc.) 'not', this occurs in main-clause-initial position. (Leer 2000: 112)

I agree with Leer's assessment of *gwál* < *$g^w a$ + *ɬ as an etymological analysis, but I cannot accept it as a synchronic analysis because there is ample evidence that *gwál* does not have a negative interpretation in modern Tlingit. In particular, *gwál* can be used in contexts without irrealis marking and it can occur in relatively positive claims. If *gwál* does originally derive from a negative particle this may explain both its irrealis triggering behaviour and its possible incompatibility with negation.

The *$g^w a$ mentioned above and its variant *gu are part of a complex of modality-associated particles. Other related particles include the optative *gu.aal* [kʷù.ˈʔàːɬ] 'hopefully' discussed further in section 4.5.3.2, the dubitative *gushí* [kʷù.ˈʃí] 'maybe', and the mirative *gwáa* 'surprisingly' (Leer 1973a: f05/185). The *gaa* ~ *gáa* element in the particle *haagaashí* [hàː.kàː.ˈʃí] 'it would be good if' (Leer 1973a: 10/48–50) and in *dágáa* [tá.ˈkáː] (Leer 1973a: f05/10) is probably also from *$g^w a$ with loss of labialization. The dubitative *shákdé* [ʃák.ˈté] 'possibly' might contain *$g^w a$ if it does not come from *gí* ~ *gé*. The wh-words *gwátk* [kʷátk] 'when (past)' and *gwátgeen* [ˈkʷát.kìːn] 'when (future)' might also be connected to *$g^w a$. Other potentially related elements are the polar yes/no particle *gí* ~ *gé*, the adverb *deisgwách* [tèːs.ˈkʷátʃ] 'eventually, in a while, gradually' and the interjection *hachgwá'* [hàtʃ.ˈkʷáʔ] 'serves you right' (Leer 1973a: f05/186; Dauenhauer & Dauenhauer 2002: 10).

4.5.3. Optative selects irrealis

Optatives are formed with an optative particle *gu.aal* 'hopefully' (sec. 4.5.3.2), irrealis *u-*, and the verbal suffix *-k̲* /q/ which may or may not be epenthesized to *-ík̲* [íq] ~ *-ik̲* [ìq]. Optativity is similar to negation in that it also triggers Ɛ-suppression and differences in V-agreement, though the details of the latter still need to be fully elucidated. Optatives are more or less structurally identical to prohibitives (sec. 4.5.4) with the only obvious difference being the particle: prohibitives have *líl* 'don't' or *tléil* 'not' where optatives have *gu.aal* 'hopefully'. The optative particle is usually accompanied by the dubitative *gushí* as shown in (310) but this is not required as shown in (311).

(310) *optative with gushí*

Gu.aal kwshé áa yéi has wuteeyík̲ wé x̲áat,
gu.aal =gushé á -μ yéi= has=u- wu-$^1\sqrt{}$tiʰ-μ - wé x̲áat
OPT =DUB 3N-LOC thus=PLH= IRR-PFV-$^1\sqrt{}$be -VAR-OPT MDST fish
yéi ax̲alx̲éis'.
yéi= a- x̲- d- l- $^2\sqrt{}$x̲es'-μH
thus=XPL-1SG·S-MID-XTN-$^2\sqrt{}$wish-VAR
'Hopefully the fish are there, I wish so.' (Eggleston 2017)

(311) *optative without gushí*

Gu.aal haax̲ ugoodík̲.
gu.aal haa-x̲ u- $^1\sqrt{}$gut -μ -k̲
OPT CIS -PERT IRR-$^1\sqrt{}$go·SG-VAR-OPT
'Hopefully he comes here repeatedly.' (Story 1966: 105)

The optative always requires the presence of irrealis in Asp⁰. It also always requires the presence of the *-k̲* suffix. This is shown by the forms in (312): the grammatical form in (312a) is ungrammatical without irrealis *u-* in (312b) and is also ungrammatical without optative *-k̲* in (312c).

(312) a. Gu.aal kwshé xwaxáak. *irrealis optative activity Ø-imperfective*
gu.aal =gushé u- x- $\sqrt[2]{}$xa-μH-k
OPT =DUB IRR-1SG·S-$\sqrt[2]{}$eat-VAR-OPT
'Hopefully I eat it.'

b. *Gu.aal kwshé xaxáak. **realis optative activity Ø-imperfective*
gu.aal =gushé x- $\sqrt[2]{}$xa-μH-k
OPT =DUB 1SG·S-$\sqrt[2]{}$eat-VAR-OPT
intended: 'Hopefully I eat it.'

c. *Gu.aal kwshé xwaxá. **irrealis optative activity Ø-imperfective*
gu.aal =gushé u- x- $\sqrt[2]{}$xa-H
OPT =DUB IRR-1SG·S-$\sqrt[2]{}$eat-VAR
intended: 'Hopefully I eat it.'

According to Leer, the optative and its sibling the prohibitive can only occur with imperfectives and perfectives (Leer 1991: 214). It is not entirely clear if he means to include progressives in this context; he sometimes treats progressive aspect as a subtype of imperfective aspect and other times treats it as distinct. I have never heard an optative progressive and I have not found any in a cursory search of textual materials, but I have not attempted to elicit an optative progressive so I cannot say if they are ungrammatical. There are many examples of prohibitive repetitive imperfectives (iterative *Ø*-imperfective) as well as a few optative repetitive imperfectives like (311) above. As for *CNJ*-imperfectives, I am unaware of any examples but I have also not elicited any. Among perfectives Leer almost certainly intends to exclude the habituals (iterative *u*-perfective) as well as all of the *CNJ*-perfectives (cf. Leer 1991: 221–228). The exact distribution of optatives (and prohibitives) thus remains in some doubt. I believe I have heard an optative prospective in conversation, so this possibility should also be tested.

The restriction of optatives to imperfective and perfective aspect raises questions about its semantics. Optativity generally encompasses bouletic possibility modality, usually with a future time orientation. The normal expression of future time and also to a certain extent possibility modality is the prospective aspect (Burge 2017). If the prospective aspect is incompatible with optativity – itself a curious prohibition demanding explanation – then the optative must provide not only modality but also the future time orientation to the imperfective and perfective aspects.

One unusual example of an optative in (313) from *Ḵeiwxnéi* Nora Marks Dauenhauer is particularly intriguing because it poses two significant syntactic implications. This was spoken during the prologue to a traditional narrative about Raven and Deer.[47]. The verb appears to be a relative clause headed by *yé* 'place, way, manner, time' that Cable calls a 'light noun' (Cable 2011), the whole structure being a kind of matrixless relative clause or 'irrelative'. The contraction of the final relative clause suffix *-i* with *yé* as *éi* [éː] or *ei* [èː] is quite common. If the analysis as a relative clause is correct then this suggests (i) that the optative and negative can be combined in a single clause and (ii) that the optative can occur within relative clauses.

47. For the video see https://www.youtube.com/watch?v=H9Y_1gg5Ki8; accessed 27 May 2019.

(313) Gu.aal kwshégé tlél ux̲ kei utéegei.
gu.aal =gushé=gé tlél ux̲= kei=u- ¹√tiʰ-μH-k̲ -i yé
OPT =DUB =YN NEG amiss=up= IRR-¹√be -VAR-OPT-REL way
'Hopefully it won't be mistaken.' (*K̲eiwxnéi* Nora Marks Dauenhauer)

4.5.3.1. Optative irrealis does not stack

I do not have any data unambiguously showing that the irrealis introduced by the optative does not stack with irrealis from other phenomena. But the lack of irrealis stacking in negatives (sec. 4.5.1.1), and more signficantly the lack in prohibitives (sec. 4.5.4.1), leads me to expect the same for optatives.

4.5.3.2. The optative particle *gu.aal*

The optative particle is *gu.aal* [kʷù.ˈʔàːɬ] 'hopefully' in Northern and Southern dialects of Tlingit; in Tongass Tlingit it is *gu.aàl* [kʷù.ˈʔaʰɬ] with a predictable fading vowel /Vʰ/ instead of a long low tone vowel /V̀ː/ in the second syllable. It is occasionally rendered as an allegro form *gwaal* [kʷàːɬ] in rapid speech though it is not represented as such in text (cf. English *I'dna* [ˈaɪd.nə] vs. *I wouldn't have*).

The optative particle *gu.aal* is usually followed by the dubitative particle *gushí* [kʷù.ʃí] ~ *kwshí* [kʷʃí]. Both of these particles probably include the **gʷa* discussed in section 4.5.2.2. The *gushí* is usually *gushé* with a final /e/ rather than /i/ in most coastal varieties of Northern Tlingit; Transitional and Inland varieties retain the /i/ found in Tongass and Southern.

The sequence of optative and dubitative is *gu.aal gushí* [kʷù.ˈʔàːɬ kʷù.ˈʃí] but the dubitative particle is more often encliticized onto the optative to form a single phonological word *gu.aal=kwshí* [kʷù.ˈʔàːɬkʷ.ʃí]. Even though this acts like a single phonological word it is usually written as two separate orthographic words. In rapid speech the cluster *lkwsh* [ɬkʷʃ] may be reduced to *lsh* [ɬʃ]; this contraction is usually not represented in writing. The sequence *gu.aal yéi kwshí* 'hopefully so' contains the manner adverb *yéi* [jéː] 'thus, so' between the optative and dubitative particles showing that they are still separable. This sequence is occasionally contracted to *gu.aaléi=kwshé* [kʷù.ʔàː.ˈɬéːkʷ.ʃé] with the onset *y* [j] deleted (Leer 1973a: 02/39).

The optative *gu.aal* is phonetically very similar to the dubitative particle *gwál*, but the two are phonologically, syntactically, and semantically distinct. Leer (1991: 458 fn. 65) says that some examples from Story (1966) erroneously have *gwál* (her "gʷʌ́ɬ") instead of *gu.aal*, such as her two example sentences repeated in (314). Naish's representation of the optative as "*gʷa ɬ gʷšɛ́*" and not "*gʷʌ́ɬ*" (Naish 1966: 129) also strongly suggests that Story's transcriptions are mistaken. Story's translations imply a conditional future with English *would* but the actual Tlingit forms are imperfective.

(314) a. gʷʌ́ɬ ha-χ ʊgùdiɢ
Gu.aal haax̲ ugoodík̲.
gu.aal haa-x̲ u- √gut -μ -k̲
OPT CIS -PERT IRR-√go·SG-VAR-OPT
'Hopefully he comes here repeatedly.' (orig. tr. '(I wish) he'd come here.') (Story 1966: 105)

b. gʷʌ́ɬ yé dà ʊnéɢ
Gu.aal yéi daa unéik̲.
gu.aal yéi= daa= u- √ne -μH-k̲
OPT thus=around=IRR-√happen-VAR-OPT
'Hopefully he does it.' (orig. tr. '(I wish) he'd do it.') (Story 1966: 105)

In fact, the combination of *gwál* and -*k̲* is ungrammatical. The forms in (315) show that the optative sentence with *gu.aal* and *u-...-k̲* is acceptable but the sentence with *gwál* instead is unacceptable. The two particles are thus distinct despite their phonological similarities.

(315) a. Gu.aal kwshé yéi utéek̲. *optative with gu.aal*
gu.aal kwshé yéi= u- √tiʰ-μH-k̲
OPT DUB thus=IRR-√be -VAR-OPT
'Hopefully it is the case.'

b. *Gwál kwshé yéi utéek̲. *optative with *gwál*
gwál kwshé yéi= u- √tiʰ-μH-k̲
DUB DUB thus=IRR-√be -VAR-OPT
intended: 'Hopefully it is the case.'

The optative particle is historically composed of the mirative *gu.aa* [kʷù.ˈʔàː] and the negative *l* [ɬ] (sec. 4.5.1.2). Leer (1991, 2000) implies that the semantic composition of *gu.aal* is synchronic, and hence that the negative is syntactically present in the optative particle. As with *gwál* in section 4.5.2.2, I accept that *gu.aal* probably etymologically contains the negative particle but I do not believe it is synchronically analyzable as such. In particular, replacing the optative particle *gu.aal* with the negative particle *tléil* results in a prohibitive interpretation rather than an optative (see sec. 4.5.4) which suggests that the optative does not synchronically include negative semantics.

The *gu.aa* mirative mentioned above is relatively uncommon but occurs in a few set phrases and is occasionally found in narratives. Its rarity and likely unproductiveness further support *gu.aal* as being synchronically unanalyzable. The most commonly encountered context for bare *gu.aa* (i.e. without *l*) is the set phrase of encouragement *i gu.aa yáx̲ x'wán* 'be strong, brave' with second person singular *i* 'you' (or plural *yee* 'you guys'), the similative postposition *yáx̲* 'like, as, similar to' and the imperative particle *x'wán*. A literal translation might be 'you be like surprised' but speakers do not actually interpret this phrase compositionally. The *gu.aa* in this encouragement phrase has morphed into an independently meaningless *du.aa* [kʷù.ˈʔàː] for some speakers, further supporting its synchronic lack of meaning. Leer (1973a: 02/39) notes another phrase *a yáx̲ gu.aa* as meaning 'or else', though I have never heard this. There also is one attested phrase from an unspecified source that indicates a separation between the *gu.aa* and the *l* in the optative *gu.aal*: *gwaag̲áal yéi wooteeyík̲* 'may, let it be so' (Leer 1973a: f05/187) which suggests *gu.aa* ~ *gwáa* with postposition -*g̲áa* 'for' or adverb *g̲áa* 'sufficient, enough, okay' and negative *l*.

The optative-prohibitive suffix -*k̲* is probably etymologically related to the deprivative suffix -*k̲* ~ -*ák̲w* 'lacking'. The deprivative suffix is found in an adverbial structure *ka-d-l-...-k̲* as in *kaltéelk̲* 'shoeless' with *téel* 'shoe', *kaltsáax'k̲* 'bare-handed' with *tsáax'* 'mitten', and *kals'áaxwk̲* 'hatless' with *s'áaxw* 'hat'. It is also found more or less frozen with a handful of deprivative verbs like *wudlix̲aayák̲w* 'it shed, lost fur' with *x̲aaw* 'fur, hair', *altl'éilák̲w* 's/he removes its guts/milt' with *tl'éil* 'milt', *aklanóox'ák̲w* 's/he removes its shell' with *nóox'* 'shell', and *alg̲eiyák̲w* 's/he removes its (shell) contents' with *g̲ei* 'between'. A further connection is the negative verbal suffix -*ɢ* in Eyak (Krauss 1981: 28).

4.5.4. Prohibitive selects irrealis

Prohibitives are formed with a prohibitive particle *líl* [ɬíɬ] (or negative *tléil*, see sec. 4.5.4.2), irrealis *u-*, and the verbal suffix -*k̲* [q]. The irrealis and suffixation are identical to optatives (sec. 4.5.3).

Prohibitives, like optatives and negatives, trigger Ɛ-suppression and show modified V-agreement, though the details of the latter have yet to be fully spelled out.

(316) Łíł cāwa't xāx ułgenê'q.

Líl shaawát x̱áax̱ oolgeiník.
líl shaawát x̱á -x̱ a- u- d- l- ²√gin -μ -k̲
PHIB woman 1SG-PERT XPL-IRR-MID-XTN-²√look-VAR-PHIB
'Women must not look at me.' (Swanton 1909: 317.9.166)

(317) Líl gági yigoodík̲!
líl gági= u- u- i- ¹√gut -μ -k̲
PHIB emerge=IRR-ZPFV-2SG-¹√go·SG-VAR-PHIB
'Don't come out!' (Eggleston 2017)

Prohibitives are strucuturally the negative counterpart of optatives. But pragmatically prohibitives are always commands whereas optatives are rarely if ever commands and are instead expressions of the speaker's hope. Compare the optative and prohibitive for the same verb in (318).

(318) a. Gu.aal kwshí eex̱áak̲. *optative activity Ø-imperfective*
gu.aal =gushí u- i- ²√x̱a-μH-k̲
OPT =DUB IRR-2SG·S-²√eat-VAR-OPT
'Hopefully you eat it.'

b. Líl eex̱áak̲! *prohibitive activity Ø-imperfective*
líl u- i- ²√x̱a-μH-k̲
PHIB IRR-2SG·S-²√eat-VAR-OPT
'Don't eat it!'

Because prohibitives are commands they function like the negative counterpart of imperatives (ch. 2 sec. 2.6.5) and so are typically found with a second person subject. But unlike imperatives a prohibitive will never have a covert second person singular subject (*pro*), and also unlike imperatives they can be marked for perfective aspect with *u-* or *wu-* as in (317).

Eggleston records a large number of prohibitive examples (around 760) in her lexical documentation (Eggleston 2017). All of her forms are second person however, so the attestation of forms with first, third, and fourth person is more limited. The example in (316) above shows that prohibitives can have a third person subject, the form in (319) shows a first person singular object *x̱at=* 'me' with an unaccusative, and I have no reason to believe that fourth person arguments should be excluded. This is one more differentiating factor between prohibitives and imperatives then because imperatives only allow second person.

(319) Líl x'wán k̲áak̲wx̱ x̱at wuneek̲, léelk'w. *prohibitive with first person*
líl x'wán k̲áak̲w-x̱ x̱at= u- wu-¹√niʰ -μ -k̲ léelk'w
PHIB IMP wrong -PERT 1SG·O=IRR-PFV-¹√happen-VAR-PHIB g'parent
'Don't let anything bad happen to me, grandfather.' (Nyman & Leer 1993: 6.108)

Since prohibitives are mostly attested with second person arguments, it can be difficult to show that they require irrealis because the second person singular subject *i-* 'you' and plural *ÿi-* 'you guys'

phonologically block the labiality of irrealis *u-*. Unaccusatives only take an object however, and the second person plural object *ÿee=* does not interfere with the irrealis *u-*.

(320) a. Yee litseen. *lexical state Ø-imperfective*
ÿee= l- i- $^{1}\sqrt{}$tsin-μ
2PL·O=XTN-STV-$^{1}\sqrt{}$alive-VAR
'You guys are strong.' (Eggleston 2017)

b. Líl yee ultseeník! *prohibitive lexical state Ø-imperfective*
líl ÿee= u- l- $^{1}\sqrt{}$tsin-μ -k
PHIB 2PL·O=IRR-XTN-$^{1}\sqrt{}$alive-VAR-PHIB
'Don't you guys be strong!' (Eggleston 2017)

c. *Líl yee latseeník! **without u-*
líl ÿee= l- $^{1}\sqrt{}$tsin-μ -k
PHIB 2PL·O= XTN-$^{1}\sqrt{}$alive-VAR-PHIB
intended: 'Don't you guys be strong!'

d. *Líl yee ultseen! **without -k*
líl ÿee= u- l- $^{1}\sqrt{}$tsin-μ
PHIB 2PL·O=IRR-XTN-$^{1}\sqrt{}$alive-VAR
intended: 'Don't you guys be strong!'

4.5.4.1. Prohibitive irrealis does not stack

Just as with negatives (sec. 4.5.1.1) the irrealis required by a prohibitive does not add to or replace an existing irrealis from lexical or derivational sources. An already-irrealis form will show other effects of the prohibitive like Ɛ-suppression and changes in V-agreement, but there is no additional irrealis prefix in Asp⁰ nor is any existing one modified. The data in (321)–(324) show this for two contexts: (i) lexically specified irrealis in an activity Ø-imperfective form and (ii) derivationally specified irrealis in a comparative dimension state Ø-imperfective form. The prohibitive cannot be combined with an aspectually triggered irrealis because it is only possible with Ø-imperfective and *u*/*wu*-perfective forms.

The data in (321) and (322) demonstrate that prohibition does not add irrealis to a lexically specified irrealis. The form in (321) is a baseline activity Ø-imperfective. The prohibitive form in (322a) has the same prefixation realization as the baseline form and the form in (322b) shows that the expected phonological result of two *u-* prefixes is ungrammatical.

(321) Yee uyéx. *state Ø-imperfective with lexical u-*
ÿee= u- $^{1}\sqrt{}$yex-H
2PL·O=IRR-$^{1}\sqrt{}$lack-VAR
'You guys are absent.'

(322) a. Líl yee uyeixík *prohibitive with one u-*
líl ÿee= u- $^{1}\sqrt{}$yex-μ -k
PHIB 2PL·O=IRR-$^{1}\sqrt{}$lack-VAR
'Don't you guys be absent!'

b. *Líl yee ooyeixík̲ *prohibitive with u- + u-
líl ÿee= u- u- ¹√yex̲-μ -k̲
PHIB 2PL·O=IRR-IRR-¹√lack-VAR
intended: 'Don't you guys be absent!'

The data in (323) and (324) show that prohibition does not add irrealis to a derivationally specified irrealis. The form in (323) is a baseline state *Ø*-imperfective with the comparative derivation. The prohibitive form in (324a) shows a slightly different prefix realization because of the disappearance of *i-* in Ɛ, but the result is as expected for a single *u-* prefix. The form in (324b) with two *u-* prefixes is ungrammatical.

(323) Yéi ikwliyáatl'. *comparative state Ø-imperfective with derivational u-*
yéi= i- ka- u- l- i- ¹√ÿatl'-μH
thus=2SG·O-CMPV-IRR-XTN-STV-¹√short-VAR
'You are too short.'

(324) a. Líl yéi ikoolyáatl'ik̲! *prohibitive with one u-*
líl yéi= i- ka- u- l- ¹√ÿatl'-μH-k̲
PHIB thus=2SG·O-CMPV-IRR-XTN-¹√short-VAR-PHIB
'Don't be too short!'

b. *Líl yéi ikuwulyáatl'ik̲! *prohibitive with u- + u-*
líl yéi= i- ka- u- u- l- ¹√ÿatl'-μH
PHIB thus=2SG·O-CMPV-IRR-IRR-XTN-¹√short-VAR
intended: 'Don't be too short!'

There are several other possible combinations of irrealis and prohibition, but there are no attested examples that suggest the appearance of more than one irrealis prefix. There is also no evidence for modification of the irrealis prefix from *w-* to *u-* or from *u-* to *w-*. I conclude that irrealis marking for prohibition is semelfactive just like for negation.

4.5.4.2. The prohibitive particle *líl*

The prohibitive particle is *líl* [ɬíɬ] 'don't in both Northern and Southern Tlingit; in Tongass Tlingit it is *lil* [ɬiɬ] with a short vowel corresponding regularly to the short high tone vowel in the other dialects. Forms with the vowels /a/ and /u/ are ungrammatical, as are forms with the lateral fricative /ɬ'/ and the lateral affricates /tɬ/, /tɬʰ/, and /tɬ'/ in either onset or coda.[48]

Individuals vary in whether they use this dedicated prohibitive particle or if instead they use some form of the negative particle *tléil* as shown by the comparison in (325).[49] Most speakers generally prefer one to the exclusion of the other, but some speakers alternate between both prohibitive *líl* and negative *tléil*. There does not seem to be a semantic difference between the two, and speakers who exclusively use the negative particle in prohibitives still seem to recognize the prohibitive particle with no confusion of meaning.

48. Near homophones are √*lel* 'baggy, flabby', √*lil'* 'glide, slide', √*l'il'* 'defecate', and *l'él* ~ *l'ál* 'black spruce' (*Picea mariana* (Mill.) Britton, Sterns & Poggenburg 1888) or 'shore pine' (*Pinus contorta* Douglas ex Loudon 1838).
49. The particle *x'wán* [xʼʷán] appears with a variety of commands including imperatives and prohibitives. Its semantic contribution is unknown, but it seems to have no impact on the selection of prohibitive particles.

(325) a. Líl keeneegík̲!
líl k- i- √nik-μ -k̲
PHIB QUAL-2SG·S-√tell-VAR-PHIB
'Don't tell about it!' (orig. tr.) (Eggleston 2017)

b. Hél keeneegík̲ x'wán.
hél k- i- √nik-μ -k̲ x'wán
NEG QUAL-2SG·S-√tell-VAR-PHIB IMP
'Please don't tell this.' (orig. tr.) (Dauenhauer & Dauenhauer 1987: 230.258)

This interchangeability of the prohibitive *líl* and negative *tléil* strongly suggests that they are in the same syntactic position. This is supported by the fact that they cannot occur together as shown by the data in (326). A speaker must use either the prohibitive particle or the negative particle, but not both in the same clause.

(326) a. *Líl hél keeneegík̲. **prohibitive > negative*
líl hél k- i- √nik-μ -k̲
PHIB NEG QUAL-2SG·S-√tell-VAR-PHIB
intended: 'Don't tell it.'

b. *Hél líl keeneegík̲. **negative > prohibitive*
hél líl k- i- √nik-μ -k̲
NEG PHIB QUAL-2SG·S-√tell-VAR-PHIB
intended: 'Don't tell it.'

There seems to be a gradual shift underway from the prohibitive *líl* to the negative *tléil*, so that younger speakers tend to use the negative particle instead of the prohibitive particle in prohibitive constructions. It is unclear if this is dialect-specific or if the change is underway in all dialects.

Leer notes a semantic similarity between the admonitive (sec. 4.4.3) and the prohibitive, suggesting that the admonitive is the older of the two, and that the prohibitive is replacing it:

> It seems possible that the Prohibitive is in the process of supplanting the original prohibitive construction, namely the Admonitive. This hypothesis would explain why it is that the language allows itself the luxury of supporting these two quite different constructions with very similar meanings, and why the Admonitive with *-ga'* is the negative counterpart to the Hortative with *-d*. (Leer 1991: 459)

It is unclear if his hypothesis is well founded however because the formal semantics of the prohibitive and admonitive have yet to be worked out in any detail. It is entirely possible that they are not identical and so one is not supplanting the other; the involvement of negation in the prohibitive but not in the admonitive suggests that they should be semantically distinct.

Leer analyzes the prohibitive *líl* as being composed of a prohibitional element *lí* and negative *l* (sec. 4.5.1.2), and thus *líl* < **łi=ł* PHIB=NEG Leer (2000: 113). Synchronically it is possible that the negative *l* in the prohibitive particle is still active rather than frozen, unlike the presence of *l* in the dubitative *gwál* (sec. 4.5.2.2) and optative *gu.aal* particles (sec. 4.5.3.2). This possibility is supported by the fact prohibitive and negative particles apparently compete for the same syntactic position as in (326).

The *lí* element in *líl* < **łi=ł* is also found in the interjection *ilí!* [ʔì.ˈɬí] 'don't!' which also contains a frozen second person singular pronoun *i* [ʔì] 'you (sg.)'. This interjection is used both alone and with a few other particles as in *ilí dé!* 'stop now!' and *ilí s'é!* 'wait!'. The *lí* element is documented as occasionally occurring without the initial *i-* as in *lí s'é!* 'wait!' (Leer 1973a: 08/41; Dauenhauer & Dauenhauer 2002: 16), so Leer usually gives the interjection as "(*ʔi*ˆ)*łí*" (Leer 1973a, 1991, 2000).

The lateral fricative in the interjection *ilí* may be debuccalized to a glottal fricative as *ihí* [ʔì.ˈhí] with no change in meaning (Dauenhauer & Dauenhauer 2002: 16). Similar reduction of the initial lateral fricative /ɬ/ of *líl* to /h/ giving *híl* [híɬ] which is easily reanalyzed as negative *hél* [héɬ]. This probably contributes to the shift from the prohibitive particle *líl* to the negative particle *tléil*.

7 *AspP: The final phase*

The greatest works bring glory to a common verb.

Alasdair Grey, *Unlikely Stories, Mostly* (1983)

1 D^0 object subtree: Argument restriction and saturation . . . 688
  1.1 Structure and raising of the D^0 subtree . . . 692
  1.2 Object D pronouns mostly saturate . . . 698
  1.3 The Ns in D^0 restrict or saturate . . . 741
2 Plurality modifiers: Argument restriction . . . 768
  2.1 Constraints on plurality modification . . . 769
  2.2 Related plural elements . . . 778

This chapter details two major areas of Tlingit argument structure that are reflected at the left edge of the verb word and thus in AspP. These two areas are (i) object D pronouns and their associated elements, and (ii) the argument plurality modifiers. I model the object D pronouns in section 1, organizing them into a syntactic subtree labelled D^0 which is similar to the Asp^0 subtree of chapter 6. I describe the plurality modifiers in section 2, showing that they must be syntactically separate from the D^0 because among other things they can scope over either the subject or object.

The D^0 subtree must be merged in VP before appearing in AspP; evidence for this includes selectional and scopal restrictions. It is possible that the plurality modifiers may also be merged in a lower position, perhaps VP or *v*P, and later moved to their final location in AspP. Movement in current Minimalist approaches requires a phase, so there must be a phase at Asp for movement to positions above it. This is significant because I argued in chapter 5 that there is a phase at Voice to account for movement of subject D pronouns. Voice need not be present in every verbal structure, but if it is then there are two phases within the verb word.

The two phases correspond to phonological domains: the Voice phase corresponds to the spellout of the Classifier and Stem domains and the Asp phase corresponds to the spellout of the Conjunct domain. The material above Asp – the self-benefactive, object D pronouns, plurality modifiers, and preverbs – correspond to the Disjunct and Preverb domains. The phonology of the Conjunct, Classifier, and Stem domains is complex and reflects what Boas describes as "a number of elements that enter into very intimate phonetic relation" (Boas 1917: 22). The spellout of the material above

Figure 7.1: Example of plurality modifier and object in AspP

Asp is much less complex and is characterized mostly by constraints on tone and foot structure with essentially no subsegmental or featural manipulation.

The sentence in (1) illustrates a simple combination of a plurality modifier and an object D pronoun without any additional material in D0. The resulting structure is shown in figure 7.1. Since the object D pronouns is singular first person *x̲at=* 'me' which is specified as singular, the plurality modifier can only be interpreted as applying to the number-unspecified subject D pronoun *du-* 'someone, people'.

(1) Has x̲at wududzinéekw. *example of plurality modifier and object*
has=x̲at= wu-du- d- s- i- 1√nikw-μH
PLH= 1SG·O=PFV-4H·S-MID-CSV-STV-1√nikw -VAR
'They (some unspecified people) made me sick.'

There are two other phenomena in AspP that have been omitted here due to space and time limitations: self-benefactives and preverbs. Self-benefactives were previously mentioned in chapter 5 section 5.2.1; they are characterized by a prefix *g-* that immediately follows the object D pronoun

complex and trigger middle voice marking with *d-* in Voice. The pair of sentences in (2) illustrate the contrast between a transitive without and with self-benefactivity.

(2) a. Kóox wutusi.ée. *without self-benefactive*
kóox wu-tu- s- i- $^{1}\sqrt{}$.i -μH
[DP rice] PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$COOK-VAR
'We cooked rice.'

b. Kóox gawtudzi.ée. *with self-benefactive*
kóox g- wu-tu- d- s- i- $^{1}\sqrt{}$.i -μH
[DP rice] SBEN-PFV-1PL·S-MID-CSV-STV-$^{1}\sqrt{}$COOK-VAR
'We cooked rice for ourselves.'

The self-benefactive *g-* must be located in AspP because of its linear position preceding the aspectual prefixes. It is also phonologically similar to the N elements within D^0 (sec. 1.3). If it has the same phonology as the N elements and is in a similar linear position then it is probably in the same spellout domain, though not necessarily in the exact same syntactic position. This means that the self-benefactive could be within the D^0 subtree or instead merged immediately below it in AspP. It cannot be higher than D^0 because this would result in the spellout of self-benefactive *g-* to the left of the object D pronouns and this is prohibited. The syntactic category of the self-benefactive is still unknown because it has no extra-verbal counterparts and bears no resemblance to other benefactive-like forms in the language. It could plausibly be a PP following its semantic similarity to the benefactive PPs formed with *ÿís* 'for, benefitting'. Given its phonological behaviour it could also plausibly be an N like the qualifiers and incorporates. Because it has received so little attention in the past and is not especially well attested in the textual documentation, it is difficult to say at present exactly how the self-benefactive fits into AspP.

Preverbs are adverbial PPs that immediately precede the rest of the verb word and which express direction and manner. Most are closely associated with and often selected by motion derivation and conjugation class phenomena and so were mentioned earlier in chapter 6 section 3.3, but several have other functions apart from the motion verb system. For reference I offer a possibly exhaustive list of preverbs in table 7.1, based on a list by Leer (1991: 132–134) with additions, modifications, and reanalysis. This table is broken into eight labelled groups A, B, ... H according to their relative order and morphology. The H group is outermost (leftmost) and A is innermost (rightmost), so the outside is at the top. These groupings reflect the ones proposed by Leer (1991) with modifications based on cooccurrence evidence and morphological properties. The order of groups in table 7.1 reflects the tendency for preverbs in each group to be ordered with respect to those in other groups, but (*pace* Leer) there is still insufficient evidence to take the groups as a complete partial ordering. The ordering within each group is unknown so the representation in table 7.1 is arbitrary. The groupings also divide the preverbs on the basis of their postpositions, if any. There is a loose correlation between order and presence or absence of a postposition: preverbs without postpositions are near the bottom of table 7.1 and so are closer to the verb word.

Three preverbs regularly occur together with one another so that there is a kind of pairing that could be modelled as a kind of selection. These three are: the two group H preverbs *áa* (+ *ÿax̲*) 'rotating' and *shóo* (+ *ÿax̲*) 'end over end', and the group F preverb *ux̲* (+ *kei*) 'blindly, mistakenly, out of control'. The two group H preverbs depend on the group A directional *ÿax̲* 'facing' or perhaps on

Grp.	Preverb	Translation	Conj.	Etymology	Translation	Postpn.	Gloss
H	*g̱unayéi ~ g̱unéi*	beginning	*Ø*	*g̱una-yé*	other-place	*-μ*	LOC
	áa	there (TRN)	*?*	*á*	3N	*-μ*	LOC
	áa (+ *ÿax̱*)	rotating	*Ø?*	*á*	3N	*-μ*	LOC
	shóo (+ *ÿax̱*)	end over end	*Ø*	*shú*	end	*-μ*	LOC
G	*héeni*	into water	*Ø*	*héen*	water	*-í*	LOC
	gági	into open	*Ø*	*gáak*	open	*-í*	LOC
	éegi	down to beach	*Ø*	*éek̲*	beach	*-í*	LOC
	dáagi	inland	*Ø*	*dáak̲*	inland	*-í*	LOC
	x̱áni	nearby	*Ø?*	*x̱án*	near	*-í*	LOC
	gáani	outside	*?*	*gáan*	outside	*-í*	LOC
	neilí	inside	*?*	*neil*	home	*-í*	LOC
	yáni	on shore?	*?*	*ÿán*	shore	*-í*	LOC
F	*k̲ut*	lost	*g*	*k̲ú*	areal	*-t*	PNCT
	yux̱	outside	*n*	*yú*	DIST	*-x̱*	PERT
	yaax̱	aboard	*g̱*	*yaakw*	boat	*-x̱*	PERT
	héenx̱	in water	*g̱*	*héen*	water	*-x̱*	PERT
	ux̱ (+ *kei*)	blindly	*Ø*	*ú?*	3H?	*-x̱*	PERT
	k̲wáak̲x̱ ~ k̲wáak̲t	wrongly	*Ø*	*k̲u-√.ak̲w?*	AREAL-√try?	*-x̱, -t*	PERT, PNCT
	yatx̱	starting off	*Ø*	*yá*	PROX	*-dáx̱*	ABL
	ÿanax̱	underground	*g̱*	**ŋən*	ground	*-náx̱*	PERL
E	*ÿan ~ ÿax̱ ~ ÿánde*	ashore, ending	*Ø*	*ÿán*	shore	*-t, -x̱, -dé*	PNCT, PERL, ALL
	neil(t) ~ neilx̱ ~ neildé	inside, home	*Ø*	*neil*	home	*-t, -x̱, -dé*	PNCT, PERL, ALL
	k̲ux̱ ~ k̲ux̱ ~ k̲úx̱de	back	*Ø*	*k̲ú-x̱*	AREAL-PERT	*-t, -x̱, -dé*	PNCT, PERL, ALL
	kux ~ kux̱x̱ ~ kúxde	aground	*Ø*	*√kux*	dry	*-t, -x̱, -dé*	PNCT, PERL, ALL
	haat ~ haax̱ ~ haandé	here (CIS)	*Ø*	*haa^n*	1PL	*-t, -x̱, -dé*	PNCT, PERL, ALL
	yóot ~ yóox̱ ~ yóode	off	*Ø*	*yú*	DIST	*-t, -x̱, -dé*	PNCT, PERL, ALL
D	*kei*	up	*Ø/g*	*dikée*	above	—	—
	yei	down	*Ø/g̱*	*diyée*	below	—	—
	yeik̲	abeach	*Ø*	*éek̲*	beach	—	—
	daak̲	inland	*Ø*	*dáak̲*	inland	—	—
	daak	asea	*Ø*	*dáak*	asea	—	—
C	*yéi*	thus	—	*yé*	way	—	—
	yóo	so said (QUOT)	—	*yóo(.á)*	QUOT	—	—
B	*ÿaa*	mind (MENT)	—	**ŋa^{h}n*	mind	—	—
A	*yoo*	alternating (ALT)	*Ø/n*	*√yu'k*	shake	—	—
	ÿaa	along	*Ø/n*	*√ÿa*	mv. along	—	—
	ÿax̱	exhaustive (EXH)	*Ø*	*ÿán?*	shore?	*-x̱*	PERT
	ÿax̱	facing	*?*	*ÿá*	face	*-x̱*	PERT

Table 7.1: Preverbs

the *ÿax* allomorph of the group E preverb *ÿan* ~ *ÿax* ~ *ÿánde* 'ashore, ending'. The group F preverb *ux* (+ *kei*) 'blindly, mistakenly, out of control' depends on the group D preverb *kei* 'up'. The *áa* (+ *ÿax*) 'rotating' pair is distinguished from the lone translocative preverb *áa* 'there' by the lack of *ÿax* and consequently a different meaning, suggesting that the lexicalization of these pairs is still somewhat compositional and not fully idiomatic. All three of these preverb pairs are relatively uncommon so it is difficult to speculate further on their structure and function without eliciting more data.

The list of preverbs from Leer (1991: 132–134) does not distinguish between the *ÿax* 'exhaustive', *ÿax* 'facing', and *ÿax* 'ashore, ending' forms. The latter alternates with the forms *ÿan* and *ÿánde* as in (3), but the data in (4) and (5) show that the other two do not share this alternation. Arguably these other two are actually the same preverb with different interpretations in different contexts, but I leave this for later investigation.

(3) a. Yax koox. *repetitive imperfective ÿax*
ÿax= $^{1}\sqrt{}$kux -μ
ashore=$^{1}\sqrt{}$go·boat-VAR
'S/he repeatedly boats ashore.'

b. Yan uwakúx. *perfective ÿan*
ÿan= u- i- $^{1}\sqrt{}$kux
ashore=ZPFV-STV-$^{1}\sqrt{}$go·boat
'S/he boated ashore.'

(4) a. Yax ayasaxéix. *repetitive imperfective ÿax*
yax=a- ÿ- s- $^{2}\sqrt{}$xa-eH-x
EXH=ARG-QUAL-XTN-$^{2}\sqrt{}$eat-VAR
'S/he repeatedly eats it up.'

b. Yax ayawsixáa. *perfective ÿax*
ÿax=a- ÿ- wu-s- i- $^{2}\sqrt{}$xa-μH
EXH=ARG-QUAL-PFV-XTN-STV-$^{2}\sqrt{}$eat-VAR
'S/he ate it up.'

(5) a. Áa yax haan. *repetitive imperfective ÿax*
á -μ= ÿax= $^{1}\sqrt{}$han -μ
TRN-LOC=facing=$^{1}\sqrt{}$stand·SG-VAR
'S/he repeatedly turns around.'

b. Áa yax uwahán. *perfective ÿax*
á -μ= ÿax= u- i- $^{1}\sqrt{}$han
TRN-LOC=facing=ZPFV-STV-$^{1}\sqrt{}$stand·SG
'S/he turned around.'

Further supporting the differentiation of *ÿax* forms is the fact that the non-alternating *yax* occurs in a different linear position closer to the verb word. The data below shows *ÿax* to the right of a group A preverb, specifically the *yóo* 'thus'[1] in (6) and the *yéi* 'thus' in (7).

1. Although *yóo* is usually described only as a quotative with speech verbs, for some people it has generalized into an equivalent of *yéi* 'thus', probably because of sequences like *yéi wdudzinee* [jé:‿w.tù.tsì.ˈnì:] 'people did so' versus *yóo wdudzinee* [jú:‿w.tù.tsì.ˈnì:] 'id.' where the labial of the perfective colours the vowel of the preverb.

(6) Ch'a gígaa kínde yóo yax̲ ash siné
ch'a gígaa kín-dé yóo=ÿax̲= ash= s- i- $^{1}\sqrt{}$ne -H
just vainly up -ALL thus=facing=3PRX=CSV-STV-$^{1}\sqrt{}$occur-VAR
'It tries thus in vain to make him move up.' (Dauenhauer & Dauenhauer 1987: 148.187)

(7) Du noowú 100 k̲aa x̲'oos yéi yax̲ koogaaléi.
du noow-í 100 k̲aa x̲'oos yéi= ÿax̲= k- u- g̲- i- $^{1}\sqrt{}$le -μH
3H·PSS fort -PSS 100 4H·PSS foot thus=facing=CMPV-IRR-G̲CNJ-STV-$^{1}\sqrt{}$far-VAR
'His fort is as far as 100 feet down (from the walls).' (Story & Naish 1973: 109.1416)

This *ÿax̲* is the only PP preverb that occurs to the right of the group A–D preverbs. This suggests that it may have been reinterpreted as lacking a suffix like other inner preverbs, and so the pertingent *-x̲* is no longer present in its lexical entry. The regular alternation between *-t*, *-x̲*, and *-dé* would militate against reanalysis of the 'ashore, terminating' preverb as bare rather than a PP, further reinforcing the split between them. For now I continue to consider the *ÿax̲* preverb to be a PP with the expectation that this may need to be revised with further examination.

Most of the monosyllabic preverbs are represented without a tone diacritic in the orthography – e.g. *k̲ut*, *k̲ux̲*, *ÿan*, *kei* – implying that they are spoken with low tone. This may actually be a misreading of high tone in an unstressed or secondary position where the pitch range is more compressed. Take for example the preverb *ÿan* ~ *ÿax̲* ~ *ÿánde* where the underlying lexical entry is *ÿán* 'shore' with high tone that is preserved with the syllabic *-dé* 'to' postposition but not in the other two forms. It is certainly possible that an underlying high tone is deleted in the *ÿan* and *ÿax̲* forms. But instead the monosyllabic forms might preserve high tone with a pitch excursion that is perceptually less salient due to pitch range compression. Supporting this analysis is occasional appearance of the *kei* 'up' preverb with high tone *kéi* in transcriptions by native speakers, where there is apparently no semnatic difference between the two in contrast with *yéi* 'thus' versus *yei* 'down'. Acoustic phonetic investigation should clarify whether there really is high tone preserved in the phonological output. I maintain the customary representation of absent high tone in surface forms of preverbs, but I indicate its presence in underlying forms.

I hope to offer a detailed study of preverbs in the future. For now I simply consider them all to be PP or Adv elements merged in AspP.[2] The Adv and PP preverbs associated with motion derivations could plausibly be merged earlier in the derivation as path arguments and then raised to AspP. Other contexts could plausibly see preverbs first merged in AspP as event modifiers. The invariable position of preverbs in AspP rather than elsewhere in the clause is probably connected to the fixed preverbal position of path arguments which unlike argument DPs cannot be left or right dislocated.

1. D⁰ object subtree: Argument restriction and saturation

The D⁰ is a subtree with its own internal syntax in much the same way as the Asp⁰ subtree (ch. 6 sec. 1). The D⁰ subtree has a structure that arises from successive binary Merge operations on a small lexicon of morphemes. I presume that the resulting subtree encapsulates the semantics of all of the elements within it, and this denotation then composes together the initial projection of AspP

2. The Adv elements might be better analyzed as bare NP adverbs since many appear to be Ns.

that denotes the rest of the verbal structure. As with Asp^0, the semantic machinery of D^0 is still unexplored but prima facie appears to be compatible with theories of entity and event semantics.

In many verb forms D^0 is instantiated by a lone terminal D node that is the object pronoun as illustrated in (8). This is analogous with Asp^0 which is commonly instantiated by a lone aspectual prefix. Consequently, both Asp^0 and D^0 have a basic 'subhead' around which each subtree can be expanded.

(8) Iwtuwax̲áa. *transitive with overt object*
i- wu-tu- i- $\sqrt[2]{}$x̲a-μH
2SG·O-PFV-1PL·S-STV-$\sqrt[2]{}$eat-VAR
'We ate you (sg.).'

Also like Asp^0, the D^0 node may be present but empty as shown by the form in (9). In such cases D^0 is analyzed as containing an unpronounced pronoun (i.e. *pro*), just as the empty Asp^0 is analyzed as containing an unpronounced *∅* prefix. In (9) the verb is still transitive just as in (8) since the root is bivalent, but it has a covert third person object interpreted as 'it'. The interpretation of (9) as an intransitive like 'we ate' is impossible for this root because of its bivalency. Thus in (9) the D^0 node must exist even though it is phonologically empty, and hence it is modelled with the covert pronoun terminal *pro*.

(9) Wutuwax̲áa. *transitive with covert object*
wu-tu- i- $\sqrt[2]{}$x̲a-μH
PFV-1PL·S-STV-$\sqrt[2]{}$eat-VAR
i. 'We ate it.'
ii. *'We ate.'

Verbs in Tlingit cannot lack aspect but they can lack objects. Thus unlike Asp^0 the D^0 node may be completely absent when there is no object. The form in (10) shows this, using a monovalent root which derives an unergative intransitive verb. Since the verb is unergative it has only a subject and no object, so there cannot be an invisible pronoun and the interpretation 'we slept it' is impossible. Thus in (10) the D^0 node simply does not exist.

(10) Wutuwax̲éix'w. *unergative intransitive without object*
wu-tu- i- $\sqrt[1]{}$x̲ex'w -μH
PFV-1PL·S-STV-$\sqrt[1]{}$sleep·PL-VAR
i. 'We slept.'
ii. *'We slept it.'

The D^0 is more than just a single node because it can include other material besides an object D pronoun. This other material is divisible into three categories: 'alienable' incorporated nouns (ANs), 'inalienable' incorporated nouns (INs), and qualifiers.[3] The ANs are in complementary distribution with the object D pronouns, but the INs and qualifiers regularly cooccur with object D pronouns. Both ANs and INs have more or less obvious correspondences with ordinary (verb-external) nouns. The qualifiers are IN-like elements that have no independent existence as ordinary nouns. The line

3. The scare quotes for 'alienable' and 'inalienable' mean that these terms should not be taken literally. See section 1.3.

Figure 7.2: Tree for 'we have kept you from speaking' in (11)

is blurry between IN and qualifier because there is some homophony between them and the denotations of some INs have shifted away from their ordinary noun counterparts. All three of the ANs, INs, and qualifiers are analyzed as N terminals though this is not necessarily ideal for the qualifiers.

The verb word in (11) illustrates the combination of an object, an IN, and a qualifier all together in one D⁰ subtree. There is a second person singular object D pronoun *i-* followed by the incorporated N *x̲'e-* from the noun *x̲'é* 'mouth' and the qualifier *ÿ-*.[4] The sequence *i-x̲'e-ÿ-* is thus linearized from the D⁰ structure [*i-* [*x̲'e- ÿ-*]]. The entire AspP is represented as a tree in figure 7.2; this shows that D⁰ is initially merged in VP where it probes [θ_1], and then it is raised to AspP after Asp⁰ merges and creates the phase for AspP.

(11) Ix̲'ayawtusi.aa.
i- x̲'e- ÿ- wu-tu- s- i- $^1\sqrt{}$.a -μ
2SG·O-mouth-QUAL-PFV-1PL·S-CSV-STV-$^1\sqrt{}$delay-VAR
'We have kept you from speaking.'

The D⁰ is originally merged within VP as expected for an object. It raises to AspP after the phase instantiated by Asp⁰. There could be some kind of EPP feature or other Case-like phenomenon that motivates the movement of D⁰ to AspP, but I have not investigated this avenue of analysis. I suggest instead that Tlingit's movement of the D⁰ object subtree to AspP is motivated by phonology. The D⁰

4. The meaning of the *ÿ-* qualifier here is unclear; it appears in most verbs based on $^1\sqrt{}$*.a* 'delay'. See section 1.3.4.2.

contains material that cannot be spelled out in the Stem domain corresponding to the VP because in every case the D⁰ will include consonants and vowels that are incompatible with the spellout of the √ and V material as a syllable. This implies that if D⁰ contains only *pro* then it need not be moved, and since D⁰ does not need to scope over anything below AspP this is satisfactory. It is also plausible that syntactic and phonological motivations for raising of D⁰ to AspP could hold at the same time so that there is a conspiracy of both syntax and phonology to force D⁰ out of VP.

The D⁰ subtree may either saturate or restrict semantic variables for entities. The first and second person object D pronouns saturate the entity variable associated with the Θ_1 (patient-like) proto-role function as shown by the ungrammaticality of an additional pronoun in the core clause. The data in (12) illustrates this with the DP pronoun *wa.é* 'you sg.' and the object D pronoun *i-* together in (12b). The grammaticality of (12c) shows that this constraint does not apply to non-core clause positions such as focus. Also, DP pronouns cannot be used in place of object D pronouns as shown by (12d).

(12) a. Iwtusiteen. *object D pronoun*
i- wu-tu- s- i- $\sqrt[2]{}$tin-μ
2SG·O-PFV-1PL·S-XTN-STV-$\sqrt[2]{}$see -VAR
'We saw you.'

b. *Wa.é iwtusiteen. **DP pronoun + object D*
wa.é i- wu-tu- s- i- $\sqrt[2]{}$tin-μ
2SG 2SG·O-PFV-1PL·S-XTN-STV-$\sqrt[2]{}$see -VAR
intended: 'We saw you.'

c. Wa.é áwé iwtusiteen. *DP pronoun + focus + object D*
wa.é á -wé i- wu-tu- s- i- $\sqrt[2]{}$tin-μ
2SG FOC-MDST 2SG·O-PFV-1PL·S-XTN-STV-$\sqrt[2]{}$see -VAR
'It's you that we saw.'

d. *Wa.é wutusiteen. **DP pronoun only*
wa.é wu-tu- s- i- $\sqrt[2]{}$tin-μ
2SG PFV-1PL·S-XTN-STV-$\sqrt[2]{}$see -VAR
intended: 'We saw you.'

The 'alienable' incorporated nouns (ANs) saturate entity variables in the same way as the first and second person object D pronouns. The diagnostic is similar to that for the object D pronouns: an AN cannot occur together with a coreferential DP in the core clause. This is demonstrated by the data in (13). These ANs are in complementary distribution with object D pronouns, so given their argument saturating function they might be analyzed as cases of N → D raising.

(13) a. Ax̲ eet yaan uwaháa. *incorporated N*
ax̲ ee -t ÿaan= u- i- $\sqrt[1]{}$ha^{h} -μH
1SG BASE-PNCT hunger=ZPFV-STV-$\sqrt[1]{}$mv·invis-VAR
'Hunger appeared to me.' (i.e.. 'I got hungry.')

b. *Yaan ax̲ eet yaan uwaháa. **DP + incorporated N*
ÿaan ax̲ ee -t ÿaan= u- i- $\sqrt[1]{}$ha^{h} -μH
hunger 1SG BASE-PNCT hunger=ZPFV-STV-$\sqrt[1]{}$mv·invis-VAR
intended: 'Hunger appeared to me.' (i.e.. 'I got hungry.')

In the following subsections I discuss the structure of the D^0 subtree and its individual elements. I begin with the internal organization of D^0 in section 1.1. I then explore the syntactic and semantic behaviour of the object D pronouns in section 1.2, showing how they generally saturate arguments. Following this I sketch the N elements of D^0 in section 1.3, establishing the distinction between ANs, INs, and qualifiers and detailing their syntactic and semantic properties.

1.1. Structure and raising of the D^0 subtree

There are four kinds of morphemes that appear in D^0: object D pronouns, non-pronominal argument prefixes, incorporated 'alienable' nouns, incorporated 'inalienable' nouns, and qualifiers. These are organized together into a single subtree with its own internal syntactic structure in the same vein as Asp^0. Unlike Asp^0, the D^0 subtree must first be merged within VP so that it is in the domain of √ and V and so can be probed for θ-features and ϰ-features. Therefore D^0 does not spell out in its initial position, but is instead raised from VP to AspP after Asp^0 has been merged.

Phonologically D^0 corresponds more or less exclusively to the Disjunct domain. Like Asp^0, D^0 exhibits a sort of phonological cohesion with all of its elements being somewhat independent of its neighbours to the left and right. Phonological interactions between D^0 and its neighbours are limited to its edges and there are no long distance interactions between the Disjunct domain and other domains in the verb complex. This phonological unity supports the analysis of D^0 as a single cohesive syntactic unit; if the D^0 elements were successively merged on top of AspP we would expect them to behave in a more individuated fashion and this is exactly what we see for the plurality modifiers and preverbs. There is some slop in the system since some of the D^0 elements – which are the leftmost elements in D^0 – vary back and forth in their phonological behaviour between being more or less phonologically independent of the verb word. This is also the case for the ANs, and this could be taken as support for N → D movement. Further phonological characterization of the D^0 elements is necessary to verify the syntax-phonology correspondence for D^0 proposed here.

1.1.1. Syntactic categories in D^0

The description above presents two syntactic categories within D^0: D and N. This is unlike Asp^0 which instead contains only nodes of the category Asp. Consequently there is a selectional difference between the syntax of D^0 and Asp^0. This is probably theoretically significant, but it could alternatively reflect incorrect assumptions about either D^0 or Asp^0. Presumably further work on D^0 and Asp^0 will clarify this assymmetry.

Most of the D pronouns in D^0 generally act like DP pronouns in other languages, hence my ascription of the D category. Thus we see phenomena like in (12) previously where an object D pronoun *i-* 'you sg.' cannot occur together with the DP pronoun *wa.é* 'you sg.' in the core clause. Most of the D pronouns also have clear phonological and semnatic correpondences with other pronouns: the object *haa=* 'us' parallels possessive *haa* 'our', the object *x̲at=* 'me' parallels independent *x̲át* 'me', etc. There are a couple of exceptions: the argument-marking *a-* that occurs in transitives with a third person subject and object does not appear to be saturating (sec. 1.2.2), and the fourth person human object *k̲u-* 'someone, people' has a second life as the 'areal' prefix (sec. 1.2.3.2).

Most of the N elements in D^0 have close parallels with nouns elsewhere. Thus they do not necessarily saturate arguments, comparable with the non-head elements in noun compounds. Nearly all of the N elements have obvious phonological and semantic correspondences with ordinary nouns, so for example *tu-* 'inside; mind' parallels *tú* 'inside (of hollow object); mind, feelings (of living be-

ing)' and *gax̲=* 'crying' parallels *gaax̲* 'crying'. In some cases the forms of the N elements and ordinary nouns are identical such as *daa-* 'around, surrounding' and *daa* 'around, surrounding' but they can be distinguished by syntactic and phonological diagnostics. There are some exceptions: qualifiers like *k-* 'small round object' and *k-* 'comparative' have no synchronic relationship with ordinary nouns,[5] and the ANs uniquely saturate arguments like the D pronouns. The divisions I have presented between the D and N categories in D⁰ are thus somewhat debatable and deserve more scrutiny.

1.1.2. Organization within D⁰

In this section I discuss the linear order and hierarchical structure of the elements in D⁰. The linear order of elements in D⁰ is probably fixed. We lack conclusive evidence for many individual elements because the possible number of combinations is prohibitively large – e.g. 36 × 35 = 1260 for pairwise combinations of INs – but in general there is no evidence suggesting multiple possible orders for any given pair of elements in D⁰. Object D pronouns always occur to the left of everything else in D⁰; the data in (14) illustrate how the second person singular object *i-* and the IN *ÿa-* 'face' cannot be reordered.

(14) a. Keitl yei iyagux̲lasháa. *D > IN*
keitl yei= i- ÿa- w- g- g̲- l- ¹√shaʰ-μH
[DP dog] down=2SG·O-face-IRR-GCNJ-MOD-XTN-²√bark -VAR
'The dog will bark at you (lit. your face).' (Story & Naish 1973: 25.137)

b. * Keitl yei yayguxlasháa. **IN > D*
keitl yei= ÿa- i- w- g- g̲- l- ¹√shaʰ-μH
[DP dog] down=face-2SG·O-IRR-GCNJ-MOD-XTN-²√bark -VAR
intended: 'The dog will bark at you (lit. your face).'

ANs do not occur together with D pronouns so they are unordered with respect to each other. I have not found any instances of ANs and INs occurring together in the same form, though I see no reason in principle why this should not occur. If they can occur together then the similar argument-saturating effects of D pronouns and ANs suggests the order AN > IN just like D > IN.

The object D pronouns do not occur together in the same form so there can be no ordering among individual object D pronouns. This is demonstrated in (15) with attempts to combine the first person singular object *x̲at=* 'me' and the second person singular object *i-* ~ *ee=* 'you sg.'. The closest approximations to the ungrammatical forms in (15c) and (15d) are given in (16); the form in (16a) has coordination in a topic with a first person plural object and the form in (16b) has an additive DP pronoun in a stripping-like structure.

(15) a. X̲at wusiteen. *first singular object*
x̲at= wu-s- i- ²√tin-μ
1SG·O=PFV-XTN-STV-²√see -VAR
'S/he saw me.'

b. Iwsiteen. *second singular object*
i- wu-s- i- ²√tin-μ
2SG·O-PFV-XTN-STV-²√see -VAR
'S/he saw you.'

5. Etymologically they probably derive from *ká* 'horizontal surface, top' but their meanings diverged; see sec. 1.3.4.

c. *Xat iwsiteen. **first + second object*
xat= i- wu-s- i- $\sqrt[2]{}$tin-μ
1SG·O=2SG·O-PFV-XTN-STV-$\sqrt[2]{}$see-VAR
intended: 'S/he saw me and you.'

d. *Ee xat wusiteen. **second + first object*
ee= xat= wu-s- i- $\sqrt[2]{}$tin-μ
2SG·O=1SG·O=PFV-XTN-STV-$\sqrt[2]{}$see-VAR
'S/he saw you and me.'

(16) a. Wa.é ka xát, haa wusiteen. *coord. topic paraphrase for (15c) and (15d)*
wa.é ka xát haa= wu-s- i- $\sqrt[2]{}$tin-μ
2SG and 1SG 1PL·O=PFV-XTN-STV-$\sqrt[2]{}$see-VAR
'You and me, s/he saw us.'

b. Xat wusiteen, ka wa.é tsú. *stripping paraphrase for (15c) and (15d)*
xat= wu-s- i- $\sqrt[2]{}$tin-μ ka wa.é tsú
1SG·O=PFV-XTN-STV-$\sqrt[2]{}$see-VAR and 2SG also
'S/he saw me, and you too.'

The ANs also do not occur together in the same form, so there can be no ordering among individual ANs. Some INs are attested togeher in the same form, so in principle it should be possible to combine any number of INs as long as the result makes sense. Cooccurrence patterns of INs suggest that they have a complete partial ordering. The rightmost IN is always *ka-* and the next rightmost IN is always *ÿa-* (Leer 1991: 113). Other attested sequences include *tuk-x'e-* 'butt-mouth-' (i.e. anus) and *tl'ik-sha-* 'finger-head-' (i.e. fingertip), *sha-ÿa-* 'head-face-', *sha-tu-* 'head-inside-', *x'e-tu-* 'mouth-inside-', and *tu-ÿa-* 'inside-face-'. The limit on possible combinations of INs is unknown; the most I have noticed is three (see below) but I have yet to attempt a principled study of INs either from the documentation or through elicitation.

There are no obvious phonological reasons for why the individual INs should be ordered with respect to each other in the way they are, e.g. that *sha-* 'head' must always precede *ka-* 'horizontal surface'. This strongly suggests that their phonological forms are irrelevant for ordering, so we must look to syntax and semantics. The syntax should not in principle care about which INs come in which order since from a syntactic point of view they are homogeneous. The order of INs in a particular verb thus probably reflects the compositionality of compounding just as in ordinary nouns, and so compositional semantics is the most likely ordering source for all the INs.

Given the facts above, I suggest the partial ordering of Ds, ANs, and INs shown in (17) to map the linearization of these elements in the D⁰ subtree. This representation assumes that the ANs and INs cannot cooccur, but as noted above this is not confirmed. Qualifiers are treated like kinds of INs for now; see section 1.3 for more discussion of their status.

(17)

partial ordering of Ds, ANs, and INs

Figure 7.3: Structure of (18) with D and N in D⁰

The hierarchical structure within D⁰ is not very clear and needs more investigation. In the simplest case there is only one node like in figure 7.1. When there are two elements such as a D pronoun and an IN the organization is a simple binary merge pair like [$_{D^0}$ D N]. This case is illustrated by the sentence in (18) which has the corresponding syntactic structure shown in figure 7.3, omitting agreement and other phenomena unrelated to the organization within D⁰.

(18) Xat shaguxlaxáash. *D⁰ with D + N*
xat= sha- w- g- g- lˢ- ²√xash-μH
1SG·O=head-IRR-GCNJ-MOD-XTN-²√cut -VAR
'She's going to cut my hair.' (Story & Naish 1973: 61.708)

More complex structures are possible such as the form in (19) that contains three distinct Ns along with a covert D. If we maintain a strictly binary Merge operation then there must be assymetry between the various Ns and Ds when there are more than two.

(19) X'ashakligéi. *D⁰ with D + N + N + N*
x'e- sha- k- l- i- ¹√ge -μH
3·O mouth-head-HSFC-XTN-STV-¹√bright-VAR
'S/he is witty, funny.' (Leer 1973a: f02/155)

A straightforward analysis of D⁰ structures with multiple Ns would follow the pattern of compound nouns: one N is the head and all the other Ns are modifiers of this N. Tlingit noun compounds are always head final so this predicts structures like [N [N N]] for (19). But where does the D pronoun belong? There is evidence that at least in some cases the D pronoun is actually the possessor

of N, as in the minimal pair in (20) from Leer. The form in (20a) has the usual first person singular object *x̲at*= 'me' but the form in (20b) instead has *ax̲*= 'my' which is identical to the usual first person singular possessive pronoun as in *ax̲ shá* 'my head' or *ax̲ keidlí* 'my dog'.

(20) a. X̲at shawlixaash.
x̲at= sha- wu-l^{s}- i- $\sqrt[2]{}$xash-μ
1SG·O=head-PFV-XTN-STV-$\sqrt[2]{}$cut -VAR
'S/he cut my hair.' (Leer 1991: 43)

b. Ax̲ shawlixaash.
ax̲= sha- wu-l^{s}- i- $\sqrt[2]{}$xash-μ
1SG·O=head-PFV-XTN-STV-$\sqrt[2]{}$cut -VAR
'S/he cut my hair.' (Leer 1991: 43)

If the D pronoun is the possessor of the noun then we can propose a structure like [$_{D^0}$ D [N [N N]]] for instances of D⁰ with more than two elements. This does not rule out other possible hierarchical structures within D⁰ (sec. 1.3.3). Possession is not the only relationship that exists between Ds and Ns in D⁰, such as with qualifiers where the N may be an entity modifier or an event modifier rather than a possessed noun (sec. 1.3.3.1). Also the self-benefactive *g-* could plausibly be adjoined at the top of D⁰ if it is actually merged within D⁰. And furthermore there is the question of how diminutive suffixation fits into the D⁰ structure (sec. 1.3.3).

As far as I am aware, there are no INs in unergative intransitive verbs. Unaccusatives will have an object argument and hence a D in D⁰. But unergatives would have no D in D⁰ since their sole argument is a subject and thus appears in *v*P rather than AspP. There are motion derivations that introduce elements in D⁰ (ch. 6 sec. 3.3) and these could plausibly be applied to unergative motion verbs, but I have not found any examples of them with unergatives and I suspect that their semantics might limit them to involuntary and thus usually unaccusative verbs. If INs could occur with unergative verbs then there would still be a potential analysis: if the lone argument of an unergative is first merged in VP then the D pronoun in D⁰ could be raised to *v*P and the remainder of D⁰ raised to AspP.

1.1.3. Raising of D⁰ from VP to AspP

The D⁰ node is first merged in VP, as expected crosslinguistically for the object of a verb. This means that VP should form a constituent containing the stem and the object. The data in (21)–(23) show that none of the D pronouns, qualifiers, or ANs can be spelled out within the stem domain. This could contradict the model where D⁰ is merged in VP because it never appears in this position.

(21) a. X̲at yisiteen. *D pronoun in AspP*
x̲at= wu-i- s- i- $\sqrt[2]{}$tin-μ
1SG·O=PFV-2SG·S-XTN-STV-$\sqrt[2]{}$see -VAR
'You have seen me.'

b. *Yisix̲atteen. **D pronoun in VP*
wu-i- s- i- x̲at= $\sqrt[2]{}$tin
PFV-2SG·S-XTN-STV-1SG·O=$\sqrt[2]{}$see
intended: 'You have seen me.'

c. *Yisiteenxat. **D pronoun in VP*
wu-i- s- i- $^{2}\sqrt{}$tin-μ xat=
PFV-2SG·S-XTN-STV-$^{2}\sqrt{}$see -VAR 1SG·O=
intended: 'You have seen me.'

(22) a. Kaxwsi.ée. *qualifier in AspP*
k- wu-x- s- i- $^{1}\sqrt{}$.i -μH
SRO-PFV-1SG·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
'I cooked it (small round).'

b. *Xwasik.ée. **qualifier in VP*
wu-x- s- i- k- $^{1}\sqrt{}$.i -μH
PFV-1SG·S-CSV-STV-SRO-$^{1}\sqrt{}$cook-VAR
intended: 'I cooked it (small round).'

c. *Xwasi.éek. **qualifier in VP*
wu-x- s- i- $^{1}\sqrt{}$.i -μH k-
PFV-1SG·S-CSV-STV-$^{1}\sqrt{}$cook-VAR SRO-
intended: 'I cooked it (small round).'

(23) a. I eet gí yaan uwaháa? *incorporate in AspP*
i ee -t gí ÿaan= u- i- $^{1}\sqrt{}$ha^{h} -μH
[PP 2SG BASE-PNCT] YN hunger=ZPFV-STV-$^{1}\sqrt{}$mv·invis-VAR
'Are you hungry?' (lit. 'Has hunger appeared to you?')

b. * I eet gí uwayaanháa? **incorporate in VP*
i ee -t gí u- i- ÿaan= $^{1}\sqrt{}$ha^{h}
[PP 2SG BASE-PNCT] YN ZPFV-STV-hunger=$^{1}\sqrt{}$mv·invis
inteneded: 'Are you hungry?'

c. * I eet gí uwaháayaan? **incorporate in VP*
i ee -t gí u- i- $^{1}\sqrt{}$ha^{h} -μH ÿaan=
[PP 2SG BASE-PNCT] YN ZPFV-STV-$^{1}\sqrt{}$mv·invis-VAR hunger=
inteneded: 'Are you hungry?'

Since the object can never spell out within VP there is no surface-obvious evidence that supports the first merge of D⁰ in VP. But there is semantic evidence that supports this model. For one, among transitive handling verbs the root constrains the qualia of the object as discussed in chapter 2 section 1.2. Another fact is that the *-x'* repetitive suffix – which is homophonous with the plural suffix of nouns – can scope over the object as shown in (24). Given that the repetitive suffixes are merged below AspP, this means that the D⁰ must start out lower than its final position in AspP.

(24) Wé aas digéix'.
wé aas d- i- $^{1}\sqrt{}$ge-μH-x'
[DP MDST tree] MID-STV-$^{1}\sqrt{}$big-VAR-PL
i. 'Those trees are big.'
ii. *'The tree is big.'

Another supporting fact for the raising of D^0 is that many qualifiers and INs have idiomatic interpretations, often to the point of apparent meaninglessness. In Hale's approach to Navajo the qualifers and preverbs are especially thorny problems that require extensive restructuring usually by movement of the stem or reordering at PF (Hale 2000, 2001, 2003). The idiomatic behaviour of some qualifiers and INs in Tlingit can be simply accounted for by selection: the D^0 containing the idiomatic element is selected by the root, and then later this D^0 is raised to AspP. The internal structure of the D^0 node furthermore supports the combination of idiomatic elements selected by the root with normal elements like entity-referring D pronouns. The solution for idiomatic preverbs is predictably similar: they are merged in VP and so are available for selection by the root lexical entry.

So why does D^0 move? One argument is phonological. According to my analysis in chapter 2, the VP spells out as the Stem domain in the phonology. The Stem domain consistently represents the root and stem variation, along with the repetitive suffixes and a handful of derivational suffixes. The phonology of the Stem domain is very constrained, exhibiting many distinct restrictions on tone, stress, size, and syllable structure. The elements in D^0, many of which are lexically specified with enough material to be syllabic, would generally be too large to be spelled out in the Stem domain. The Classifier and Conjunct domains show similarly strict constraints on their phonological realizations, and so landing sites in ƐP, *v*P, and VoiceP would also be unsuitable for the D^0 material. This leaves AspP which is exactly where D^0 is realized. For this argument to go through we need to know far more about the phonology of the domains within the Tlingit verb word; this work is already ongoing but still at too early a stage to offer substantive support. Kahnemuyipour (2009) suggests a similar argument for movement of objects to AspP in Persian where stress assignment on the object is the driving factor.

Another argument for the movement of D^0 is syntactic. Many languages have a somewhat mysterious requirement for the subject to appear in a particular position in the sentence. This is usually modelled with an 'EPP feature' following the Extended Projection Principle of Government and Binding which ensures that an argument appears in Spec-IP (Manzini 1992; Hornstein, Nunes, & Grohmann 2005: 23). The requirement for movement of objects to AspP could be plausibly modelled by a similar EPP feature, though it is not clear why this would be associated with objects rather than subjects.[6]

1.2. Object D pronouns mostly saturate

The object D pronouns are elements in D^0 that match the $[\theta_1]$ feature specified by √ after being merged in VP. They thus realize the Θ_1 function in the semantics which assigns a proto-patient role to the semantic variable denoting the entity. Most of the object D pronouns are argument saturating as diagnosed by their incompatibility with coreferential DPs in the core clause. There are three exceptions where they do not seem to be argument saturating: the argument-marking *a-* (sec. 1.2.2), the areal *k̲u-* (sec. 1.2.3.2), and the third person proximate or reflexive *ash=* ~ *ach=* (sec. 1.2.3.3).

The more or less complete inventory of overt object D pronouns is shown in table 7.2. Covert pronouns are excluded. The 'Abbrev.' column gives the conventional gloss abbreviation for each item, the 'Form' column gives the corresponding analyzed form, and the 'Gloss' column gives typical translations. Allomorphy is represented by multiple lines with the same abbreviation and gloss. The 'Regular' column shows whether the pronoun is used regularly as part of the person and num-

6. Perhaps ergativity and/or split-intransitivity are related to this object instead of subject pattern.

Abbrev.	*Form*	*Gloss*	*Regular*	*Saturating*	*Expletive*	*Lexicalized*
1SG	x̲at=	me	✓	✓	✗	✗
1SG	ax̲=	my (with IN)	✓	✓	✗	✗
1PL	haa=	us	✓	✓	✗	✗
2SG	i-	you sg.	✓	✓	✗	✗
2SG	ee=	you sg.	✓	✓	✗	✗
2PL	ÿi-	you pl.	✓	✓	✗	✗
2PL	ÿee=	you pl.	✓	✓	✗	✗
ARG	a-	him, her, it	✓	(✗)	(✗)	(✗)
XPL	a-	—	(✗)	✓	✓	✓
PART	aa=	one, some	✓	✗	✗	✗
3PRX	ash=	him, her	✓	✓	?	(✗)
RFLX	ash=	self	(✗)	✓	?	✓
RFLX	ach=	self	(✗)	✓	?	✓
RFLX	sh=	self	✓	✓	?	✓
RFLX	chush=	self	✓	✓	✗	✗
RECIP	woosh=	each other	✓	✓	✗	✗
RECIP	wooch=	each other	✓	✓	✗	✗
4N	at=	thing, stuff	✓	✓	✗	✗
4H	k̲aa=	one, people	✓	✓	✗	✗
4H	k̲u-	one, people	✓	✓	✗	✓
AREAL	k̲u-	area, weather	(✗)	(✗)	?	✓

Table 7.2: Object D pronoun inventory

ber paradigm. Forms that are not 'Regular' do not alternate with other pronouns and are used for something other than ordinary verb arguments; see sections 1.2.2 and 1.2.3 for details.

The 'Saturating' column in table 7.2 shows indicates that the pronoun saturates the argument position, thus blocking the appearance of other DPs or pronouns in the core clause for the argument. The 'Expletive' column indicates that the pronoun can appear as a meaningless expletive that fills the argument position with no semantic denotation. The 'Lexicalized' column indicates that the pronoun can be lexically or derivationally specified in which case it cannot be replaced by other pronouns and has an idiomatic interpretation.

Instances of '(✗)' in table 7.2 mean that the specified pronoun does not have the indicated property but there is a homophonous or near-homophonous form that does have that property. To illustrate this, compare the fourth person *k̲u-* 'one, people' which regularly alternates with other persons and numbers like first person singular *x̲at=* 'me' versus the homophonous areal *k̲u-* 'area, weather' which does not alternate with other pronouns. Question marks indicate uncertainty due to lack of investigation and data.

The pronouns in table 7.2 are organized into six groups according to their semantics. The first two groups are the first and second persons. The third group is more or less the third person, though the expletive *a-* actually has no meaning. The fourth group is the reflexives and reciprocals. The fifth group is the 'fourth person' that denotes an indefinite, nonspecific, or nonreferential entity; the semantics of these pronouns is still unclear so they are not called 'indefinite' and the 'fourth' label has become traditional.[7] The last group contains the lone areal *ku-* 'area, weather' which refers to locations and spaces rather than entities.

The data in (25)–(30) illustrate the regular object D pronouns as a full paradigm with the root $\sqrt[2]{t'i^h} \sim \sqrt[2]{t'e^h}$ 'find'. Most examples have a covert third person subject, but the reciprocal forms in (29) have an overt first person plural subject *tu-* 'we' to force plurality and avoid the *has=* pluralizer (sec. 2). Forms in (26), (28), (29), and (30) demonstrate allomorphy with different forms but identical interpretations.

(25) a. Xat woot'ee. *first person singular object*
xat= wu-i- $\sqrt[2]{t'i^h}$-μ
1SG·O=PFV-STV-$\sqrt[2]{\text{find}}$-VAR
'S/he found me.'

b. Haa woot'ee. *first person plural object*
haa= wu-i- $\sqrt[2]{t'i^h}$-μ
1PL·O=PFV-STV-$\sqrt[2]{\text{find}}$-VAR
'S/he found us.'

(26) a. Iwoot'ee. *second person singular object*
i- wu-i- $\sqrt[2]{t'i^h}$-μ
2SG·O-PFV-STV-$\sqrt[2]{\text{find}}$-VAR
'S/he found you.'

b. Ee woot'ee. *second person singular object*
ee= wu-i- $\sqrt[2]{t'i^h}$-μ
2SG·O=PFV-STV-$\sqrt[2]{\text{find}}$-VAR
'S/he found you.'

c. Yiwoot'ee. *second person plural object*
ÿi- wu-i- $\sqrt[2]{t'i^h}$-μ
2PL·O-PFV-STV-$\sqrt[2]{\text{find}}$-VAR
'S/he found you guys.'

d. Yee woot'ee. *second person plural object*
ÿee= wu-i- $\sqrt[2]{t'i^h}$-μ
2PL·O=PFV-STV-$\sqrt[2]{\text{find}}$-VAR
'S/he found you guys.'

7. In descriptions of Dene languages the 'fourth person' can be the same as for Tlingit, i.e. indefinite or nonspecific or nonreferential. But the term 'fourth' may instead refer to the alternative third person of the *y-*/*b-* alternation which is better represented as 3 vs. 3′ as in descriptions of e.g. the Algonquian languages.

(27) a. Aawat'ee. *third person object*
a- wu-i- $\sqrt[2]{t'i^h}$-μ
ARG-PFV-STV-$\sqrt[2]{\text{find}}$-VAR
'S/he found him/her/it.'

b. Aa woot'ee. *partitive (third person) object*
aa= wu-i- $\sqrt[2]{t'i^h}$-μ
PART=PFV-STV-$\sqrt[2]{\text{find}}$-VAR
'S/he found one/some (of it).'

c. Ash woot'ee. *third person proximate object*
ash= wu-i- $\sqrt[2]{t'i^h}$-μ
3PRX·O=PFV-STV-$\sqrt[2]{\text{find}}$-VAR
'S/he found him/her.'

(28) a. Sh wudit'ee. *reflexive object*
sh= wu-d- i- $\sqrt[2]{t'i^h}$-μ
RFLX·O=PFV-MID-STV-$\sqrt[2]{\text{find}}$-VAR
'S/he found him/herself.'

b. Chush wudit'ee. *reflexive object*
chush=wu-d- i- $\sqrt[2]{t'i^h}$-μ
RFLX·O= PFV-MID-STV-$\sqrt[2]{\text{find}}$-VAR
'S/he found him/herself.'

(29) a. Woosh wutudit'ee. *reciprocal object*
woosh=wu-tu- d- i- $\sqrt[2]{t'i^h}$-μ
RFLX·O= PFV-1PL·S-MID-STV-$\sqrt[2]{\text{find}}$-VAR
'We found each other.'

b. Wooch wutudit'ee. *reciprocal object*
wooch=wu-tu- d- i- $\sqrt[2]{t'i^h}$-μ
RFLX·O= PFV-1PL·S-MID-STV-$\sqrt[2]{\text{find}}$-VAR
'We found each other.'

(30) a. K̲oowat'ee. *fourth person human object*
k̲u- wu-i- $\sqrt[2]{t'i^h}$-μ
4H·O-PFV-STV-$\sqrt[2]{\text{find}}$-VAR
'S/he found someone/people.'

b. K̲aa woot'ee. *fourth person human object*
k̲aa= wu-i- $\sqrt[2]{t'i^h}$-μ
4H·O=PFV-STV-$\sqrt[2]{\text{find}}$-VAR
'S/he found someone/people.'

c. At woot'ee. *fourth person nonhuman object*
at= wu-i- $\sqrt[2]{t'i^h}$-μ
4N·O=PFV-STV-$\sqrt[2]{\text{find}}$-VAR
'S/he found something/stuff.'

Most object D pronouns are argument saturating according to the same diagnostic as the subject D pronouns discussed in chapter 4. Specifically, if an overt D pronoun in the verb word can occur together with an overt DP in the core clause then the D pronoun is argument restricting, otherwise it is argument saturating. This is demonstrated for the first person plural object D pronoun *haa=* in (31): the *haa=* D pronoun can be the object in (31a), but it cannot cooccur with the independent DP pronoun *uháan* in (31b), and that DP pronoun cannot occur as the object in (31c).

(31) a. Haa yisiteen. *object D pronoun*
haa= wu-i- s- i- $\sqrt[2]{}$tin-μ
1PL·O=PFV-2SG·S-XTN-STV-$\sqrt[2]{}$see -VAR
'You saw us.'

b. * Uháan haa yisiteen. **object D and DP pronouns*
uháan haa= wu-i- s- i- $\sqrt[2]{}$tin-μ
[DP 1PL] 1PL·O=PFV-2SG·S-XTN-STV-$\sqrt[2]{}$see -VAR
intended: 'You saw us.'

c. * Uháan yisiteen. **object DP pronoun*
uháan wu-i- s- i- $\sqrt[2]{}$tin-μ
[DP 1PL] PFV-2SG·S-XTN-STV-$\sqrt[2]{}$see -VAR
intended: 'You saw us.'

Crucially we must exclude left and right peripheral positions in focus and topic structures. DPs in the peripheries are not necessarily arguments because they may be externally merged into their final positions rather than being raised from an argument position in *v*P or VP. The data in (32) illustrate the grammaticality of the DP pronoun *uháan* 'us' together with the D pronoun *haa=* 'us' in the left peripheral contexts of focus, contrast, and topic and in the right peripheral context of givenness. This is similar to the Clitic Left/Right Dislocation phenomena in many languages.

(32) a. Uháan áyá haa yisiteen. *object D and focused DP pronoun*
uháan á -yá haa= wu-i- s- i- $\sqrt[2]{}$tin-μ
[DP 1PL] FOC-PROX 1PL·O=PFV-2SG·S-XTN-STV-$\sqrt[2]{}$see -VAR
'It's us that you saw (us).'

b. Uháan ku̱.aa haa yisiteen. *object D and contrastive DP pronoun*
uháan ku̱.aa haa= wu-i- s- i- $\sqrt[2]{}$tin-μ
[DP 1PL] CONTR 1PL·O=PFV-2SG·S-XTN-STV-$\sqrt[2]{}$see -VAR
'Us however, you saw (us).'

c. Uháan, haa yisiteen. *object D and topic DP pronoun*
uháan, haa= wu-i- s- i- $\sqrt[2]{}$tin-μ
[DP 1PL] 1PL·O=PFV-2SG·S-XTN-STV-$\sqrt[2]{}$see -VAR
'Us, you saw (us).'

d. Haa yisiteen, uháan. *object D and given DP pronoun*
haa= wu-i- s- i- $\sqrt[2]{}$tin-μ uháan
1PL·O=PFV-2SG·S-XTN-STV-$\sqrt[2]{}$see -VAR [DP 1PL]
'You saw us, us.'

Similar facts hold for the other first and second person object D pronouns. The data in (33) shows that the first person singular object cannot occur with a DP pronoun in the core clause and that the DP pronoun cannot serve as the object. The same is shown for the second person singular object in (34) and the second person plural object in (35).

(33) a. Xat yisiteen. *object D pronoun*
xat= wu-i- s- i- $\sqrt[2]{}$tin-μ
1SG·O=PFV-2SG·S-XTN-STV-$\sqrt[2]{}$see-VAR
'You saw me.'

b. * Xát xat yisiteen. **object D and DP pronouns*
xát xat= wu-i- s- i- $\sqrt[2]{}$tin-μ
[DP 1SG] 1SG·O=PFV-2SG·S-XTN-STV-$\sqrt[2]{}$see-VAR
intended: 'You saw me.'

c. * Xát yisiteen. **object DP pronoun*
xát wu-i- s- i- $\sqrt[2]{}$tin-μ
[DP 1SG] PFV-2SG·S-XTN-STV-$\sqrt[2]{}$see-VAR
intended: 'You saw me.'

(34) a. Iwtusiteen. *object D pronoun*
i- wu-tu- s- i- $\sqrt[2]{}$tin-μ
2SG·O=PFV-1PL·S-XTN-STV-$\sqrt[2]{}$see-VAR
'We saw you.'

b. * Wa.é iwtusiteen. **object D and DP pronouns*
wa.é i- wu-tu- s- i- $\sqrt[2]{}$tin-μ
[DP 2SG] 2SG·O=PFV-1PL·S-XTN-STV-$\sqrt[2]{}$see-VAR
intended: 'We saw you.'

c. * Wa.é wutusiteen. **object DP pronoun*
wa.é wu-tu- s- i- $\sqrt[2]{}$tin-μ
[DP 2SG] PFV-1PL·S-XTN-STV-$\sqrt[2]{}$see-VAR
intended: 'We saw you.'

(35) a. Yiwtusiteen. *object D pronoun*
ÿi- wu-tu- s- i- $\sqrt[2]{}$tin-μ
2PL·O-PFV-1PL·S-XTN-STV-$\sqrt[2]{}$see-VAR
'We saw you guys.'

b. * Yeewháan yiwtusiteen. **object D and DP pronouns*
ÿeewháan ÿi- wu-tu- s- i- $\sqrt[2]{}$tin-μ
[DP 2PL] 2PL·O-PFV-1PL·S-XTN-STV-$\sqrt[2]{}$see-VAR
intended: 'We saw you guys.'

c. * Yeewháan wutusiteen. **object DP pronoun*
ÿeewháan wu-tu- s- i- $\sqrt[2]{}$tin-μ
[DP 2PL] PFV-1PL·S-XTN-STV-$\sqrt[2]{}$see-VAR
intended: 'We saw you guys.'

All of the first and second person object D pronouns are also ungrammatical with a non-pronominal DP. The sentences in (36) illustrate this for first person singular and plural objects and (37) for second person singular and plural objects.

(36) a. Yá i x̲ooní yisiteen. *third person*
yá i x̲oon-í wu-i- s- i- $^{2}\sqrt{}$tin-μ
[DP PROX 2SG·PSS friend-PSS] PFV-2SG·S-XTN-STV-$^{2}\sqrt{}$see-VAR
'You saw (this) your friend.'

b. * Yá i x̲ooní x̲at yisiteen. **first person singular*
yá i x̲oon-í x̲at= wu-i- s- i- $^{2}\sqrt{}$tin-μ
[DP PROX 2SG·PSS friend-PSS] 1SG·O=PFV-2SG·S-XTN-STV-$^{2}\sqrt{}$see-VAR
intended: 'You saw me your friend.'

c. * Yá i x̲oonx'í haa yisiteen. **first person plural*
yá i x̲oon-x'-í haa= wu-i- s- i- $^{2}\sqrt{}$tin-μ
[DP PROX 2SG·PSS friend-PL-PSS] 1PL·O=PFV-2SG·S-XTN-STV-$^{2}\sqrt{}$see-VAR
intended: 'You saw us your friends.'

(37) a. Wé ax̲ x̲ooní x̲wasiteen. *third person*
wé ax̲ x̲oon-í wu-x̲- s- i- $^{2}\sqrt{}$tin-μ
[DP MPRX 1SG·PSS friend-PSS] PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$see-VAR
'I saw (that) my friend.'

b. * Yá ax̲ x̲ooní ix̲wsiteen. **second person singular*
yá ax̲ x̲oon-í i- wu-x̲- s- i- $^{2}\sqrt{}$tin-μ
[DP PROX 1SG·PSS friend-PSS] 2SG·O-PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$see-VAR
intended: 'I saw you my friend.'

c. * Yá ax̲ x̲oonx'í yee x̲wsiteen. **second person plural*
yá ax̲ x̲oon-x'-í ÿee= wu-x̲- s- i- $^{2}\sqrt{}$tin-μ
[DP PROX 1SG·PSS friend-PL-PSS] 2PL·O=PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$see-VAR
intended: 'I saw you guys my friends.'

The situation for the fourth person object D pronouns is similar. The fourth person human *k̲u-* 'someone, people' is saturating as shown in (38) because it cannot occur together with an object DP. Either the pronoun *k̲u-* 'someone' can be used in (38a) or the wh-indefinite DP *ch'a aadóo sá* 'someone, whoever' in (38b), but the combination of both in (38c) is ungrammatical. The data in (39) shows the same pattern for the fourth person nonhuman *at=* 'something, stuff' and the wh-indefinite DP *ch'a daa sá* 'something, whatever'.

(38) a. K̲uwtusiteen. *object D pronoun*
k̲u-wu-tu- s- i- $^{2}\sqrt{}$tin-μ
4H- PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see-VAR
'We saw someone.'

b. Ch'a aadóo sá wutusiteen. *object DP*
ch'a aadóo sá wu-tu- s- i- $^{2}\sqrt{}$tin-μ
just who Q PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see-VAR
'We saw someone.'

c. * Ch'a aadóo sá k̲uwtusiteen. **object D pronoun and DP*
ch'a aadóo sá k̲u-wu-tu- s- i- $^{2}\sqrt{}$tin-μ
just who Q 4H- PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see -VAR
intended: 'We saw someone.'

(39) a. At wutusiteen. *object D pronoun*
at=wu-tu- s- i- $^{2}\sqrt{}$tin-μ
4N=PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see -VAR
'We saw something.'

b. Ch'a daa sá wutusiteen. *object DP*
ch'a daa sá wu-tu- s- i- $^{2}\sqrt{}$tin-μ
just what Q PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see -VAR
'We saw something.'

c. * Ch'a daa sá at wutusiteen. **object D pronoun and DP*
ch'a daa sá at=wu-tu- s- i- $^{2}\sqrt{}$tin-μ
just what Q 4N=PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see -VAR
intended: 'We saw something.'

The same tests with DP pronouns cannot be applied to the reflexive and reciprocal D pronouns because we do not know if there are any independent reflexive or reciprocal DP pronouns. We expect them to be something like *chúsh* 'self' and *wóosh* 'each other', but neither has ever been attested nor elicited. One situation for testing the existence of these DP pronouns would be in a focus environment like ※*Wóosh áwé woosh has wudziteen* 'It's each other that they saw', but this has not been tested and requires a very carefully constructed context for it to be interpretable.

Aside from pronouns, other DPs can occur in the same sentence with the reflexive and reciprocal pronouns, but they cannot be object DPs. Consider the examples in (40). First, in (40a) there is a lone DP *yá keitl* 'the dog(s)' together with the reflexive *woosh=* 'each other'. Then (40b) adds an overt subject D pronoun *tu-* 'we' and the structure immediately becomes ungrammatical. This implies that the DP *wé keitl* in (40a) is not an object; it is instead a third person subject. The reciprocal *woosh=* therefore saturates the object since otherwise (40b) would be grammatical.

(40) a. Yá keitl woosh wudziteen. *third person subject*
yá keitl woosh=wu-d- s- i- $^{2}\sqrt{}$tin-μ
[DP PROX dog] RECIP= PFV-MID-XTN-STV-$^{2}\sqrt{}$see -VAR
'These dogs saw each other.'

b. * Yá keitl woosh wutudziteen. **first person plural subject*
yá keitl woosh=wu-tu- d- s- i- $^{2}\sqrt{}$tin
[DP PROX dog] RECIP= PFV-1PL·S-MID-XTN-STV-$^{2}\sqrt{}$see
intended: 'Us dogs saw each other.', 'We (who are) these dogs saw each other'

The *a-* prefix appears with a third person object when the subject is also third person. This is demonstrated by the paradigm in (41). The form in (41a) has a third person object without overt indication and the form in (41b) has a third person subject without overt indication. The combination of both third person subject and object without overt indication in (41c) is ungrammatical and instead in (41d) the *a-* prefix appears.

(41) a. Xwasiteen. *1 → 3*
wu-x- s- i- $^{2}\sqrt{}$tin-μ
PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$see -VAR
'I saw him/her/it.'

b. Xat wusiteen. *3 → 1*
xat= wu-s- i- $^{2}\sqrt{}$tin-μ
1SG·O=PFV-STV-$^{2}\sqrt{}$see-VAR
'S/he/it saw me.'

c. *Wusiteen. **3 → 3*
wu-s- i- $^{2}\sqrt{}$tin-μ
PFV-XTN-STV-$^{2}\sqrt{}$see -VAR
intended: 'S/he/it saw him/her/it.'

d. Awsiteen. *3 → 3*
a- wu-s- i- $^{2}\sqrt{}$tin-μ
ARG-PFV-XTN-STV-$^{2}\sqrt{}$see -VAR
'S/he/it saw him/her/it.'

But unlike the first, second, and fourth person object D pronouns, the *a-* prefix is not saturating. This is shown in (42) by the fact that in both forms there is an overt DP interpreted as the object. The form in (42a) has only an object DP (houses do not generally have vision), and the form in (42b) has both a subject and an object DP. The *a-* prefix can be saturating in other contexts; see section 1.2.2 for further discussion.

(42) a. Yá hít awsiteen. *DP_O a-*
yá hít a- wu-s- i- $^{2}\sqrt{}$tin-μ
[DP PROX house] ARG-PFV-XTN-STV-$^{2}\sqrt{}$see -VAR
'S/he saw this house.'

b. Wé shaawát yá hít awsiteen. *DP_S DP_O a-*
wé shaawát yá hít a- wu-s- i- $^{2}\sqrt{}$tin-μ
[DP MDST woman] [DP PROX house] ARG-PFV-XTN-STV-$^{2}\sqrt{}$see -VAR
'The woman saw this house.'

The partitive *aa=* 'one, some' is also not saturating because it can occur with DPs as shown in (43). See section 1.2.1.13 for more on the partitive.

(43) Aa uwaxáa wé sakwnéin
aa= u- i- $^{2}\sqrt{}$xa-μH wé sakwnéin
PART=ZPFV-STV-$^{2}\sqrt{}$eat-VAR [DP MDST bread]
'He ate some of the bread.' (Naish 1966: 75)

1.2.1. Relationships of objects with other pronouns

Tlingit has five different kinds of pronouns: (i) object D pronouns in AspP, (ii) subject D pronouns in *v*P, (iii) possessive DP pronouns, (iv) independent DP pronouns, and (v) postpositional DP pronouns. The object D pronouns are under consideration in this section; the first person singular

object is shown in (44a). The subject D pronouns were mentioned earlier in chapter 4; the form in (44b) shows the first person singular subject. The possessive DP pronouns appear as possessors of NPs as shown in (44c). The independent DP pronouns occur in non-argument positions as in (44d) and in non-verbal clauses. The postpositional pronouns are complements of suffixal postpositions as in (44e).

(44) a. Xat isa.ée. *first person singular object*
xat= i- s- $^{1}\sqrt{}$.i -μH
1SG·O=2SG·S-CSV-$^{1}\sqrt{}$cook-VAR
'You cook me.', 'You are cooking me.'

b. Ixsa.ée. *first person singular subject*
i- x- s- $^{1}\sqrt{}$.i
2SG·O-1SG·S-CSV-$^{1}\sqrt{}$cook
'I cook you.', 'I am cooking you.'

c. Ax keidlí gáax. *first person singular possessive*
ax keitl-í $^{1}\sqrt{}$gax-μH
[DP 1SG·PSS dog -PSS] $^{1}\sqrt{}$cry -VAR
'My dog is howling.'

d. Xát ku.aa tléil xwa.aax. *first person singular independent*
xát ku.aa tléil u- wu-x- $^{2}\sqrt{}$.ax -μ
[DP 1SG] CONTR NEG IRR-PFV-1SG·S-$^{2}\sqrt{}$hear-VAR
'Me however, I didn't hear it.'

e. Xáan kananeek! *first person singular postpositional*
xá -n ka- n- $^{2}\sqrt{}$nik
[PP 1SG-INSTR] QUAL-NCNJ-2SG·S $^{2}\sqrt{}$tell
'Tell it to me!'

Each of these pronoun classes has a different distribution of forms and – beyond the first and second persons – a different distribution of contrasts. Consequently the relationships between these different classes of pronouns are not simple: there is no one-to-one mapping between any of the sets. The object D pronouns show the largest number of meaning contrasts and the largest amount of allomorphy. They bear the most phonological similarity to the possessive pronouns, but even these two classes of pronouns do not completely match each other. It is thus impossible to fully unify the lexical entries of the object D pronouns with any of the other pronoun classes, and hence the object D pronoun paradigm is overall unique despite its significant overlap with other classes.

Table 7.3 gives each pronoun category in comparison to the others, with phonologically similar forms on each line. Note that in this table the pronouns on a single line have phonological resemblances but do not necessarily have the same meaning. Furthermore, the same meaning may be present on more than one line. To illustrate this, consider the first person plural object *haa*= 'us'. This is homophonous with the first person plural possessive *haa* 'our' but also with the cislocative postpositional *haa*^{n}+ 'here' which has a distinct meaning.[8] The first person plural subject is *tu-* which is given on its own line since it has no related forms.

8. The ^{n} indicates the appearance of an excrescent /n/, e.g. *haan-dé* CIS-ALL 'hither'. Cf. *uháan, ÿeewháan*.

Object		*Subject*		*Possessive*		*Independent*		*Postpositional*	
Abbv.	*Form*	*Abbv.*	*Form*	*Abbv.*	*Form*	*Abbv.*	*Form*	*Abbv.*	*Form*
1SG	x̲at=~ax̲=	1SG	x̲-	1SG	ax̲	1SG	x̲át	1SG	x̲á+
1PL	haa=			1PL	haa	1PL	uháan	CIS	haa^{n}+
		1PL	tu-						
2SG	i-~ee=	2SG	i-	2SG	i	2SG	wa.é		
2PL	ÿi-~ÿee=	2PL	ÿi-	2PL	ÿee	2PL	ÿeewháan		
		4H	du-	3H	du	3H	hú	3H	ú+
ARG/XPL	a-			3N	a	3N	á	3N	á+
3PRX	ash=~ach=			3PRX	ash	3PRX	ʔásh		
4H	k̲u-							4H	k̲ú+
4H	k̲aa=			4H	k̲aa				
4N	at=			4N	at	4N	át		
RFLX	sh=			RFLX	sh				
RFLX	chush=			RFLX	chush	RFLX	ʔchúsh		
RECIP	woosh=			RECIP	woosh	RECIP	ʔwóosh	RECIP	wóosh+
RECIP	wooch=			RECIP	wooch	RECIP	ʔwóoch	RECIP	wóoch+
PART	aa=			PART	aa				

Table 7.3: Comparison of object D pronouns with other pronouns

A '+' on a form in table 7.3 indicates that the element is not itself a prefix, but must occur with a suffix. This applies only to the postpositional pronouns, and is specifically limited to the postpositional pronouns that require direct suffixation. There is an alternative structure of Pron *ee*-P as shown in (45). This alternative uses the same form as the possessive pronoun and a meaningless attachment base *ee* (Leer 1991: 58 fn. 10). The meaningless base *ee* is historically derived from a relational noun, hence the possessive pronoun form, but today *ee* has no semantic contribution.

(45) a. Óon akaawaneek. *direct postpositional pronoun*
ú -n a- k- wu-i- $^{2}\sqrt{}$nik-μ
[PP 3H-INSTR] ARG-QUAL-PFV-STV-$^{2}\sqrt{}$tell -VAR
'S/he told him/her about it.'

b. Du een akaawaneek. *indirect postpositional pronoun*
du ee -n a- k- wu-i- $^{2}\sqrt{}$nik-μ
[PP 3H BASE-INSTR] ARG-QUAL-PFV-STV-$^{2}\sqrt{}$tell -VAR
'S/he told him/her about it.'

In the following subsections I explicate the relationships between each object D pronoun and the other pronoun classes (subject, independent, possessive, and postpositional). I do not discuss the *tu-*, *du-*, *hú*, and *ú+* pronouns because these have no relationship with any object pronouns.

1.2.1.1. First person singular *x̲at=*

The first person singular object D pronoun *x̲at=* 'me' is nearly identical to the independent pronoun *x̲át* except for tone as shown in (46) and (47) below. The allomorph *ax̲=* is identical to the possessive

pronoun *ax̲* 'my' as in (48); this allomorph optionally occurs in contexts where the object can be interpreted as the possessor of an IN. Both the object *x̲at=* and independent *x̲át* 'me' are similar to the subject *x̲-* 'I' and postpositional *x̲á+* 'me' except that these latter two lack a coda consonant.[9]

(46) a. X̲at woox̲oox̲. *first singular object pronoun*
x̲at= wu-i- ²√x̲ux̲ -μ
1SG·S-PFV-STV-²√summon-VAR
'S/he summoned me.'

b. *X̲át woox̲oox̲. **with high tone*

(47) a. X̲át áwé. *first singular independent pronoun*
x̲át á -wé
1SG CPL-MDST
'That's me.'

b. *X̲at áwé. **with low tone*

(48) a. Ax̲ shawlixaash. *first singular object pronoun*
ax̲= sha- wu-l- i- ²√xash-μ
1SG·O=head-PFV-XTN-STV-²√cut -VAR
'S/he cut my hair.'

b. Ax̲ x̲'oos yanéekw. *first singular possessive pronoun*
ax̲ x̲'oos i- ¹√nikw-μH
[DP 1SG·PSS foot] STV-¹√sick -VAR
'My foot hurts.'

(49) a. X̲áan kananeek. *first person postpositional pronoun x̲á+*
x̲á -n k- n- ²√nik-μ
[PP 1SG-INSTR] QUAL-NCNJ-2SG·S-²√tell -VAR
'Tell me about it.'

b. Ax̲ een kananeek. *first person postpositional pronoun ax̲ ee+*
ax̲ ee -n k- n- ²√nik-μ
[PP 1SG BASE-INSTR] QUAL-NCNJ-2SG·S-²√tell -VAR
'Tell me about it.'

1.2.1.2. First person plural *haa=*

The first person plural object D pronoun *haa=* 'us' (50a) is homophonous with the possessive pronoun *haa* 'our' (50b) and is probably related to the independent *uháan* 'us' (50c) by its second syllable (see discussion of the second person plural in section 1.2.1.4). Notably, the corresponding subject D pronoun *tu-* [tʰù] 'we' (51) has no resemblance to the object nor to any other expression of the first

9. All of the first person singular pronouns share the uvular fricative *x̲* [χ]. This is not accidental, descending from a Proto-Na-Dene first person singular **$* that has cognates in Eyak *x* ~ *s* and Dene **x* ~ **s* ~ **š* (Krauss 1977a). The phonetics of **$* is unclear; it might have been */χ/ or */x/ though it does not evolve like ordinary PND **χ* or **x*.

person plural. The postpositional pronoun for the first person plural is always the complex structure *haa ee+* with the meaningless base *ee* (52). The *haa^n+* that attaches directly to postpositions has instead become the cislocative 'here, hither, this way' (53) and no longer has a personal or plural interpretation.

(50) a. Haa wooxoox. *first plural object pronoun*
haa=wu-i- $^2\sqrt{}$xux -μ
1PL·S- PFV-STV-$^2\sqrt{}$summon-VAR
'S/he summoned us.'

b. Haa x'oos yanéekw. *first plural possessive pronoun*
haa x'oos i- $^1\sqrt{}$nikw-μH
[DP 1PL·PSS foot] STV-$^1\sqrt{}$sick -VAR
'Our feet hurt.'

c. Uháan áwé. *first plural independent pronoun*
uháan á -wé
1PL CPL-MDST
'That's us.'

(51) Iwtusiteen. *first plural subject pronoun*
i- wu-tu- s- i- $^2\sqrt{}$tin-μ
2SG·O-PFV-1PL·S-XTN-STV-$^2\sqrt{}$see -VAR
'We saw you (sg.).'

(52) a. Haa eedé nagú. *first plural postpositional pronoun*
haa ee -dé n- $^1\sqrt{}$gut -⊗
[PP 1PL BASE-ALL] NCNJ-2SG·S-$^1\sqrt{}$go·SG-VAR
'Come to us.'

b. Haa eet uwagút. *first plural postpositional pronoun*
haa ee -t u- i- $^1\sqrt{}$gut -H
[PP 1PL BASE-PNCT] ZPFV-STV-$^1\sqrt{}$go·SG-VAR
'S/he came to us.'

(53) a. Haandé nagú. *cislocative postpositional pronoun*
haa^n-dé n- $^1\sqrt{}$gut -⊗
[PP CIS -ALL] NCNJ-2SG·S-$^1\sqrt{}$go·SG-VAR
'Come here.'

b. Haat uwagút. *cislocative postpositional pronoun*
haa^n-t n- i- $^1\sqrt{}$gut -H
[PP CIS -PNCT] ZPFV-STV-$^1\sqrt{}$go·SG-VAR
'S/he came here.'

1.2.1.3. Second person singular *i-* ~ *ee=*

The second person singular object D pronoun *i-* 'you sg.' (54a) is identical to the subject (54b) and possessive (54c) pronouns. The relationship with the independent pronoun *wa.é* [wà.ˈʔé] 'you sg.' (54c) is somewhat speculative, resting on the assumption that the [ʔì] of the object, subject, and possessive is related to the second syllable [ʔé] of the independent pronoun. The initial *wa* [wà] of the independent pronoun has no obvious source but it could potentially be related to the mesiodistal determiner *wé* [wé] 'that; there'.

(54) a. Iwooxoox. *second singular object pronoun*
i- wu-i- ²√xux -μ
2SG·O-PFV-STV-²√summon-VAR
'S/he summoned you (sg.).'

b. Xat ixá. *second singular subject pronoun*
xat= i- ²√xa-H
1SG·O=2SG·S-²√eat-VAR
'You (sg.) are eating me.'

c. I x'oos yanéekw. *second plural possessive pronoun*
i x'oos i- ¹√nikw-μH
[DP 2SG·PSS foot] STV-¹√sick -VAR
'Your (sg.) feet hurt.'

d. Wa.é áwé. *second singular independent pronoun*
wa.é á -wé
2SG CPL-MDST
'That's you (sg.).'

Orthographically the object D pronoun may be written as a separate word implying that it is a proclitic as in (55). This is partly because Story (1966) and Naish (1966) assumed that all object D pronouns were separate words (Leer 1991: 122 fn. 37). Although Leer asserts that the *i-* is normally realized as a short vowel, it is certainly plausible for it to arise as a long vowel given the right foot structure and stress conditions. The phonetics of this and other D pronouns have yet to be explored.

(55) Ee x'akakkwanéek. *second singular object pronoun*
ee= x'e- k- w- g- g- x- ²√nik-μH
2SG·O-mouth-QUAL-IRR-GCNJ-MOD-1SG·S-²√tell -VAR
'I'll interpret you.' (Story & Naish 1973: 116.1516)

The long *ee=* is conventionally represented as a proclitic rather than a prefix as in short *i-*. This is probably not a phonologically justifiable distinction, instead reflecting the orthographic practice of representing most proclitics as separate words. The variation in length for *i-* ~ *ee=* is shared with the second person plural *ÿee=* ~ *ÿi-* discussed in section 1.2.1.4 below.

1.2.1.4. Second person plural *ÿi-* ~ *ÿee=*

The second person plural object D pronoun *ÿi-* ~ *ÿee=* 'you pl.' (56a) is related to the corresponding subject D pronoun *ÿi-* 'you pl.' (56b), the possessive *yee* 'your (pl.)' (56c), and the independent *ÿeewháan* 'you pl.' (56d).

(56) a. Yiwooxoox. *second plural object pronoun*
ÿi- wu-i- $^{2}\sqrt{}$xux -μ
2PL·O-PFV-STV-$^{2}\sqrt{}$summon-VAR
'S/he summoned you guys.'

b. Xat yixá. *second plural subject pronoun*
xat= ÿi- $^{2}\sqrt{}$xa-H
1SG·O=2SG·S-$^{2}\sqrt{}$eat-VAR
'You guys are eating me.'

c. Yee x'oos yanéekw. *second plural possessive pronoun*
ÿee x'oos i- $^{1}\sqrt{}$nikw-μH
[DP 2PL·PSS foot] STV-$^{1}\sqrt{}$sick -VAR
'You guys's feet hurt.'

d. Yeewháan áwé. *second plural independent pronoun*
ÿeewháan á -wé
2PL CPL-MDST
'That's you guys.'

There is extensive variation between long and short vowel forms of the second person plural as shown in (57). The short vowel form is analyzed as a prefix and the long vowel form is analyzed as a proclitic, but this is more due to orthographic convention than anything else. The two forms seem to be in free variation but they are probably conditioned by syllable structure, metrical structure, stress, and other poorly understood phonological phenomena in the verb prefixation system.

(57) a. Yiwtusiteen. *second plural object with short vowel*
ÿi- wu-tu- s- i- $^{2}\sqrt{}$tin-μ
2PL·O-PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see -VAR
'We saw you guys.'

b. Yee wutusiteen. *second plural object with long vowel*
ÿee= wu-tu- s- i- $^{2}\sqrt{}$tin-μ
2PL·O=PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see -VAR
'We saw you guys.'

This variation in length is shared with the second person singular as noted in section 1.2.1.3. The length variation is probably unrelated to second person. Instead it is more likely that the phonology of high front /i/ is significant, and that both pronouns just happen to be based on this vowel. Since the addition of *ÿ* is not a regular plurality operator, the *ÿi- ~ ÿee=* is not synchronically decomposable into *ÿ* and *i*, although a historical connection between **ŋi* and **i* is certainly plausible.

The independent pronoun *ÿeewháan* 'you pl.' (56d) has a wide variety of forms depending on dialect and individual variation, including e.g. *yeewáan* [jìː.ˈwáːn], *yeeháan* [jìː.ˈháːn], *eewáan* [ʔìː.ˈwáːn], and *eeyáan* [ʔìː.ˈjáːn], as well as *ÿeèÿaan* [ɥiʰ.ˈɥaːn], *eèÿaan* [ʔiʰ.ˈɥaːn], and *ÿiÿaan* [ɥi.ˈɥaːn] in Tongass Tlingit (Leer 1973a: 01/67, 1991: 58 fn. 12). The initial *yee* or *ee* of *ÿeewháan* is probably related to the object D pronoun *ÿi- ~ ÿee=* and the other second person plural pronouns, but it is puzzling why this should be followed by what otherwise seems to be the first person plural

uháan noted above. Leer (1973a: 01/67) groups both -*ʷháan* pronouns together with the noun *k̲wáan* 'dwellers, people, nation' that is probably derived from *k̲uháan* 'one stands', implicitly suggesting an ultimate relationship with the root $^{1}\sqrt{han}$ 'sg. stand'.

1.2.1.5. Third person *a-*

The third person object D pronoun is normally covert, i.e. *pro*. For example, in unaccusative intransitives the object is either a full DP outside of the verb word as in (58a) or it is simply absent as in (58b).

(58) a. *overt third person DP*
Yá té yadál.
yá té i- $^{1}\sqrt{}$dal -H
[DP PROX rock] STV-$^{1}\sqrt{}$heavy-VAR
'This rock is heavy.'

b. *covert third person object*
Yadál.
i- $^{1}\sqrt{}$dal -H
STV-$^{1}\sqrt{}$heavy-VAR
'S/he/it is heavy.'

In transitives (including causatives) the pattern is similar when the subject is anything other than third person. Either the object is a full DP outside of the verb word as in (59a) or it is absent as in (59b).

(59) a. *overt third person DP*
Wé k̲áa wutuwax̲oox̲.
wé k̲áa wu-tu- i- $^{2}\sqrt{}$x̲ux̲ -μ
[DP MDST man] PFV-1PL·S-STV-$^{2}\sqrt{}$summon-VAR
'We summoned that man.'

b. *covert third person object*
Wutuwax̲oox̲.
wu-tu- i- $^{2}\sqrt{}$x̲ux̲ -μ
PFV-1PL·S-STV-$^{2}\sqrt{}$summon-VAR
'We summoned him/her.'

When the subject is third person there is a different pattern shown in (60). The form in (60a) has the prefix *a-* in the object pronoun position. But as has been seen in earlier examples, the data in (60b) and (60c) show that this *a-* prefix is not saturating since an object DP can occur together with *a-*. I have given it the relatively neutral gloss ARG to indicate that it is some kind of argument marker without taking a position on its meaning; see section 1.2.2 for further discussion.

(60) a. *no DP*
Aawax̲oox̲.
a- wu-i- $^{2}\sqrt{}$x̲ux̲ -μ
ARG-PFV-STV-$^{2}\sqrt{}$summon-VAR
'S/he summoned him/her.'

b. *object DP*
Wé k̲áa aawax̲oox̲.
wé k̲áa a- wu-i- $^{2}\sqrt{}$x̲ux̲ -μ
[DP MDST man] ARG-PFV-STV-$^{2}\sqrt{}$summon-VAR
'S/he summoned that man.'

c. Ax tláach wé káa aawaxoox. *subject DP + object DP*
ax tláa -ch wé káa a- wu-i- $^{2}\sqrt{}$xux -μ
[DP 1SG·PSS mother-ERG] [DP MDST man] ARG-PFV-STV-$^{2}\sqrt{}$summon-VAR
'My mother summoned that man.'

The *a-* prefix could be argued to be a purely epenthetic syllable [ʔà] given that [ʔ] is a typical epenthetic onset consonant and [a] is a typical epenthetic vowel. But this argument-marking *a-* is more or less homophonous with the third person nonhuman pronouns – possessive *a* 'its' as in (61a), independent *á* 'it' as in (61b), and postpositional *á+* 'it' as in (61c). So it seems likely that *a-* is not just underlyingly /CV/ but is actually specified as /ʔa/ identical to its cognate pronouns.

(61) a. A x'oos yanéekw. *third nonhuman possessive pronoun*
a x'oos i- $^{1}\sqrt{}$nikw-μH
[DP 3N·PSS foot] STV-$^{1}\sqrt{}$sick -VAR
'Its feet hurt.'

b. Á áwé. *third nonhuman independent pronoun*
á á -wé
3N CPL-MDST
'That's it.'

c. Át uwagút. *third nonhuman postpositional pronoun*
á -t u- i- $^{1}\sqrt{}$gut -H
[PP 3N-PNCT] ZPFV-STV-$^{1}\sqrt{}$go·SG-VAR
'S/he went to it/there.'

1.2.1.6. Third person proximate *ash=*

The third person proximate (human) object D pronoun *ash=* [ʔàʃ] ~ *ach=* [ʔàtʃ] 'him, her' is clearly related to the equivalent possessive and postpositional pronouns. The *ash=* allomorph may plausibly be from third person *a* and the reflexive *sh* discussed in section 1.2.1.10, in which case it could originally have meant something like 'he himself' or 'her herself'. The examples in (62) are from texts because I have not investigated the third proximate in any detail. See further section 1.2.3.3.

(62) a. Áa ash shukaawajáa *third proximate object pronoun*
á -μ ash= shu-k- wu-i- $^{2}\sqrt{}$ja^{h} -μH
[PP 3N-LOC] 3PRX·O=end- QUAL-PFV-STV-$^{2}\sqrt{}$advise-VAR
aadé aguxsanéi yé.
á -dé a- w- g- g- s- $^{1}\sqrt{}$ne^{h} -μH yé
[CP 3N-ALL ARG-IRR-GCNJ-MOD-CSV-$^{1}\sqrt{}$occur-VAR REL] way
'He instructed <u>him</u> on the way that he would do it.' (Dauenhauer & Dauenhauer 1987: 126.70)

b. Dáaknáx áwé ash jeet *third proximate possessive pronoun*
dáak -náx á -wé ash jee -t
[PP inland-PERL] FOC-MDST [3PRX·PSS poss'n-PNCT]
yéi awsinéi
yéi= a- wu-s- i- $^{1}\sqrt{}$ne^{h} -μH
thus=ARG-PFV-CSV-STV-$^{1}\sqrt{}$occur-VAR
'She made it happen for <u>him</u> through the inland.' (Dauenhauer & Dauenhauer 1987: 130.159)

c. Wé át áwé ash eet *third proximate postpositional pronoun*
wé át á -wé ash ee -t
[DP MDST thing] FOC-MDST [PP 3PRX$_i$ BASE-PNCT]
x'eiwatán wé du eegáa woosoowu át.
x'e- wu-i- $^1\sqrt{}$tan -H wé du ee -gáa wu-i- $^1\sqrt{}$su -μ -i át
mouth-PFV-STV-$^1\sqrt{}$hdl·w/e-VAR [DP MDST [CP 3H$_i$ BASE-ADES PFV-STV-$^1\sqrt{}$magic-VAR-REL] thing]
'It was that thing that talked to him, that thing that had helped him supernaturally.'
(Dauenhauer & Dauenhauer 1987: 130.175)

The *ach*= allomorph is exceedingly rare as an actual pronoun; it appears in derivational contexts where *ash*= would otherwise be expected (sec. 1.2.3.3), but I have no examples at hand of it being used for the proximate third person. The *ach*= allomorph looks suspiciously like it is instead constructed from *a* and the ergative/instrumental postposition *-ch*, but there is similar variation between coda [ʃ] and [tʃ] with the reciprocal *woosh*= ~ *wooch*= as detailed in section 1.2.1.12.

The third person proximate is only used for human (or human-like) referents. It refers to a foreground referent in contrast with other referents in the discourse. I have labelled it 'proximate' by analogy with the proximate/obviate distinction in other languages, but there is no required contrast with obviate pronouns when *ash*= ~ *ach*= is used. Story and Naish describe it as 'focal' (Story 1966: 31; Naish 1966: 71). Leer refers to this as the 'salient' pronoun (Leer 1990b, 1991, 1993).

1.2.1.7. Fourth person human *ku-*

The fourth person human object D pronoun *ku-* 'one, somebody, people' has only one corresponding form among the other pronoun categories, namely the postpositional *kú*+.

(63) a. Atyátx'i kukwliseek *fourth human object pronoun*
at- yát -x' -i ku- k- u- l- i- $^2\sqrt{}$sik-μ
[DP 4N·PSS-child-PL-PSS] 4H·O-QUAL-IRR-XTN-STV-$^2\sqrt{}$shy-VAR
'Children are shy of people.' (Story & Naish 1973: 25.139)

b. S'eenáa kóot aawahís'. *fourth human postpositional pronoun*
s'eenáa kú-t a- wu-i- $^2\sqrt{}$his' -H
[DP lamp] [PP 4H-PNCT] ARG-PFV-STV-$^2\sqrt{}$loan-VAR
'He loaned the lamp to someone.' (Story & Naish 1973: 124.1634)

Some people have the allomorph *kaa*= (sec. 1.2.1.8) for *ku-* but others do not. In particular, my Teslin consultants disliked *kaa*=, and it does not appear in a transcribed narrative by *Yeilnaawú* Tom Peters from Teslin (Dauenhauer & Dauenhauer 1987: 166–193). I have not checked narratives by *Seidaayaa* Elizabeth Nyman however, nor have I checked with speakers from Tagish or Carcross.

The *ku-* object D pronoun is a reflex of the Proto-Na-Dene areal prefix **qu-* (Thompson 1993; Tuttle & Hargus 2004; Crippen 2009b). This prefix has two interpretations throughout the family: indefinite human and spatial extent. Tlingit may be developing a split of the two meanings with its fourth person human *ku-* as a saturating D pronoun and its areal *ku-* a non-saturating kind of IN that can occur together with object D pronouns. See section 1.2.3.2 for further discussion.

1.2.1.8. Fourth person human *ḵaa=*

The fourth person human object D pronoun *ḵaa=* 'one, somebody, people' is functionally an allomorph of *ḵu-*. Phonologically however *ḵaa=* is related to the fourth person human possessor *ḵaa* 'one's, someone's, people's' and not to the *ḵú+* postpositional pronoun. The *ḵaa* and *ḵaa=* pronouns are probably derived from the noun *ḵáa* [qʰáː] 'man'.

(64) a.
Yú x'áat' kaadé áa ḵaa jikaawaḵaa
yú x'áat' ká -dé á -μ ḵaa=ji- k- wu-i- ²√ḵa-μ
[PP DIST island HSFC-ALL] [PP 3N-LOC] 4H·O=hand-QUAL-PFV-STV-²√say-VAR
yá ḵaa naax'ú.
yá ḵaa naaʷ -x' -í
[DP PROX 4H·PSS corpse-PL-PSS]
'He instructed people to take them there out to the island, these people's corpses.'
(Story & Naish 1973: 115.1502)

b.
Ḵaa waaḵ shagáal'i yoo duwats'ét'k.
ḵaa waaḵ shá- gáal'-í yoo=du- i- ²√ts'et' -H -k
[DP 4H·PSS eye head-clam -PSS] ALT= 4H·S-STV-²√cut·care-VAR-REP
'They remove cataracts by careful cutting.' (orig. tr.) (Story & Naish 1973: 143.1927)

Given that *ḵaa* 'one's' is a possessive pronoun, I suspect that the choice of *ḵaa=* versus *ḵu-* depends on the presence or absence of INs. I have not tested this however, nor have I checked whether there are confirming patterns in narratives and other text sources.

1.2.1.9. Fourth person nonhuman *at=*

The fourth person nonhuman object D pronoun *at=* 'something, things, stuff' (65a) has parallels in the possessive *at* (65b), independent *át* (65c), and postpostional *at* (65d) with the same meanings.

(65) a. *fourth nonhuman object pronoun*
At wutuwat'ee.
at= wu-tu- i- ²√t'iʰ -μH
4N·O=PFV-1PL·S-STV-²√find-VAR
'We found something.'

b. *fourth nonhuman possessive pronoun*
At xaawú wutuwat'ee.
at xaaw-í wu-tu- i- ²√t'iʰ -μ
[DP 4N·PSS fur -PSS] PFV-1PL·S-STV-²√find-VAR
'We found something's fur.'

c. *fourth nonhuman independent pronoun*
Át áwé.
át á -wé
4N CPL-MDST
'That's something.', 'That's a thing.'

d. *fourth nonhuman postpositional pronoun*
At eet yan x'usshaxwsigóo.
at ee -t ÿán= x'us-sha- wu-x- s- i- ²√gu -μH
[PP 4N BASE-PNCT] TERM=foot- head-PFV-1SG·S-XTN-STV-²√poke-VAR
'I bumped my foot on something.'

As implied by the two translations in (65c) the independent pronoun *át* is homophonous with and perhaps identical to the noun *át* 'thing'. Whether they are actually distinct elements is unknown. Unlike other independent pronouns, *át* can be used with a determiner as shown in (66), in which case it has the interpretation of a definite entity with unknown (implicitly non-human) identity.

(66) Wé át ku̲.aa tléil x̲wasakú daatx̲ sá sitee.
wé át ku̲.aa tléil u- wu-x̲- s- $^{2}\sqrt{}$ku -H daat-x̲ sá s- i- $^{1}\sqrt{}$ti^{h}-μ
[DP MDST thing] CONTR NEG IRR-PFV-1SG·S-XTN-$^{2}\sqrt{}$know-VAR [CP what-PERT Q APPL-STV-$^{1}\sqrt{}$be -VAR]
'But that thing, I don't know what it's made out of.'

The (pro)noun *át* and the object D pronoun *at=* are syntactically distinct: the noun in (67) can be focused with *áwé*, but the object D pronoun in (68) is not focusable. Note the distinction in tone between the two elements. The *át* 'thing' noun is presumably the source of all of the fourth nonhuman pronouns, but it is syntactically distinct from all of them except the independent pronoun.

(67) a. Át wutusiteen. *át object DP*
át wu-tu- s- i- $^{2}\sqrt{}$tin-μ
[DP thing] PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see -VAR
'We saw a thing.'

b. Át áwé wutusiteen, tléil lingít. *focused át object DP*
át á -wé wu-tu- s- i- $^{2}\sqrt{}$tin-μ tléil lingit
[DP thing] FOC-MDST PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see -VAR NEG person
'It's a thing that we saw, not a person.

(68) a. At wutusiteen. *at= object pronoun*
at wu-tu- s- i- $^{2}\sqrt{}$tin-μ
4N·O=PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see -VAR
'We saw something.'

b. *At áwé wutusiteen. **focused at= object pronoun*
at= á -wé wu-tu- s- i- $^{2}\sqrt{}$tin-μ
4N·O=FOC-MDST PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see -VAR
intended: 'It's something that we saw.'

1.2.1.10. Reflexive *sh=*

The reflexive object D pronoun *sh=* 'self' is unique among the object D pronouns in that it is a single consonant [ʃ]. It has a parallel in the possessive *sh*, but other reflexives are of the 'full' *chush* form discussed in section 1.2.1.11 below.

(69) a. Shunax̲wáayi teen sh x̲wadik̲'ék'w. *reflexive object pronoun*
shunax̲wáayi teen sh= wu-x̲- d- i- $^{2}\sqrt{}$k̲'ek'w-H
[PP axe INSTR] RFLX·O=PFV-1SG·S-MID-STV-$^{2}\sqrt{}$wound -VAR
'I wounded myself with an axe.'[10] (Story & Naish 1973: 61.711)

10. The noun *shanax̲wáayi* ~ *shunax̲wáayi* (T. *shanax̲waaÿi*) 'axe' (Leer 1973a: f02/992, 1978c: 70) looks suspiciously like a deverbal noun but its etymology is unknown. It seems to contain *sha-* 'head' or *shu-* 'end', the *n*-conjugation prefix, and the nominalization suffix *-í*. Along with *-μH* stem variation, this predicts a root $\sqrt{}$*x̲wa*$^{(h)}$ or $\sqrt{}$*x̲waÿ*, both of which are unattested. The root $^{1}\sqrt{}$*xa* 'pour, dump' and noun *xwáa* 'young man' are apparently unrelated. I predict an *n*-conjugation verb like ⁕*ashaawax̲waa* ~ ⁕*ashoowax̲waa* 's/he axed it' but have not tested this.

b. Sh tóogaa has wudixáa. *reflexive possessive pronoun*
sh tú -gáa has= wu-d- d- i- $^{2}\sqrt{}$xa-μH
[DP RFLX·PSS inside-ADES] PLH= PFV-MID-APSV-STV-$^{2}\sqrt{}$eat-VAR
'They ate as much as they wanted.' (lit. 'They ate for self's inside.')
(Story & Naish 1973: 77.935)

The *sh=* object D pronoun is analyzed as a proclitic because if it is followed by a vowel – for example the irrealis *u-* – then there is an epenthetic glottal stop separating them: *tléil k'idéin sh udanúkx* 'he isn't feeling himself well' (Story & Naish 1973: 88.1096) is [...ʃʔùtànúkʷχʷ] and not *[...ʃùtànúkʷχʷ]. Similar facts hold for the reflexive possessive pronoun; see section 1.2.4 for further discussion of proclisis versus prefixation.

1.2.1.11. Reflexive *chush=*

The *chush=* form is an allomorph of reflexive *sh=* with no apparent difference in meaning. It is described by Leer (1991: 59) as a variant only used in songs, but my consultants who speak Inland varieties from Teslin, Tagish, and Carcross regularly use the *chush=* object as well as its possessive counterpart.

(70) a. Chush wutudziteen. *reflexive object pronoun*
chush=wu-tu- d- s- i- $^{2}\sqrt{}$tin-μ
RFLX·O= PFV-1PL·S-MID-XTN-STV-$^{2}\sqrt{}$see -VAR
'We saw ourselves.'

b. Chush téeli awdzi.ée. *reflexive possessive pronoun*
chush téel -í a- wu-d- s- i- $^{1}\sqrt{}$.i -μH
[DP RFLX·PSS shoe-PSS] ARG-PFV-MID-CSV-STV-$^{1}\sqrt{}$cook-VAR
'S/he cooked his/her own shoe.'

The object D pronoun *chush=* does not appear in any data from Coastal speakers that I have consulted. But the possessive pronoun form *chush* is attested at least twice from Angoon speakers by Story & Naish (1973: 65.754–755) and twice from *Kéet Yanaayí* Willie Marks (Dauenhauer & Dauenhauer 1987: 162.194, 205) who was from Douglas with parents from Chilkat and Hoonah (Dauenhauer & Dauenhauer 1990: 550). I have not attempted to elicit *chush=* as an object D pronoun from Coastal speakers so I cannot say if it is possible, but it does not seem implausible.

Based on the variation with *woosh* [wùːʃ] versus *wooch* [wùːtʃ] for the reciprocal (sec. 1.2.1.12), we might predict the possibility of a ※*chuch* reflexive. I have looked for examples of this but have not found any; I have not yet tested it with my consultants.

Evseeva & Salaberri (2018) note a common crosslinguistic pattern where nouns for 'head' become reflexives. Following this reasoning, it seems plausible to connect the reflexive *sh* to *shá* [ʃá] 'head', but the *chush* forms resist this etymology. We might suppose that the *chu* [tʃʰu] portion could come from something like *ch'u* [tʃ'ù] 'just' thus suggesting a **ch'u shá* 'just head', but this does not occur in contemporary Tlingit.

1.2.1.12. Reciprocal *woosh=* ~ *wooch=*

The reciprocal object D pronoun *woosh=* has parallels in the possessive and postpositional pronouns. The final *sh* is suspiciously similar to the reflexive, but there is no **woo-* to supply the initial part of the morpheme.

(71) a. Woosh wutudziteen. *reciprocal object pronoun*
woosh=wu-tu- d- s- i- $^{2}\sqrt{}$tin-μ
RECIP·O=PFV-1PL·S-MID-XTN-STV-$^{2}\sqrt{}$see-VAR
'We saw each other.'

b. Woosh téeli has awditáw. *reciprocal possessive pronoun*
woosh téel-í has= a- wu-d- i- $^{2}\sqrt{}$taw-H
[DP RECIP·PSS shoe-PSS] PLH= ARG-PFV-MID-STV-$^{2}\sqrt{}$steal-VAR
'They stole each other's shoes.'

c. Woosh eedé has wudi.aat *reciprocal postpositional pronoun*
woosh ee -dé has=wu-d- i- $^{1}\sqrt{}$.at -μ
[PP RECIP BASE-ALL] PLH= PFV-MID-STV-$^{1}\sqrt{}$go·PL-VAR
'They went to each other.'

The object, possessive, and both have allomorphs with a final affricate *wooch* [wù:tʃ] instead of a final fricative *woosh* [wù:ʃ]. The reason for this alternation is unknown, but it is similar to and possibly related to the same alternation in the third person proximate *ash= ~ ach=*.

(72) a. Ha, wooch yeeydzixán áyá. *reciprocal object pronoun*
ha wooch=wu-ÿi- d- s- i- $^{1}\sqrt{}$xan-H á -yá
well RECIP·O= PFV-2PL·S-MID-CSV-STV-$^{1}\sqrt{}$near-VAR FOC-MDST
'Well, you love each other so.' (Dauenhauer & Dauenhauer 1987: 104.456)

b. Wooch keeká áwé át *reciprocal possessive pronoun*
wooch keeká á -wé á -t
[DP RECIP·PSS opposite] FOC-MDST [PP 3N-PNCT]
has datéeyin yú.á.
has=d- $^{1}\sqrt{}$ti^{h}-μH-ín yú.á
PLH= MID-$^{1}\sqrt{}$be -VAR-PAST QUOT
'It's opposite of each other that they used to be, they say.' (Nyman & Leer 1993: 2.1)

c. hasdu een géyá woochdáx *reciprocal postpositional pronoun*
has=du ee -n gé-yá wóoch-dáx
[PP PLH= 3H BASE-INSTR] YN-PROX [PP RECIP -ABL]
haa wusdaagín.
haa= wu-d- s- $^{1}\sqrt{}$dak -μ -ín
1PL·O=PFV-MID-XTN-$^{1}\sqrt{}$migrate-VAR-PAST
'maybe with them we migrated apart from each other.'
(Dauenhauer & Dauenhauer 1987: 70.153)

d. Tle k'adéin wooch een has datéeyin *recip. postpositional pronoun*
tle $^{1}\sqrt{}$k'e -déin wooch ee -n has=d- $^{1}\sqrt{}$ti^{h}-μH-ín
just $^{1}\sqrt{}$good-ADV [PP RECIP BASE-INSTR] PLH= MID-$^{1}\sqrt{}$be -VAR-PAST
'They had been good with each other.' (Nyman & Leer 1993: 2.5)

The reciprocal object D pronoun is unique in its linear position to the left of the plurality modifier *has=* 'plural human' (sec. 2) where other object D pronouns are to the right of it. The reasons for this are still unknown, but it may reflect scopal differences and deserves further investigation.

(73) a. Woosh has wudziteen. *reciprocal > plural*
woosh=has=wu-d- s- i- $\sqrt[2]{}$tin-μ
RECIP·O=PLH= PFV-MID-XTN-STV-$\sqrt[2]{}$see -VAR
'They saw each other.'

b. *Has woosh wudziteen. **plural > reciprocal*
has=woosh=wu-d- s- i- $\sqrt[2]{}$tin-μ
PLH= RECIP·O=PFV-MID-XTN-STV-$\sqrt[2]{}$see -VAR
intended: 'They saw each other.'

(74) a. Has yee shik'áan. *plural > 2PL*
has=ÿee= sh- i- $\sqrt[2]{}$k'an-μH
PLH= 1PL·O=PEJ-STV-$\sqrt[2]{}$hate -VAR
'They hate you guys.' (Story & Naish 1973: 106.1378)

b. *Yee has shik'áan. **2PL > plural*
ÿee= has=sh- i- $\sqrt[2]{}$k'an-μH
1PL·O=PLH= PEJ-STV-$\sqrt[2]{}$hate -VAR
intended: 'They hate you guys.'

1.2.1.13. Partitive *aa*=

The partitive *aa*= is homophonous with independent partitive pronoun, both of which denote 'some of' or 'one of'. It is related to the independent partitive pronoun *aa* 'one, some'. It should not be confused with the argument marking prefix *a-*; the partitive has a long vowel and has proclitic rather than prefixal phonology as shown by the pair in (76).

(75) a. Aa xwaaxáa. *partitive object pronoun*
aa= wu-x- i- $\sqrt[2]{}$xa-μH
PART·O=PFV-1SG·S-STV-$\sqrt[2]{}$eat-VAR
'I ate some.'

b. Yáadu aa tsú. *partitive independent pronoun*
yá -d -ú aa tsú
PROX-LINK-LOCP PART also
'The one here too.' (Dauenhauer & Dauenhauer 1987: 232.301)

(76) a. 'àùwȁdjáq' *partitive aa=*
Aa uwajáq.
[ʔà: ʔù.wà.tʃáq]
aa= u- i- $\sqrt[2]{}$jaq-H
PART=ZPFV-STV-$\sqrt[2]{}$kill -VAR
'He killed one of them.' (Boas 1917: 50)

b. Aawajáq. *argument a-*
[ʔà:.wà.tʃáq]
a- wu-i- $\sqrt[2]{}$jaq-H
ARG-PFV-STV-$\sqrt[2]{}$kill -VAR
'S/he killed him/her/it.'

See section 1.2.3.1 for further discussion of the partitive, particularly its saturating behaviour and its relationship with other object D pronouns.

1.2.2. Argument-marking *a-*

The *a-* prefix that appears in D^0 is traditionally analyzed as an indicator of a third person object when it occurs together with a third person subject (Leer 1991: 58). In previous works I have described it as a 'three-on-three' marker (3→3) because of its function in marking third objects in the context of third subjects. This is a useful description for the common case where *a-* has a regular inflectional function, but it is misleading because *a-* is not limited to indicating third person objects.

The *a-* prefix actually has at least four distinct functions, and possibly more: (i) 3→3 argument marker in transitive structures, (ii) expletive object in antipassive-like structures, (iii) fourth person human subject in unergative motion verbs, and (iv) marker in perambulative revertive motion derivation. The first function is the most commonly encountered and is unquestionably regular. The other three functions are limited to certain parts of the lexicon.

To see the 3→3 case, first consider the 1→3 pattern in (77) where a first person plural subject occurs with a third person object in (77a), and then the reverse 3→1 in (77b) with a third person subject and a first person plural object. In neither case is there an overt third person indicator.

(77) a. Wutusiteen. *1PL → 3*
wu-tu- s- i- $\sqrt[2]{}$tin-μ
PFV-1PL·S-XTN-STV-$\sqrt[2]{}$see -VAR
'We saw him/her/it.'

b. Haa wusiteen. *3 → 1PL*
haa= wu-s- i- $\sqrt[2]{}$tin-μ
1PL·O=PFV-XTN-STV-$\sqrt[2]{}$see -VAR
'She/he/it saw us.'

Given that both the subject and object are covert when third person, we might predict a form like (78a) when both the subject and object are third. But this is ungrammatical, and instead the grammatical form in (78b) has the *a-* prefix to the left of perfective *wu-* and hence in the object D pronoun position.

(78) a. *Wusiteen. **3 → 3 without a-*
wu-tu- s- i- $\sqrt[2]{}$tin-μ
PFV-1PL·S-XTN-STV-$\sqrt[2]{}$see -VAR
intended: 'We saw him/her/it.'

b. Awsiteen. *3 → 3 with a-*
a- wu-s- i- $\sqrt[2]{}$tin-μ
ARG-PFV-XTN-STV-$\sqrt[2]{}$see -VAR
'She/he/it saw him/her/it.'

We might conclude from (78b) that *a-* saturates the third person object argument position like other object D pronouns. But this cannot be the case because *a-* can occur with overt DPs in the core clause as shown in (79). The DP *yú shaa* 'that (distal) mountain' denotes the object in both (79a) and (79b), with the latter including an overt subject DP as well.

(79) a. Yú shaa awsiteen. *3 → 3 DP*
yú shaa a- wu-s- i- $\sqrt[2]{}$tin-μ
[DP DIST mountain] ARG-PFV-XTN-STV-$\sqrt[2]{}$see -VAR
'She/he/it saw that mountain.'

b. Ax̲ tláa yú shaa awsiteen. *3 DP → 3 DP*
ax̲ tláa yú shaa a- wu-s- i- $\sqrt[2]{}$tin-μ
[DP 1SG·PSS mother] [DP DIST mountain] ARG-PFV-XTN-STV-$\sqrt[2]{}$see -VAR
'My mother saw that mountain.'

The *a-* prefix in this context cannot occur with anything other than a third person subject. This is shown by the ungrammaticality of the forms in (80). This ungrammaticality and the absence of *a-* in e.g. (77a) means that *a-* is dependent on both the subject and object being third person and is not simply a third person object marker.

(80) a. *Awtusiteen. **1pl → 3 with a-*
a- wu-tu- s- i- $\sqrt[2]{}$tin-μ
ARG-PFV-1PL·S-XTN-STV-$\sqrt[2]{}$see -VAR
intended: 'We saw him/her/it.'

b. *Ayisiteen. **2sg → 3 with a-*
a- wu-i- s- i- $\sqrt[2]{}$tin-μ
ARG-PFV-2SG·S-XTN-STV-$\sqrt[2]{}$see -VAR
intended: 'You (sg.) saw him/her/it.'

The *a-* in (79) looks something like an agreement morpheme. But this is not the whole story of *a-*. Section 1.2.2.1 details the appearance of *a-* in antipassive-like structures where it seems to be a meaningless expletive that fills the object position and blocks the existence of a referential object. This context for *a-* can be diagnosed semantically by the lack of an object referent and morphosyntactically by the possibility of a non-third subject. Section 1.2.2.2 details the appearance of *a-* in unergative motion verbs where it occurs instead of the otherwise expected fourth person human *du-* 'someone, people'. This context is diagnosed semantically by its interpretation as an indefinite and morphosyntactically by its occurrence in place of a subject. And section 1.2.2.3 details the appearance of *a-* in the perambulative revertive motion derivation. This context is diagnosed semantically by the 'going back' interpretation and morphosyntactically by its association with the other perambulative revertive motion elements *ÿ-*, *u-*, and *d-*.

1.2.2.1. Expletive antipassive-like *a-*

The usual structure for antipassivization has the introduction of *d-* in Voice along with suppression of the object argument as detailed in chapter 5. But there are a handful of antipassive-like verbs that occur with an expletive *a-* in the object position rather than using *d-*. These verbs are all transitives without lexicalized *d-*. Only a few such verbs are known to me at present, but they are relatively common and behave the same in all dialects. There are probably more lurking in the lexical documentation, but I have yet to compile a list of them.

The data in (81) illustrates the bivalent activity root $\sqrt[2]{}$*l'u'n* 'hunt' in an ordinary transitive structure with a first person singular subject *x̲-* and an object DP *jánwu* 'mountain goat' (*Oreamnos amer-*

icanus Blainville, 1816). The ungrammatical form in (81b) shows that, as expected, the *a-* prefix is not permitted because although the object is third person the subject is not also third person.

(81) a. Jánwu xal'óon. *1SG → 3 DP*
jánwu x- $\sqrt[2]{}$l'u'n-μH
[DP mtn·goat] 1SG·S-$\sqrt[2]{}$hunt -VAR
'I am hunting (a) mountain goat.'

b. * Jánwu axal'óon. **1SG → 3 DP with a-*
jánwu a- x- $\sqrt[2]{}$l'u'n-μH
[DP mtn·goat] XPL-1SG·S-$\sqrt[2]{}$hunt -VAR
intended: 'I am hunting (a) mountain goat.'

The data in (82) show that without an overt DP it is possible for this root $\sqrt[2]{}$*l'u'n* 'hunt' to occur with *a-* and a non-third subject. In (82a) the lack of *a-* gives the expected reading for a covert third person object 'it', so this structure is transitive. Then in (82b) the structure with both *a-* and first person singular *x-* is unexpectedly grammatical. The interpretation 'I am hunting' is crucially intransitive, and the transitive interpretation 'I am hunting it' is unacceptable. Thus although *a-* appears in (82b), it apparently does not code for an argument and so is glossed as an expletive with 'XPL'.

(82) a. Xal'óon. *1SG → 3*
x- $\sqrt[2]{}$l'u'n-μH
1SG·S-$\sqrt[2]{}$hunt -VAR
i. *'I am hunting.'
ii. 'I am hunting it.'

b. Axal'óon. *1SG intransitive with a-*
a- x- $\sqrt[2]{}$l'u'n-μH
XPL-1SG·S-$\sqrt[2]{}$hunt -VAR
i. 'I am hunting.'
ii. *'I am hunting it.'

This expletive *a-* can occur with a third person subject, in which case there is structural ambiguity. The form in (83) is ambiguous between an intransitive reading where *a-* is an expletive and a transitive reading where *a-* reflects a covert object.

(83) Al'óon. *a- without object DP*
a- $\sqrt[2]{}$l'u'n-μH
ARG-$\sqrt[2]{}$hunt -VAR
XPL-$\sqrt[2]{}$hunt -VAR
i. 'S/he/it is hunting it.' (ARG)
ii. 'S/he/it is hunting.' (XPL)

The addition of an overt DP eliminates the structural ambiguity. The DP *gooch* 'wolf' in (84) is an overt object DP so that *a-* can only be interpreted as (i) the 3→3 argument marker and not as (ii) an expletive.

(84) Gooch al'óon.
gooch a- $\sqrt[2]{}$l'u'n-μH
[DP wolf] ARG-$\sqrt[2]{}$hunt-VAR
i. 'S/he is hunting a wolf/wolves.' (ARG)
ii. *'S/he/it is hunting.' (XPL)

The DP *gooch* 'wolf' in (84) cannot be interpreted as a subject. This is because Tlingit generally requires the ergative *-ch* on a lone subject DP. The only case where ergative *-ch* is not required is when there are both subject and object DPs and they are in the canonical order S > O as shown in (85). A lone unmarked DP can only be interpreted as an object like in (85c).[11]

(85) a. Ax tláa ax éesh awsiteen. $DP_S > DP_O$
ax tláa ax éesh a- wu-s- i- $\sqrt[2]{}$tin-μ
[DP 1SG·PSS mother] [DP 1SG·PSS father] ARG-PFV-XTN-STV-$\sqrt[2]{}$see-VAR
i. 'My mother saw my father.'
ii. *'My father saw my mother.'

b. Ax tláach ax éesh awsiteen.
ax tláa -ch ax éesh a- wu-s- i- $\sqrt[2]{}$tin-μ
[DP 1SG·PSS mother-ERG] [DP 1SG·PSS father] ARG-PFV-XTN-STV-$\sqrt[2]{}$see-VAR
i. 'My mother saw my father.'
ii. *'My father saw my mother.'

c. Ax éesh awsiteen.
ax éesh a- wu-s- i- $\sqrt[2]{}$tin-μ
[DP 1SG·PSS father] ARG-PFV-XTN-STV-$\sqrt[2]{}$see-VAR
i. 'S/he/it saw my father.'
ii. *'My father saw him/her/it.'

d. Ax tláach wusiteen.
ax tláa -ch wu-s- i- $\sqrt[2]{}$tin-μ
[DP 1SG·PSS mother-ERG] PFV-XTN-STV-$\sqrt[2]{}$see-VAR
i. 'My mother saw him/her/it.'
ii. *'S/he/it saw my mother.'

As seen in (85d) the presence of a DP with ergative *-ch* preceding the verb word triggers the disappearance of *a-*. I have modeled this as an interaction between *-ch* in a functional projection and the movement of the subject DP to this projection through AspP (Crippen 2016), but I am not entirely satisfied with this analysis because it does not explain why *a-* appears in other contexts. This issue takes us above AspP however, so I set it aside for further investigation of ergative *-ch*.

There are some verb roots that seem to only occur with antipassive *a-* expletives. Three specific examples are $\sqrt[2]{}$*jun* 'dream', $\sqrt[2]{}$*sha* 'bark', and $\sqrt[2]{}$*l'eix* 'dance'. As shown in (86)–(88), these roots are attested with *a-* and a non-third person subject which is diagnostic for the antipassive *a-* expletive.

11. This might not always be true when the lone unmarked DP is a name or is otherwise human. See (111) on page 734 for a counterexample. But all my elicited data currently support the requirement for *-ch* on lone subject DPs. We need a review of narrative instances of subjects without *-ch* and further elicitation to clarify this point.

(86) Axwaasháa.
a- wu-x- i- $^{2}\sqrt{}$sha -μH
XPL-PFV-1SG·S-STV-$^{2}\sqrt{}$bark-VAR
'I barked.' (Eggleston 2017)

(87) Axajóon
a- x- $^{2}\sqrt{}$jun -μH
XPL-1SG·S-$^{2}\sqrt{}$dream-VAR
'I'm dreaming.' (Eggleston 2017)

(88) Seigánín agaxtool'eix.
seigánín a- w- g- g- tu- $^{2}\sqrt{}$l'ex -μ
tomorrow XPL-IRR-GCNJ-MOD-1PL·S-$^{2}\sqrt{}$dance-VAR
'We are going to dance tomorrow.' (Story & Naish 1973: 63.726)

None of these verbs occurs as an ordinary transitive, i.e. with an object D pronoun or an object DP. It may be that all of these verbs occur with 'cognate objects', i.e. entity arguments which are generic abstractions of the same event denoted by the root. In English these are expressed with nouns that are copies of the verb stem: 'I dreamed a dream', 'We danced a dance', etc. The expletive *a-* might serve the same function in Tlingit as copy nouns in English. This suggests a possible analysis for the transitive/intransitive alternations like *xal'óon* 'I'm hunting it' versus *axal'óon* 'I'm hunting' where the *a-* is also a cognate object. Contextually controlled elicitation is needed to test this hypothesis because it is impossible to verify from textual materials.

It is not clear if there are intransitives with *a-* that are based on causative or applicative structures. These would be verbs with an overt *s-*, *l-*, or *sh-* in *v* as well as *a-* and an overt subject D pronoun like *x-* 'I' or *tu-* 'we'. Searching for them is difficult because of the other more widespread functions of *a-*; a crude search suggests that my current corpus contains perhaps 2000 instances of verbs starting with *a-*. If in fact the expletive *a-* does not occur with causatives then it implies that this *a-* requires bivalent roots. This does not exclude applicatives which would also be based on bivalent roots, so there could also be applicatives with antipassive *a-*. If applicatives are excluded then the constraints on *a-* could arise from an interaction between root valency and argument structure.

Leer (1990c) notes that the appearance of expletive *a-* has similarities with other members of the Na-Dene family. He specifically cites Eyak and Koyukon examples: "Note also that this prefix is a lexicalized part of Tlingit *ʔa--l'è·x̣*, Eyak *ʔi--gah* and Koyukon *k'ə-l-ʒəs* all meaning 's/he's dancing'." (Leer 1990c: 93 n. 9). The Koyukon *k'ə-* prefix is the equivalent of Tlingit's fourth person nonhuman *at=* 'something' (Jetté & Jones 2000: 309–311), and the Eyak *ʔi-* also appears to have the same meaning (Krauss 1981: 49). This suggests they are not actually parallels of the Tlingit expletive *a-*, but are instead more like the Tlingit *at=* 'something' (sec. 1.2.1.9) that regularly alternates with other objects.

1.2.2.2. Fourth person human subject *a-*

The fourth person human subject D pronoun is *du-* 'someone; people' (sec. 1.2.1; ch. 5 sec. 6). This D pronoun always appears in *v*P or VoiceP as expected for a subject pronoun. It is not permitted with unergative verbs for reasons that are still unclear. Consider the usual appearance of *du-* for a fourth person human subject with a transitive verb in (89).

(89) a. Kanals'áak wutuwajáḵ. *transitive*
kanals'áak wu-tu- i- $^{2}\sqrt{}$jaḵ-H
[DP squirrel] PFV-1PL·S-STV-$^{2}\sqrt{}$kill -VAR
'We killed a squirrel.'

b. Kanals'áak wuduwajáḵ. *transitive with du-*
kanals'áak wu-du- i- $^{2}\sqrt{}$jaḵ-H
[DP squirrel] PFV-4H·S-STV-$^{2}\sqrt{}$kill -VAR
'Someone/people killed a squirrel.'

Unergative verbs are unexpectedly ungrammatical with *du-* as a subject. Instead when they express a fourth person subject there is the *a-* prefix in its usual object D pronoun position as shown in (90). The *du-* in (90b) is ungrammatical and instead *a-* in (90c) expresses the fourth person human subject. For brevity I symbolize this as *du-* → *a-*.

(90) a. Aadé wutuwaḵooẋ. *unergative motion*
á -dé wu-tu- i- $^{1}\sqrt{}$ḵuẋ -μ
[PP 3N-ALL] PFV-1PL·S-STV-$^{1}\sqrt{}$go·boat-VAR
'We boated there.'

b. * Aadé wuduwaḵooẋ. **unergative motion with du-*
á -dé wu-du- i- $^{1}\sqrt{}$ḵuẋ -μ
[PP 3N-ALL] PFV-4H·S-STV-$^{1}\sqrt{}$go·boat-VAR
intended: 'Someone/people boated there.'

c. Aadé aawaḵooẋ. *unergative motion with a-*
á -dé a- wu-i- $^{1}\sqrt{}$ḵuẋ -μ
[PP 3N-ALL] 4H·S-PFV-STV-$^{1}\sqrt{}$go·boat-VAR
'Someone/people boated there.'

This *du-* → *a-* phenomenon has not been investigated in any depth, but it is apparently found in all dialects. If *a-* can be an expletive for objects when one is required but not present, then perhaps in this case the *a-* is similarly encoding an expletive but in this case a subject. The spellout of *a-* in the usual object position is perhaps due to phonology, though we would need to justify why it could not be spelled out in the usual subject position (compare the second person singular *i-* prefix that appears in both positions).

I suspect that *du-* → *a-* is due to some kind of conflict between the syntax and semantics of middle voice. Story (1966: 93), Krauss (1969: 67), Leer (1991: 96, 175), Thompson (1996: 373–374), and Dauenhauer & Dauenhauer (2002: 94) have all puzzled over the relationship between *du-* and *d-* in Voice as I discussed earlier in chapter 5. In particular, as shown in (91) *du-* requires *d-* if and only if there is an overt {*s-*, *l-*, *sh-*} in *v*, and as shown in (92) *du-* blocks *d-* if and only if there is no overt *v*.

(91) a. Wutusi.ée. *overt s-*
wu-tu- s- i- $^{1}\sqrt{}$.i -μH
PFV-1PL·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
'We cooked it.'

b. *Wudusi.ée. *overt s- and du- without d-*
wu-du- s- i- $^{1}\sqrt{}$.i -μH
PFV-4H·S-CSV-STV-$^{1}\sqrt{}$cook-VAR
'Someone/people cooked it.'

c. Wududzi.ée. *overt s- and du- with d-*
wu-du- d- s- i- $^{1}\sqrt{}$.i
PFV-4H·S-MID-CSV-STV-$^{1}\sqrt{}$cook
'Someone/people cooked it.'

(92) a. Wututdináa. *lexically specified d-*
wu-tu- d- i- $^{2}\sqrt{}$na -μH
PFV-1PL·S-MID-STV-$^{2}\sqrt{}$drink-VAR
'We drank it.'

b. *Wududináa. *du- with lexically specified d-*
wu-du- d- i- $^{2}\sqrt{}$na -μH
PFV-4H·S-MID-STV-$^{2}\sqrt{}$drink-VAR
intended: 'Someone/people drank it.'

c. Wuduwanáa. *du- without lexically specified d-*
wu-du- i- $^{2}\sqrt{}$na -μH
PFV-4H·S- STV-$^{2}\sqrt{}$drink-VAR
'Someone/people drank it.'

When *d-* occurs in motion verbs it is specifically associated with revertive motion semantics, indicating that the source and destination locations of the path are identical. If *du-* normally entails *d-* then this revertive semantics could also be entailed with the fourth person subject in motion verbs. To avoid this undesired entailment, the grammar suppresses *du-*. Then the lack of an argument – not *pro* or PRO but rather no argument at all – might trigger the appearance of *a-* for the same reasons as its appearance in other expletive contexts. For this explanation to be fully supported we need a better understanding of the syntax and semantics of the interaction between *du-* and *d-*.

1.2.2.3. Perambulative revertive motion *a-*

The perambulative revertive motion derivation was described previously in chapter 5 section 5.2.3. This derivation applies to unergative motion verbs and describes motion that returns to some previous source location by a path other than the one taken to depart the original source location (contrast the direct revertive motion that retraces the previous path). The perambulative motion derivation includes the *a-* prefix as well as the *ÿ-* qualifier (cf. sec. 1.3.4.2), and *d-* in Voice. Compare the two forms in (93), the first of which in (93a) illustrates a typical motion verb as a basis case; the second form in (93b) illustrates the perambulative motion derivation.

(93) a. K̲'éex̲'dáx̲ wutuwak̲oox̲. *ordinary motion*
K̲'éex̲'-dáx̲ wu-tu- i- $^{1}\sqrt{}$k̲ux̲ -μ
[PP PLACE -ABL] PFV-1PL·S-STV-$^{1}\sqrt{}$go·boat-VAR
'We went by boat from Kake.'

b. Ayawtudik̲úx̲. *perambulative revertive with a-*
a- ÿ- wu-tu- d- i- $^{1}\sqrt{}$k̲ux̲ -H
XPL-QUAL-PFV-1SG·S-MID-STV-$^{1}\sqrt{}$go·boat-VAR
'We went back by boat.'

All motion verbs that occur with the perambulative revertive are unergatives that normally take only a subject.[12] The form in (93b) shows an overt first person plural *tu-* subject D pronoun. This means that the *a-* cannot be construed as saturating the subject,[13] and alternatively it is not clear what it could restrict about the subject. Thus although I have labeled the *a-* as 'expletive', it seems to have nothing to do with the core arguments of the verb.

Perhaps instead of being associated with a subject or object argument, *a-* is actually an expletive path argument. Path PPs do not occur with the perambulative revertive derivation. The *a-* could then be an expletive for the path argument that is not explicitly expressed. The path of perambulative revertive motion derivations is an unspecified path that is disjoint with the path of some entailed prejacent motion event except that the destination of the revertive path is the source of the prejacent path. The details of the path are entirely implicit and contextual, so there is no need for an overt expression of the path as a PP.

The analysis of *a-* as an expletive path argument raises some problems with other motion derivations. One is that the direct revertive motion derivation with *k̲ux̲=* and *d-* lacks *a-*. This might be explained by *k̲ux̲=* being an overt path argument and not simply a meaningless modifier, so an expletive path *a-* would be unnecessary. One other problem is that there are a number of motion derivations without overt path arguments that do not include an overt *a-* such as the form in (94).

(94) Wutuwa.aat *motion without explicit path or a-*
wu-tu- i- $^{1}\sqrt{}$.at -μ
PFV-1PL·S-STV-$^{1}\sqrt{}$go·PL-VAR
'We went.'

An alternative angle for explaining *a-* in the perambulative revertive is that its presence is required by the *ÿ-* qualifier. As detailed later in section 1.3.4.2, the *ÿ-* qualifier is originally an incorporated noun meaning 'face, vertical surface' from the inalienable noun *ÿá* 'face, vertical surface'. As an inalienable noun, *ÿ-* might require a possessor. If so, then lacking an external DP or a *pro* the possessor of the *ÿ-* could plausibly be the *a-* prefix. If this were the case then we would need to explain instances of *ÿ-* and other qualifiers and incorporates that occur regularly without an overt possessor like *a-*.

1.2.3. Other non-saturating pronouns

As discussed in section 1.2.2, the *a-* is an object D pronoun that does not always saturate its argument. There are three other elements in the object position that also seem to not saturate the object argument, at least in certain contexts. These three elements are: (i) partitive *aa=* 'one, some', (ii) areal *k̲u-* 'extent, area, weather', and (iii) derivational *ash=* ~ *ach=* The partitive *aa=* acts like an object

12. Admittedly, I have never tested the perambulative revertive with unaccusative or transitive motion verbs. But I have never encountered any in conversation or in textual data.
13. Although the subject D pronoun *du-* sometimes seems to be expletive, this is never the case for *tu-* 'we'.

modifier and can occur together with an overt object DP as well as very occasionally with another object D pronoun. The areal *k̲u-* is homophonous with the fourth person human *k̲u-* but it has a distinct interpretation and can occur together with object D pronouns. The *ash=* ~ *ach=* proclitic is homophonous with the third person proximate *ash=* ~ *ach=* but appears in derivations where it seems to have a reflexive interpretation.

I suggest that these three elements are not actually object pronouns. They may have originally been so, but they appear to have shifted into new functions and hence occur in different positions. The partitive *aa=* is probably better classed with the plurality modifiers given its lack of saturation and its appearance to the left of the other object D pronouns. The areal *k̲u-* is probably either an IN or an AN depending on whether it saturates or not. The derivational *ash=* ~ *ach=* is more of a puzzle because its productivity is debatable and it is not known to occur with any other object pronouns.

1.2.3.1. The partitive *aa=*

The partitive *aa=* is traditionally analyzed as an object (Boas 1917: 61; Naish 1966: 71; Leer 1991: 59). Unlike other object D pronouns, it regularly occurs together with an object DP as shown by the data in (95).

(95) a. *partitive aa=*

Wé k'únts' x̲waax̲áa.
wé k'únts' wu-x̲- i- $^{2}\sqrt{\text{x̲a}}$-μH
[DP MDST potato] PFV-1SG·S-STV-$^{2}\sqrt{\text{eat}}$-VAR
'I ate the potato(es).'

b. *object DP with partitive aa=*

Wé k'únts' aa x̲waax̲áa.
wé k'únts' aa= wu-x̲- i- $^{2}\sqrt{\text{x̲a}}$-μH
[DP MDST potato] PART=PFV-1SG·S-STV-$^{2}\sqrt{\text{eat}}$-VAR
'I ate some of the potato(es).', 'I ate one of the potatoes.'

The problem with forms like (95b) is that they could be interpreted as actually representing a complex NP like *k'únts' aa* 'some of potato'. Naish gives an example with the partitive *aa=* separated from the DP which is dislocated to the right periphery.

(96) a uwʌχá wé sʌg^{w}nén *object DP separated from partitive aa=*

Aa uwax̲áa wé sakwnéin
aa= u- i- $^{2}\sqrt{\text{x̲a}}$-μH wé sakwnéin
PART=ZPFV-STV-$^{2}\sqrt{\text{eat}}$-VAR [DP MDST bread]
'He ate some of the bread.' (Naish 1966: 75)

Another unusual property of the partitive is that it can be used for subjects as well as objects (Leer 1991: 122). The data in (97) and (98) illustrate this. The verb in (97) is an unergative motion verb with *aa=* as its lone argument. This example is also semantically interesting because the verb root is restricted to singular referents, yet the partitive implies that there is a plurality of referents from which one is selected.

(97) yʌn a ʊhànǰ *partitive unergative subject*

Yan aa uhaanch.
ÿán= aa= u- $^{1}\sqrt{\text{han}}$ -μ -ch
ashore=PART=ZPFV-$^{1}\sqrt{\text{stand}}$·SG-VAR-REP
'One (of them) always stands ashore.' (orig. 'One of them is stationed there.') (Naish 1966: 75)

The sentence in (98) shows two partitive subjects. The first partitive is the subject of an unergative motion verb like in (97), but here the root is restricted to plural referents. The second partitive is significant because it is in a transitive structure with the fourth person nonhuman object D pronoun *at*= 'something, stuff'.

(98) Ch'u ch'áagudáx̱ yú al'óon atgutóot aa wu.aadín *two partitive subjects*
ch'u ch'áakw-dáx̱ yú al'óon atgutú-t aa= wu-$^{1}\sqrt{}$.at -μ -ín
just ancient -ABL DIST hunting forest -PNCT PART=PFV-$^{1}\sqrt{}$go·PL-VAR-PAST
Lingít, ḵa héen x̱ukaanáx̱ aa at eenín.
Lingít ḵa héen x̱oo- ká -náx̱ aa= at= $^{2}\sqrt{}$.in -μ -ín
Tlingit and water among-HSFC-PERL PART=4N·O=$^{2}\sqrt{}$gather-VAR-PAST
'Even from long ago some would go hunting in the forest, Tlingits, and some would gather things on through the sea.' (Dauenhauer & Dauenhauer 1987: 218.3–7)

These facts suggest that the partitive *aa*= is not actually an object D pronoun. It might instead be better to group it with the plurality modifiers *has*= and *dax̱*= that are discussed in section 2. As such, the partitive would show a preference for scoping over the object like *dax̱*= does, but can scope over the subject when necessary.

1.2.3.2. The areal *ḵu-*

The areal *ḵu-* prefix appears in verbs that describe weather phenomena, other environmental phenomena, spatial extents, and certain mental properties. Its meaning can be summarized as 'extent, space, area', although it has more specific interpretations in combination with various roots (Crippen 2009b). It is homophonous with but semantically distinct from the fourth person human object D pronoun *ḵu-* 'someone, people'; the two are not known to cooccur, however.

The areal *ḵu-* is unquestionably saturating in stative weather verbs because we have negative evidence where it blocks other objects. Evidence from its spatial extent and mental phenomena interpretations also suggests that it is saturating, though here we lack negative evidence. But there are also cases where the areal *ḵu-* unequivocally occurs together with an object D pronoun, implying that it is not saturating. I first review the contexts where it is either verified as saturating or appears to be so, then I review the data where it occurs with another object D pronoun.

The areal prefix is frequently encountered in verbs of weather. This 'weather' *ḵu-* is argument saturating with the root $^{1}\sqrt{}$*k'e* 'good'. The first two forms in (99) demonstrate that the areal *ḵu-* alternates with an object D pronoun. Further, in (99c) and (99d) the combination of the same object D pronoun together with the areal *ḵu-* is ungrammatical. The forms in (100) show that the areal *ḵu-* cannot cooccur with an overt DP.[14]

(99) a. Iyak'éi. *object D pronoun i-*
i- i- $^{1}\sqrt{}$k'e -μH
2SG·O-STV-$^{1}\sqrt{}$good-VAR
'You (sg.) are good.'

14. The form in (100b) is less preferred than (99b) but it is still grammatical.

b. K̲uwak'éi. *object D pronoun ku̲-*
k̲u- i- $^{1}\sqrt{}$k'e -μH
AREAL-STV-$^{1}\sqrt{}$good-VAR
'It is good weather.'

c. *Ik̲uwak'éi. **two object D pronouns: i- > ku̲-*
i- k̲u- i- $^{1}\sqrt{}$k'e -μH
2SG·O-AREAL-STV-$^{1}\sqrt{}$good-VAR
intended: 'You (sg.) are good weather.'
(cf. *K̲uk'éix̲ isitee.* 'You are (of) good weather.')

d. *K̲u.iyak'éi. **two object D pronouns: ku̲- > i-*
k̲u- i- i- $^{1}\sqrt{}$k'e -μH
AREAL-2SG·O-STV-$^{1}\sqrt{}$good-VAR
intended: 'You (sg.) are good weather.'

(100) a. * Yá k̲utí k̲uwak'éi. **DP with object D pronoun ku̲-*
yá k̲utí k̲u- i- $^{1}\sqrt{}$k'e -μH
[DP PROX weather] AREAL-STV-$^{1}\sqrt{}$good-VAR
intended: 'This weather is good weather.'

b. Yá k̲utí yak'éi. *DP only*
yá k̲utí i- $^{1}\sqrt{}$k'e -μH
[DP PROX weather] STV-$^{1}\sqrt{}$good-VAR
'This weather is good.'

The areal *k̲u-* also occurs in many verbs where it denotes an area or spatial extent, as its grammatical label implies. The pair of examples in (101) illustrate the semantic contrast between an overt object DP and the areal *k̲u-* apparently functioning as an object. In (101a) the overt object DP is the nominalization *i sakwnéin sa.eeyí* 'your cooking of bread'. The sentence in (101b) has *k̲u-* as its object, but this cannot mean 'someone, people' and instead must mean 'area, place'. Thus the areal appears to be an object, though as noted above we lack negative evidence.

(101) a. I sakwnéin sa.eeyí naaléiyi *overt object DP*
i sakwnéin s- $^{1}\sqrt{}$.i -μ -í n- i- $^{1}\sqrt{}$le^{h}-μH-i
[DP 2SG·PSS bread CSV-$^{1}\sqrt{}$cook-VAR-PSS] [PP NCNJ-STV-$^{1}\sqrt{}$far -VAR-REL
yéidáx̲ x̲wadzinix'.
yé -dáx̲ wu-x̲- d- s- i- $^{2}\sqrt{}$nix' -H
place-ABL] PFV-1SG·S-MID-XTN-STV-$^{2}\sqrt{}$smell-VAR
'I smelled your bread cooking from a far away place.' (Story & Naish 1973: 198)

b. Sháchk kát k̲oowdzinéex' jánwu. *obj. D pronoun ku̲-*
sháchk ká -t k̲u- wu-d- s- i- $^{2}\sqrt{}$nix' -μH jánwu
[PP muskeg HSFC-PNCT] AREAL-PFV-MID-XTN-STV-$^{1}\sqrt{}$smell-VAR [DP mtn·goat]
'It was sniffing around on the muskeg, the mountain goat.' (Story & Naish 1973: 200)

Time is often metaphorically described using terminology for space as discussed previously in chapter 6 section 3. The areal *ku-* appears in some verbs for temporal phenomena where it is an argument denoting a contextually determined moment or timespan. In (102) the areal *ku-* seems to denote the current season, and in (103) the areal seems to denote the current turn. Both of these examples are based on the root $\sqrt[1]{ha}$ 'move invisibly, imperceptibly; appear' which is monovalent.

(102) Táakwde yaa kunahéin.
táakw-dé ÿaa= ku- n- $\sqrt[1]{ha}$ -eH-n
[PP winter -ALL] along=AREAL-NCNJ-$\sqrt[1]{mv}$·invis-VAR-NSFX
'It is approaching winter.' (Story & Naish 1973: 52.577)

(103) De wa.é áwé i eet koowaháa, X'adánjaa.
de wa.é á -wé i ee -t ku- wu-i- $\sqrt[1]{ha}$ -μH X'adánjaa
now 2SG FOC-MDST [PP 2SG BASE-PNCT] AREAL-PFV-STV-$\sqrt[1]{mv}$·invis-VAR [DP NAME]
'Now it's you that the time (turn) has come to, X'adánjaa.' (Leer 1973a: 01/13)

Beyond weather and spatial extents, *ku-* appears in a couple of verbs that describe mental phenomena. In these contexts it is usually but not always accompanied by a preverb *ÿaa=* 'mental' that is an incorporated noun in an unusual position from an independent noun that is now lost.[15] The sentence in (104) illustrates the root $\sqrt[1]{gat}$ 'daze' with *ÿaa=* and *ku-*, and the sentence in (105) illustrates a similar combination with the root $\sqrt[1]{ge}$ 'wise'.

(104) Du daa yaa koowagát.
du daa ÿaa= ku- wu-i- $\sqrt[1]{gat}$ -H
[DP 3H·PSS surroundings] mind=AREAL-PFV-STV-$\sqrt[1]{daze}$-VAR
'S/he has become dizzy, confused, disoriented.' (Leer 1976a: 826)

(105) Yaa kudzigéi.
ÿaa= ku- d- s- i- $\sqrt[1]{ge}$ -μH
mind=AREAL-MID-XTN-STV-$\sqrt[1]{wise}$-VAR
'S/he is wise, smart, intelligent.' (Leer 1976a: 654)

Both sentences in (104) and (105) are problematic for argument structure. Both roots appear to be monovalent from the documentation: the verb in (104) has a lone DP argument *du daa* 'his/her surroundings' and the verb in (105) can occur with a subject D pronoun like *x-* 'I' or *i-* 'you'. But in both cases it is plausible that the areal *ku-* could saturate the object so that these roots are actually bivalent. Leer lists these roots as unique even though they are homophonous with other roots – $\sqrt[1]{ge}$ 'big' and $\sqrt[1]{gat}$ 'fall apart, scatter' – that are plausibly the same roots. If they are the same roots then they would be monovalent and thus the *ku-* would not be saturating.

To review, saturation of the object depends on two diagnostics: (i) failure to occur with an overt object DP and (ii) failure to occur with another object D pronoun. The preceding data is all either

15. Leer (1991: 135 fn. 50) connects *ÿaa=* to Proto-Dene **yən-* ~ **yi:n-* 'mind' and Eyak *ʔi:lih* which are also anomalous preverbal nouns associated with mental states. Leer argues that *ÿaa=* 'mental' occurs in its unusual position before the object D pronouns because it has been reanalyzed as a variant of the preverb *ÿaa=* 'along.

confirmed as having a saturating *ku-* or is potentially saturating given limited evidence. But there are cases which apparently violate both of the two diagnostics above. The forms in (106) show apparent violation of the first diagnostic with the presence of an overt object DP. The root $^{1}\sqrt{gat}$ 'daze' seen earlier now has a causative *l-* that should account for the additional DP. But the *ku-* appears also, implying that it does not saturate the object.

(106) a. Ax̲ oox̲ yaa kux̲wligát.
ax̲ oox̲ ÿaa= ku̲- wu-x̲- l- i- $^{1}\sqrt{gat}$ -H
[DP 1SG·PSS tooth] mind=AREAL-PFV-1SG·S-CSV-STV-$^{1}\sqrt{daze}$-VAR
'I forgot my dentures.' (Eggleston 2017)

b. Yaa kux̲wligát ax̲ dáanaa daakeidí.
ÿaa= ku̲- wu-x̲- l- i- $^{1}\sqrt{gat}$ -H ax̲ dáanaa daa- ká- át -i
mind=AREAL-PFV-1SG·S-CSV-STV-$^{1}\sqrt{daze}$-VAR [DP 1SG·PSS money around-HSFC-thing-PSS]
'I forgot it, my wallet.' (Eggleston 2017)

The forms in (107)–(112) show apparent violation of the second diagnostic with the presence of an overt object D pronoun. Examples (107)–(109) have the first person singular object *x̲at=* 'me', example (110) has the fourth person nonhuman *at=* 'something, stuff', and example (111) has the reflexive *sh=* 'self'. The form in (112) has the argument-marking prefix *a-* which is also not saturating, but its presence indicates that there is a covert object alongside of the areal *ku-* so the latter is also not saturating.

(107) Du daa yaa x̲at ku̲shusigéi.
du daa ÿaa= x̲at= ku̲- shu-s- i- $^{1}\sqrt{ge}$ -μH
[DP 3H·PSS surroundings] mind=1SG·O=AREAL-end- CSV-STV-$^{1}\sqrt{wise}$-VAR
'He understands me.' (Story & Naish 1973: 237)

(108) Yaa x̲at ko̲owligát.
ÿaa= x̲at= ku̲- wu-l- i- $^{1}\sqrt{gat}$ -H
mind=1SG·O=AREAL-PFV-CSV-STV-$^{1}\sqrt{fall}$·apart-VAR
'He forgot me.' (Eggleston 2017)

(109) Áankíchx' yéi x̲at ku̲wdzitee.
Áankích-x' yéi= x̲at= ku̲- wu-d- s- i- $^{1}\sqrt{ti^{h}}$-μ
[PP PLACE -LOC] thus=1SG·O=AREAL-PFV-PASV-CSV-STV-$^{1}\sqrt{be}$ -VAR
'I was born in Anchorage.' (*Sháax'sáani Kéek'* Shirley Kendall)

(110) Ch'a yeisú yéi at ku̲noogú áwé
ch'a yeisú yéi= at= ku̲- $^{1}\sqrt{nikw}$-μ -í á -wé
[CP just still thus=4N·O=AREAL-$^{1}\sqrt{feel}$ -VAR-SUB] FOC-MDST
x̲'awoolt loowagúk̲ wé keitl.
x̲'é- wool-t lu- wu-i- $^{1}\sqrt{guk}$ -H wé keitl
[PP mouth-hole -PNCT] nose-PFV-STV-$^{1}\sqrt{push}$-VAR [DP MDST dog]
'It was while she was still doing stuff that they ran up to the entrance, those dogs.'
(Dauenhauer & Dauenhauer 1987: 228.202)

(111) Ách áwé Yéil akaawa.aakw
ách á -wé Yéil a- k- wu-i- $^{2}\sqrt{}$.akw-μ
XPLN FOC-MDST [DP Raven] ARG-QUAL-PFV-STV-$^{2}\sqrt{}$try -VAR
s'eex tóox sh kuwul.oowú.
s'eex tú -x sh= ku- wu-d- l- $^{1}\sqrt{}$.u -μ -í
[CP [PP lint inside-PERT] RFLX·O=AREAL-PFV-MID-CSV-$^{1}\sqrt{}$wear-VAR-SUB]
'That's why Raven tried to hide himself inside some lint.' (Leer 1969: 4.4.23)

(112) Yaa yaa akunalgát.
ÿaa= ÿaa= a- ku- n- l- $^{1}\sqrt{}$gat -H
along=mind=ARG-AREAL-NCNJ-CSV-$^{1}\sqrt{}$fall·apart-VAR
'S/he is starting to forget it.' (Eggleston 2017)

I suggest that in these kinds of structures the areal *ku-* acts as an argument restrictor – or possibly sometimes as an event restrictor – in common with the behaviour of INs as described in section 1.3. Thus there are three different contexts for *ku-* in D^0: as a fourth person human object D pronoun, as an areal D pronoun, and as a restricting IN. When it is saturating the *ku-* is merged as D, but when it is restricting the *ku-* is merged as N. This means that *ku-* may be syntactically ambiguous between D and N in cases where there is no overt object D pronoun or DP. It also predicts the possibility of at least the combination of fourth person human *ku-* and areal *ku-*, though this is unattested and I have not tried to elicit it.

There are signs of *ku-* having originally been an independent noun. The etymon is something like *kú* meaning roughly 'space, area, place'. It is frozen in a few nouns like *junkóox'* 'in dreams' with *joon* 'dream' and locative *-x'*, *guxkú* 'slavery' with *goox* 'slave', *dagankú* 'afterlife' with *dáak* 'inland' and *aan* 'land', *galgaakú* 'wilderness' with unclear etymology,[16] and in a few placenames such as *T'aakú* 'Taku River', *Taalkú* 'Thomas Bay' and *Sit'kú* 'Sitkoh Bay'. It also occurs in several fixed PPs such as *kúnáx* 'very' with perlative *-náx*, *kúdáx* ~ *kútx* with ablative *-dáx*, *kút* 'astray, lost' with punctual *-t*, and *kúde* 'hidden' with allative *-dé*. The old areal noun *kú* is probably also frozen in the revertive preverb *kúx=* 'reverse, going back' with the pertingent *-x*.

All this suggests that the areal prefix might have originally been an independent noun incorporated into the verb like the INs and ANs. Given that it does not seem to be possessed in its independent noun contexts, the areal might first have been incorporated as an AN which led to its argument saturating function. It then could have been reinterpreted as an IN to give its restricting function. Since the areal prefix is one of the hallmarks of the Na-Dene family (Thompson 1993; Tuttle & Hargus 2004; Crippen 2009b), further comparison with the Dene languages and Eyak may help clarify Tlingit's areal prefix. Notably, in Koyukon which "has one of the most active gender systems in the Athabaskan language family", the *hʉ-* areal prefix regularly alternates with other qualifiers in most verbs depending on noun class of the object (Jetté & Jones 2000: xciii).

1.2.3.3. The derivational *ash=* ~ *ach=*

As mentioned earlier in section 1.2.1.6, the third proximate *ash=* ~ *ach=* 'him, her' is an object D pronoun used to refer to a foreground third person in the discourse which would usually be expected

16. The root $^{1}\sqrt{}$*ga* 'bashful' is presumably unrelated to *galgaakú* 'wilderness' given their meanings.

to be a subject based on its discourse prominence, but which actually appears as the object. Leer (1991, 1993) describes this class of pronouns as 'salient'; it has something of the flavour of proximativity, hence the label, but its actual relationship with other proximate/obviate systems remains to be explored.

The third person human proximate *ash=* pronoun seems to be the argument because it replaces expected *a-*, but we still lack negative evidence showing that it cannot occur with an overt DP in the core clause. Some typical examples of this *ash=* are shown in (113), representing a variety of different dialects and time periods.

(113) a. Adʌ'x yū'cāwʌt ye acia'osîqa, *3rd proximate object ash=*

Aadáx̲ yú shaawát yéi ash ÿawsik̲aa
á -dáx̲ yú sháa -ÿát yéi= ash= ÿ- wu-s- i- $^{1}\sqrt{}$k̲a-μ
[PP 3N-ABL] [DP DIST woman-child] thus=3PRX·O=QUAL-PFV-CSV-STV-$^{1}\sqrt{}$say-VAR
'Then that woman said to him thus' (Swanton 1909: 314.75)

b. Daa sáwé ash yawu.aayín?
daa s-á -wé ash= ÿ- wu-$^{2}\sqrt{}$.a -μ -ín
[DP what] Q-FOC-MDST 3PRX·O=QUAL-PFV-$^{2}\sqrt{}$delay-VAR-PAST
'What was it that had delayed him?' (Story & Naish 1973: 65.764)

c. Aag̲áa áwé áa ash shukaawajáa.
á -g̲áa á -wé á -μ ash= shu-k- wu-i- $^{2}\sqrt{}$ja^{h} -μH
[PP 3N-ADES] FOC-MDST [PP 3N-LOC] 3PRX·O=end- QUAL-PFV-STV-$^{2}\sqrt{}$advise-VAR
'It was then that he instructed her there.' (Dauenhauer & Dauenhauer 1987: 184.349)

d. Tsu héènde ash kaawanáa.
tsu héèn-dé ash= k- wu-i- $^{2}\sqrt{}$na -μH
again [PP water-ALL] 3PRX·O-QUAL-PFV-STV-$^{2}\sqrt{}$order-VAR
'He ordered him to the water again.' (Dauenhauer & Dauenhauer 1987: 142.75)

The *ash=* ~ *ach=* also has a distinct non-referential function in a pattern called the pretend activity *ash=k-u-d-l-…-aa* derivation which was mentioned earlier in chapter 6 section 4.3.3 (also cf. Story 1966: 55 and Leer 1991: 127). This derivation is comprised of the *ash=* pronoun, the *k-* qualifier (sec. 1.3.4.1), the irrealis *u-* (ch. 6 sec. 4), the *d-* prefix in Voice (ch. 5), the *l-* prefix in *v* (ch. 4), and a suffix *-aa* after the verb stem that is possibly related to the instrumental nominalization suffix *-aa*. A list of verbs attested in the lexical documentation with this derivation was given earlier in table 6.34 (ch. 6 sec. 4.3.3, p. 654). Three pairs of base verbs and derived forms with *ash=* are given in (114)–(115); these are based on bivalent roots.

(114) a. Kooch'éit'aa aawak̲'ísh. *base verb*
kooch'éit'aa a- wu-i- $^{2}\sqrt{}$k̲'ish-H
[DP ball] ARG-PFV-STV-$^{2}\sqrt{}$swat -VAR
'He batted the ball.' (Story & Naish 1973: 24.141)

b. Has ash koolk̲'íshaa. *derived verb*
has=ash= k- u- d- l^{s}- $^{2}\sqrt{}$k̲'ish-H -aa
PLH= DERIV=QUAL-IRR-MID-XTN-$^{2}\sqrt{}$swat -VAR-DERIV
'They are playing with bat and ball.' (Story & Naish 1973: 152.2070)

(115) a. Koot'áax'aa xwaat'áx'. *base verb*
koot'áax'aa wu-x- i- $^{2}\sqrt{}$t'ax'-H
[DP marble] PFV-1SG·S-STV-$^{2}\sqrt{}$flick -VAR
'I flicked the marble.' (Story & Naish 1973: 93.1180)

b. Has ash koolt'áax'aa. *derived verb*
has=ash= k- u- d- l- $^{2}\sqrt{}$t'ax'-μH-aa
PLH= DERIV=QUAL-IRR-MID-XTN-$^{2}\sqrt{}$swat -VAR-DERIV
'They are playing marbles.' (Story & Naish 1973: 152.2072)

(116) a. Geigách' yoo alikíts'k. *base verb*
geigách' yoo=a- l^{s}- i- $^{2}\sqrt{}$kits'-H -k
[DP hammock] ALT= ARG-XTN-STV-$^{2}\sqrt{}$rock -VAR
'He is rocking the hammock back and forth.' (Story & Naish 1973: 174.2398)

b. Has ash koolkíts'aa. *derived verb*
has=ash= k- u- d- l^{s}- $^{2}\sqrt{}$kits'-H -aa
PLH= DERIV=QUAL-IRR-MID-XTN-$^{2}\sqrt{}$rock -VAR-DERIV
'They are playing see-saw/teeter-totter.' (Story & Naish 1973: 152.2074)

Other instances of the derivation are with nullivalent or monovalent roots. The data (117) illustrate a nullivalent root $^{0}\sqrt{}$*gix'* 'squeak, make noise by rubbing' which gives rise to an intransitive with *l-* in *v*. The data in (118) shows a monovalent root $^{1}\sqrt{}$*kux* 'go by boat, other vehicle' which gives rise to an unergative intransitive motion verb and a causative with *s-* in *v*. The data in (119) shows a monovalent root $^{1}\sqrt{}$*x'il'* 'slide, slip' which gives rise to an unaccusative intransitive; the *sh-* in *v* is pejorative and does not add an argument (ch. 4 sec. 4.3).

(117) a. Yaakw yan yoo ligíx'k. *base verb*
yaakw ÿán= yoo=l- i- $^{0}\sqrt{}$gix' -H -k
[DP boat] shore=ALT= INTR-STV-$^{0}\sqrt{}$squeak-VAR
'The boat is rubbing and squeaking on the shore.' (Story & Naish 1973: 177.2440)

b. Has ash koolkíts'aa. *derived verb*
has=ash= k- u- d- l- $^{2}\sqrt{}$gix' -H -aa
PLH= DERIV=QUAL-IRR-MID-XTN-$^{0}\sqrt{}$squeak-VAR-DERIV
'They are playing stringed instruments.' (Story & Naish 1973: 152.2074)

(118) a. Xwaakoox. *base verb*
wu-x- i- $^{1}\sqrt{}$kux -μ
PFV-1SG·S-STV-$^{1}\sqrt{}$go·boat-VAR
'I boated / drove.'

b. Captainch yaa naskúx. *causative verb*
captain-ch ÿaa= n- s- $^{1}\sqrt{}$kux -H
[DP captain -ERG] along=NCNJ-CSV-$^{1}\sqrt{}$go·boat-VAR
'The captain is piloting it.' (Story & Naish 1973: 33.265)

c. Has ash kooskúxaa. *derived verb*
has=ash= k- u- d- s- $^{1}\sqrt{}$kux -H -aa
PLH= DERIV=QUAL-IRR-MID-CSV-$^{1}\sqrt{}$go·boat-VAR-DERIV
'They are playing at boating.' (e.g. toy boats) (Story & Naish 1973: 152.2071)

(119) a. Nadáakw kaawax'íl'. *base verb*
nadáakw k- wu-i- $^{1}\sqrt{}$x'il' -H
[DP table] HSFC-PFV-STV-$^{1}\sqrt{}$slide-VAR
'The table surface has become slippery.' (Story & Naish 1973: 196.2737)

b. T'éex' káa yei guxshax'éel'. *pejorative verb*
t'éex' ká -μ yei= w- g- g- sh-$^{1}\sqrt{}$x'il'-μH
[PP ice HSFC-LOC] down=IRR-GCNJ-MOD-PEJ-$^{1}\sqrt{}$slip -VAR
'He will slip on the ice.' (Story & Naish 1973: 196.2737)

c. has ach kooshx'íl'aa neech *derived verb*
has=ach= k- u- d- sh-$^{1}\sqrt{}$x'il' -H -aa =neech
PLH= DERIV=QUAL-IRR-MID-PEJ-$^{1}\sqrt{}$slide-VAR-DERIV=HAB·AUX
'they are always sledding' (Nyman & Leer 1993: 154.1161)

Since the attested roots are nullivalent, monovalent, and bivalent it is difficult to say from the attested data whether *ash=* in this derivation is saturating an otherwise available argument role or not. Complicating this is the presence of the potentially argument-suppressing *d-* in Voice and the possibly argument-adding *l-* in *v*. If both of these other heads affect the argument structure then they could simply cancel each other out, but if either one does not affect the argument structure then there is either a suppressed argument or an added argument that must be accounted for. There is no evidence for any instances of this *ash=k-u-l-…-aa* derivation ever occurring with an object, suggesting that the *ash=* does saturate the object, but we need negative evidence to support this conclusion.

The *ash=* may have originally derived from the combination of a third person *a-* and the reflexive *sh=*, in which case it might be interpreted as 'he himself' or 'she herself'. If this is the case then it could explain the presence of the *d-* in Voice in the morphology *ash=k-u-d-l-…-aa* of the pretend activity derivation. Since the reflexive object D pronoun is otherwise always saturating, if this derivational *ash=* is an allomorph of the reflexive then we should expect it to also be saturating.

The allomorph *ach=* appears to be limited to Inland Tlingit (Leer 1991: 123 fn. 41, 1973a: 03/150), Southern Tlingit (e.g. Leer 1973a: 03/150), and Tongass Tlingit (e.g. Leer 1973a: f06/109). This allomorph is problematic for the analysis of *ash=* as a reflexive because *ach=* looks more like *á-ch* with the third person nonhuman pronoun and the ergative suffix. But there is also the reflexive allomorph *chush* and the reciprocal variation between *woosh* and *wooch* that suggest a more general alternation between *sh* and *ch* that is perhaps frozen in modern Tlingit varieties.

The complexity of valency and argument operations among the attested examples of the *ash=k-u-d-l-…-aa* pretend activity derivation make it difficult to say whether there is an argument being saturated by *ash=* or if it is instead some kind of modifier. Leer (1991: 127) describes the pretend activity derivation as "nonproductive", and if this is true then it may not be possible to elicit any new structures that could clarify the role of *ash=* in this derivation. I suspect though that its morphosyntax is regular enough to be productivized by native speakers given some explicit consideration of existing patterns.

1.2.4. Proclitics vs. prefixes among the object D pronouns

All elements that surface within D^0 are affixes, but there is considerable variation between prefixes and proclitics. There is a relatively clear division among the Ns (sec. 1.3.1): the ANs are all proclitics and the INs are almost all prefixes. This accords with their syntactic behaviours: ANs are saturating (sec. 1.3.2) and INs are generally restricting (sec. 1.3.3). Given this pattern, we might expect the object D pronouns to be proclitics because they are mostly saturating like the ANs. This is not the case; some object D pronouns are indeed proclitics like first person singular *x̲at=* 'me' and third person proximate *ash=* 'him/her', but there are others which act like prefixes such as second person singular *i-* 'you' and fourth person human *k̲u-* 'one, people'. And some waffle between prefix and proclitic with allomorphs like second person plural *ÿi-* 'you guys' or *ÿee=* 'you guys'. See tables 7.2 and 7.3 for lists of the object D pronouns.

So why are some D pronouns prefixes and others proclitics? There are no obvious answers from the semantics or syntax: meaning (person, number) does not determine prefix versus proclitic, nor does saturation versus restriction. There might be an explanation from morphophonology, however. Since the object D pronouns always appear to the left of all other D^0 elements, their prefix versus proclitic variation reflects the left edge of the Disjunct phonological domain that spells out D^0. This edge is the word boundary since all elements further to the left in the Preverb domain are all proclitics or independent phonological phrases. The differences between prefix and proclitic should then be due solely to the interaction of lexical form and phonological constraints on length (moraicity), stress, and foot structure at the word edge. This then points to another interesting problem: the ANs and D pronouns are in complementary distribution but the ANs are all proclitics and so do not show similar variation between proclitic and prefix.

A deeper problem is that all the existing descriptions of Tlingit do not offer any firm diagnostics for proclitichood. Boas (1917) vacillates between writing the object D pronouns as part of the verb word – i.e. prefixes – or as a separate word – i.e. proclitics – but gives no reasons for either. Story (1966) assumes that all of the object D pronouns are actually separate words and does not comment on their different phonologies. Thus she gives *ʌ wɫʔéɫ'* 'he salted it' with *a-* as a separate word where the orthography has it as part of the verb word in *awli.él'*. De Wolf (1977) follows Story without comment. Leer (1991) analyzed the object D pronouns as variously proclitics and prefixes, but gave no evidence or argumentation for his representations. Cable (2006) and Eggleston (2013) appear to have silently followed Leer. Thus nobody has ever offered any concrete evidence for the distinction between prefix and proclitic in Tlingit.

I have developed one proclitichood diagnostic for the object D pronouns. This is not the last word on the topic, but it forms a basis for further phonological work. All syllables in Tlingit must have an onset consonant, and if one is lacking then a prothetic glottal stop [ʔ] is inserted. Some combinations of verb prefixes would logically result in a phonological string beginning with a vowel, i.e. an onsetless syllable. This common with the irrealis prefix *u-* for example (see ch. 6 sec. 4). In such cases, the verb word is spelled out with an initial glottal stop as shown by the data in (120).

(120) a. Tléil ushk'é. *negative with initial u-*
[tɬʰéːɬ ʔùʃ.ˈk'é]
tléil u- sh-$\sqrt{}^{1}$k'e -H
NEG IRR-PEJ-$\sqrt{}^{1}$good-VAR
'S/he/it is not good.'

b. Ungalk̲oowún. *potential with initial u-*
[ˌʔùn.qaɬ.ˈqʰùː.wún]
u- n- g̲- d- l- $^{1}\sqrt{}$k̲u -μ -ín
IRR-NCNJ-MOD-MID-XTN-$^{1}\sqrt{}$vomit-VAR-PAST
'S/he could have vomited.' (Eggleston 2017)

When this word-initial irrealis *u-* is preceded by an object D pronoun that is a prefix, the prefix vowel coalesces with the irrealis to produce a long (bimoraic) vowel that may be labialized. This is shown by the data in (121). If the object prefix has its own onset like *k̲u-* in (121a) then this is spelled out. But if the object prefix is just a vowel as with the second singular *i-* and the argument-marking *a-* then the prothetic glottal stop appears in front of the object as in (121b) and (121c). The lack of a glottal stop between the object D pronoun and the rest of the verb word indicates that the object D pronoun is a prefix.

(121) *object prefixes*

a. Tléil k̲oox̲á. *fourth person human k̲u-*
[ˈtɬʰéːɬ ˌqʰʷùː.ˈχá]
tléil k̲u- u- $^{2}\sqrt{}$x̲a-H
NEG 4H·O-IRR-$^{2}\sqrt{}$eat-VAR
'S/he/it is not eating someone/people.'

b. Tléil eex̲á. *second person singular i-*
[ˈtɬʰéːɬ ˌʔìː.ˈχá]
tléil i- u- $^{2}\sqrt{}$x̲a-H
NEG 2SG·O-IRR-$^{2}\sqrt{}$eat-VAR
'S/he/it is not eating you sg.'

c. Tléil oox̲á. *third person (arg) a-*
[ˈtɬʰéːɬ ˌʔùː.ˈχá]
tléil a- u- $^{2}\sqrt{}$x̲a-H
NEG ARG-IRR-$^{2}\sqrt{}$eat-VAR
'S/he/it is not eating him/her/it.'

In the same morphosyntactic context as (121), the proclitic object D pronouns behave differently. As shown in (122), there is a glottal stop between these proclitics and the rest of the verb word.

(122) *object proclitics*

a. Tléil x̲at ux̲á. *first person singular x̲at=*
[ˈtɬʰéːɬ ˌχàt‿ʔù.ˈχá]
tléil x̲at= u- $^{2}\sqrt{}$x̲a-H
NEG 1SG·O=IRR-$^{2}\sqrt{}$eat-VAR
'S/he/it is not eating me.'

b. Tléil haa ux̲á. *first person plural haa=*
[ˈtɬʰéːɬ ˌhàː‿ʔù.ˈχá]
tléil haa= u- $^{2}\sqrt{}$x̲a-H
NEG 1PL·O=IRR-$^{2}\sqrt{}$eat-VAR
'S/he/it is not eating us.'

c. Tléil yee uxá. *second person plural ÿee=*
[tɬʰéːɬ ˌjìː‿ ʔù.ˈχá]
tléil ÿee= u- $\sqrt[2]{}$xa-H
NEG 2PL·O=IRR-$\sqrt[2]{}$eat-VAR
'S/he/it is not eating you guys.'

d. Tléil kaa uxá. *fourth person human kaa=*
[ˈtɬʰéːɬ ˌqʰàː‿ʔù.ˈχá]
tléil kaa= u- $\sqrt[2]{}$xa-H
NEG 4H·O= IRR-$\sqrt[2]{}$eat-VAR
'S/he/it is not eating you guys.'

e. Tléil at uxá. *fourth person nonhuman at=*
[ˈtɬʰéːɬ ˌʔàt‿ʔù.ˈχá]
tléil at= u- $\sqrt[2]{}$xa-H
NEG 4N·O=IRR-$\sqrt[2]{}$eat-VAR
'S/he/it is not eating something/things.'

f. Tléil sh udaxá. *reflexive sh=*
[ˈtɬʰéːɬ ʃ‿ ˌʔù.tà.ˈχá]
tléil sh= u- d- $\sqrt[2]{}$xa-H
NEG RFLX·O=IRR-MID-$\sqrt[2]{}$eat-VAR
'S/he/it is not eating him/her/itself.'

This difference in the presence or absence of a glottal stop can be further used to diagnose allomorphy between prefix and proclitic forms. Compare for example the fourth person human prefix in (121a) with the fourth person human proclitic in (122d). This diagnostic also highlights an interesting pattern among the objects: the proclitics in (122) are almost all bimoraic. Thus *xat=* [χàt] and *at=* [ʔàt] have a coda consonant and *haa=* [hàː], *ÿee=* [jìː], and *kaa=* [qʰàː] have a long vowel. The only exception is the reflexive *sh=* [ʃ] which is a lone consonant. Other proclitic objects like reflexive *chush=* [tʃʰùʃ] and reciprocal *woosh=* [wùːʃ] are at least bimoraic. A corrollary pattern is that no object prefix has a coda consonant or is a lone consonant.

The glottal stop diagnostic presented above only applies in a few situations and so cannot be used to show that what are proclitics in this context are always proclitics in every context. For example, the first person plural *haa=* may act like a prefix when it is followed by the perfective by triggering syncopation (deletion) of the vowel of the perfective prefix. Compare the argument-marking prefix *a-* in (123) and the first person singular proclitic *xat=* in (124) with *haa=* in (125).[17]

(123) a. Xat wusiteen. *first person singular proclitic*
[χàt wù.sì.ˈtʰìːn]
xat= wu-s- i- $\sqrt[2]{}$tin-μ
1SG·O=PFV-XTN-STV-$\sqrt[2]{}$see -VAR
'S/he/it saw me.'

17. Normally *haa=* is orthographically represented as a separate word even when perfective syncope occurs, so the written form in (125b) is unusual although its pronunciation is normal.

b. *Xatwsiteen. *first person singular prefix*
[χàtw.sì.ˈtʰìːn]
xat- wu-s- i- $\sqrt[2]{\text{tin-}\mu}$
1SG·O-PFV-XTN-STV-$\sqrt[2]{\text{see}}$-VAR
intended: 'S/he/it saw me.'

(124) a. *A wusiteen. *argument marking proclitic*
[ʔà wù.sì.ˈtʰìːn]
a= wu-s- i- $\sqrt[2]{\text{tin-}\mu}$
ARG=PFV-XTN-STV-$\sqrt[2]{\text{see}}$-VAR
intended: 'S/he/it saw me.'

b. Awsiteen. *argument marking prefix*
[ʔàw.sì.ˈtʰìːn]
a- wu-s- i- $\sqrt[2]{\text{tin-}\mu}$
ARG-PFV-XTN-STV-$\sqrt[2]{\text{see}}$-VAR
'S/he/it saw him/her/it.'

(125) a. Haa wusiteen. *first person plural prefix*
[hàː wù.sì.ˈtʰìːn]
haa= wu-s- i- $\sqrt[2]{\text{tin-}\mu}$
1PL·O=PFV-XTN-STV-$\sqrt[2]{\text{see}}$-VAR
'S/he/it saw us.'

b. Haawsiteen. *first person plural prefix*
[hàːw.sì.ˈtʰìːn]
haa- wu-s- i- $\sqrt[2]{\text{tin-}\mu}$
1PL·O-PFV-XTN-STV-$\sqrt[2]{\text{see}}$-VAR
'S/he/it saw us.'

This syncope of the perfective vowel may not actually be due to prefixation per se, but to some phenomena like metrical foot structure or syllable structure. To clarify this we need more work on the phonological patterns in verb words. As such, we cannot yet answer the questions posed earlier in this section because the emprical details are not fully settled. Nonetheless, the fact that there is a proclitic/prefix split in D⁰ seems to reflect the syntactic structure even if the mapping between syntax and phonology is not perfect. This is a key consequence of the model I have developed through this dissertation: the phonology of the verb word is not arbitrary and instead reflects the structure of its input that is determined by syntax.

1.3. The Ns in D⁰ restrict or saturate

The structure of D⁰ presented in section 1.1 distinguishes between an object D pronoun and an unspecified number of Ns as represented by the recursive N* node in (126). These Ns are nominal elements that denote entities, parts of entities, properties of entities, spatial relations, instruments, and activities. Most Ns have a relatively straightforward semantic interpretation, although the interpretation may be mediated by metaphor. Some Ns – though not so many as is often assumed

– are probably idiomatic: lexically specified along with the entry for √ in particular contexts. This idiomaticity should be relatively straightforward to handle in the syntax because the D⁰ complex is initially merged in VP, so the idiom structure can be modelled by a VP stored in the lexicon just like object idioms in other languages.

(126) *D⁰ containing multiple Ns*

The Ns in D⁰ are traditionally divided into two classes of 'alienable' (AN) and 'inalienable' (IN) based on the possession behaviour of their counterparts in ordinary NPs (Leer 1991: 112–114, 128–129). The ANs are related to alienable nouns, do not stack, are all argument saturating, and cannot cooccur with object D pronouns. The INs are related to inalienable nouns, often stack, are generally argument restricting, and so can cooccur with object D pronouns. In some corner cases the INs may instead be argument saturating. ANs are generally interpreted literally, but INs frequently have metaphorical interpretations where they indicate a mapping from a concrete concept to an abstract one such as 'mouth' → 'speech'. The data in (127) and (128) illustrate two ANs and the data in (129) and (130) illustrate an IN and a stack of INs, respectively.

(127) a. *alienable noun*

Át ÿaanch wudzigáax̱.
á -t ÿaan -ch wu-d- s- i- ¹√gax̱-μH
[PP 3N-PNCT] [DP hunger-ERG] PFV-MID-CSV-STV-¹√cry -VAR
'There hunger made him cry.' (Swanton 1909: 311.7)

b. *AN*

Yee eet gé yaan uwaháa?
ÿee ee -t gé ÿaan= u- i- ¹√ha -μH
[PP 2PL BASE-PNCT] YN hunger=PFV-STV-¹√mv·invis-VAR
'Are you hungry?' (lit. 'Has hunger appeared to you?') (Dauenhauer & Dauenhauer 2002: 31)

(128) a. *alienable noun*

Tle wé yaakw tlél duteen.
tle wé yaakw tlél u- du- ²√tin-μ
then [DP MDST boat] NEG IRR-4H·S-²√see -VAR
'Then people couldn't see that boat.' (Nyman & Leer 1993: 6.93)

b. *AN*

Toolch'án yáx̱ áwé a daat yakw ukoox̱ch,
toolch'án yáx̱ á -wé a daa -t yakw=u- ¹√kux̱ -μ -ch
[PP spinner SIM] FOC-MDST [PP 3N$_i$ around-PNCT] boat= ZPFV-¹√go·boat-VAR-REP
wé x̱áat.
wé x̱áat
[DP MDST fish$_i$]
'Like a spinner the boat goes around them, those fish.' (Story 1995: 323.061)

(129) a. Ch'éix̱'w du daa yéi nateech *inalienable noun*
ch'éix̱'w du daa yéi= n- $^{1}\sqrt{\text{ti}^{h}}$-μ -ch
[DP dirt] [PP 3H·PSS around LOC] thus=NCNJ-$^{1}\sqrt{\text{be}}$ -VAR-REP
wé gandaa teix̱ích.
wé gán-daa $^{1}\sqrt{\text{ta}^{h}}$ -e -x̱ -í -ch
[PP [PP MDST fire- around LOC] $^{1}\sqrt{\text{sleep}}$·SG-VAR-REP-SUB-ERG]
'Dirt was always on his body because he slept around the fire.'
(Dauenhauer & Dauenhauer 1987: 140.34)

b. Ch'a yeedát neeyís daawtusihát. *IN*
ch'a yeedát nee-ÿís daa- wu-tu- s- i- $^{1}\sqrt{\text{hat}}$ -H
[PP just now time-BEN] around-PFV-1PL·S-CSV-STV-$^{1}\sqrt{\text{cover}}$-VAR
'We have enclosed it for now' (Story & Naish 1973: 79)

(130) a. Ax̱ tl'ek̲shaká eeyak̲'ék'w. *inalienable nouns*
ax̱ tl'eik̲-shá- ká u- i- i- $^{2}\sqrt{\text{k̲'ek'w}}$-H
[DP 1SG·PSS finger-head-HSFC] ZPFV-2SG·S-STV-$^{1}\sqrt{\text{wound}}$ -VAR
'You cut my fingertip.'

b. Ax̱ yaadé sh tl'ek̲shakawdlináash. *INs*
ax̱ ÿá -dé sh= tl'ek̲- sha- ka- wu-d- l- i- $^{2}\sqrt{\text{na'sh}}$-μH
[PP 1SG·PSS face-ALL] RFLX·O=finger-head-HSFC-PFV-MID-XTN-STV-$^{2}\sqrt{\text{shake}}$ -VAR
'He shook his fingertip at my face.' (Story & Naish 1973: 186)

The majority of Ns have counterpart ordinary nouns that occur in DPs and PPs elsewhere in the clause, but there are a few fossilized ANs and INs that have no corresponding ordinary nouns in modern Tlingit. Table 7.4 on page 744 gives a list of documented ANs along with their associated ordinary nouns. Table 7.5 on page 745 documents the INs and their associated ordinary nouns. Both tables have extensive coverage including many rare or even hapax Ns, but neither has been confirmed to be exhaustive. Archaic or extinct ordinary nouns are indicated by a preceding superscript dagger '†' to indicate that these are no longer in use; the corresponding ANs or INs seem to still function.

The ANs in table 7.4 are divided into four sets based on semantic similarities. The first set involves bodily experiences and activities. Most of this set are found especially in the frame *X eet Y=uwaháa* 'Y has appeared invisibly to X' that expresses the experience of a body urge. The second set describes temporal phenomena. The third set is abstract entities and properties; both *kanik=* 'news' and *kayik* 'noise' may derive from deverbal nouns because of the *k-* qualifier (cf. table 7.5). The fourth set denotes more or less physical entities; the *sha.ax̱w=* 'bundle' is uniquely from a deverbal noun. Each set has been ordered by phonological complexity, with monosyllables before disyllables and open syllables before closed syllables.

The INs in table 7.5 are difficult to divide semantically because the vast majority of them are body parts and other relational nouns. The sole exceptions are the qualifiers *ka-* and *ga-* as well as the unusual *tóox'=* 'kneeling' that occurs only in one verb. Because they seem to form one homogeneous set, table 7.5 organizes the INs purely by their phonological shape, going from CV to CVV.CVC. There are five INs that have lost a coda *k*: *x̱eek* 'upper arm' → *x̱i-*, *táak* 'inner bottom' → *ta-*, *x̱'áak* 'between'

Incorp.	*Gloss*	*Noun*	*Gloss*	*Noun morph.*	*Gloss*
has'=	vomit	háas'	vomit	√has'-μH	√vomit-VAR
lux'=	urine	lóox'	urine	√lux'-μH	√urine-VAR
l'il'=	feces	l'éel'	feces	√l'il'-μH	√feces-VAR
gax̲=	crying	gaax̲	crying	¹√gax̲-μ	¹√cry-VAR
luk=	sipping	†lóok	sip	²√luk-μH	²√sip-VAR
ÿaan=	hunger	†ÿaan	hunger	√ÿan-μ	√hunger-VAR
ÿata=	sleep	tá	sleep	ÿá-¹√ta-H	face-¹√sleep·SG-VAR
shakux=	thirst	shakoox	thirst	shá-¹√kux-μ	head-¹√dry-VAR
x̲'asakw=	breath	x̲'aséikw	breath, life	x̲'é-¹√sa-eH-kw	mouth-¹√breathe-VAR-REP
xee=	dusk	xee	shadow	√xi-μ	√shadow-VAR
k̲ee=	dawn	†k̲ee	dawn	√k̲i-μ	√dawn-VAR
ÿee=	time	†ÿee	time	√ÿi-μ	√time-VAR
k'ei=	good	k'éi	good	¹√k'e-μH	¹√good-VAR
saa=	name	saa	name	¹√sa-μ	¹√breathe-VAR
taa=	lonely?	??			
ÿak̲a=	curse	yak̲á	speech	ÿá-¹√k̲a-H	face-¹√say-VAR
kanik=	news	kanéek	news	ká-¹√nik-μH	HSFC-²√tell-VAR
kayik=	noise	kayéik	noise	ká-¹√yek-μH	HSFC-¹√animated-VAR
naa=	nation	naa	nation	√na-μ	√people-VAR
hin=	water	héen	water	√hin-μH	√water-VAR
aan=	land	aan	land, town	¹√.an-μ	¹√rest-VAR
len=	tide	lein	tideflats	¹√laʰ-e-n	¹√melt-VAR-NSFX
yakw=	boat	yaakw	boat	√yakw-μ	√boat-VAR
sha.ax̲w=	bundle	sha.aax̲w	bundle	shá-²√.ax̲w-μ	head-²√wrap-VAR

Table 7.4: ANs in D⁰ associated with alienable nouns

→ *x̲'aa-*, *t'áak* 'upland' → *t'aa-*, and *t'éik* 'behind' → *t'ei-*. As shown in the noun morphology column, this lost coda *k* reflects an obsolete locative suffix *-k*.[18]

The INs in table 7.5 that are represented by a form /Ca/ can plausibly be analyzed instead as underlyingly /C/ with an epenthetic vowel [a]. The same epenthetic vowel appears in the Conjunct and Classifier domains of the verb, and is probably the epenthetic vowel for all regular prefixation in Tlingit. If we adopt a /C/ representation then the rules for epenthesis in the Disjunct domain – which includes the spellout of D⁰ – are different from those in the Conjunct and Classifier domains. Specifically, the Disjunct domain spells out every sequential /C/ as a syllable [Ca] whereas uninterrupted sequences of underlying /C/ are permitted in the spellout of the Conjunct and Classifier domains.

18. The obsolete locative *-k* appears to have been a locative suffix associated with relational nouns that denote spatial or abstract relationships with the obligatory (inalienable) possessor. It is no longer functional but still alternates with postpositions: when the noun does not have a postposition suffix the *-k* appears. Its distribution across dialects is universal but its appearance with particular nouns varies and the patterns of variation are still not understood.

Incorp.	*Gloss*	*Noun*	*Gloss*	*Noun morph.*	*Gloss*
k-	horiz. sfc.	ká	horiz. sfc.	√ka-H	√HSFC-VAR
ÿ-	face	ÿá	face	√ÿa-H	√face-VAR
gu-	base	gú	base	√gu-H	√base-VAR
ji-	hand	jín	hand	√jin-H	√hand-VAR
la-	interior	la-	surface?	√la?	√surface?
lu-	nose	lú	nose	√lu-H	√nose-VAR
ta-	bottom	táak	inner bottom	√ta-μH-k	√bottom-VAR-OLOC
tu-	inside	tú	inside	√tu-H	√inside-VAR
se-	voice	sé	neck	√se-H	√neck-VAR
sha-	head	shá	head	√sha-H	√head-VAR
shu-	end	shú	end	√shu-H	√end-VAR
x̲a-	fur	x̲aaw	fur	√x̲aw-μ	√fur-VAR
x̲i-	shoulder	x̲eek	upper arm	√x̲i-μ-k	√u·arm-VAR-OLOC
x̲'e-	mouth	x̲'é	mouth	√x̲'e-H	√mouth-VAR
daa-	around	daa	around	√da-μ	√around-VAR
s'ee-	eyebrow	s'ee(y)	eyebrow	√s'i(y)-μ	√eyebrow-VAR
t'aa-	upland	t'áak	upland	√t'a-μH-k	√upland-VAR-OLOC
t'ei-	behind	t'éik	behind	√t'a-μH-k	√behind-VAR-OLOC
x̲oo-	among	x̲oo	among	√x̲u-μ	√among-VAR
x̲'aa-	between	x̲'áak	between	√x̲'a-μH-k	√between-VAR-OLOC
duk-	skin	dook	skin	√duk-μ	√skin-VAR
gin-	flipper	geen	flipper	√gin-μ	√flipper-VAR
s'ak̲-	bone	s'aak̲	bone	√s'ak̲-μ	√bone-VAR
s'uk̲-	rib	s'óok̲	rib	√s'uk̲-μH	√rib-VAR
tax̲'-	heart	téix̲'	heart	√tex̲'-μH	√heart-VAR
tuk̲-	butt	tóok̲	butt	√tuk̲-Hμ	√butt-VAR
tl'ik̲-	finger	tl'eek̲	finger	√tl'ik̲-μ	√finger-VAR
wak̲-	eye	waak̲	eye	√wak̲-μ	√eye-VAR
yik-	within	yík	within	√yik-H	√within-VAR
x̲an-	near	x̲án	near	√x̲an-H	√near-VAR
x̲'us-	foot	x̲'oos	foot	√x̲'us-μ	√foot-VAR
keey=	knee	keey	knee	√kiy-μ	√knee-VAR
s'aan=	limb	†s'aan	limb?	√s'an-μ	√limb?-VAR
lidix̲'=	neck	lidíx̲'	neck	√la-√dix̲'-H	√surface-√spine-VAR
daa.it=	joint	daa.ít	joint	√da-μ-√.it-H	√around-VAR-√space?-VAR
tóox'=	kneeling	†tóox'	knee?	√tux'-μH	√knee?-VAR

Table 7.5: INs in D⁰ associated with inalienable nouns

The underlying representation as /C/ is less plausible for ordinary nouns however, so saying e.g. *sha-* 'head' is /ʃ/ implies a separate lexical entry for the noun *shá* 'head' /ʃá/. I do not offer a solution because we need more study of the phonology of D⁰ spellout. I adopt the /C/ analysis only for the two prefixes *k-* and *ÿ-* where their semantics can be considerably different from the corresponding ordinary nouns *ká* 'horizontal surface' and *ÿá* 'face, vertical surface' (cf. sec. 1.3.4), maintaining the /Ca/ analysis for the other prefixes. More phonological analysis is required to determine whether this is actually justified, however.

There is considerable similarity between Tlingit's Ns in D⁰ and the so-called 'lexical suffixes' of Salishan and Wakashan languages (e.g. Gerdts 2003; Wojdak 2008), particularly in that some of the Tlingit Ns have no corresponding free nouns in modern Tlingit. Wiltschko's analysis of Halkomelem lexical suffixes as instances of incorporated √ (Wiltschko 2009) might be a fruitful approach for Tlingit Ns in D⁰: what I represent here as Ns may actually be √ nodes without N given the lack of stem variation for nearly all of the Ns in D⁰. I point out some phonological support for a √ analysis of the Ns in section 1.3.1, but I leave the development of this hypothesis to future work on D⁰ and to crosslinguistic formalization of incorporation more generally.

As previously discussed in chapter 2 section 1.2, many of the Ns in D⁰ are so-called 'qualifiers' that semantically restrict the qualia of an argument such as its shape or construction. These qualifiers appear to have historically arisen from inalienable nouns that denote parts of entities but which have gained new interpretations by metaphoric extension, semantic bleaching, and other lexical semantic phenomena.

1.3.1. Phonology of Ns

The Ns in D⁰ are phonologically heterogeneous, with some as small as a single consonant and some as large as a disyllable with coda consonants and long vowels. The smallest documented Ns are *k-* /k/ 'horizontal surface' and *ÿ* /ɥ/ 'face, vertical surface' and the largest known N is *daa.it=* /tàːʔìt/ 'joint'. The INs are generally smaller than the ANs, but there is considerable overlap between them so that phonology cannot fully distinguish between the two classes. Some Ns act like proclitics and others like suffixes, mostly depending on syllable size and complexity. All Cs and CVs are prefixes, and all disyllables are proclitics, but the facts are not entirely clear for say CVV or CVC shapes. Ns are not lexically specified for high tone, and none surface with high tone in Northern Tlingit.[19] The sole documented exception is the IN *tóox'=* 'kneeling' which might be derived from a PP; its only documentation is in writing so its transcription with high tone is also doubtable.[20]

All of the ANs are minimally bimoraic monosyllables. They may be bimoraic with a long vowel such as *k̲ee=* /qʰìː/ 'dawn' or *saa=* /sàː/ 'name', or bimoraic with a coda consonant such as *g̲ax̲=* /qàχ/ 'crying' or *yakw=* /jàkʷ/ 'boat'. Trimoraic monosyllables are possible: *ÿaan=* /jàːn/ 'hunger'

19. The Southern Tlingit dialects are reported to have OCP-like polar tone assigned to verb prefix syllables and so Ns may surface with high tone depending on the particular combination of prefixes in the verb word (Williams, Williams, & Leer 1978: 14).

20. I only know *tóox'=* from Story & Naish's two examples *yan tóox'-uwatsóow* 's/he knelt' and *tléil a yee yax̲ tóox'-dutsóow* 'people don't kneel in there (church)' (Story & Naish 1973: 120). It looks like a PP with *tú* 'inside' and locative *-x'* but this is semantically opaque. Leer (1973a) only lists *tóox'=* with $\sqrt[2]{}$*tsuw* 'push pl./long' (Leer 1973a: 09/178), repeating the Story & Naish data. Elsewhere he does list two nouns *shutóox̲'* 'ankle' < *shú-tóox̲'* 'end-??' and *x̲'usgukshtóox̲'* 'ankle bone' < *x̲'oos-gú-ká-shú-tóox̲'* 'foot-base-HSFC-end-??' (Leer 1973a: 07/44) which might be related, implying *ʔtux̲'=* with a final /χ'/ rather than /x'/.

and *aan=* /ʔàːn/ 'land'. In contrast, monomoraic syllables are relatively plentiful among the INs, so monomoraic monosyllabicity is exclusively diagnostic for an IN. This is probably the only reliable phonological diagnostic that distinguishes ANs from INs, and it is not an exhaustive diagnostic, so the difference between them must be lexically specified.

A few apparently /Ca/-shaped INs are actually lexically specified with an underlying /e/ that is only distinct from /a/ when lengthened, including at least *x̱'e-* 'mouth' and *se-* 'voice, throat'. This is shown by the data in (131) in contrast with (132). The IN *sha-* 'head' in (131) regularly becomes long [ʃàː] together with perfective *wu-* and stative *i-* in (131b), and long [ʃèː] is ungrammatical. The IN *se-* 'voice, throat' in (132) instead has an underlying /e/ so that although in the progressive it surfaces as short [sà] in (132a), in the perfective it is [sèː] in (132c) rather than [sàː] in (132b).

(131) a. Yaa x̱at shanax̱ích. *short a*
[jàː‿ χàt‿ ˌʃà.nà.ˈχítʃ]
ÿaa= x̱at= sha- n- $^{2}\sqrt{}$x̱ich-H
along=1SG·O=head-NCNJ-$^{2}\sqrt{}$hit -VAR
'S/he is hitting my head.'

b. X̱at shaawax̱ích. *long a*
[χàt‿ ˌʃàː.wà.ˈχítʃ]
x̱at= sha- wu-i- $^{2}\sqrt{}$x̱ich-H
1SG·O=head-PFV-STV-$^{2}\sqrt{}$hit -VAR
'S/he hit my head.'

c. *X̱at sheiwax̱ích. **long e*
[χàt‿ ˌʃèː.wà.ˈχítʃ]
x̱at= she- wu-i- $^{2}\sqrt{}$x̱ich-H
1SG·O=head-PFV-STV-$^{2}\sqrt{}$hit -VAR
intended: 'S/he hit my head.'

(132) a. Yaa x̱at sana.át'. *short a*
[jàː‿ χàt‿ ˌsà.nà.ˈʔát']
ÿaa= x̱at= se- n- $^{1}\sqrt{}$.at' -H
along=1SG·O=voice-NCNJ-$^{1}\sqrt{}$cold-VAR
'I'm getting cold.' (Leer 1973a: 02/121)

b. *X̱at saawa.át'. **long a*
[χàt‿ ˌsàː.wà.ˈʔát']
x̱at= sa- wu-i- $^{1}\sqrt{}$.at' -H
1SG·O=voice-PFV-STV-$^{1}\sqrt{}$cold-VAR
intended: 'I got cold.'

c. X̱at seiwa.át'. *long e*
[χàt‿ ˌsèː.wà.ˈʔát']
x̱at= se- wu-i- $^{1}\sqrt{}$.at' -H
1SG·O=voice-PFV-STV-$^{1}\sqrt{}$cold-VAR
'I got cold.' (Leer 1973a: 02/121)

The alternations *x̲'a* ~ *x̲'ei* and *sa* ~ *sei* are historically explained by the regular development of **ay* [aj] > *ei* [eː]. Shortening of 'long' **Cay* to **Ca* is straightforwardly accounted for by deletion of the moraic coda **y*, so originally the *a* ~ *ei* alternation was actually **a* ~ **ay*. In modern Tlingit there must instead be a constraint against short *e* in this context, and indeed no other INs ever occur with short *e* and furthermore short *e* does not occur anywhere in the Disjunct domain. The underlying form of both *x̲'e-* and *se-* could then arguably be *Cei-* with a long vowel, but since *t'ei-* 'behind' is never realized as [t'à] this is not a solution to the *a* ~ *ei* alternation in INs. For now I simply consider this to be a special phonological exception against short *e* in the Disjunct domain.

Monomoraic monosyllabic INs that have the shape *Ci-* or *Cu-* must also be lexically specified with an underlying vowel. Thus *ji-* 'hand' must have an underlying form like /tʃɪ-/ and *tu-* 'inside; feelings, spirit' must have an underlying form like /tʰu-/. Unlike the *Ce-* prefixes these *Ci-* and *Cu-* forms always occur with the same vowel and the quality of this vowel cannot be accounted for by epenthesis. So although INs like *sha-* 'head' could possibly be underlyingly specified as /ʃ-/, this cannot apply for *Ci-*, *Cu-*, or *Ce-* INs. Alternatives like partial underspecification of vowel features or specification of vowels without moras have yet to be exxplored.

1.3.2. Argument saturating ANs

ANs are argument saturating because when they occur: (i) no coreferential DP can occur in the core clause and (ii) no coreferential D pronoun can occur in the verb word. ANs are probably most often objects of unaccusative verbs, but they can also be subjects of unergative verbs. I am unsure if ANs occur as objects of transitive verbs, but I suspect that they can. I do not know of any instances where ANs are subjects of transitive verbs.

When an AN appears it cannot occur together with another DP for the same argument; this shows that the AN is saturating and not restricting. The data in (133) show that the AN *ÿaan=* 'hunger' cannot cooccur with the independent noun *ÿaan* 'hunger', nor with some other DP like *wé át* 'that thing', nor with a D pronoun.

(133) a. *only AN*

Ax̲ eet yaan uwaháa.
ax̲ ee -t ÿaan= u- i- $^{1}\sqrt{}$ha -μH
[PP 1SG BASE-PNCT] hunger=ZPFV-STV-$^{1}\sqrt{}$mv·invis-VAR
'I have gotten hungry.' (lit. 'Hunger came to me invisibly.')

b. * **AN and same DP*

Yaan ax̲ eet yaan uwaháa.
ÿaan ax̲ ee -t ÿaan= u- i- $^{1}\sqrt{}$ha -μH
[DP hunger] [PP 1SG BASE-PNCT] hunger=ZPFV-STV-$^{1}\sqrt{}$mv·invis-VAR
intended: 'Hunger came to me invisibly.'

c. * **AN and different DP*

Wé át ax̲ eet yaan uwaháa.
wé át ax̲ ee -t ÿaan= u- i- $^{1}\sqrt{}$ha -μH
[PP MDST thing] [PP 1SG BASE-PNCT] hunger=ZPFV-STV-$^{1}\sqrt{}$mv·invis-VAR
intended: 'That thing, hunger, came to me invisibly.'

d. * **AN and D pronoun*

Ax̲ eet ee yaan uwaháa.
ax̲ ee -t ee= ÿaan= u- i- $^{1}\sqrt{}$ha -μH
[PP 1SG BASE-PNCT] 2SG·O=hunger=ZPFV-STV-$^{1}\sqrt{}$mv·invis-VAR
intended: 'You, hunger, came to me invisibly.'

There is a straightforward syntactic solution to fitting the ANs into the argument structure system, namely to analyze them as merged in D within D^0, and thus saturating the object argument. This could be done in one of two ways: (i) merge the AN first as an N and then raise it to D, or (ii) merge the AN directly in D. I have yet to explore the predictions of these two different options, and I have not considered any possible alternatives.

As noted above, ANs can occasionally be subjects of unergative motion verbs. This is illustrated by the examples in (134) and (135) which contrast a verb with a subject D pronoun and an AN. Although the D pronoun appears in the subject position, the AN cannot do so and must be realized in the object position.

(134) a. Yaa ntoo.át. *unergative with subject D pronoun*
ÿaa= n- tu- $\sqrt[1]{}$.at -H
along=NCNJ-1PL·S-$\sqrt[1]{}$go·PL-VAR
'We are going along.'

b. *Yaa haa na.át. **unergative with object D pronoun*
ÿaa= haa=n- $\sqrt[1]{}$.at -H
along=1PL·O-NCNJ-$\sqrt[1]{}$go·PL-VAR
intended: 'We are going along.'

(135) a. *Yaa naxee.át. **unergative with AN in subject position*
ÿaa= n- xee- $\sqrt[1]{}$.at
along=NCNJ-shadow-$\sqrt[1]{}$go·PL
'It is becoming dusk.' (Story & Naish 1973: 63.738)

b. Yaa xee na.át. *unergative with AN in object position*
ÿaa= xee= n- $\sqrt[1]{}$.at -H
along=shadow=NCNJ-$\sqrt[1]{}$go·PL-VAR
'It is becoming dusk.' (Story & Naish 1973: 63.738)

There are two potential analyses for (135b). One is where the AN is first merged in VP, then raises to *v*P to satisfy the requirement for a subject, and then raises further to AspP to spell out in the usual position of an AN. The other analysis has the AN first merged in *v*P and then raised to AspP. In both cases the now familiar question arises: why raise to AspP? A phonological explanation is not as compelling since [xìː] and [tʰùː] are not obviously different except in vowel quality and onset consonant, but /i/ occurs in the same position from the second person subjects *i-* and *ÿi-* and /χ/ (though not /x/) occurs in the same position from first person subject *x̲-*. If phonology is not the trigger for movement then, lacking any obvious semantic explanation, this AN subject seems to support syntactic explanations for movement to AspP.

I have encountered one counterexample verb where an AN is not saturating, specifically where an AN occurs together with an object DP. The two sentences in (136) – both example sentences from Story & Naish's verb dictionary – are causatives based on a monovalent $\sqrt[1]{}$*.a* 'end move, extend' (Leer 1973a: 02/5–21; Williams, Williams, & Leer 1978: 4). They have the AN *k̲ee=* ~ *k̲ei=* 'dawn, day' which is otherwise known from the compound *k̲eex̲'é* 'dawn' (lit. *k̲ee-x̲'é* 'day-mouth') which is reflected in the placename *K̲éex̲'* 'Kake' and the noun *k̲ee.á* ~ *k̲ei.á* 'dawn' which is derived from the verb *k̲eewa.aa* ~

k̲eiwa.aa (*n*; achievement) 'it dawned' which is based on the same root $^{1}\sqrt{.a}$ 'end move, extend' (Story & Naish 1973: 63.736; Leer 1973a: 02/10). The literal interpretation of the verb in (136) is presumably something like 'make the day extend (i.e. occur)'.

(136) a. du kayageeyí k̲eewdudzi.aa. *AN with object DP*
du ká- yagiyee-í k̲ee=wu-du d- s- i- $^{1}\sqrt{.a}$ -μ
[DP 3H·PSS HSFC-day -PSS] day- PFV-4H·S-MID-CSV-STV-$^{1}\sqrt{}$end·move-VAR
'People celebrated his birthday.' (Story & Naish 1973: 44.457)

b. Kíswás has ak̲eeguxsa.áa. *AN with object DP*
Kíswás has= a- k̲ee-w- g- g̲- s- $^{1}\sqrt{.a}$ -μH
[DP Christmas] PLH= ARG-day- IRR-GCNJ-MOD-CSV-$^{1}\sqrt{}$end·move-VAR
'They are going to celebrate Christmas' (Story & Naish 1973: 44.458)

The problem with (136) is that the AN is apparently not saturating because it occurs in both sentences with an overt object DP. The intransitive counterpart *k̲eewa.aa* ~ *k̲eiwa.aa* 'it dawned' does seem to have *k̲ee=* ~ *k̲ei=* saturating the object given that it is not attested with any object DP or D pronoun, but we need negative evidence to support this. Given that the bare noun *k̲ee* ~ *k̲ei* is no longer available in modern Tlingit, I suspect that this AN has been reanalyzed as a qualifier and so it behaves like an argument restricting IN. I expect that further investigation of the ANs should turn up others that have been reanalyzed as qualifiers, particularly the more obscure ANs that are limited to one or two verbs.

This shift from AN to IN calls into question the accuracy of the current categorization of incorporates in Tlingit. The original itemization going back to Boas (1917) and Story (1966) was based purely on phonological similarity with external nouns. The syntactic properties of the external nouns were assumed to correlate with those of the ANs and INs, but data like (136) shows that this correlation is incomplete. The ANs and INs need to be reviewed individually for their syntactic properties in verbal structures without regard to the behaviour of the external nouns. This is the primary reason why I have adopted the abbreviations 'AN' and 'IN' and have questioned the applicability of the terms 'alienable' and 'inalienable' to these elements in the D^0 complex.

1.3.3. Argument restricting INs

INs are not argument saturating because they regularly occur together with an object D pronoun or an object DP in the core clause. This sets them apart from most ANs which cannot cooccur with an object D pronoun or DP. The sentences in (137) demonstrate object D pronouns together with INs.

(137) a. X̲at shagux̲laxáash. *object D pronoun with IN*
x̲at= sha- w- g- g̲- l- $^{2}\sqrt{}$xash-μH
1SG·O=head-IRR-GCNJ-MOD-XTN-$^{2}\sqrt{}$cut -VAR
'She's going to cut my hair.' (Story & Naish 1973: 61.708)

b. Haagú; x̲at jilasá! *object D pronoun with IN*
haa^{n}=gú x̲at= ji- l- $^{1}\sqrt{}$sa -H
CIS= IMP·go 1SG·O=hand-ZCNJ CSV-$^{1}\sqrt{}$rest-VAR
'Come here; give my hand a rest!' (steering boat) (Story & Naish 1973: 172.2371)

c. Ix̲'akakk̲wanéek. *object D pronoun with IN*
i- x̲'e- k- w- g- g̲- x̲- $^{2}\sqrt{}$nik-μH
2SG·O-mouth-QUAL-IRR-GCNJ-MOD-1SG·S-$^{2}\sqrt{}$tell -VAR
'I will interpret you.' (Story & Naish 1973: 116.1516)

Similarly, the data in (138) demonstrate third person object DPs together with INs. The INs can occur with any object argument, and so they cannot be argument saturating.

(138) a. Pipe tukawdidúk. *object DP with IN*
pipe tu- k- wu-d- i- $\sqrt{}^{2}$duk-H
[DP pipe] inside-SRO-PFV-PASV-STV-$^{2}\sqrt{}$plug -VAR
'The pipe has gotten plugged.' (Story & Naish 1973: 50.539)

b. Té teen ts'ítskw shagax̲dudzóo. *object DP with IN*
té teen ts'ítskw sha- w- g- g̲- du- $^{2}\sqrt{}$dzu^{h}-μH
[PP rock INSTR] [DP bird] head-IRR-GCNJ-MOD-4H·S-$^{2}\sqrt{}$throw-VAR
'They are going to throw at the birds' heads with rocks.' (Story & Naish 1973: 109.1421)

c. Yaana.eit daakakk̲was'éil' *object DP with IN*
yaana.eit daa- k- w- g- g̲- x̲- $^{2}\sqrt{}$s'el'-μH
[DP celery] around-HSFC-IRR-GCNJ-MOD-1SG·S-$^{2}\sqrt{}$tear -VAR
'I will peel the celery.' (Story & Naish 1973: 147.1994)

Most INs are derived from relational nouns. Relational nouns are inalienable (obligatorily possessed) nouns that denote parts of entities or spatial relationships of entities such as *ax̲ jín* 'my hand', *ax̲ shá* 'my head', *ax̲ x̲án* 'my nearby', and *ax̲ daa* 'my around, surroundings'. INs derived from relational nouns can thus be interpreted as possessed by the object (Leer 1991: 42). The first person singular *x̲at=* 'me' has an allomorph *ax̲=* 'my' that can optionally occur with an IN, making the possessive relationship explicit. The data in (139) illustrate a three way contrast between an independent DP argument *ax̲ shá* 'my head (hair)' in (139a), the IN *sha-* 'head' with the ordinary object pronoun *x̲at=* 'me' in (139b), and the IN *sha-* 'head' with the possessive object pronoun *ax̲=* 'my' in (139c).

(139) a. Ax̲ shá awlixaash. *possessed DP object*
ax̲ shá a- wu-l- i- $^{2}\sqrt{}$xash-μ
[DP 1SG·PSS head] ARG-PFV-XTN-STV-$^{2}\sqrt{}$cut -VAR
'She cut my hair.' (Leer 1991: 43 #59a)

b. X̲at shagux̲laxáash. *x̲at= D pronoun with IN*
x̲at= sha- w- g- g̲- l- $^{2}\sqrt{}$xash-μH
1SG·O=head-IRR-GCNJ-MOD-XTN-$^{2}\sqrt{}$cut -VAR
'She's going to cut my hair.' (Story & Naish 1973: 61.708)

c. Ax̲ shawlixaash. *ax̲= D pronoun with IN*
ax̲= sha- wu-l- i- $^{2}\sqrt{}$xash-μ
1SG·O=head-PFV-XTN-STV-$^{2}\sqrt{}$cut -VAR
'She cut my hair.' (Leer 1991: 43 #59b)

The alternation between *x̱at=* and *ax̱=* is not universal; some of my consultants have rejected *ax̱=* in contexts like (139c). This may indicate an ongoing shift in the syntax and semantics of INs and incorporation, or instead a reduction of allomorphy in the object D pronouns.

Leer describes the addition of the diminutive suffix *-k'w* to some INs (Leer 1991: 116). I have personally never encountered this phenomenon and he does not elaborate on its occurrence. If it is regular then it strongly suggests that the INs may still be perceived as nouns rather than as more or less opaque lexical elements. The data from Leer in (140) illustrate a DP and the addition of the diminutive suffix *-k'w*. Then in (141) the same alternation is shown but with the IN *ÿa-* 'face' rather than the independent noun *ÿá* 'face'.

(140) a. Du yá wdzix̱áaw. *DP*
du ÿá wu-d- s- i- $^{1}\sqrt{}$x̱aw-μH
[$_{DP}$ 3H·PSS face] PFV-PASV-CSV-STV-$^{1}\sqrt{}$fur -VAR
'His/her face has become hairy.' (Leer 1991: 116 #34b)

b. Du yáak'w wudzix̱áaw. *DP with diminutive*
du ÿá -k'w wu-d- s- i- $^{1}\sqrt{}$x̱aw-μH
[$_{DP}$ 3H·PSS face-DIM] PFV-PASV-CSV-STV-$^{1}\sqrt{}$fur -VAR
'His/her little face has become hairy.' (a baby) (Leer 1991: 116 #34d)

(141) a. Yawdzix̱áaw. *IN*
ÿa- wu-d- s- i- $^{1}\sqrt{}$x̱aw-μH
face-PFV-PASV-CSV-STV-$^{1}\sqrt{}$fur -VAR
'S/he has gotten a hairy face.' (Leer 1991: 116 #34c)

b. Yak'wwudzix̱áaw. *IN with diminutive*
ÿa- k'w-wu-d- s- i- $^{1}\sqrt{}$x̱aw
face-DIM-PFV-PASV-CSV-STV-$^{1}\sqrt{}$fur
'S/he has gotten a little hairy face.' (a baby) (Leer 1991: 116 #34e)

I mentioned earlier (p. 746) that what I have represented as N in D^{0} might be better analyzed as √ along the lines of Wiltschko's analysis of Halkomelem lexical suffixes (Wiltschko 2009). The possibility of diminutive marking for INs might challenge this analysis depending on how the diminutive suffix is analyzed in Tlingit. Given that NPs are similar to VPs in that there is a √ and a categorizing head that realizes the stem variation, the diminutive suffix is readily analyzed as merged in NP or VP as illustrated by the form in (142).

(142) Yá hítk' ya.óosk'.
yá √hit -H -k' i- $^{1}\sqrt{}$.us -μH -k'
[$_{DP}$ PROX [$_{NP}$ √house-VAR$_{N}$-DIM]] STV-[$_{VP}$ $^{1}\sqrt{}$cute-VAR$_{V}$-DIM]
'This little house is cute.'

The diminutive suffix is only known to attach to NPs and VPs as in (142), except for Leer's reported cases of diminutives on INs. It is certainly possible to analyze the diminutive as attached to √, but this would have no parallel anywhere else in the language and would go against my present approach to √ as requiring a categorizing head before any other syntactic operations (i.e. no √P). I have no solution to this conundrum at present and simply maintain the analysis of INs as Ns merged in D^{0}.

Figure 7.4: Left merge

Figure 7.5: Right merge

Figure 7.6: High qualifier

Leer's other example of the diminutive applied to an IN is illustrated in (143). Because the construction of the base verb 'have humorous/cute speech' is somewhat complex, I have added a few introductory forms to show its derivation from the root $\sqrt[1]{\underline{g}i} \sim \sqrt[1]{\underline{g}e}$ 'bright'.

(143) a. Ligée. *base verb*
l- i- $\sqrt[1]{\underline{g}}$i -μH
XTN-STV-$\sqrt[1]{\text{bright}}$-VAR
'It is shiny, bright (with reflected light).' (Leer 1973a: f02/154)

b. Kaligée. *added qualifier k-*
k- l- i- $\sqrt[1]{\underline{g}}$i -μH
QUAL-XTN-STV-$\sqrt[1]{\text{bright}}$-VAR
'S/he is fancy, cute.' (Leer 1973a: f02/154)

c. Shakligéi. *added IN sha- 'head'*
sha- k- l- i- $\sqrt[1]{\underline{g}}$e -μH
head-QUAL-XTN-STV-$\sqrt[1]{\text{bright}}$-VAR
'S/he is pretty, has a good looking face.' (Story & Naish 1973: 159)

d. X̲'ashakligée. *added IN x̲'e- 'mouth'*
x̲'e- sha- k- l- i- $\sqrt[1]{\underline{g}}$i -μH
mouth-head-QUAL-XTN-STV-$\sqrt[1]{\text{bright}}$-VAR
'S/he has humorous/cute speech.' (Leer 1991: 116 #33b)

e. X̲'ashak'wkaligée. *added diminutive*
x̲'e- sha- k'w-k- l- i- $\sqrt[1]{\underline{g}}$i -μH
mouth-head-DIM-QUAL-XTN-STV-$\sqrt[1]{\text{bright}}$-VAR
'S/he has humorous/cute babyish speech.' (Leer 1991: 116 #33c)

The form in (143e) poses an interesting question. Consider the structure of D⁰ in (143d) that is shown in figure 7.4. This shows three INs *x̲'e-* 'mouth', *sha-* 'head', and qualifier *k-*, with the structure

built straightforwardly by successive binary leftward merges. The *pro* in D is because all the forms in (143) lack an overt object D pronoun or DP.

With the structure in figure 7.4 in mind, why is the diminutive in (143e) after *sha-* 'head' and not after the qualifier *k-*? If it attached to the highest N node like we see in noun compounds then we would expect *-k'w* to spell out to the right of *k-*, but instead it precedes *k-*. This could actually be diagnostic for a difference between the positions of incorporated nouns and qualifiers. If the qualifiers are merged higher than the incorporates then we might instead have the structure in figure 7.5. But the qualifiers could be even higher still, modifying the entirety of the D^0 as shown in figure 7.6 instead of just the N complex as in figure 7.5.

The distinction among INs between qualifier and incorporate has so far only been semantic, but the data in (143e) suggests the possibility of a syntactic difference as modelled in the trees in figures 7.5 and 7.6. This possibility is explored in the following subsection.

1.3.3.1. Qualification versus incorporation

Leer describes a variety of INs that "function as classificatory prefixes" (Leer 1991: 117), claiming that these INs impose "selectional restrictions on an inanimate object with regard to its phyiscal characteristics". Such an element is called a QUALIFIER following Kari (1989: 430) and Jetté (1906), as discussed earlier in chapter 2 section 1.2. Qualifiers are semantically distinct from incorporates in that they denote qualia of the argument referent rather than parts of the referent. Leer (1991: 117) provides some examples of stative verbs with qualifiers based on the roots $\sqrt[1]{\textit{ÿat'}}$ 'long', $\sqrt[1]{\textit{wux'}}$ 'wide', and $\sqrt[1]{\textit{t'ix'}}$ 'hard'; I have selected three in (144) to illustrate the qualifier/incorporate contrast.

(144) a. Yéi kwliyáat'. *comparative*
yéi= k- u- l- i- $\sqrt[1]{\text{ÿat'}}$-μH
thus=CMPV-IRR-XTN-STV-$\sqrt[1]{\text{long}}$-VAR
'It (extended/complex object) is comparatively long/tall.' (Leer 1991: 117 #35b)

b. Yéi jikwliyáat'. *qualifier ji- + comparative*
yéi= ji- k- u- l- i- $\sqrt[1]{\text{ÿat'}}$
thus=hand-CMPV-IRR-XTN-STV-$\sqrt[1]{\text{long}}$
'It (slender flexible object) is comparatively long.' (Leer 1991: 117 #35d)

c. Yéi jikwliyáat'. *incorporate ji- + comparative*
yéi= ji- k- u- l- i- $\sqrt[1]{\text{ÿat'}}$
thus=hand-CMPV-IRR-XTN-STV-$\sqrt[1]{\text{long}}$
'S/he has long arms/hands.' (Leer 1991: 117 #35e)

There are two semantic distinctions between (144b) and (144c). One is humanity since (144b) refers to an inanimate object whereas (144c) refers to a human. The other is qualification: the reference in (144b) is not to a portion of the object but rather the object as a whole, whereas in (144c) only a part of the object – the person's arms or hands – is described. Qualifiers seem to apply to the entire referent rather than a part of the referent, whereas incorporates are the reverse. If this is generally the case then it suggests a syntactic distinction where the qualifiers restrict the entire argument – including the D pronoun – whereas incorporates are possessed by the argument and so appear beneath the D pronoun. The configuration for a qualifier would thus be something like the structure in figure 7.6.

INs can occur without a corresponding object argument in two similar contexts: (i) with antipassives formed by *d-* in Voice that suppresses an object, and (ii) with unergative intransitives that lack an object. The data in (145) illustrate the situation where an object has been suppressed. In (145a) there is an overt object DP *wé x'úx'* 'that book' to which the IN *k-* 'horizontal surface' refers. The antipassive in (145b) has the object argument suppressed by *d-* in Voice (ch. 5 sec. 3), but the IN *k-* 'horizontal surface' persists. The interpretation 'write' is dependent on three morphemes: the root $\overset{2}{\sqrt{}}$*xit* 'scratch, furrow', the pejorative *sh-* in *v*, and the qualifier *k-*. The retention of *k-* despite the loss of the object is problematic for an analysis where all INs are possessed by the object since there is no object in an antipassive.

(145) a. Wé x'úx' kaxwshixít. *IN with transitive*
wé x'úx' k- wu-x- sh- i- $\overset{2}{\sqrt{}}$xit -H
[DP MDST book] HSFC-PFV-1SG·S-PEJ-STV-$\overset{2}{\sqrt{}}$scratch-VAR
'I wrote that book.' (lit. 'I scratched the surface of that book/paper/membrane.')

b. Kaxwjixít. *IN with antipassive*
k- wu-x- d- sh- i- $\overset{2}{\sqrt{}}$xit
HSFC-PFV-1SG·S-APSV-PEJ-STV-$\overset{2}{\sqrt{}}$scratch
'I wrote.' (lit. 'I surface-scratched.')

An example of an unergative intransitive with an IN is given in (146). Here the base verb in (146a) is unergative with only a subject. In (146b) it is modified by a revertive motion derivation: the IN *ÿ-* 'face' appears even though there is no object argument, nor any overt mechanism that adds an object (vs. e.g. a causative with *s-* in *v*).

(146) a. Xwaataa. *unergative intransitive*
wu-x- i- $\overset{1}{\sqrt{}}$ta^{h} -μ
PFV-1SG·S-STV-$\overset{1}{\sqrt{}}$sleep·SG-VAR
'I slept.'

b. Kux yaxwditáa. *with IN ÿ- 'face'*
kux=ÿ- wu-x- d- i- $\overset{1}{\sqrt{}}$ta^{h} -μH
REV= face-PFV-1SG·S-MID-STV-$\overset{1}{\sqrt{}}$sleep·SG-VAR
'I went back to sleep.' (Leer 1976a: 350)

A similar problem arises with a large number of handling verbs where the root is normally bivalent, but for unclear reasons the object argument seems to be suppressed without any overt mechanism (e.g. antipassive with *d-* in Voice). Since handling verbs are motion verbs these also usually occur with a PP as a path argument, but this PP does not block the object in other contexts so it cannot be not an alternation between DP and PP. In these contexts it seems like the IN has saturated the argument despite not being possessed. Generally in such contexts the IN can be analyzed semantically as a metaphorical instrument, what I refer to as a 'metaphor function' (Crippen 2014). The data in (147) illustrate one handling verb where the appearance of an IN is connected to the loss of an argument.

(147) a. Wé gúx'aa át xwaatán. *transitive handling with PP*
wé gúx'aa á -t wu-x̲- i- $\sqrt[2]{}$tan -μH
[DP MDST cup] [PP 3N-PNCT] PFV-1SG·S-STV-$\sqrt[2]{}$hdl·w/e-VAR
'I put the cup there.'

b. Du eet x̲'ax̲waatán. *intransitive with PP*
du ee -t x̲'e- wu-x̲- i- $\sqrt[2]{}$tan -H
[PP 3H BASE-PNCT] mouth-PFV-1SG·S-STV-$\sqrt[2]{}$hdl·w/e-VAR
'I spoke to him/her.'

c. X̲'ax̲wditán. *intransitive without PP*
x̲'e- wu-x̲- d- i- $\sqrt[2]{}$tan -H
mouth-PFV-1SG·S-APSV-STV-$\sqrt[2]{}$hdl·w/e-VAR
'I spoke.'

The basis case in (147a) is a handling verb based on $\sqrt[2]{}$*tan* 'handle wooden object, extended object, empty container'. The subject is the D pronoun *x̲-* 'I', the object is the DP *wé gúx'aa* 'the cup', and the PP *á-t* 'it-to' is the path argument. The sentence in (147a) literally means 'I handled the empty cup to there', or symbolically something more or less like $\mathsf{handle}(e) \wedge \textsc{pfv}(e) \wedge \Theta_1(y, \mathsf{cup}) \wedge \mathcal{Q}(y, \mathsf{empty}) \wedge \Theta_2(x, \textsc{1sg}) \wedge \Theta_3(z, \textsc{3n})$. The sentence in (147b) is based on the same verb root but features the addition of the IN *x̲'e-* 'mouth'. There is no covert object so there cannot be a *pro* together with the *x̲'e-* in D^0. Furthermore, addition of the argument suppressing *d-* in Voice in (147c) causes the PP to disappear, further implying that there is no object argument to suppress.

I do not have a syntactic solution for the difference between incorporates and qualifiers among the INs. I suggest the structure in figure 7.6 on page 753 as a starting point, distinguishing between incorporates that are complements of the D pronoun and qualifiers that are adjoined to the D pronoun. The cases above where no D pronoun exists could be handled by treating the qualifiers like bare NP adverbs, and so simply adjoining them to AspP without a D^0 projection. This leaves unresolved how the phonology should know to treat several 'bare N' qualifiers just like those appearing in a D^0 subtree, rather than say treating them like the spellout of Asp^0 or like the preverbs. Also outstanding is the question of why the qualifiers appear to modify the D^0 by right adjunction whereas most NP modifiers adjoin to the left of the NP.

1.3.4. The *k-* and *ÿ-* prefixes

The *k-* and *ÿ-* prefixes in D^0 are particularly significant among the elements of the D^0 complex. They are always the rightmost elements in D^0 and are invariably ordered *ÿ-* > *k-* when they occur together in the same structure. Both appear to have multiple meanings depending on the semantics of the root, and both are more or less lexicalized with a wide variety of roots. Both are also much more widespread in the lexicon than any other N elements in D^0, but *k-* seems to occur even more frequently than *ÿ-* across the lexicon. Their fixed ordering, polysemy, and relatively high frequency make them stand out from all the other N elements in D^0, but there is still very little known about their syntax or semantics. I discuss the *k-* qualifiers in section 1.3.4.1 and then the *ÿ-* qualifiers in section 1.3.4.2.

Both the *ÿ-* and *k-* prefixes generally have entity restricting semantics that support their inclusion in D^0: they must compose with the entity denoted by the object. But both prefixes occasionally seem

to have event restricting semantics with particular verb roots, like the *k-* of the comparative or the *ÿ-* of indirect motion. If they do in fact restrict the denotation of events then their composition with the event introduced by √ would be complicated by appearing inside of D^0. Since the *ÿ-* and *k-* prefixes are always linearly ordered to the right of all other D^0 elements, it is possible that they could be merged with AspP like the self-benefactive *g-* rather than merged within D^0. If they were merged in AspP then they would have direct compositional access to the event variable and thus could act as event restrictors. There would then be a structural ambiguity: both *ÿ-* and *k-* would generally be merged within D^0, but sometimes they would be merged in AspP with a distinct event restricting rather than entity restricting function.

The apparent structural ambiguity of the *ÿ-* and *k-* prefixes in Tlingit corresponds to similar ambiguities among the Dene languages. In Koyukon for example the 'gender prefix' qualifiers typically restrict the denotation of entities (Kari 1989; Axelrod 2000; Jetté & Jones 2000) just as with classificatory INs in Tlingit like *k-* 'small round' or *x̱'e-* 'mouth, opening'. But in Navajo the qualifiers in many cases have event restricting semantics such as the transitional *y-*, the seriative *h-*, and the terminative *n-* (Young 2000: 32–33). I suggest that this duality across the Dene family is due to the same kind of structural ambiguity as may exist in Tlingit. In some languages like Koyukon the qualifiers could be mostly inside the D^0 complex and thus have entity restricting semantics, but in other languages like Navajo the qualifiers could be merged with AspP and thus have event restricting semantics. Depending on how the qualifiers work in Eyak, it may be that Proto-Na-Dene shared the same structural ambiguity, or it may be that both Tlingit and Proto-Dene have independently innovated the shift of qualifiers from D^0 to AspP.

1.3.4.1. The *k-* prefixes

The *k-* prefix is actually at least three different N elements with the same form but different meanings and lexical distributions. One *k-* is clearly related to the inalienable noun *ká* 'horizontal surface'. Another *k-* indicates that the object is a small round entity such as an apple, egg, or coin; this has no obvious etymology among the independent nouns. A third *k-* is the comparative indicator in stative verbs, in which case it has a lexically dependent allomorph *g-*.[21] Beyond these three are more sporadic instances of *k-* with unknown or unclear meanings not easily reconciled with any other *k-*.

- horizontal surface *k-*
- small round *k-*
- comparative *k-*
- other *k-*

The first *k-* illustrated here is the horizontal surface *k-* which clearly corresponds to a noun and is thus a kind of IN. Its etymon is the inalienable noun *ká* that is illustrated in (148) where it is contrasted with another relational noun *tayee* 'below, area underneath'.[22] In (148a) the resting place of the book is the upper surface of the table, whereas in (148b) the book rests somewhere below.

21. The *g-* allomorph of the comparative only occurs in *yéi googéink'* 'it is comparatively small' and *yéi goowáatl'* 'it is comparatively short' according to my inventory of comparative states in chapter 6 table 6.33 (p. 652). The comparative *g-* and the self-benefactive *g-* are semantically and syntactically distinct despite homophony; I do not believe they can occur together because of their distinct distributional requirements.
22. The noun *tayee* 'below' is probably from *táa*^{k} 'inside surface' + *ÿee* 'below' but it is not synchronically decomposable.

(148) a. Wé x'úx' nadáakw kát xwaatée.
wé x'úx' nadáakw ká -t wu-x- i- $^{2}\sqrt{}$ti -μH
[DP MDST book] [PP table HSFC-PNCT] PFV-1SG·S-STV-$^{2}\sqrt{}$hdl·gen-VAR
'I put the book on (top of) the table.'

b. Wé x'úx' nadáakw tayeet xwaatée.
wé x'úx' nadáakw taÿee-t wu-x- i- $^{2}\sqrt{}$ti -μH
[DP MDST book] [PP table below-PNCT] PFV-1SG·S-STV-$^{2}\sqrt{}$hdl·gen-VAR
'I put the book below the table.'

The horizontal surface *k-* has essentially the same meaning as the noun *ká* 'horizontal surface'. This kind of *k-* is relatively uncommon in the verbal lexicon even though the noun *ká* is very common. The horizontal surface *k-* is usually described as lexically specified but given its semantic transparency it is probably more productive than is reflected by the lexical documentation. The verbs in (149) show typical instances of *k-* 'horizontal surface'. Note that the forms in (149a)–(149c) confirm that this *k-* occurs with a DP object.

(149) a. K'wátl' kaxwaaxáas'. *horizontal surface k-*
k'wátl' k- wu-x- i- $^{2}\sqrt{}$xas' -μH
[DP pot] HSFC-PFV-1SG·S-STV-$^{2}\sqrt{}$scrape-VAR
'I scraped the pot.' (Story & Naish 1973: 181.2502)

b. S'ísaa akawliyáas'. *horizontal surface k-*
s'ísaa a- k- wu-l^{s}- i- $^{1}\sqrt{}$ÿas' -μH
[DP cloth] ARG-HSFC-PFV-CSV-STV-$^{1}\sqrt{}$smooth-VAR
'He smoothed out the cloth.' (Story & Naish 1973: 199.2778)

c. I jiyís x'úx' kaxwshixít. *horizontal surface k-*
i jee -ÿís x'úx' k- wu-x- sh-i- $^{2}\sqrt{}$xit -VAR
[PP 2SG·PSS poss'n-BEN] [DP letter] HSFC-PFV-1SG·S-PEJ-STV-$^{2}\sqrt{}$furrow-VAR
'I wrote a letter for you.'

d. Eelí! Kakgishagéen. *horizontal surface k-*
eelí k- w- g- g- i- sh-$^{2}\sqrt{}$gin -μH
don't·IMP HSFC-IRR-GCNJ-MOD-2SG·S-PEJ-$^{2}\sqrt{}$wrinkle-VAR
'Don't! You'll wrinkle it.' (Story & Naish 1973: 251)

e. Kaxwlidál'. *horizontal surface k-*
k- wu-x- l^{s}- i- $^{2}\sqrt{}$dal'-H
HSFC-PFV-1SG·S-XTN-$^{2}\sqrt{}$imprint-VAR
'I stamped, imprinted it.', 'I typed it.'

The interpretation of the horizontal surface *k-* like in (149) is still uncertain. It could be straightforwardly taken to denote the part of the object affected by the event, with the object in a possessive relationship with it. This would presumably be similar to an NP headed by the relational noun *ká* 'horizontal surface', and so we might expect that the two would not occur together. But they do appear together as shown by the sentences in (150). This pleonasm suggests that they are semantically distinct, but it is unclear what the consequences are for composition.

(150) a. Du x̱aawaagí ká akaawax'óo *ká and k-*
du x̱aaÿ- waak̲-í ká a- k- wu-i- $^{2}\sqrt{}$x'u-μH
[DP 3H·PSS sauna-eye -PSS HSFC] ARG-HSFC-PFV-STV-$^{2}\sqrt{}$nail-VAR
'He's nailed up his windows.'[23] (orig. tr.) (Story & Naish 1973: 138.1859)

b. Wé eech ká kashix̱'íl'kw. *ká and k-*
wé eech ká k- sh- i- $^{1}\sqrt{}$x̱'il' -H -kw
[DP MDST boulder HSFC] HSFC-PEJ-STV-$^{1}\sqrt{}$slide-VAR-REP
'Those rocks are slippery.' (orig. tr.) (Story & Naish 1973: 196.2738)

Another *k-* prefix is the 'small round object' qualifier which indicates that the object is small and round as mentioned earlier in chapter 2 section 1.2. Exemplary small round objects include *k'wát'* 'egg', *x'áax'* 'apple', *gwít* 'dime', *tléik̲w* 'berry', and *kées* 'bracelet' (Leer, Hitch, & Ritter 2001: CV·4). This *k-* has no obvious etymon among the independent nouns; the closest relatable elements might be *k'wát'* 'egg' or $^{1}\sqrt{}$*k'a* 'too small', but both of these would require unprecedented loss of phonological features. The small round *k-* is frequently found with handling verbs but may be added to nearly any verb that can involve manipulation of an object.

(151) a. X'áax' akaawatáw. *small round k-*
x'áax' a- k- wu-i- $^{2}\sqrt{}$taw-H
[DP apple] ARG-SRO-PFV-STV-$^{2}\sqrt{}$steal-VAR
'He stole an apple.' (Story 1966: 81)

b. K'wát' akaawat'ei. *small round k-*
k'wát' a- k- wu-i- $^{2}\sqrt{}$t'e^{h}-μ
[DP egg] ARG-SRO-PFV-STV-$^{2}\sqrt{}$find-VAR
'He found an egg.' (Story 1966: 81)

c. Gúx'aa akawliwál'. *small round k-*
gúx'aa a- k- wu-l- i- $^{2}\sqrt{}$wal' -H
[DP cup] ARG-SRO-PFV-XTN-STV-$^{2}\sqrt{}$break-VAR
'He broke the cup to pieces.' (orig. tr.) (Story & Naish 1973: 35.300)

d. S'ín kax̱at'áx't *small round k-*
s'ín k- x̱- $^{2}\sqrt{}$t'ax' -H -t
[DP carrot] SRO-1SG·S-$^{2}\sqrt{}$cut·piece-VAR-ICT
'I'm cutting carrot in small pieces.' (orig. tr.) (Story & Naish 1973: 62.715)

The *k-* qualifier is also a defining feature of comparative forms of stative verbs. The comparative derivation was described earlier in chapter 6 section 4.3.1 in the context of derivationally specified irrealis marking. Comparatives are formed from dimension state verbs by the addition of the *k-* qualifier, irrealis *u-*, and *-μH* stem variation. The data in (152) illustrates a typical state verb, showing that the addition of a comparative argument PP is ungrammatical without the comparative morphology.

23. The noun *x̱aawaagí* 'window' refers originally to the use of a rawhide panel to let light into a traditional steambath. Traditional Tlingit houses did not have windows, with light coming from the fire, lanterns, the rooftop smokehole, the door, or removed wall panels in warm weather. Early Russian buildings also used rawhide windows instead of glass, a common practice across Siberia. Compare English *window* < ME *windoȝe*, MSc. *windock*, *windoch* < Old Norse *vind-auga* < *vindr* 'wind' + *auga* 'eye' which displaced earlier OE *ēag-duru* 'eye-door' and *ēag-þyrel* 'eye-thirl'.

(152) a. Yú kaxyeit yayát'. *basic state*
yú kaxyeit i- $^{1}\sqrt{}$ÿat'-H
[DP DIST rafter] STV-$^{1}\sqrt{}$long-VAR
'That rafter is long.'

b. * Yú kaxyeit yá tságaa yáanáx yayát'. **comparv. PP + basic state*
yú kaxyeit yá tságaa yáanáx i- $^{1}\sqrt{}$ÿat'-H
[DP DIST rafter] [PP PROX pole SUP] STV-$^{1}\sqrt{}$long-VAR
intended: 'That rafter is longer than this pole.'

c. Yú kaxyeit yá tságaa yáanáx koowáat'. *comparv. PP + comparv. state*
yú kaxyeit yá tságaa yáanáx k- u- i- $^{1}\sqrt{}$ÿat'-μH
[DP DIST rafter] [PP PROX pole SUP] CMPV-IRR-STV-$^{1}\sqrt{}$long-VAR
'That rafter is longer than this pole.'

The comparative *k-* qualifier has a unique allomorph *g-*. This allomorph does not occur for other *k-* prefixes, strongly implying that the comparative qualifier is distinct from the other *k-* prefixes. The selection of the *g-* allomorph for comparatives seems to be lexically specified, only occurring with a few roots such as $^{1}\sqrt{}$*ÿatl'* 'short' in (153). The reason for the allomorphy is unknown; although the pairing of *k*+$^{1}\sqrt{}$*ÿat'* 'long' above versus *g*+$^{1}\sqrt{}$*ÿatl'* 'short' below suggests antonymy as a trigger for this variation, similar root pairs like $^{1}\sqrt{}$*dal* 'heavy' and $^{1}\sqrt{}$*das* 'light' uniformly take *k-* for their comparative forms. A plausible historical explanation is that the comparative was originally *g-* and has become *k-* in most contexts by analogy with other *k-* functions, but this does not explain the retention of *g-*.

(153) a. Yéi goowáatl'. *comparative with g-*
yéi= g- u- i- $^{1}\sqrt{}$ÿatl'-μH
thus=CMPV-IRR-STV-$^{1}\sqrt{}$short-VAR
'It is comparatively short.' (Leer 1991: 259)

b. *Yéi koowáatl'. **comparative with k-*
yéi= k- u- i- $^{1}\sqrt{}$ÿatl'-μH
thus=CMPV-IRR-STV-$^{1}\sqrt{}$short-VAR
intended: 'It is comparatively short.'

Beyond the three kinds of *k-* described above, there are some more or less idiomatic instances of *k-* in the lexical documentation which have no obvious interpretation. In some cases this may be due to semantic drift from one of the other *k-* prefixes, but in other cases it may reflect either still unanalyzed instances of *k-*, or perhaps of older unrelated prefixes that have phonologically converged with *k-*. The data in (154) illustrate a few of these 'residue' *k-* prefixes with unknown semantics. Such *k-* prefixes are glossed as QUAL meaning that they are qualifiers but their function is not known.

(154) a. Ax táax'ál'i kaxwaal'éex'.
ax táax'ál'-í k- wu-x- i- $^{2}\sqrt{}$l'ix' -μH
[DP 1SG·PSS needle -PSS] QUAL-PFV-1SG·S-STV-$^{2}\sqrt{}$break-VAR
'I broke my needle.' (Story & Naish 1973: 35.307)

b. Yan ágé kayli.áx?
ÿán á -gí k- wu-i- l- i- $^{2}\sqrt{}$.ax -H
TERM FOC-YN QUAL-PFV-2SG·S-XTN-STV-$^{2}\sqrt{}$hear-VAR
'Do you understand it now?' (Story & Naish 1973: 107.1391)

c. Haa ée kayidligóok.
haa ee -H k- wu-i- d- l- i- $^{2}\sqrt{}$guk -μH
[PP 1PL BASE-LOC] QUAL-PFV-2SG·S-MID-XTN-STV-$^{2}\sqrt{}$know·how-VAR
'You showed us how to do it.' (Story & Naish 1973: 115.1499)

d. Ldakát haa k̲usteeyí yánde kakk̲wanéek.
ldakát haa k̲u- d- s- $^{1}\sqrt{}$ti^{h}-μ -í ÿán -dé=k- w- g- g̲- x̲- $^{2}\sqrt{}$nik-μH
all [DP 1PL·PSS AREAL-MID-XTN-$^{1}\sqrt{}$be -VAR-PSS] TERM-ALL=QUAL-IRR-GCNJ-MOD-1SG·S-$^{2}\sqrt{}$tell -VAR
'I am going to finish telling about all our culture.' (Story & Naish 1973: 225)

If there are at least three kinds of *k-* prefix then we might expect a verb to have three *k-* prefixes but this is not known to occur. There are a very few attested examples where two *k-* prefixes together show separate meanings (Story 1966: 81). Given three semantically distinct *k-* prefixes represented as k_1-, k_2-, and k_3-, there should be six possible combinations of two *k-* prefixes: k_1-k_2-, k_2-k_3-, k_1-k_3-, k_2-k_1-, k_3-k_2-, k_3-k_1-. Since these prefixes are homophonous and since we currently have no way to distinguish their linear order, a form with e.g. k_1-k_2- is indistinguishable from k_2-k_1-. Thus there are only three combinations that we can identify: {k_1-k_2- = k_2-k_1-}, {k_1-k_3- = k_3-k_1-}, and {k_2-k_3- = k_3-k_2-}.

These three identifiable combinations of two *k-* prefixes are, with arbitrary linear orders: (i) small round + comparative, (ii) horizontal surface + small round, and (iii) horizontal surface + comparative. Of these three both (i) and (ii) are attested. The (i) pairing is shown in (155) and the (ii) pairing is shown in (156). Note that the ordering of *k-* glosses in (155) and (156) is arbitrary. My impression from eyeballing the documentation is that (ii) cases are more common. I have found no examples of (iii) but I see no reason why this combination should not occur so it is likely an accidental gap and needs to be elicited.

(155) *small round k- + comparative k-*

a. Tlax̲ yéi kakwdigéix' wé tléik̲w.
tlax̲ yéi= k- k- u- d- i- $^{1}\sqrt{}$ge-μH-x' wé tléik̲w
very thus=SRO-CMPV-IRR-MID-STV-$^{1}\sqrt{}$big-VAR-PL [DP MDST berry]
'The berries are very big.' (Story & Naish 1973: 29.205)

b. Tlax̲ a yáanáx̲ kakoogéi yá k'únts'.
tlax̲ a yáanáx̲ k- k- u- i- $^{1}\sqrt{}$ge-μH yá k'únts'
very [PP 3N SUP] SRO-CMPV-IRR-STV-$^{1}\sqrt{}$big-VAR [DP PROX potato]
'This potato is much bigger than it.' (Story & Naish 1973: 26.206)

c. Ax̲ kéesi tlax̲ yéi kakoosáa.
ax̲ kées -í tlax̲ yéi= k- k- u- i- $^{1}\sqrt{}$sa -μH
[DP 1SG·PSS bracelet-PSS] very thus=SRO-CMPV-IRR-STV-$^{1}\sqrt{}$narrow-VAR
'My bracelet is very narrow.' (Story & Naish 1973: 139.1871)

d. Yéi kakoogéik'i x'áax'.
yéi= k- k- u- i- $^{1}\sqrt{}$ge-μH-k' -i x'áax'
[CP thus=SRO-CMPV-IRR-STV-$^{1}\sqrt{}$big-VAR-DIM-REL] apple
'An apple that is comparatively small.' (Story & Naish 1973: 197.2747)

(156) *horizontal surface k- + small round k-*

a. Has akaklawál't yú s'eenáa.
has=a- k- k- lˢ- ²√wal' -H -t yú s'eenáa
PLH= ARG-HSFC-SRO-CSV-²√break-VAR-ICT [DP DIST light]
'They break the light bulbs.' (Story & Naish 1973: 35.302)

b. K'wát' kakaxwliwál'.
k'wát' k- k- wu-x- lˢ- i- ¹√wal' -H
[DP egg] HSFC-SRO-PFV-1SG·S-CSV-STV-¹√break-VAR
'I cracked an egg.' (Story & Naish 1973: 35.301)

c. Du yée kakawlis'él'.
du yée k- k- wu-l- i- ¹√s'el'-H
[DP 3H·PSS appendix?] HSFC-SRO-PFV-XTN-STV-¹√tear -VAR
'His appendix[24] burst (tore).' (Story & Naish 1973: 39.373)

d. Tsaa yoowú kakawjit'áx'.
tsaa ÿoow -í k- k- wu-d- sh-i- ¹√t'ax'-H
[DP seal stomach-PSS] HSFC-SRO-PFV-PASV-PEJ-STV-¹√burst-VAR
'The seal stomach burst.' (Story & Naish 1973: 39.374)

e. Wé kaháakw áwé akakawsitáx'.
wé kaháakw á -wé a- k- k- wu-s- i- ²√tax'-H
MDST fish·eggs FOC -MDSTARG-HSFC-SRO-PFV-XTN-STV-²√bite -VAR
'It's the fish eggs that he chewed.' (Leer 1973a: 06/81)

In addition to the combinations above, there are also attested pairs of a qualifier *k-* of unknown meaning together with one of the identifiable *k-* prefixes. The data in (157) represent forms that probably contain horizontal surface *k-* with an unidentified qualifier *k-*. The form in (158) is a comparative with an unidentified qualifier *k-* (cf. 154a).

(157) *horizontal surface k- + unidentified qualiifer k-*

a. Haa kakaysikwéy áwé.
haa= k- k- wu-i- s- i- ¹√kwey-H á -wé
1PL·O=HSFC-QUAL-PFV-2SG·S-CSV-STV-¹√mark -VAR FOC-MDST
'It is that you have made us marked.' (Dauenhauer & Dauenhauer 1987: 172.123)

b. Yaakw át akakawligwáatl.
yaakw á -t a- k- k- wu-lˢ- i- ¹√gwa'tl-μH
[DP boat] [PP 3N-PNCT] ARG-HSFC-QUAL-PFV-CSV-STV-¹√roll -VAR
'He made the boat roll there.' (Story & Naish 1973: 175.2410)

c. Yaakw yaa kakanaltít.
yaakw ÿaa= k- k- n- l- ¹√tit -H
[DP boat] along=HSFC-QUAL-NCNJ-XTN-¹√wave-VAR
'The boat is moving by the waves.' (Story & Naish 1973: 175.2411)

24. Although the noun *yée* was originally translated as 'appendix', it is otherwise unattested. It could alternatively be *ÿee* 'below' with locative *-H* in which case this is a PP not a DP, so literally 'it (appendix) tore in his below'.

(158) Yá táax'ál' tlax̲ kakayatlei *qualifier k- + comparative k-*
yá táax'ál' tlax̲ k- k- i- $^{1}\sqrt{}$tlaʰ -e
[DP PROX needle] very QUAL-CMPV-STV-$^{1}\sqrt{}$stout-VAR
'This needle is very fat.' (Story & Naish 1973: 30.215)

Some preliminary experimentation suggests that three *k-* prefixes are prohibited, but further elicitation is needed to verify this restriction. If indeed there is a prohibition on k_1-k_2-k_3-, it is unclear why this should be syntactically unacceptable and so its ban would probably be due a phonological constraint like haplology. But any such constraint must be modulated by the acceptability of two *k-* prefixes in a single form, so simply attributing *k_1-k_2-k_3- to haplology is insufficient. I leave this puzzle unsolved for now.

1.3.4.2. The *ÿ-* prefixes

The *ÿ-* prefix is, like the *k-* prefix, probably a few different homophonous prefixes that have the same phonological forms with different meanings and distributions across the lexicon. But unlike the *k-* prefixes, there is no evidence that more than one *ÿ-* can occur in a single verb word. The description of *ÿ-* by Story (1966: 80) suggests at least three distinct readings of this prefix: (i) face or vertical surface, (ii) passage through space or time, and (iii) exhaustivity. Beyond these three there are other sporadic instances of *ÿ-* that have less clearly identifiable meanings.

The 'face' meaning of *ÿ-* is directly connected to the inalienable noun *ÿá* 'face, vertical surface'. This is clearly shown by a couple of examples in (159) originally given by Story (1966) to illustrate this sense of *ÿ-*. This shows that *ÿ-* is, at least in this case, a kind of IN.

(159) a. Ayaawagwál. *incorporated ÿ- 'face'*
a- ÿ- wu-i- $^{2}\sqrt{}$gwal-H
ARG-face-PFV-STV-$^{2}\sqrt{}$beat -VAR
'He hit him in the face.' (Story 1966: 80)

b. Yawdzi.át'. *incorporated ÿ- 'face'*
ÿ- wu-d- s- i- $^{1}\sqrt{}$.at' -H
face-PFV-PASV-CSV-STV-$^{1}\sqrt{}$cold-VAR
'His face has been made cold.' (Story 1966: 80)

This *ÿ-* shows a relatively clear pattern of incorporation. The data in (160) contrasts a sentence with an independent *ÿá* object in (160a) against an incorporated *ÿ-* in (160b). In contexts like (160b) the reference to 'face' is often not translated, as shown here by Story & Naish's very loose "my firewood went down and turned black instead of burning (esp. of hemlock)".

(160) a. I yá kawdiyés'. *independent ÿá 'face'*
i ÿá k- wu-d- i- $^{2}\sqrt{}$yes'-H
[DP 2SG·PSS face] HSFC-PFV-PASV-STV-$^{2}\sqrt{}$dark-VAR
'The surface of your face is discoloured.' (Story & Naish 1973: 70.828)

b. Ax̲ gáni a x̲'éix̲ yakawdliyés'. *incorporated ÿ- 'face'*
ax̲ gán -í a x̲'é -x̲ ÿ- k- wu-d- l- i- $^{2}\sqrt{}$yes'-H
[DP 1SG·PSS wood-PSS] [PP 3N·PSS mouth-PERT] face-HSFC-PFV-PASV-APPL-STV-$^{2}\sqrt{}$dark-VAR
'The surface of the face of my firewood was blackened by/at its (fire's) mouth.'
(Story & Naish 1973: 30.227)

The sense of *ÿ-* as 'passage through space or time' is illustrated by Story (1966: 80) with the three verbs in (161). Although she does not note this, all three of her examples exhibit *∅*-conjugation verbs as indicated by their stem variation: *-μH* is usual for *∅*-conjugation perfectives of open syllable roots, and *-H* for *∅*-conjugation perfectives of closed syllable roots. I address this correlation below.

(161) a. X'oon sá yaawaxée? *'passage' ÿ- qualifier*
x'oon sá ÿ- wu-i- $^{1}\sqrt{}$xi -μH
how·much Q QUAL-PFV-STV-$^{1}\sqrt{}$overnight-VAR
'How many nights have passed?' (orig. 'What date is it?') (Story 1966: 80)

b. A tóonáx yawdigát'. *'passage' ÿ- qualifier*
a tú -náx ÿ- wu-d- i- $^{1}\sqrt{}$gat' -H
[PP 3N·PSS inside-PERL] QUAL-PFV-MID-STV-$^{1}\sqrt{}$crawl-VAR
'He crawled through it.' (orig. 'He went through on all fours.') (Story 1966: 80)

c. Xoodzí yawligás'. *'passage' ÿ- qualifier*
xoodzí ÿ- wu-l- i- $^{1}\sqrt{}$gas' -H
[DP meteor] QUAL-PFV-XTN-STV-$^{1}\sqrt{}$end·mv-VAR
'A meteor fell.' (orig. 'A comet shot through.') (Story 1966: 80)

Story (1966: 80) further suggests that spatial *ÿ-* is connected to change of direction or escape. One of her representative forms probably demonstrates an *∅*-conjugation motion derivation that specifies the addition of *ÿ-u-* and the *-ch* repetitive imperfective for indirect motion (ch. 6 sec. 4.3.2). There are two kinds of indirect motion derivations, one with the prefixes *ÿ-u-* that regularly alternate with *ÿaa=* (Leer 1991: 304–305), and another with the prefixes *sha-ÿ-u-* that include the IN *sha-* 'head' (Leer 1991: 314–315). The data in (162) illustrate the motion derivation with *ÿ-u-*: the imperative in (162a) and progressive in (162d) exhibit both prefixes, the perfective in (162b) shows only *ÿ-* since the perfective *wu-* obscures the irrealis *u-*, and the repetitive imperfective in (162c) demonstrates the appearance of *ÿaa=* instead of *ÿ-u-* which is unique to these derivations.

(162) a. Héide wután! *indirect motion imperative with ÿ-u-*
hé -dé ÿ- u- $^{2}\sqrt{}$tan
MPRX-ALL QUAL-IRR-ZCNJ-$^{2}\sqrt{}$hdl·w/e
'Move it aside!' (Leer 1991: 305)

b. Héide yaxwaatán. *indirect motion perfective with ÿ-u-*
hé -dé ÿ- u- wu-x- i- $^{2}\sqrt{}$tan -H
MPRX-ALL QUAL-IRR-PFV-1SG·S-STV-$^{2}\sqrt{}$hdl·w/e-VAR
'I moved it aside.' (Leer 1991: 304)

c. Héide yaa xatánch. *indirect motion repetitive imperfective with ÿaa=*
hé -dé ÿaa= x- $^{2}\sqrt{}$tan -H -ch
MPRX-ALL along=1SG·S-$^{2}\sqrt{}$hdl·w/e-VAR-REP
'I repeatedly move it aside.' (Leer 1991: 305)

d. Héide yaa wunxatán. *indirect motion progressive with ÿaa=ÿ-u-*
hé -dé ÿaa= ÿ- u- n- x- $^{2}\sqrt{}$tan -H
MPRX-ALL along=QUAL-IRR-NCNJ-1SG·S-$^{2}\sqrt{}$hdl·w/e-VAR
'I am moving it aside.' (Leer 1991: 305)

The data in (163) illustrate the related kind of indirect motion derivation with *sha-ÿ-u-*, again taken from Leer's examples. The same inflectional contexts are given as in (162) above, demonstrating the same patterns of appearance of *ÿ-*, *u-*, and *ÿaa=*.

(163) a. Yax̲ shawutí! *indirect motion imperative with sha-ÿ-u-*
ÿáx̲= sha- ÿ- u- $^{2}\sqrt{\text{ti}^{\text{h}}}$ -H
TERM=head-QUAL-IRR-ZCNJ-$^{2}\sqrt{\text{hdl}}$·gen-VAR
'Hang it up!' (Leer 1991: 315)

b. Yax̲ shayax̲waatée. *indirect motion perfective with sha-ÿ-u-*
ÿáx̲= sha- ÿ- u- wu-x̲- i- $^{2}\sqrt{\text{ti}^{\text{h}}}$
TERM=head-QUAL-IRR-PFV-1SG·S-STV-$^{2}\sqrt{\text{hdl}}$·gen
'I hung it up.' (Leer 1991: 315)

c. Yax̲ yaa shax̲ateech. *indirect motion repetitive imperfective with ÿaa=sha-*
ÿáx̲= ÿaa= sha- x̲- $^{2}\sqrt{\text{ti}^{\text{h}}}$ -μ -ch
TERM=along=head-1SG·S-$^{2}\sqrt{\text{hdl}}$·gen-VAR-REP
'I repeatedly hang it up.' (Leer 1991: 315)

d. Yax̲ yaa shawunx̲atéen. *indirect motion progressive with ÿaa=sha-ÿ-u-*
ÿáx̲= ÿaa= sha- ÿ- u- n- x̲- $^{2}\sqrt{\text{ti}^{\text{h}}}$ -μ -n
TERM=along=head-QUAL-IRR-NCNJ-1SG·S-$^{2}\sqrt{\text{hdl}}$·gen-VAR-NSFX
'I am hanging it up.' (Leer 1991: 315)

Although Leer says that the *ÿ*-containing motion derivations do not occur without an argument PP (Leer 1991: 304), it is plausible that forms like Story's *yak̲gidanóok'* 'you will swivel it' in (164) below are instances without the argument PP. This suggests that a large number of verbs involving a change of direction that are documented with lexically specified *ÿ-* could be explained by the *ÿ-u-* ~ *ÿaa=* indirect motion derivations.

(164) Yak̲geedanóok'. *indirect motion prospective with ÿ-*
ÿ- w- g- g̲- i- d- $^{2}\sqrt{\text{nuk'}}$ -μH
QUAL-IRR-GCNJ-MOD-2SG·S-MID-$^{2}\sqrt{\text{swivel}}$-VAR
'You (sg.) will swivel it.' (Story 1966: 80)

There are the outstanding problems of why these lexical entries lack irrealis *u-* and why they do not alternate with *ÿaa=*, but both could be plausibly explained by lexicalization processes. Alternatively, these two problems could be explained by a fossilized stratum of simpler *ÿ-* indirect motion derivations from which the *ÿ-u-* indirect motion derivations evolved. In either case, the *ÿ-* still contributes synchronic meaning. Story's examples in (161) where she finds a meaning of 'passage through space or time' could then be included among these lexicalized indirect motions since they all share both *ÿ-* and the *∅*-conjugation class specified by the motion derivations.

Story's other example of spatial *ÿ-* in (165a) that she describes as "an escape situation" is actually the perambulative revertive motion derivation discussed in chapter 5 section 5.2.3. This is characterized by the prefixes *a-* and *ÿ-* in D^0 and *d-* in Voice and means 'turning back along a path other than the original one'. The perambulative revertive in (165a) contrasts with the unmarked form in (165b).

(165) a. Ayakg̱idaháan. *perambulative revertive*
a- ÿ- w- g- g̱- i- d- $^{1}\sqrt{}$han -μH
XPL-QUAL-IRR-GCNJ-MOD-2SG·S-MID-$^{1}\sqrt{}$stand·SG-VAR
'You (sg.) will run away.' (Story 1966: 80)

b. Kei kg̱idaháan. *unmarked form*
kei=w- g- g̱- i- d- $^{1}\sqrt{}$han -μH
up= IRR-GCNJ-MOD-2SG·S-MID-$^{1}\sqrt{}$stand·SG-VAR
'You (sg.) are going to stand up.'

In both the indirect and revertive motion derivations with *ÿ-*, it seems plausible to suppose that the *ÿ-* is related to the *ÿá* 'face' noun, at least historically. There is a semantic parallel with the English verb 'face' that means to orient the front of one's body (and head) in a particular direction: e.g. "Please face the camera", "She faced away from the window". This 'face' meaning of *ÿ-* may still be active in these motion derivations as a kind of adverbial event restrictor rather than an entity restrictor. Once we know more about the semantics of this 'facing' *ÿ-* we may be able to unify it with the more semantically transparent IN *ÿ-* 'face' and thus reduce the inventory of *ÿ-* prefixes. For now I consider them to be separate but related lexical items.

The third category of *ÿ-* qualifier is the exhaustive *ÿ-* for which Story says "the meaning may have reference to all-inclusiveness" (Story 1966: 80). She notes that this *ÿ-* occurs with the *ÿáx̱=* preverb as shown by her two examples in (166).

(166) a. Yax̱ haa yawliláxw. *exhaustive ÿáx̱= + ÿ- + l^s-*
ÿáx̱=haa= ÿ- wu-l^s- i- $^{1}\sqrt{}$laxw-H
EXH=1PL·O=QUAL-PFV-APPL-STV-$^{1}\sqrt{}$starve-VAR
'We're all starved.' (Story 1966: 80)

b. Yax̱ ayawsix̱áa. *exhaustive ÿáx̱= + ÿ- + s-*
ÿáx̱=a- ÿ- wu-s- i- $^{2}\sqrt{}$x̱a-μH
EXH=ARG-QUAL-PFV-APPL-STV-$^{2}\sqrt{}$eat-VAR
'He ate it all up.' (Story 1966: 80)

Leer (1991: 219) describes forms like Story's in (166) as representing an exhaustive derivation composed of the preverb *ÿáx̱=* (or alternatively *NP-x̱* 'along NP'), the qualifier *ÿ-* in D^0, and *s-* or *l-* in *v* which all together means "exhausting O; affecting all/much/many O" for some object O. Leer gives another supporting example that is analyzed in (167a) and which I contrast with a non-exhaustive minimal variant in (167b). The non-exhaustive form lacks *l-* in *v* so the *d-* in Voice triggered by *du-* is predictably absent (ch. 5 sec. 6).

(167) a. Yax̱ yawdudli.ún. *exhaustive ÿáx̱= + ÿ- + l-*
ÿáx̱=ÿ- wu-du- d- l- i- $^{2}\sqrt{}$.un -H
EXH=QUAL-PFV-4H·S-MID-APPL-STV-$^{2}\sqrt{}$shoot-VAR
'People shot all/a bunch of them.' (Leer 1991: 219 #7b)

b. Wuduwa.ún. *non-exhaustive*
wu-du- i- $^{2}\sqrt{}$.un -H
PFV-4H·S-STV-$^{2}\sqrt{}$shoot-VAR
'People shot him/her/it.'

The exhaustive derivation with *ÿáx̲=ÿ-s/l-* is well attested but poorly understood. Its preverb *ÿáx̲=* is glossed 'exhaustive' but this is somewhat misleading because it is the combination of all three morphemes that gives the reading, not just *ÿáx̲=*. Leer (1991: 219) argues that this preverb is actually a fossilization of the noun *ÿán* 'shore, ground' and the pertingent postposition *-x̲* 'of, contacting, along, against', supporting his claim with the contrast between (167a) above and the form in (168) which has a large PP headed by *-x̲* that replaces *ÿáx̲=*.[25]

(168) Du x̲'usyeex̲ at yawdudli.ún. *exhaustive ÿ- with PP*
du x̲'oos-ÿee -x̲ at= ÿ- wu-du- d- l- i- $\sqrt[2]{}$.un -H
[3H·PSS foot- below-PERT] 4N·O=QUAL-PFV-4H·S-MID-XTN-STV-$\sqrt[2]{}$shoot-VAR
'People shot up everything below his/her feet.' (Leer 1976a: 153)

Given that *ÿáx̲=* is not the locus of exhaustivity, this leaves *ÿ-* and *s-* ~ *l-*. The function of the *s-* ~ *l-* is probably an applicative that licenses the PP headed by *-x̲* (ch. 4 sec. 3.3). This leaves the *ÿ-* as the remaining option for exhaustivity, but there is no clear relationship between the meaning of 'face' and the exhaustion of a set of entities. For now I simply gloss this *ÿ-* opaquely as a qualifier, but hopefully its semantics will become clear with further investigation into the exhaustive derivation.

The AN *ÿata-* 'sleep' is illustrated in (169). This AN might contain a frozen *ÿ-* qualifier because the noun *tá* 'sleep' and the root $\sqrt[1]{ta^h}$ 'sg. sleep' – e.g. *x̲atá* 'I sleep' – do not contain *ÿa*.

(169) a. Du yáx̲ yataxeex.
du ÿá -x̲ ÿata-$\sqrt[1]{}$xix-μ
[PP 3H·PSS face-PERT] sleep-$\sqrt[1]{}$fall -VAR
'Sleep is falling on his face.' (i.e. 'he is falling asleep') (Story 1966: 80)

b. Du éet yataawaháa.
du ee -t ÿata-wu-i- $\sqrt[1]{}$ha^h -μH
[PP 3H BASE-PNCT] sleep-PFV-STV-$\sqrt[1]{}$mv·inv-VAR
'Sleep has come invisibly to him.' (i.e. 'he is sleepy') (Story 1966: 80)

Normally *ÿ-* never occurs to the left of any N except *k-*, so if *ÿata-* were analyzed as *ÿ-ta-* this ordering would be unique. In addition, although there is a *ta-* < *táa^k* 'inner bottom' (table 7.5, p. 745), *ta-* 'sleep' does not occur independently of *ÿata-*. Because of this, I do not analyze *ÿata-* as containing two synchronic morphemes. The AN may originally have been nominalized from a verb with the structure *ÿ-$\sqrt[1]{ta^h}$-H* that included the *ÿ-* qualifier, but in modern Tlingit this *ÿ-* is frozen.

Finally, unlike the *k-* prefixes there are no known verb forms that contain two *ÿ-* prefixes. There are certainly verbs that could be mistaken for containing two *ÿ-* prefixes, but close examination always shows that they do not. A couple of examples are shown in (170). In (170a) the realization of *yay* [jàj] is actually due to the combination of perfective *wu-* and second person singular subject *i-* 'you sg.' that realize together as *ÿi* which then is preceded by the *ÿ-* qualifier. In (170b) the realization of *yaya* is the sequence of the *ÿ-* qualifier followed by the lone *i-* in Ɛ that arises as *ÿa*.

25. The sentence in (168) is actually a metaphorical expression that Leer less literally translates as "people went to great lengths to get him/her to come to a potlatch" (Leer 1991: 219 #7c). He suggests a parallel in English with "they left no stone unturned along his/her way" (Leer 1991: 219 fn. 12).

(170) a. Sh tugéit xat yaydzikáa
sh tú- gé -t xat= ÿ- wu-i- d- s- i- $^{1}\sqrt{}$ka-μH
[PP RFLX·PSS mind-against-PNCT] 1SG·O=face-PFV-2SG·S-MID-XTN-STV-$^{2}\sqrt{}$say-VAR
yá lingít wakkáx'.
yá lingít waak-ká -x'
[PP PROX person eye- HSFC-LOC]
'You insulted me in front of these people.' (Dauenhauer & Dauenhauer 1987: 200.116)

b. Taakw eetíx' áwé yoo yaya.éik wé gaat.
taakw eetí -x' á -wé yoo=ÿ- i- $^{1}\sqrt{}$.a -eH-k wé gaat
[PP winter remains-LOC] FOC-MDST ALT= QUAL-STV-$^{1}\sqrt{}$end·mv-VAR-REP [DP MDST sockeye]
'It is in the early spring that they run, the sockeye.' (Eggleston 2017)

After extensive searching of extant materials, I have found no sequences that look like *yay* or *yaya* which are not best analyzed along the lines of the forms in (170). I conclude then that sequences of two *ÿ-* prefixes do not occur although I have not attempted to elicit any forms with more than one *ÿ-*. The reason for this restriction is unknown, but it suggests an analysis where the *ÿ-* prefixes are all a single terminal node so that a pair of *ÿ-* is impossible. This means that *ÿ-* is either polysemous or its meaning must be abstract enough to cover all instances of *ÿ-* in every verb.

2. Plurality modifiers: Argument restriction

There are two plurality modifiers *has=* and *dax=* which appear between the preverbs and the D^0 subtree. These plurality modifiers are argument restrictors which entail the plurality of either the subject or the object. The human plural *has=* modifier indicates that the referent is plural and human, and the distributive plural *dax=* indicates that the referent is plural and possibly distributed or nonhuman or both. The data in (171) illustrate the use of *has=* and *dax=* for covert objects.

(171) a. Wutusiteen. *covert object*
wu-tu- s- i- $^{2}\sqrt{}$tin-μ
PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see -VAR
i. 'We saw him/her/it.'
ii. 'We saw them (things).'
iii. *'We saw them (people).' (Leer 1991: 130 #61b)

b. Has wutusiteen. *covert object with has=*
has=wu-tu- s- i- $^{2}\sqrt{}$tin-μ
PLH= PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see -VAR
'We saw them (people).' (Leer 1991: 130 #61d)

c. Dax wutusiteen. *covert object with dax=*
dax=wu-tu- s- i- $^{2}\sqrt{}$tin-μ
DPL= PFV-1PL·S-XTN-STV-$^{2}\sqrt{}$see -VAR
'We saw them (things).' (Leer 1991: 130 #62b)

The *has=* and *dax=* plural modifiers in (171) occur with *pro* arguments that end their lives below AspP so that both modifiers c-command them in the final derivation. It is however possible for

overt DPs to occur with both plural modifiers, in which case the DPs must be moved out from below AspP for spellout of the verb word. The data in (172) illustrate this with overt DPs. In (172b) the DP is *dáx̲náx̲ k̲áa* 'two men', and in (172c) the DP is *shayadihéini k'únts'* 'potatoes which are many' including a relative clause.

(172) a. K̲áa x̲wasiteen. *overt object*
k̲áa wu-x̲- s- i- $^{2}\sqrt{}$tin-μ
[DP man] PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$see-VAR
'I saw a man.'

b. Dáx̲náx̲ k̲áa has x̲wasiteen. *overt object with has=*
déix̲-náx̲ k̲áa has=wu-x̲- s- i- $^{2}\sqrt{}$tin-μ
[DP two -HUM man] PLH= PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$see-VAR
'I saw two men.'

c. Shayadihéini k'únts' dax̲ uwa.ée. *overt object with dax̲=*
sha- ÿ- d- i- $^{1}\sqrt{}$ha^{h} -eH-n -i k'únts' dax̲=u- i- $^{1}\sqrt{}$.i -μH
[DP head-face-MID-STV-$^{1}\sqrt{}$many-VAR-NSFX-REL potato] DPL= ZPFV-STV-$^{1}\sqrt{}$cook-VAR
'Many potatoes got cooked.' (lit. 'potatoes that are many')

Since the DPs must be moved out from below AspP, in the final form of the derivations of (171b) and (172c) they cannot be within the scope of the *has=* and *dax̲=* modifiers. The DPs are still interpreted as plural however, and I take this as evidence that the DPs were c-commanded by the modifiers at some point in the derivation. This point would be when the modifiers are merged at AspP before the DPs are moved out from below AspP due to the phase at Asp. Thus the *has=* and *dax̲=* plural modifiers are diagnostics for movement of DPs out of the verb word.

According to Leer, it is possible for *has=* and *dax̲=* to cooccur in a single form but "some speakers feel that the combination ... is excessively 'busy' and should be avoided" (Leer 1991: 129 fn. 46). I have not encountered this constraint, but although I have elicited *has=* and *dax̲=* in a single form, this combination is very rarely attested. When they do occur together, the ordering must be *has=* > *dax̲=* as shown in (173).

(173) a. Shayadihéini k'únts' has dax̲ amsi.ée. *has= > dax̲=*
sha- ÿ- d- i- $^{1}\sqrt{}$ha^{h} -eH-n -i k'únts' has=dax̲=a- m- s- i- $^{1}\sqrt{}$.i -μH
[DP head-face-MID-STV-$^{1}\sqrt{}$many-VAR-NSFX-REL potato] PLH= DPL= ARG-PFV-CSV-STV-$^{1}\sqrt{}$cook-VAR
'They cooked many potatoes.' (lit. 'potatoes that are many')

b. * Shayadihéini k'únts' dax̲ has amsi.ée. **dax̲= > has=*
sha- ÿ- d- i- $^{1}\sqrt{}$ha^{h} -eH-n -i k'únts' dax̲=has=a- m- s- i- $^{1}\sqrt{}$.i -μH
[DP head-face-MID-STV-$^{1}\sqrt{}$many-VAR-NSFX-REL potato] DPL= PLH= ARG-PFV-CSV-STV-$^{1}\sqrt{}$cook-VAR
intended: 'They cooked many potatoes.'

2.1. Constraints on plurality modification

There are three significant constraints on plurality modification that limit the combination of these modifiers with various referents. First (sec. 2.1.1), both *has=* and *dax̲=* are permitted only with third person and cannot be combined with first or second person referents. Second (sec. 2.1.2), the *has=*

plural modifier is constrained to humans and cannot be used with nonhuman referents; in contrast the *da<u>x</u>=* plural modifier is generally constrained to nonhumans. Third (sec. 2.1.3), both *has=* and *da<u>x</u>=* are permitted only with subjects or objects and cannot be used to modify argument PPs (path or location) nor adjuncts. The net effect of these constraints is to limit the application of *has=* and *da<u>x</u>=* to a subset of all possible referents: (non)human entities that are not local to the discourse (third person) and that are either proto-agents (Θ_2) or proto-patients (Θ_1) of an eventuality.

All three of these constraints could potentially be modelled either in the syntax or in the semantics. Syntactically the first and third constraints can be based on probes for a third person φ-feature [3] and for the two θ-features [θ_1] and [θ_2]. The second constraint presumably would involve a φ-feature like [HUM] which specifies that the referent is human. Although I have not needed this [HUM] feature yet in my analysis, it could conceivably be required for the third person human possessive pronoun *du* 'his/her', the similar location pronoun *du ee* ~ *ú* '(to, on, etc.) him/her', and the fourth person human indefinite subject *du-* 'someone, people', as well as perhaps for certain roots that are restricted to human referents. All three constraints could also be modelled semantically with functional restrictions on the denotation of the participant variables, such as for example $\Theta_2(\varepsilon, x) \wedge \mathsf{human}(x) \wedge \neg\mathsf{local}(x)$ which says that the referent of x must be human and not local to the discourse (not a participant). Both syntactic and semantic constraints could also be active at the same time. For now I suggest a syntactic solution in keeping with the rest of my model, but I acknowledge that this is a more or less arbitrary decision that should be revisited in the future.

The syntactic configuration for *has=* with a third person human subject thus looks something like the tree in figure 7.7, which represents the sentence in (174). The verb in (174) is an applicative based on the bivalent root $\sqrt[2]{ti'w}$ 'count, read' with the applicative *l-* licensing the recipient argument PP headed by the locative postposition *-x'* ~ *-μ* 'at, on, to'.

(174) Du éex' has at wulitéew.
du ee -x' has=at= wu-l- i- $\sqrt[2]{}$ti'w -μH
[PP 3H BASE-LOC] PLH= 4N·O=PFV-APPL-STV-$\sqrt[2]{}$teach-VAR
i. 'They taught something to her.'
ii. *'S/he taught something to them.'
iii. *'S/he taught some people to him/her.' (Leer 1991: 132 #66d)

The *v*P in figure 7.7 has a subject *pro* which is interpreted as third person with the addition of plurality and humanity from *has=*. The *has=* cannot modify the object *at=* because this is already specified as nonhuman (i.e. 'something', not 'someone'). To show how argument PPs could potentially be in the scope of *has=*, the derivation in figure 7.7 stops before the raising of the applicative recipient argument PP *du éex'* 'to her' from its initial merge in *v*P to its final landing place in AspP above *has=*. Even though *has=* c-commands the PP, because plurality modification is restricted to subjects and objects the PP cannot be interpreted as plural and thus the translation 's/he taught them something' is incorrect.

2.1.1. Constraints on person: Only third

Neither *has=* nor *da<u>x</u>=* can be applied to an overt first or second person argument. The data in (175)–(177) demonstrate this for *has=* using the unaccusative stative verb 'be' based on the root $\sqrt[1]{ti^h}$ 'be, exist'.

Figure 7.7: Tree showing *has*= with a third person subject.

(175) a. *Yéi has x̱at yatee. **has= with first person singular*
yéi= has=x̱at= i- ¹√tiʰ-μ
thus=PLH=1SG·O=STV-¹√be -VAR
intended: 'I am thus.'

b. *Yéi has haa yatee. **has= with first person plural*
yéi= has=haa= i- ¹√tiʰ-μ
thus=PLH=1PL·O=STV-¹√be -VAR
intended: 'We are thus.'

(176) a. *Yéi has iyatee. **has= with second person singular*
yéi= has=i- i- ¹√tiʰ-μ
thus=PLH=2SG·O-STV-¹√be -VAR
intended: 'You (sg.) are thus.'

b. *Yéi has yee yatee. **has= with second person plural*
yéi= has=ÿee= i- $^{1}\sqrt{}$ti^{h}-μ
thus=PLH= 2PL·O=STV-$^{1}\sqrt{}$be -VAR
intended: 'You (pl.) are so.'

(177) Yéi has yatee. *has= with third person*
yéi= has=i- $^{1}\sqrt{}$ti^{h}-μ
thus=PLH= STV-$^{1}\sqrt{}$be -VAR
'They (humans) are thus.'

The constraint against *has=* with first or second person is presumably a constraint prohibiting the referent from being local to the discourse, i.e. a discourse participant. The discourse nonlocal persons are the third and fourth (indefinite, nonspecific, or nonreferential). These are often translated as singular, but in fact they are number neutral. Thus the addition of *has=* does not contradict any singularity entailments because these persons do not entail singularity.

The data in (178) illustrate a third person nonhuman noun *x'áax'* 'apple'. In (178a) the noun can be interpreted as either singular or plural and hence is number neutral. The *has=* human pluralizer cannot be combined with the third person *x'áax'* 'apple' in (178b) because apples are not human.[26]

(178) a. X'áax' xwaaxáa. *number-neutral third nonhuman object*
x'áax' wu-x- i- $^{2}\sqrt{}$xa-μH
[DP apple] PFV-1SG·S-STV-$^{2}\sqrt{}$eat-VAR
i. ✓'I ate an apple.'
ii. ✓'I ate apples.'

b. * X'áax' has xwaaxáa. **has= pluralizing third nonhuman object*
x'áax' has=wu-x- i- $^{2}\sqrt{}$xa-μH
[DP apple] PLH= PFV-1SG·S-STV-$^{2}\sqrt{}$eat-VAR
intended: 'I ate apples.'

The data in (179) illustrate a third person human noun *Naawéijín* 'Norwegian'. In (179a) the unmarked form can be interpreted as either singular or plural, but when *has=* is added in (179b) it can only be plural. I expect this explicit pluralization has information structure consequences.

(179) a. Naawéijín xwasiteen. *number-neutral third human object*
Naawéijín wu-x- s- i- $^{2}\sqrt{}$tin-μ
[DP Norwegian] PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$see -VAR
i. ✓'I saw a Norwegian.'
ii. ✓'I saw Norwegians.'

b. Naawéijín has xwasiteen. *has= pluralizing third human object*
Naawéijín has=wu-x- s- i- $^{2}\sqrt{}$tin-μ
[DP Norwegian] PLH= PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$see -VAR
'I saw Norwegians.'

26. Given a mythological narrative, a dream, or some similarly surreal experience, *has=* can be combined with a conventionally non-human entity. This can be found in some recorded narratives.

The fourth person human subject *du-* can similarly be interpreted as singular or plural as shown in (180). I have not verified if *has=* can be used to pluralize *du-*. The vast majority of examples of *has=… du-* I have found show disjoint reference with the *has=* pluralizing a third person object and not *du-*; two exceptions with *has=* possibly pluralizing *du-* are listed in (181).

(180) Haa wududziteen. *number-neutral fourth human subject du-*
haa=wu-du- d- s- i- $^{2}\sqrt{}$tin-μ
1PL·S=PFV-4H·S-MID-XTN-STV-$^{2}\sqrt{}$see -VAR
i. ✓ 'Someone saw us.'
ii. ✓ 'People saw us.'

(181) *has= pluralizing fourth human subject du-?*

a. A héent akoonáa áwé
a héen-t a- k- u- $^{2}\sqrt{}$na -μH á -wé
[CP so water-PNCT ARG-QUAL-IRR-ZCNJ $^{2}\sqrt{}$order-VAR SUB] FOC-MDST
tsá yú héen táax̲ has kawduwax'aak.
tsá yú héen táa^{k} -x̲ has=k- wu-du- i- $^{1}\sqrt{}$x'ak -μ
then [PP DIST water below-PERT] PLH= QUAL-PFV-4H·S-STV-$^{1}\sqrt{}$fish·swim-VAR
'When he finally told them to go into the sea, they glided through the sea.' (orig. tr.)
(Dauenhauer & Dauenhauer 1987: 118.174–175)

b. Tléil át yawugoowún asg̲eiwú;
tléil á -t ÿ- u- wu-$^{1}\sqrt{}$gu -μ -ín asg̲eiwú
NEG [PP 3N-PNCT] face-IRR-PFV-$^{1}\sqrt{}$poke-VAR-PAST seiner
át has naduxáchjin tugboatch.
á -t has=n- du- $^{2}\sqrt{}$x̲ach-H -ch -ín tugboat-ch
[PP 3N-PNCT] PLH= NCNJ-4H·S-$^{2}\sqrt{}$tow -VAR-REP-PAST [DP tugboat -ERG]
'Seiners used to not go about on their own; they were towed around by tugboats.' (orig.)
(Naish 1966: 139.4–5)

Number neutrality in the third person is probably common to the whole Na-Dene family, though there is not much focused research on the phenomenon. See Wilhelm (2006, 2008) for a description and analysis in the distantly related Dëne Sųłiné ('Chipewyan') language.

Just as with *has=*, the distributive plural *dax̲=* cannot be applied to first or second person arguments. The data in (182)–(184) illustrate this with the same unaccusative existence verb used earlier with *has=*. The inapplicability may be due to the nonhuman constraint discussed in section 2.1.2 as well as the constraint against discourse local reference.

(182) a. *Yéi dax̲ x̲at yatee. **dax̲= with first person singular*
yéi= dax̲=x̲at= i- $^{1}\sqrt{}$ti^{h}-μ
thus=DPL= 1SG·O=STV-$^{1}\sqrt{}$be -VAR
intended: 'I am so.'

b. *Yéi dax̲ haa yatee. **dax̲= with first person plural*
yéi= dax̲=haa= i- $^{1}\sqrt{}$ti^{h}-μ
thus=DPL= 1PL·O=STV-$^{1}\sqrt{}$be -VAR
intended: 'We are so.'

(183) a. *Yéi daẋ iyatee. **daẋ= with second person singular*
yéi= daẋ=i- i- $^{1}\sqrt{\text{ti}^{h}}$-μ
thus=DPL= 2SG·O-STV-$^{1}\sqrt{\text{be}}$ -VAR
intended: 'You (sg.) are so.'

b. *Yéi daẋ yee yatee. **daẋ= with second person plural*
yéi= daẋ=ÿee= i- $^{1}\sqrt{\text{ti}^{h}}$-μ
thus=DPL= 2PL·O=STV-$^{1}\sqrt{\text{be}}$ -VAR
intended: 'You (pl.) are so.'

(184) Yéi daẋ yatee. *daẋ= with third person*
yéi= daẋ=i- $^{1}\sqrt{\text{ti}^{h}}$-μ
thus=DPL= STV-$^{1}\sqrt{\text{be}}$ -VAR
'They (nonhumans) are so.'

2.1.2. Constraints on humanity: Human or nonhuman

The plural modifiers exhibit constraints on humanity: the distinction between human (or human-like) and nonhuman referents. The *has*= pluralizer is only allowed for human referents. The *daẋ*= pluralizer is normally used only with non-human referents, but sometimes it occurs with unquestionably human referents.

The data in (185) and (186) illustrate the restriction on *has*= to only human referents. In (185) the referent of *Taaltaan* 'Tahltan' must be a human because this ethnonym denotes people who belong to the Tahltan nation. Without *has*= in (185a) the referent can be interpreted as singular, but with *has*= in (185b) the referent must be interpreted as plural.

(185) a. Wé Taaltaan litseen.
wé Taaltaan l- i- $^{1}\sqrt{\text{tsin}}$ -μ
MDST NAME XTN-STV-$^{1}\sqrt{\text{strong}}$-VAR
'That Tahltan is strong.'

b. Wé Taaltaan has litseen.
wé Taaltaan has=l- i- $^{1}\sqrt{\text{tsin}}$ -μ
MDST NAME PLH=XTN-STV-$^{1}\sqrt{\text{strong}}$-VAR
'Those Tahltans are strong.'

The forms in (186) show that the referent of *dzísk'w* 'moose' denotes a nonhuman. In (186) the referent can be interpreted either as singular or plural. Adding *has*= in (186b) is ungrammatical because a moose is not human even though it may be animate.

(186) a. Wé dzísk'w litseen.
wé dzísk'w l- i- $^{1}\sqrt{\text{tsin}}$ -μ
MDST moose XTN-STV-$^{1}\sqrt{\text{strong}}$-VAR
'That moose is strong.', 'Those moose are strong.'

b. *Wé dzísk'w has litseen.
wé dzísk'w has=l- i- $^{1}\sqrt{\text{tsin}}$ -μ
MDST moose PLH=XTN-STV-$^{1}\sqrt{\text{strong}}$-VAR
intended: 'Those moose are strong.'

I am unaware of any reliable exceptions to the restriction of *has*= to human referents. In all cases where *has*= might be analyzed as pluralizing a nonhuman referent, there is an alternative analysis where the referent is idealized as a human. This specifically happens in narrative where entities are mythically envisioned as animals with humanlike qualities, and also in oratory where typically inanimate objects are spoken about as living members of Tlingit society. But in ordinary conversation this does not occur and speakers are quick to note *has*= with nonhumans as ungrammatical.

The *dax*= plural modifier is usually limited to nonhumans, although as Leer (1991: 130) notes it does occasionally occur with human referents. If *dax*= is not exclusive to nonhumans then it is likely that its reported preference for nonhumans is connected with pragmatics and information structure. The data in (187)–(193) illustrate several instances of *dax*= used with human referents to provide a starting point for further investigation. The form in (187) was elicited but the rest are from narratives. In (187)–(190) the *dax*= applies to the object either of a transitive (187) or an unaccusative (188)–(190).

(187) Wé káa sháa dax amsiteen.
wé káa sháa dax=a- m- s- i- ²√tin-μ
[DP MDST man] [DP woman] DPL= ARG-PFV-XTN-STV-²√see -VAR
'The man saw women.' (*Keiyishí* Bessie Cooley)

(188) Yá Deisheetaan, yá dáak káx' yéi aa dax yatee.
yá Deisheetaan yá dáak ká -x' yéi= aa= dax=i- ¹√tiʰ-μ
[DP PROX NAME] [PP PROX inland HSFC-LOC] thus=PART=DPL= STV-¹√be -VAR
'These Deisheetaan, some are on the inland.' (Dauenhauer & Dauenhauer 1987: 70.142–143)

(189) Yéi dax kaawahaayi káa áwé
yéi= dax=k- wu-i- ¹√haʰ -μ -i káa á -wé
[DP thus=DPL= QUAL-PFV-STV-¹√mv·invis-VAR-REL man] FOC-MDST
wooch yaagáa tulanoogún.
wooch ÿá -gáa tu- l- ¹√nuk-μ -ín
[PP RECIP·PSS face-ADES] mind-XTN-¹√feel -VAR-PAST
'People in this relationship we considered suitable partners for one another.' (orig. tr.)
(Nyman & Leer 1993: 24.295–296)

(190) yá ax yátx'i geigí, a xoo.aa de
yá ax ÿát -x' -í geigí a xoo- aa de
[DP PROX 1SG·PSS child-PL-PSS poor] [DP 3N·PSS among-PART] already
keijín jinkaat táakw ka keijínx dax sitee
keijín jinkaat táakw ka keijín-x dax=s- i- ¹√tiʰ-μ
[PP five ten winter and five -PERT] DPL= APPL-STV-¹√be -VAR
'my poor children, some of them are 55 years old' (orig. tr.) (Nyman & Leer 1993: 26.353–354)

The verb complex in (191) follows shortly after (192) in its narrative context. It shows a rare example of both *has*= and *dax*= together in the same structure and surprisingly has the order *dax*= > *has*= which was ungrammatical earlier in (173b).

(191) yaa daẋ has nasẋít.
ÿaa= daẋ=has=n- s- $^{1}\sqrt{}$ẋit -H
along=DPL= PLH= NCNJ-CSV-$^{1}\sqrt{}$multiply-VAR
'they are still having children.' (orig. tr.) (Nyman & Leer 1993: 106.133)

The last two instances of human *daẋ=* in (192) and (193) are unusual because they have both *daẋ=* and the much more rare *daga̱-* distributive and because they apparently have *daẋ=* applied to subjects.

(192) x'oonínnáẋ yateeyi aa sá yátx' daẋ has adaga̱.weit'
x'oon -náẋ i- $^{1}\sqrt{}$ti^{h}-μ -i aa sá ÿát -x' daẋ=has=a- dag̱- $^{1}\sqrt{}$.u^{h} -e -t'
[DP how·many-HUM STV-$^{1}\sqrt{}$be -VAR-REL PART] Q [DP child-PL] DPL= PLH= ARG-DISTB-$^{2}\sqrt{}$have-VAR-REP
'so many of them have children' (orig. tr.) (Nyman & Leer 1993: 106.126)

(193) Ch'a yéi k̲áa aẋ een daẋ adag̱al'eiẋ yé.
ch'a yéi k̲áa aẋ ee -n daẋ=a- dag̱- $^{2}\sqrt{}$l'eẋ -μ yé
[DP just thus man] [PP 1SG BASE-INSTR] DPL= XPL-DISTB-$^{2}\sqrt{}$dance-VAR REL way
'everyone was dancing with me.' (orig. tr.) (Nyman & Leer 1993: 194.576–577)

2.1.3. Constraints on arguments: Only subjects or objects

The *has=* plural can scope over either the subject or the object in a transitive structure as shown by the data in (194). The form in (194a) has an overt singular subject *ẋ-* 'I' so *has=* can only pluralize the object. In (194b) the object is the overtly singular *ẋat=* 'me' so *has=* can only pluralize the subject.

(194) a. Has ẋwasiteen. *has= applied to object of transitive*
has=wu-ẋ- s- i- $^{2}\sqrt{}$tin-μ
PLH= PFV-1SG·S-XTN-STV-$^{2}\sqrt{}$see -VAR
i. 'I saw them.'
ii. * 'I saw him/her.'

b. Has ẋat wusiteen. *has= applied to subject of transitive*
has=ẋat= wu-s- i- $^{2}\sqrt{}$tin-μ
PLH= 1SG·O=PFV-XTN-STV-$^{2}\sqrt{}$see -VAR
i. 'They saw me.'
ii. * 'S/he saw me.'

It is possible for *has=* to occur with both a third person subject and a third person object. In such contexts the *has=* can only apply to one of the two third persons and never both at the same time as shown in (195) below. Thus a single three-on-three form has two possible readings of 'plural subject → object' or 'subject → plural object' but never a third reading of 'plural subject → plural object'.

(195) Has awsiteen.
has=a- wu-s- i- $^{2}\sqrt{}$tin-μ
PLH= ARG-PFV-XTN-STV-$^{2}\sqrt{}$see -VAR
i. 'They saw him/her.'
ii. 'S/he saw them.'
iii. * 'They saw them.'

Unlike *has=*, the distributive plural *da<u>x</u>=* does not normally scope over subjects (though see sec. 2.1.2). In (196a) the sentence is grammatical because *da<u>x</u>=* can only be interpreted as pluralizing the object since the subject is an explicit *<u>x</u>-* 'I'. In contrast, (196b) is bad because *da<u>x</u>=* can only be interpreted as pluralizing the subject since the object is explicitly *<u>x</u>at=* 'me'.

(196) a. Da<u>x</u> <u>x</u>wasiteen. *da<u>x</u>= applied to object of transitive*
da<u>x</u>=wu-<u>x</u>- s- i- $\sqrt[2]{}$tin-μ
DPL= PFV-1SG·S-XTN-STV-$\sqrt[2]{}$see -VAR
i. 'I saw them (nonhumans).'
ii. *'I saw it.'

b. *Da<u>x</u> <u>x</u>at wusiteen. *da<u>x</u>= applied to subject of transitive*
da<u>x</u>=<u>x</u>at= wu-s- i- $\sqrt[2]{}$tin-μ
DPL= 1SG·O=PFV-XTN-STV-$\sqrt[2]{}$see -VAR
intended: 'They (nonhumans) saw me.'

Because *da<u>x</u>=* normally only applies to the object, it is usually unambiguous with two third person arguments unlike *has=*. The sentence in (197) is not interpreted with a singular object, and even though number neutrality supports a reading of *shaawát* 'woman' as plural this is not due to *da<u>x</u>=* modifying the subject DP.

(197) Shaawát da<u>x</u> amsi.ée.
shaawát da<u>x</u>=a- wu-s- i- $\sqrt[1]{}$.i -μH
[DP woman] DPL= ARG-PFV-CSV-STV-$\sqrt[1]{}$cook-VAR
i. 'The girl(s) cooked them.'
ii. *'The girls cooked it.'

Both *has=* and *da<u>x</u>=* are strictly limited to modifying subjects and objects; they cannot be interpreted as applying to argument PPs nor to adjuncts. The data in (198) show that *has=* cannot be used for the argument PP of a motion (handling) verb because in (198b) the *has=* cannot pluralize the referent of *a<u>x</u> léelk'w* 'my grandparent'.

(198) a. A<u>x</u> léelk'w jeedé kak<u>k</u>watée wé dáanaa.
a<u>x</u> léelk'w jee -dé k- w- g- <u>g</u>- <u>x</u>- $\sqrt[2]{}$ti -μH wé dáanaa
[PP 1SG·PSS grandpt pos'n-ALL] SRO-IRR-GCNJ-MOD-1SG·S-$\sqrt[1]{}$hdl·gen-VAR [DP MDST money]
'I'm going to give the money to my grandfather.' (Story & Naish 1973: 99.1265)

b. * A<u>x</u> léelk'w jeedé has kak<u>k</u>watée wé dáanaa.
a<u>x</u> léelk'w jee -dé has=k- w- g- <u>g</u>- <u>x</u>- $\sqrt[2]{}$ti -μH wé dáanaa
[PP 1SG·PSS grandpt pos'n-ALL] PLH= SRO-IRR-GCNJ-MOD-1SG·S-$\sqrt[1]{}$hdl·gen-VAR [DP MDST money]
intended: 'I'm going to give the money to my grandfathers.'

The data in (199) show that *has=* cannot be used to pluralize an applicative argument PP. The verb in (199a) is applicativized from a basic transitive *aawak'é<u>x</u>'* 's/he kicked it' with the addition of *s-* in *v* and the PP headed by *-ch*. The *has=* in (199c) is part of the possessive pronoun; see section 2.2.1 for discussion.

(199) a. Du x̲'oosch awsik'éx̲'.
du x̲'oos-ch a- wu-s- i- $\sqrt[2]{}$k'ex̲'-H
[PP 3H·PSS foot -INSTR] ARG-PFV-APPL-STV-$\sqrt[2]{}$hook-VAR
'He hooked it with his foot.' (Story & Naish 1973: 111.1448)

b. * Du x̲'oosch has awsik'éx̲'.
du x̲'oos-ch has=a- wu-s- i- $\sqrt[2]{}$k'ex̲'-H
[PP 3H·PSS foot -INSTR] PLH= ARG-PFV-APPL-STV-$\sqrt[2]{}$hook-VAR
intended: 'He hooked it with their feet.'

c. Hasdu x̲'oosch awsik'éx̲'.
has=du x̲'oos-ch a- wu-s- i- $\sqrt[2]{}$k'ex̲'-H
[PP PLH= 3H·PSS foot -INSTR] ARG-PFV-APPL-STV-$\sqrt[2]{}$hook-VAR
'He hooked it with their feet.'

Finally, the data in (200) shows that *has*= cannot be used to pluralize adjuncts. The verb in (200a) has an adjunct PP in *du een* 'with him/her' added to the basic transitive reflexive imperative *sh idasá* 'name/call yourself'.

(200) a. Du een sh idasá.
du ee -n sh= i- d- $\sqrt[2]{}$sa -H
[PP 3H BASE-INSTR] RFLX=2SG·S-MID-$\sqrt[2]{}$name-VAR
'Introduce yourself to him.' (Story & Naish 1973: 116.1523)

b. * Du een has sh idasá.
du ee -n has=sh= i- d- $\sqrt[2]{}$sa -H
[PP 3H BASE-INSTR] PLH= RFLX=2SG·S-MID-$\sqrt[2]{}$name-VAR
intended: 'Introduce yourself to them.'

c. Hasdu een sh idasá.
has=du ee -n sh= i- d- $\sqrt[2]{}$sa -H
[PP PLH= 3H BASE-INSTR] RFLX=2SG·S-MID-$\sqrt[2]{}$name-VAR
'Introduce yourself to them.'

2.2. Related plural elements

Both *has*= and *dax̲*= plural modifiers have phonologically similar elements that appear in other syntactic contexts. They are certainly diachronically related to the *has*= and *dax̲*= modifiers, but their synchronic relationships are still unclear. For now I assume that these other elements are separate lexical entries, but it may be possible to unify their semantics and phonology across the several syntactic contexts so that only a single lexical entry is needed for each.

2.2.1. Forms related to *has*=

The *has*= plural modifier in AspP is related to three other nearly identical elements in other areas of the grammar. One is the third person human plural DP pronoun *hás* 'them' as illustrated in (201). This pronoun is structurally the same as other DP pronouns like *hú* 'him/her' in (202), appearing in A′-positions such as topic and focus. In (201) the pronoun *hás* is coreferential with an object *pro* in VP that is scoped over by the plural modifier *has*= (here realized as *s*).

(201) Ldakát hás héench yéi s wusinee. *third human plural DP pronoun*
ldakát hás héen-ch yéi= has=wu-s- i- $^{1}\sqrt{\text{ni}^{h}}$ -μ
[DP all 3H·PL] [PP water-INSTR] thus=PLH= PFV-APPL-STV-$^{1}\sqrt{\text{happen}}$-VAR
'All of them were drowned.' (orig. tr.) (Story & Naish 1973: 76.914)

(202) Ch'a hú aadé ngagóot.
ch'a hú á -dé n- g- $^{1}\sqrt{\text{gut}}$ -μH
[DP just 3H] [PP there-ALL] NCNJ-MOD-$^{1}\sqrt{\text{go}}$·SG-VAR
'Just her, let her walk over herself.' (orig. tr.) (Dauenhauer & Dauenhauer 1987: 216.435)

The appearance of both the DP pronoun *hás* and the plural modifier *has=* in (201) shows that the two elements are syntactically distinct even though they are obviously phonologically similar. This evidence can be taken to support the analysis where they are separate lexical entries, but it is still possible to argue for a copying analysis where both *hás* and *has=* spell out because of the lack of deletion of the lower *has=*. This copying approach would raise a syntactic conflict, however. Given that *has=* is a modifier rather than a pronoun itself, we would need to account for why the DP pronoun *hás* appears alone rather than modifying a third person human pronoun *hú* 'she/her, he/him' in the same way that *has=* modifies other DPs. Crucially, outside of the verb word *pro* is prohibited.

Another related element is the *has* modifier in the third person human plural possessive pronoun *hasdu* 'their' as shown in (203). The *du* 'his/her' alone is the singular third person human possessive; only with *has* does *du* denote plural human possession. This *has* does not combine with any other possessive pronouns so the *has* + *du* structure is unique.

(203) Aadáx̱ ch'a ldakát yú k̲utaan has k̲ushée *third plural poss.*
á -dáx̱ ch'a ldakát yú k̲utaan has=k̲u- $^{2}\sqrt{\text{shi}}$ -μH
[PP then-ABL] [PP just all DIST summer] PLH= AREAL-$^{1}\sqrt{\text{reach}}$-VAR
hasdu ÿéetg̲aa.
has=du ÿéet-g̲áa
[PP PLH= 3H·PSS son -ADES]
'Then all summer they search for their son.' (Swanton 1909: 312.36)

The last element related to the *has=* plural modifier is the human NP pluralizer *hás* that appears after a noun denoting a human such as the phrase *du éek' hás* 'her brothers' in (204) below. This *hás* pluralizer is usually seen only with kinship nouns, though I have occasionally heard it with a few other human nouns like *dáaktaa* 'doctor'.

(204) Tle yéi gíyá du éek' hás niyaadé *human NP plural*
tle yéi gí -yá du éek' hás niÿaa-dé
just thus YN-PROX [PP 3H·PSS brother PL dir'n -ALL]
áa yax̱ wujix̱ín.
á -μ yax̱=wu-d- sh- i- $^{1}\sqrt{\text{x̱in}}$-H
there-LOC=ROT= PFV-MID-XTN-STV-$^{1}\sqrt{\text{fall}}$ -VAR
'Maybe this is how she turned against her brothers.' (lit. 'capsized in the direction of her brothers') (Dauenhauer & Dauenhauer 1987: 116.141)

Other pluralizers in the language are apparently unrelated to *has*= judging by their phonological forms. There is a suffix *-x'* ~ *-x'w* which forms plurals of most nouns including some notable human-referring nouns (e.g. *<u>k</u>áa* 'man' : *<u>k</u>áax'w* 'men' and *a<u>x</u> yádi* 'my child' : *a<u>x</u> yátx'i* 'my children') and which also occurs as a plural suffix on verbs (see ch. 2 sec. 2.3). Although conventionally called 'plural' (Dauenhauer & Dauenhauer 1990: 511; Leer 1991: 38), this suffix has been said to denote a collective (Swanton 1911: 169; Story 1966: 203) or a distributive (Boas 1917: 81) and its actual semantic contribution is still unclear. Beyond *-x'* there is a kinship pluralizer *ÿán* that is used like the postnominal *hás* pluralizer but only with a few particular nouns like *a<u>x</u> káani yán* 'my (same sex) in-laws' and *a<u>x</u> kéek'i yán* 'my younger (same sex) siblings'. The postnominal *hás* and *ÿán* pluralizers are mutually exclusive, although there are occasional instances of either one together with *-x'* ~ *-x'w* such as *a<u>x</u> <u>x</u>oonx'í yán* 'my kin; my friends'.

2.2.2. Forms related to *da<u>x</u>*=

The *da<u>x</u>*= plural modifier is related to the phonologically and semantically similar *da<u>g</u>-* which is a distributive modifier of subjects. According to Leer (1991: 104) this *da<u>g</u>-* is "in semi-free variation" with the *da<u>x</u>*= plural modifier, but *da<u>g</u>-* only occurs with subjects. Like *da<u>x</u>*=, *da<u>g</u>-* is typically associated with nonhuman referents; Leer (1991: 105) says the referent "must be inanimate" but gives no evidence. The *da<u>g</u>-* prefix is quite rare and I have not been able to elicit it, but *da<u>g</u>-* is attested in narratives from a variety of speakers and is also attested in examples from Story (1966: 97), so it may be that *da<u>g</u>-* is fading from use. The *da<u>x</u>*= and *da<u>g</u>-* may be confused for each other because *da<u>g</u>-* can be realized as *da<u>x</u>* [tàχ] depending on the phonological context, but *da<u>g</u>-* is unequivocally distinct when overt AspP material appears to the left of it. The data in (205) demonstrate the *da<u>g</u>-* distributive prefix in such contexts where it cannot be confused with *da<u>x</u>*=.

(205) a. Áx' yéi wuda<u>x</u>duwa.oo.
á -x' yéi= wu-da<u>g</u>- du- i- $^{2}\sqrt{}$.u -μ
[PP there-LOC] thus=PFV-DISTB-4H·S-STV-$^{2}\sqrt{}$hdl·cloth-VAR
'They put it all (each one) there.' (Story 1966: 97)

b. Nada<u>g</u>aadaa.
n- da<u>g</u>- i- $^{1}\sqrt{}$da -μ
NCNJ-DISTB-STV-$^{1}\sqrt{}$flow-VAR
'They (rivers) flow.' (Leer 1991: 106 #23c)

There is a distributive numeral suffix *-<u>g</u>áa* that appears to be semantically related but which is not phonologically related other than sharing a uvular obstruent. This suffix is discussed by Cable (2014) in his analysis of distributivity in Tlingit. The distributive numeral suffix seems to be entirely independent of the distributive plural modifiers in the verb; Cable was unable to elicit them together (p.c. 2014) and there are no attested examples of the two occurring together.

The ablative postposition *-dá<u>x</u>* has nearly the same phonological form as the *da<u>x</u>*= pluralizer except for the difference in tone. Since there is a postnominal *hás* pluralizer that corresponds to the preverbal *has*=, it is reasonable to initially suspect a similar relationship between the *-dá<u>x</u>* postposition and the *da<u>x</u>*= pluralizer. But there is no semantic connection between them: *-dá<u>x</u>* only refers to departing or moving away from a location and has no implications of plurality. I conclude that the two are only accidentally similar.

Part III

The end

A Language background

Ha, gunalchéesh yá yeedát ch'a yéi gugéink' ḵunáax̱ daak̲ at kawuneek teen yéi wusneiyí.
'So, thank you now for letting me give this little explanation.'

Ḵaal.átk' Charlie Joseph in *Haa Tuwunáagu Yís* (1990, p. 182)

1 Social situation . . . 783
  1.1 Geography . . . 784
  1.2 Social organization . . . 786
2 Basic phonology . . . 788
  2.1 Consonants . . . 789
  2.2 Vowels . . . 794
  2.3 Syllables . . . 798
3 Dialects and varieties . . . 799
  3.1 Tongass Tlingit . . . 800
  3.2 Southern Tlingit . . . 801
  3.3 Northern Tlingit . . . 802
4 Orthographies . . . 808
  4.1 Current orthographies . . . 809
  4.2 Older orthographies . . . 815
5 Documentation and description . . . 818
  5.1 Early materials . . . 819
  5.2 Swanton, Boas, Shotridge, and Harrington . . . 821
  5.3 Modern lexicographic sources . . . 824
  5.4 Modern documentary sources . . . 825
6 Historical situation . . . 827
  6.1 Internal reconstruction . . . 829

1. Social situation

The Tlingit language is critically endangered and moribund, with somewhere between 100 and 200 first language (L1, also 'native', 'birth') speakers out of an ethnic population of over 30,000 between the United States and Canada. The youngest fully fluent L1 speakers are in their 60s, although some passive understanding is relatively common among people in their 50s and even 40s. Some adults with passive understanding are working towards developing or recovering spoken fluency, and several have become conversationally fluent so there is hope that L1 speakers will continue to be around for a few more decades. There are also a few second language (L2) parents raising L1 children. This new generation of L1 Tlingit speakers seems to maintain the same phonemic inventory – including all of the ejective fricatives – but other phenomena have not been investigated.

The Tlingit language was the primary language of Tlingit communities during the Russian and American colonial periods in the 19th century. The first few decades of the 20th century also saw Tlingit as the primary community language, but it began steadily losing ground in the 1920s and 1930s. This decline was due to both internal and external forces. Internally, many Tlingit parents felt that English fluency was necessary for their children to join the growing cash economy, as well as for participating in the increasingly complex governments established in Alaska and Canada (Dauenhauer & Dauenhauer 1998a; Dauenhauer 2005). Externally, Tlingit was vilified especially by Christian missionaries, and children in schools were publicly humiliated and even tortured for speaking Tlingit (Dauenhauer 1997, 2005). By the 1950s there were only a few families still raising Tlingit speaking children, and by the 1970s no children were L1 speakers.

Tlingit is still used in daily life by the last generation of L1 speakers, usually for private conversation in the home but occasionally in casual public settings such as restaurants, stores, and public gatherings. Tlingit was occasionally heard on Citizens Band and marine radio channels when L1 speakers were regularly engaged in commercial fishing and other industries, but this is now rare if not unknown. Public use in daily life has always been more common in smaller villages than in larger towns. Oratory and narrative performance are still actively practiced, but today's speakers often claim that their skills in these areas only approximate those of preceding generations. A large body of traditional song lyrics has preserved many idioms and archaicisms that would have otherwise been lost, but lyric documentation aside from Swanton 1909 is mostly not public.

Literacy in Tlingit is uncommon among the vast majority of L1 speakers, but it is more or less universal in the L2 language learner population. Some elders have learned to read and write Tlingit well enough to use it online in email, on the Internet, and in text messaging, and a very few have written short pieces of original or translated literature and poetry in the language (e.g. Dauenhauer 1972; Cooley 2005, 2010). In contrast, literacy in English is universal among Tlingit elders, and formal English education is widespread; a number of L1 speakers have obtained post-secondary degrees in fields like education, nursing, theology, anthropology, and jurisprudence. No L1 speaker has ever been awarded a degree in linguistics, but *Stoowuk̲áa* Louis Shotridge was trained in linguistic analysis by Franz Boas, *K̲eixwnéi* Nora Marks Dauenhauer and *Keiyishí* Bessie Cooley have been formally and informally trained over their years of work with linguists like Constance Naish, Gillian Story, and Jeff Leer, and *K̲aanák̲* Ruth Demmert was awarded an honourary doctorate by the University of Alaska Southeast in 2017 for her efforts in language education and cultural preservation. All of these experts have exerted considerable influence on the description and analysis of the langauge.

I have found no evidence for an organized tradition of linguistic analysis in Tlingit culture, though metalinguistic discussion is common in the etymological interpretation of names. Oratory is a highly valued skill and many Tlingit speakers have some traditional education and training in composition and performance. Oratorical training seems to be mostly by example, but opaque or obscure metaphors are explicitly discussed and some complex or archaic turns of phrase and sayings are taught with explanations and interpretations. Crucially, there are no features of Tlingit morphosyntax from the past two centuries which are not at least marginally represented today (N.M. Dauenhauer, p.c. 2010). There are some hints of certain complex structures being explicitly taught in the past, but I have only secondhand reports. Certain morphological phenomena are exceedingly rare in everyday speech but occur regularly in formal narrative and oratory; these might be studied and learned consciously. This whole area of inquiry into metalinguistic traditions has been neglected in the anthropological and linguistic literature, and opportunities for its study have largely faded over the last few generations.

There are active efforts in both Alaska and Canada to revitalize Tlingit by teaching it to both children and adults. The most success has been in adult post-secondary education, with tens of reasonably fluent L2 speakers at intermediate and advanced levels in their 20s–50s, a few of whom are raising children with the language as noted above. L2 speakers use Tlingit in everyday life, including online and in text messaging. Teaching efforts are hampered by the lack of accessible grammatical description, but in contrast lexical and narrative documentation are rich. L2 learning of Tlingit by English speakers is extremely difficult, and many eager learners are initially put off by the large consonant inventory and tone contrasts. The verbal morphology is widely despaired of as impenetrable black magic (partly due to confusing language description), but some students have internalized enough paradigmatic contrasts to successfully express the basic aspectual and person distinctions across a large verbal vocabulary. Stereotyped self-introductions in the language are widely memorized by beginning language learners, but only a very few of these initial learners go on to develop productive fluency in everyday situations.

1.1. Geography

Tlingit Country – *Lingít Aaní*[1] [ɬìn.ˈkít ˈʔàː.ní] – is the traditional territory of the Tlingit people, located in both the United States of America (Alaska) and Canada (British Columbia, Yukon Territory). Most of *Lingít Aaní* is in Alaska along the Northwest Coast of North America, from the US–Canada border at the Dixon Entrance (54.5 °N) to Icy Bay and Cape Yakataga (60.25 °N). The Canadian portion of *Lingít Aaní* extends across the coastal mountains into BC and the Yukon, from the Cassiar Mountains in the east (131 °W) to the Coast Mountains in the west (136 °W), and from the Taku River in the south (58.5 °N) to the lower Teslin River in the north (61 °N). The Tlingit have the largest traditional territory of any Northwest Coast society, and in fact *Lingít Aaní* comprises about half of the entire Northwest Coast. The total global surface area of *Lingít Aaní* is somewhere around 172,000 km^2 (66,400 sq mi) though most of this is either water, glaciers, or mountains.

The Tlingit people live in two distinct ecological zones: (i) the temperate coastal rainforest facing the northeastern Pacific Ocean and (ii) the cold taiga[2] on the other side of the coastal moun-

1. From *Lingít* 'Tlingit' and *aan-í* 'land-PSS'.
2. The term *taiga* is from Russian тайга *taĭgá* 'boreal forest, northern forest region below tundra', probably from a Siberian Turkic language like Yakut тайга *tajga* 'untraversable forest'.

tain ranges. The Tlingit people of these two ecological zones are respectively referred to as *El'ká K̲wáan* 'society on saltwater' and *Dak̲ká K̲wáan* 'society on the inland'; in English they are usually 'Coastal Tlingit' and 'Inland Tlingit'. The largest population is on the coast. The US Coast Pilot (vol. 8) sketches the Coastal Tlingit environment:

> [Southeast Alaska] consists of a 30-mile (50 km) wide strip of mainland bordered by an 80-mile (130 km) wide compact chain of islands... Most of the islands are mountainous, rough, broken and are covered with dense growths of spruce, hemlock, and cedar except on the higher summits. The mountains on the mainland are higher, less wooded, and usually snowcapped. In midsummer the snowline is at altitudes of 2000 to 3000 feet (600–1000 m) on the mainland mountains. Glaciers form in the narrow gorges of the coastal ranges and sometimes attain sufficient size to reach the water. On the islands the land usually does not reach sufficient altitude to retain snow throughout the year. (Office of Coast Survey 2014: 93)

Temperature in coastal summers is generally around 10–20 °C (50–70 °F); some places in the winter experience only a few days below freezing, but other places can regularly stay below –5 °C (20 °F) with a few meters of accumulated snow. The summer has two or three storms per month with varying intervals of rain and sun in between; unlike much of the southern Northwest Coast there is no regular stretch of dry weather. The winter is unrelentingly wet, with five or more storms blowing in from the Gulf of Alaska every month so that some months may have continuous preciptiation.

The vast majority of coastal Tlingit settlements are on salt water, and even those few on fresh water rivers are not far from salt water. For example, Klukwan on the Chilkat River is about 130 km from the Gulf of Alaska but only about 30 km upriver from the salt water of Lynn Canal. The ocean provides an inestimable bounty of food in the form of salmon, many other fish, crustaceans, and littoral plants as well as rich furs and fat from marine mammals. Traditional life on the coast is largely oriented toward the sea: Tlingit philosophy considers open water to be a bright and welcoming place in contrast with the dark dangers of the forests (Kan 1989).

Several rivers pierce the coastal ranges to allow regular access between the coast and the interior. These rivers formerly served as arteries of travel, trade, exploration, and marriage, but today have been almost completely replaced by the two roads that cross the White Pass and Chilkat Pass above Lynn Canal. Coastal Tlingit clans maintain oral histories of migrating down these rivers like the Nass River (*Naas*), the Unuk River (*Joonáx̲*), the Stikine River (*Shtax'héen*), the Taku River (*T'aak̲ú*), the Chilkat River (*Jilk̲áat*), and the Tatshenshini River and the Alsek River (*Tachanshahéeni*, *Aalsei x̲*).

The subarctic forests of the interior are a stark contrast with the coastal rainforests. Inland Tlingit country is a corrugated land of intertwining mountain ranges, river valleys, and long, deep lakes between the coastal mountains and the continental divide. Cold arctic air masses settle over the region in the winter, resulting in shockingly cold temperatures that fall below –40 °C (–40 °F). In the summer temperatures can occasionally rise above 30 °C (85 °F) but usually range around 10–20 °C (50–70 °F). Storms occasionally blow over the coastal mountains to bring regular dousings of rain or snow, but the land is far drier than any place on the coast.

Inland Tlingit country is covered by the immense world-wrapping boreal forest that extends from Scandinavia to Labrador. Birch, alder, aspen, cottonwood, spruce, and pine are stunted by the extreme cold of winter, often growing no more than 3 or 4 m tall (Bonnor & Boudewyn 1990) in contrast with the immense 40 m trees of the coastal rainforest (Viereck & Little 1974). Many patches

of permafrost and muskeg reduce trees to less than 2 m. Despite its lack of height, the boreal forest grows thick and blankets nearly every surface.

Inland Tlingit people share with their Coastal relatives a preference for settlements on wide open waters: all traditional Inland communities are on the shores of large post-glacial finger lakes with expansive views. These lakes freeze over on the surface but remain fluid below, so Inlanders have developed ice fishing techniques to exploit them through the winter. Fish is thus an important part of the traditional diet, but large game – mostly moose and caribou – are far more significant than for Coastal lifestyles.

1.2. Social organization

In this section I give a short summary of Tlingit social structure for background reference, highlighting some linguistic facts. This section is based largely on my personal experience as a member of the community, except as cited otherwise. Although lifestyle changes over the 20th century have led to the decline of some traditional social practices, the basic social frameworks are still in place and are still followed by most Tlingit people.

A Tlingit individual belongs to one of two exogamous moieties[3] that are conventionally called 'Raven' and 'Wolf/Eagle' in English. In addition to these two moieties there is a unique clan[4] called the *Neix̱.ádi* in the *Saanyaa X̱wáàn*, a member of which can marry people from either moiety. Children of Tlingit fathers whose mother is not in a moiety are adopted into an appropriate clan opposite the father's moiety, and non-Tlingit spouses of Tlingits are usually adopted into the Tlingit spouse's father's clan. Other non-Tlingits may be adopted into either moiety, but there are some traditional conventions for Haida and Tsimshian people as well as some neighbouring Dene groups who have similar social systems.

There is no Tlingit term specifically referring to 'moiety'. The Tlingit term *naa* 'clan, nation' (Tongass *naà*) may be used to refer to a moiety (e.g. *G̱ooch Naa* 'Wolf Moiety' = 'Wolf Clan'), but it is also used to refer to individual clans (e.g. *haa naayí* 'our clan', *Dag̱isdinaa* clan, *T'ikanaa* clan, *Wudshaninaa* clan) and sometimes even to non-Tlingit indigenous nations (e.g. *Deikeenaa* 'Haida' < *deikée* 'seaward' + *naa* 'nation', *G̱unanaa* 'Dene' < *g̱una* 'other' + *naa* 'nation'). The term 'side' is frequently used in local English to refer to moeties – e.g. 'the Raven side' – and the term 'moiety' is mostly restricted to academic contexts although it is becoming increasingly common among younger college-educated people. There are Tlingit kinship terms for specific intermoiety relationships such as *du g̱uneitkanaayí* 'his/her opposite clan member' (< *g̱una* 'other' + *át* 'thing' + *ká* 'atop' + *naa* 'clan' + *-í* PSS). The local English equivalents for such kinship terms vary, but for example *du g̱uneitkanaayí* is often translated as 'his/her opposite(s)'.

The Raven moiety is uniquely known as *Laayineidí* (Tongass *Laàÿineìdi*), which appears to be a typical clan name containing the stem *–eidí* 'thing of; people of' (see below). This form suggests an etymology of **łaʰÿina* + **at* 'thing' + **-i* 'possessive'. The **łaʰÿina* > *laayin* element is unknown but might be related to the similarly opaque *laayig̱águ* 'ring finger', or perhaps to the noun **niÿaʰ* > *niyaa* 'direction' (cf. *ÿinaak.áat'ani* ~ *niÿa.áat'ani* 'cover, lid') with an unknown **łaʰ*. The Raven moiety is associated with the mythological Raven *Yéil* as its English name implies, and all clans of the Raven moiety share Raven as a crest. Among the Inland Tlingit the Raven moiety is often referred

3. Locally pronounced *moiety* ['mɔɪ.jɪ.ɾi]. From French *moitié* < OF *meitié* < L *medius* 'half'.
4. From Gaelic *clan* 'family, stock, race' < Old Irish *cland* < Old Welsh *plant* < L *planta* 'sprout, shoot; scion'.

to as 'Crow' in English but the Tlingit referent is always only *yéil* 'raven' (*Corvus corax* L.) and never *ts'axweil* 'crow' (*Corvus caurinus* Baird 1858).

The Wolf/Eagle moiety has no unique Tlingit name, typically being referred to by a local major clan of the moiety. It is occasionally referred to as *Shangukeidí* ~ *Shankweidí* but this also refers to a specific clan and its application to the moiety is not recognized everywhere. The Wolf/Eagle moiety is traditionally associated with the mythological Wolf *Ǵooch* (*Canis lupus* L.) which is still the case among the Inland Tlingit and is increasingly so among traditionalists on the coast. This moiety has become associated with Eagle *Ch'áak'* (*Haliaeetus leucocephalus* L.) in the 20th century, probably partly by influence from Haida culture and partly by the logical avian symmetry with Raven *Yéil*. It is clear from both oral histories and 19th century ethnological sources that the use of Eagle as a primary symbol for the whole moiety is a relatively recent innovation.

Below each moiety are roughly thirty matrilineal clans each, for a total of about sixty clans. All moiety members are also members of a clan. Some clans are tiny with only one or two families, but others are very large with thousands of members. A moderate number of documented clans are extinct, usually because the matriline terminated with only male descendants, but they are often still referred to in ceremonies "just in case" or "for completeness" and there may be daughter clans still extant. Some clans are tied to a specific settlement like the *Naanyaa.aayí* that are known only from Wrangell, but there are several large clans that are spread throughout many settlements like the *Dakl'aweidí*, *Deisheetaan*, *Kaagwaantaan*, and *Kiks.ádi*.

Clan names have a few typical morphological structures, generally consisting of a phonologically contracted compound with a final stem of *–.ádi* /ʔátì/ 'ones of' (from *át* 'thing' + *-í* PSS), *–eidí* /èːtí/ 'ones of' (also from *át* 'thing' + *-í* PSS), or *–hittaan* /hìtˈtʰàːn/ 'house group' (from *hít* 'house' + *taan* 'group'). There are a few exceptions: names with *–.aayí* /ʔàːjí/ 'some of' (from *aa* 'some' + *-í* PSS) like the *Naanyaa.aayí* and *Shgaadaayihin.aayí*, two-word names with *kwáan* /qʰʷáːn/ like the *Kwáashk'i Kwáan* and *K'inéix Kwáan* who descend from Ahtna migrants and the *Xéel Kwáan* who came to Wrangell from *Xéel* Chikamin River, and names with *naa* /nàː/ 'clan, nation' like the *Dagisdinaa*, *T'ikanaa*, and *Wutshaninaa*. The two stems *–.ádi* and *–eidí* are from the same morphemes; the *–eidí* is a now unproductive allomorph which arose by contraction of */...V-ʔa.../ → *[...eʰ...]; the same phonological pattern is found in other vocabulary like *daakeit* /tàːkʰèːt/ 'container' from *daa* 'around' + *ká* 'atop' + *át* 'thing'. The *taan* 'group' morpheme is only found in clan names with *hít* 'house' based on house groups, but it may be related to the Dene ethnonym *Taaltaan* 'Tahltan' and/or the verb root √*tan* 'spend summer, camp out' (cf. *kutaan* 'summer' with areal *ku-*).

Clan names are rarely if ever translated into English; common English 'translations' are actually crest animals rather than the meanings of clan names. For example the clan name *Deisheetaan* /tèːʃìːˈtʰàːn/ is derived from *dei* 'road' + *shú* 'end' + *hít* 'house' + *taan* 'group' and so literally means 'Group of the House at the End of the Road'. This is often referred to as the 'Beaver clan' in English, based on the primary crest of the *Deisheetaan*. But use of crests as supposed translations is misleading because crests are not necessarily unique to each clan and because clans generally claim multiple crests. For example, the *s'igeidí* 'beaver'[5] of the *Deisheetaan* is also claimed by the *Ǵaanax.ádi*, *Ǵaanaxteidí*, *Ishkeetaan*, *Taakw.aaneidí*, *Aanx'aakhittaan*, and *Neix.ádi* clans. The *Deisheetaan* also

5. *Castor canadensis* Kuhl, 1820. Usually *s'ikyeidí* in Transitional and Southern, *s'igïyèidi* in Tongass.

claim *k̲aashashx̲áaw* 'dragonfly'[6] and *took̲* 'needlefish'[7] among others, and also use *Yéil* 'Raven' like all Raven moiety clans.

Because crests are not unique identifiers, clan names are increasingly being used in anglicized forms by English monolinguals. Anglicization is straightforward for e.g. *Kaagwaantaan* /kʰàːkʷàːnˈtʰàːn/ as English [ˌkɑg.wɑn.ˈtɑn],[8] but it is somewhat more tricky for e.g. *S'iknax̲.ádi* /sʼìknàχˈʔátì/ as [ˌsɪknʌˈhʌdi]. Phonological adaptation into English can also be misleading: the Wolf clan *K̲ookhittaan* /qʰʷùkʷhìttʰàːn/ 'Box House People' (a branch of the *Kaagwaantaan*) and the Raven clan *Kook̲hittaan* /kʰʷùːqʷhìttʰàːn/ 'Pit House People' are often homophonously anglicized and this has led to confusion and disputes between Tlingits who are monolingual English speakers.

Below each clan are one or more house groups which collectively own a named clan house like *Yan Wudliháshi Hít* 'Drifted Ashore House' or *Gaaw Hít* 'Drum House'. The Tlingit term for a house group is simply *hít* 'house' as in *wé Deisheetaan hítx'i shaydihéin* 'there are a lot of those *Deisheetaan* houses' which can refer to either the physical structures or the social groups. Some houses have become famous local monuments like the *X'átgu Hít* 'Dogfish House'[9] of the *Naanyaa.aayí* clan in Wrangell. Very few Tlingit people still live in clan houses, but in some villages they are maintained as ordinary single-family housing. Despite the lack of communal living today, many house groups continue to have ceremonial and social functions in modern Tlingit society, even when they no longer own a physical building. As seen above among the clan names, there is a historical tendency for house groups to split off from a mother clan and become established as a daughter clan. It is not clear if this practice will ever reoccur in the future, but the potential still exists.

Orthogonal to the moiety and clan system is the *k̲wáan* system of geopolitical groups. The word *k̲wáan* is usually felt to be monomorphemic but the older attested form *k̲uháan* is composed of areal *k̲u-* and the root √*han* 'sg. stand' or √*han* 'adopt, raise'. In modern anthropological literature *k̲wáan* is usually left untranslated but it is sometimes translated by native speakers as 'tribe', 'people', or 'society' (though *k̲wáan* ≠ *naa*). A *k̲wáan* is at once both a geographical and a social unit. Each *k̲wáan* is centred on one settlement, or sometimes a few close-by settlements. The clans resident at the settlement each claim some territory in the region around the settlement. All the claimed territories taken together consistute the geographic extent of the *k̲wáan*, and the clans and people form the social extent of the *k̲wáan*. Each *k̲wáan* has a distinct name, sometimes after a river (e.g. *Shtax'héen K̲wáan*, *T'aak̲ú K̲wáan*), sometimes after a settlement (*Sheet'ká K̲wáan*, *K̲éex' K̲wáan*), sometimes a land or water place (*Xootsnoowú K̲wáan*, *Áatlein K̲wáan*), and sometimes after a characteristic or concept (*G̲unax̲oo K̲wáan*, *Saanyaa K̲wáàn*).[10]

2. Basic phonology

Tlingit phonology is a large and complex area of research deserving several dissertations. In this section I offer some essential information about the consonant and vowel inventories along with some other phonological properties. The most important references on Tlingit phonetics and phonology

6. Insects in order Odonata. Also variously known as *lk̲aashishx̲áaw*, *k̲aashishlx̲áaw*, Tongass *k̲aàshaàshx̲aàwu*.
7. Or 'sand lance', *Ammodytes hexapterus* Pallas, 1914. Contrast *tóok̲* 'butt' with high tone.
8. Compare the name "Kogwonton Street" in Sitka.
9. *X'átgu* is the Pacific spiny dogfish *Squalus suckleyi* Girard, 1854. *Tóos'* is the Pacific sleeper shark *Somniosus pacificus* Bigelow & Schroeder, 1944.
10. For maps and lists see Thornton 2012, Hope III et al. 2003, Emmons 1991, Leer 1985, Swanton 1908.

	anterior					*posterior*					
	bilabial	*alveolar*	*postalv.*	*lateral*	*palatal*	*velar*	*lab.-vel.*	*uvular*	*lab.-uvu.*	*glottal*	*lab.-glot.*
unaspirated stop	(p)	t				k	kʷ	q	qʷ		
aspirated stop	(pʰ)	tʰ				kʰ	kʰʷ	qʰ	qʰʷ		
ejective stop		t’				k’	k’ʷ	q’	q’ʷ	ʔ	(ʔʷ)
nasal stop	(m)	n		(l)							
plain fricative		s	ʃ	ɬ		x	xʷ	χ	χʷ	h	(hʷ)
ejective fricative		s’		ɬ’		x’	x’ʷ	χ’	χ’ʷ		
unaspirated affricate		ts	tʃ	tɬ							
aspirated affricate		tsʰ	tʃʰ	tɬʰ							
ejective affricate		ts’	tʃ’	tɬ’							
approximant				(l)	j	(ɥ)	w				

Table A.1: Tlingit consonant inventory in IPA.

are, in chronological order: Boas 1917: 9–19; Story 1966: 4–20, 109–141; Naish 1966: 4–10; De Wolf 1977; Williams, Williams, & Leer 1978: 6–17; Leer 1979b; Leer 1991: 8–22, 90–202; Leer 1999; Maddieson, Smith, & Bessell 2001; Leer 2001; Leer 2005b; Cable 2006; Crippen & Denzer-King 2010; Weber 2012; Denzer-King 2013; and Crippen 2013b. Maddieson, Smith, & Bessell 2001 offer the only instrumental phonetic study of Tlingit. The only modern acoustic studies are those by Maddieson, Smith, & Bessell (2001) and by Denzer-King (2013); both are limited to Northern Tlingit (see sec. 3 on dialects).

The following subsections present some basic facts about Tlingit phonology that apply to all parts of speech unless otherwise noted. Section 2.1 reviews the consonant inventory, particularly detailing eight consonants with marginal status that have received minimal discussion in previous literature. Section 2.2 reviews the vowel inventory, including discussions of uvular lowering, word-final lowering, tone, and laryngeal vowel phenomena. Section 2.3 reviews syllable structure and illustrates onset and coda complexity.

2.1. Consonants

Tlingit has a lot of consonants; the complete inventory is shown in table A.1. No one speaker actually has the entire set of consonants in table A.1 because no speaker can have all of the phonemes given in parentheses; see below for discussion. The minimum number of consonants possible in any idiolect is 42 which is all of the unparenthesized consonants in table A.1. The maximum possible number of consonants in any idiolect is 49 because some of the parenthesized consonants are mutually exclusive with others as detailed later in this section. This maximal inventory of 49 consonants may be the largest inventory documented for any language in the western hemisphere, though there is as yet no comprehensive review of consonant inventories for all North, Central, and South American languages.

The most cross-linguistically remarkable feature of Tlingit’s consonant inventory is the nearly

complete set of **ejective fricatives**, with only */ʃ'/ missing as a counterpart to plain /ʃ/.[11] Tlingit's ejective fricatives are phonetically [F'] with true ejective phonation and continuous high supraglottal pressure until the release of the oral constriction. They are never sequences of fricative and glottal stop – i.e. *[Fʔ], *[ʔF], *[FʔF] – which are sometimes misreported as 'ejective' but are better described as glottalized fricatives and represented as /Fˀ/. Sequences of fricative and glottal stop are possible – e.g. [ɬʔùɬ.ˈtʃí.nì] 'vest', [ʃʔìːɬ.ˈtʰín] 'you're watching yourself', [sʔàw.sì.ˈʔí] 'they cooked it' – so aside from phonetic properties there is a distributional distinction between [ʔF] sequences and ejective fricatives.

Maddieson, Smith, & Bessell (2001) detail the phonetic properties of the ejective fricatives and unequivocally confirm their laryngeal articulation as truly ejective. Although they do not explicitly address this, I believe the articulatory details differ slightly between ejective fricatives and other ejectives. My personal experience suggests that the oral constriction of the ejective fricatives is formed with a narrower aperture and greater compression in contrast with the plain fricatives, and that there can be an additional degree of pharyngeal constriction to assist in maintaining the high supraglottal pressure through the duration of the frication. Another articulatory phenomenon I have noted is that raising of the closed larynx from its rest position to its highest point can be slow and gradual enough to allow for up to one second or so of frication, unlike ejective stops and affricates where raising of the larynx is routinely under 200 ms. This occurs occasionally in exaggeratedly slow speech as well as in some ideophony like [x':::::] which represents the sound of slowly cracking ice.

The parenthesized consonants in table A.1 are all marginal, but each has a different reason for its presence or absence in an individual's phonology (cf. Currie Hall 2013). The **bilabial stops** /p/ and /pʰ/ only exist in loanwords from English and lack an ejective counterpart. They may be replaced by a labialized velar when fully nativized (cf. Crippen & Denzer-King 2010), as shown by the sentences in (1) and (2). Although both /p/ and /pʰ/ can be phonemic, for people who lack them there is a tendency to merge them together as /kʷ/ and not /kʰʷ/.

(1) a. Béens áwé, wé gúx'aa tóox'. *labial stop*
[píːns ʔá.ˈwé wé ˈkʷú.x'àː tʰúːx'ʷ]
béens á -wé wé gúx'aa tú -x'
bean FOC-MDST MDST can inside-LOC
'It's beans inside of that can.'

b. Gwéens áwé, wé gúx'aa tóox'. *labialized velar stop*
[kʷíːns ʔá.ˈwé wé ˈkʷú.x'àː tʰúːx'ʷ]
gwéens á -wé wé gúx'aa tú -x'
bean FOC-MDST MDST can inside-LOC
'It's beans inside of that can.'

(2) a. Péenáts x̱waax̱áa. *labial stop*
[ˈpʰíː.náts χʷàː.ˈχáː]
péenáts wu-x̱- i- ²√x̱a-μH
peanut PFV-1SG·S-STV-²√eat-VAR
'I ate peanuts.'

11. There was a historical merger of */ʃ'/, */s'/ > /s'/; see section 6 for discussion. *[h'] and *[h'ʷ] are impossible.

b. Gwéenáts xwaaxáa. *labialized velar stop*
[ˈkʷíː.náts χʷàː.ˈχáː]
gwéenáts wu-x- i- ²√xa-μH
peanut PFV-1SG·S-STV-²√eat-VAR
'I ate peanuts.'

The **voiced lateral approximant** /l/ is given in two positions in table A.1 because it represents two mutually exclusive phonemes in geographically distinct varieties. The 'nasal' /l/ phoneme arose from denasalization of */n/ > /l/ which was probably influenced by the neighbouring Eyak language (sec. 3.3.4); no living speakers maintain this phoneme but it is attested in audio recordings of certain speakers up to the 1970s. This denasalized /n/ can alternatively be represented as /n̰/ using the ExtIPA diacritic for absence of expected nasalization (Duckworth et al. 1990); when this /l/ or /n̰/ is phonemic the speaker must lack /n/. Orthographic representation of this sound is rare, but as seen in the alternation in (3) it is sometimes given as ⟨n̲⟩ to indicate that it would be pronounced [n] by other speakers.

(3) a. Kaagwaantaan noow has awliyéx. *denasalized lateral*
[kʰàːk.wàːl.ˈtʰàːl lùːw has ʔàw.ɬìː.ˈjéχ]
Kaagwaantaan noow has=a- wu-l- i- ²√yex -H
CLAN fortress PLH=ARG-PFV-XTN-STV-²√build-VAR
'The Kaagwaantaan (clan) built a fortress.'

b. Kaagwaantaan noow has awliyéx. *nasal*
[kʰàːk.wàːn.ˈtʰàːn nùːw has ʔàw.ɬìː.ˈjéχ]
Kaagwaantaan noow has=a- wu-l- i- ²√yex -H
CLAN fortress PLH=ARG-PFV-XTN-STV-²√build-VAR
'The Kaagwaantaan (clan) built a fortress.'

The 'approximant' /l/ phoneme appears in syllable onsets of loanwords from Dene languages in Inland Tlingit varieties like *dal̲eiyí* [tàˈlèː.jí] 'lake trout' (see section 3.3.2) as well as in a few English loanwords like *Al̲áaski* [ʔàˈláːs.kʰì] 'Alaska' and *Cháal̲ee* [ˈtʃʰáː.lìː] 'Charlie'. Speakers who have this approximant /l/ phoneme maintain a distinct /n/, in contrast with the 'nasal' /l/ = /n̰/ where /n/ is absent. Orthographic representations of this approximant /l/ vary, but ⟨l̲⟩ has seen some use to avoid changing from ⟨l⟩ = /ɬ/ since /ɬ/ is far more frequent.

The **bilabial nasal** /m/ is a conservative retention from Pre-Tlingit */m/ in some dialects; for more discussion see sections 3. Speakers who lack /m/ have merged it more or less completely with /w/ as shown by the alternations in (4)–(6). Some speakers in /m/-less areas have occasional instances of a nasalized [w̃] that reflects the earlier /m/, and for these speakers there might be a phonemic contrast between /w/ and /w̃/ but this has yet to be investigated.

(4) a. Amsi.ée. *bilabial nasal*
[ʔàm.sìˈʔíː]
a- wu-s- i- ¹√.i -μ
ARG-PFV-CSV-STV-¹√cook-VAR
'S/he cooked it.'

b. Awsi.ée. *labial-velar approximant*
[ʔàw.sì.ˈʔíː]
a- wu-s- i- $^{1}\sqrt{}$.i -μ
ARG-PFV-CSV-STV-$^{1}\sqrt{}$cook-VAR
'S/he cooked it.'

(5) a. Máa sá iyatee? *bilabial nasal*
[máː sá ʔì.jà.ˈtʰìː]
máa sá i- i- $^{1}\sqrt{}$tiʰ-μ
how Q 2SG·O-STV-$^{1}\sqrt{}$be -VAR
'How are you?'

b. Wáa sá iyatee? *labial-velar approximant*
[wáː sá ʔì.jà.ˈtʰìː]
wáa sá i- i- $^{1}\sqrt{}$tiʰ-μ
how Q 2SG·O-STV-$^{1}\sqrt{}$be -VAR
'How are you?'

(6) a. Séem haa káa woowáal'. *bilabial nasal*
[síːm hàː kʰáː wùː.ˈwáːɬʼ]
séem haa ká -μ wu-i- $^{1}\sqrt{}$wal' -μH
rain 1PL·PSS HSFC-LOC PFV-STV-$^{1}\sqrt{}$break-VAR
'Rain broke upon us.'

b. Séew haa káa woowáal'. *labial-velar approximant*
[síːw hàː kʰáː wùː.ˈwáːɬʼ]
séem haa ká -μ wu-i- $^{1}\sqrt{}$wal' -μH
rain 1PL·PSS HSFC-LOC PFV-STV-$^{1}\sqrt{}$break-VAR
'Rain broke upon us.'

The **velar approximant** /ɥ/ is a conservative retention from Pre-Tlingit */ŋ/ in some dialects; for more discussion see section 6. It is often called 'gamma' though it is never actually realized as the voiced velar fricative *[ɣ]. Speakers who lack /ɥ/ have merged it completely with /j/ as shown in (7). The forms in (8a) and (9a) show that the /ɥ/ alternates regularly with /w/ in labialized contexts as a simple labial feature alternation between plain and labialized velar approximants. But with the shift of /ɥ/ > /j/ there is instead a phonologically opaque alternation between palatal /j/ in (8b) and labial-velar /w/ in (9b); see De Wolf (1977) for some discussion. Some speakers who maintain /ɥ/ realize it solely as [ɥ], but others preserve nasalization so that it is often [ɥ̃] or even occasionally [ŋ] just as it has been reconstructed in Pre-Tlingit.

(7) a. Yáaÿ gí ÿeeÿsiteen? *velar approximant*
[jáːɥ kí ɥìːɥ.sì.ˈtʰìːn]
yáaÿ gí ÿu- ÿi- s- i- $^{2}\sqrt{}$tin-μ
whale YN PFV-2PL·S-XTN-STV-$^{2}\sqrt{}$see -VAR
'Did you guys see a whale?'

b. Yáay gí yeeysiteen? *palatal approximant*
[jáːj kí jìːj.sì.ˈtʰìːn]
yáay gí wu-yi- s- i- $^{2}\sqrt{}$tin-μ
whale YN PFV-2PL·S-XTN-STV-$^{2}\sqrt{}$see-VAR
'Did you guys see a whale?'

(8) a. Axˍ ÿá aawatsíxˍ. *velar approximant*
[ʔàχ ɥá ʔàː.wà.ˈtsʰíχ]
axˍ ÿá a- wu-i- $^{2}\sqrt{}$tsixˍ-H
1SG·PSS face ARG-PFV-STV-$^{2}\sqrt{}$kick-VAR
'S/he kicked my face.'

b. Axˍ yá aawatsíxˍ. *palatal approximant*
[ʔàχ já ʔàː.wà.ˈtsʰíχ]
axˍ yá a- wu-i- $^{2}\sqrt{}$tsixˍ-H
1SG·PSS face ARG-PFV-STV-$^{2}\sqrt{}$kick-VAR
'S/he kicked my face.'

(9) a. Axˍ tuwáa sigóo. *labialized velar approximant*
[ʔàχ tʰù.wáː sì.ˈkʷúː]
axˍ tú- ÿá -μ s- i- $^{1}\sqrt{}$gu -μ
1SG·PSS mind-face-LOC APPL-STV-$^{1}\sqrt{}$enjoy-VAR
'I like/want it.'

b. Axˍ tuwáa sigóo. *labialized velar approximant*
[ʔàχ tʰù.wáː sì.ˈkʷúː]
axˍ tú- yá -μ s- i- $^{1}\sqrt{}$gu -μ
1SG·PSS mind-face-LOC APPL-STV-$^{1}\sqrt{}$enjoy-VAR
'I like/want it.'

The **labialized glottals** /ʔʷ/ and /hʷ/ are either conservative retentions or idiolectal phonemicizations of labialization. They occur in very limited environments due to unrelated alternations between labial and non-labial vowels as shown by the alternations in (10) and (11). Speakers who have /ʔʷ/ and /hʷ/ will realize them as in (10b) and (11b), whereas speakers who lack these phonemes will instead realize non-labialized glottals as in (10c) and (11c)

(10) a. Xˍwaahoo. *glottal fricative*
[χʷàːˈh⁽ʷ⁾ùː]
wu-xˍ- i- $^{1}\sqrt{}$hu -μ
PFV-1SG·S-STV-$^{1}\sqrt{}$wade-VAR
'I waded.'

b. Yaa nxˍahwéin *labialized glottal fricative*
[jàː ‿n.χà.ˈhʷéːn]
yaa= n- xˍ- $^{1}\sqrt{}$hu -eH-n
along=NCNJ-1SG·S-$^{1}\sqrt{}$wade-VAR-NSFX
'I am wading.'

c. Yaa nahéin *non-labialized glottal fricative*
[jàː ‿n.χà.ˈhéːn]
yaa= n- x̱- $^{1}\sqrt{}$hu -eH-n
along=NCNJ-1SG·S-$^{1}\sqrt{}$wade-VAR-NSFX
'I am wading.'

(11) a. Áa yéi x̱waa.oo. *glottal stop*
[ʔáː jéː χʷàː.ˈʔùː]
á -μ yéi= a- wu-i- $^{2}\sqrt{}$.u -μ
3N-LOC thus=ARG-PFV-STV-$^{2}\sqrt{}$leave-VAR
'I left it there.'

b. Áa yéi nx̱a.weich. *labialized glottal stop*
[ʔáː jéː ‿n.χà.ˈʔʷèːtʃ]
á -μ yéi= n- x̱- $^{2}\sqrt{}$.u -e -ch
3N-LOC thus=NCNJ-1SG·S-$^{2}\sqrt{}$leave-VAR-REP
'I have usually left it there.'

c. Áa yéi nx̱a.eich. *non-labialized glottal stop*
[ʔáː jéː ‿n.χà.ˈʔèːtʃ]
á -μ yéi= n- x̱- $^{2}\sqrt{}$.u -e -ch
3N-LOC thus=NCNJ-1SG·S-$^{2}\sqrt{}$leave-VAR-REP
'I have usually left it there.'

Table A.1 indicates a contrast between **anterior** and **posterior places of articulation**, with anterior places being palatal and further forward versus posterior places being velar and further back. There are at least two phonological phenomena that justify this division, and there are probably other related phenomena to be explored. The two phenomena that support the division are (i) affrication and (ii) labialization, with the latter perhaps more significant. Only anterior stops can be paired with anterior fricatives to form affricates, so that segments like */k͡x/ or */q͡χ/ are impossible.[12] Only posterior consonants can be labialized, although the loss of some consonants dilutes this generalization. Notably, in dialects that retain /uɻ/ this sound is the non-labialized counterpart to labialized /w/ and so labial spreading affects approximants in the same way as stops (cf. Weber 2012). A dialect with all of /uɻ/, /ʔʷ/, and /hʷ/ then shows a regular pattern of labial contrasts for all posterior consonants whereas anterior consonants block labialization spread.

2.2. Vowels

In contrast with the large consonant inventory, Tlingit's vowel inventory is relatively small; the complete inventory is shown in table A.2. There are only four phonemic vowels: a front high vowel /i/, a front mid vowel /e/, a back high vowel /u/, and a low central vowel /a/. The low /a/ vowel is plausibly analyzable as a back /ɑ/ rather than a central /a/ because it usually arises as [ɑ] (Maddieson, Smith, & Bessell 2001: 145–146). But unlike /u/ the /a/ is not a trigger for labialization, and some speakers also realize certain instances of /a/ as homophonous with [e], suggesting that /u/ is positionally

12. This conflicts at least superficially with McDonough & Wood (2008) who claim that aspiration in Dene languages is actually affrication with /x/. Possible sequences of e.g. [qχ] in Tlingit are phonologically distinct from [qʰ].

	front	*central*	*back*
high	i		u
mid	e		(o)
low		a	

Table A.2: Tlingit vowel inventory in IPA

distinct from /a/. On the other hand both /u/ and /a/ undergo ablaut to [e], so the properties distinguishing a central /a/ analysis from a back /a/ analysis are more or less equivocal. For now I follow Leer (1991: 10) in treating /a/ as something in between front and back.

There is no phonemic schwa in Tlingit, unlike in many related or nearby languages (e.g. Eyak, Witsuwit'en; Alutiiq, Kwak'wala). Epenthesis occurs with /a/ in most prefixing environments and with /i/ in most suffixing environments though there are exceptions in both cases. Since short /a/ and short /i/ are usually centralized as [ʌ] and [ɪ] (see below), these epenthetic vowels have something of the flavour of schwa but are not identical to it. Epenthetic /i/ undergoes regular labialization to [u], but epenthetic /a/ does not regularly labialize.

The high back vowel /u/ is inherently labial. It is not as strongly labialized as English /u/ however, and some speakers can occasionally delabialize /u/ to something like [ɯ] when it is surrounded by anterior consonants, but the regularity of this phenomenon is unclear. Some speakers occasionally centralize /u/ to something approaching [ʉ] and this same phenomenon can be heard in their English speech as well; the conditioning environment for this centralization is not known. The labial property of /u/ can spread to all immediately adjacent posterior consonants. This labialization can continue to spread across syllable boundaries until it is blocked by an anterior consonant (Weber 2012). Because /i/ can labialize to [u], some speakers have rephonemicized /i/ to /u/ in the root lexicon; examples include the variants *√nikw* /nikʷ/ ~ *√nuk* /nukʷ/ 'sick', *√ti'w* /tiw/ ~ *√tu'w* /tuw/ 'count, read', and *séew* /síːw/ ~ *sóow* /súːw/ 'rain'. Like uvular and word-final lowering of /i/ (see below), the rephonemicization of lexical /i/ to /u/ is mostly restricted to coastal Northern dialects and is not universally applied across the lexicon so that /i/ in the vicinity of a labial still persists in some lexical entries.

The /i/ and /e/ vowels overlap in some contexts (Maddieson, Smith, & Bessell 2001: 146). Perhaps because of this, there is a tendency for /i/ to sometimes be reanalyzed as /e/ (cf. apx. B sec. 4.2.1). This reanalysis arises because of phonetic lowering of /i/ to [ɪ] or [e] which is then interpreted by learners as a realization of /e/. There are two contexts for lowering of /i/: (i) adjacent to uvulars, and (ii) word-finally. Uvular lowering is the lowering and breaking of /i/ when it either precedes or follows a uvular consonant as shown by the data in (12).

(12) *phonetic uvular lowering*

	orth.	IPA	gloss		realization
a.	*g̲eey*	/qìːj/	'bay'	→	[qè̝ːj]
b.	*g̲éen*	/qíːn/	'red willow'	→	[qé̝ːn]
c.	*eek̲*	/ʔìːq/	'copper'	→	[ʔìːè̝q]
d.	*éek̲*	/ʔíːq/	'beach'	→	[ʔíːé̝q]

The phonetic motivation for uvular lowering is articulatory conflict as described by Bird & Leonard (2009) for Salish languages and earlier by Gick & Wilson (2006) for Nuuchahnulth and Tsilhqút'ín among others. The /i/ vowel is anterior whereas the uvular consonants are posterior: /i/ is articulated palatally or postalveolarly, whereas uvulars are articulated very far back at the uvula. So for a sequence [qi] the tongue must first bunch behind the molars, then relax and bunch again behind the alveloar ridge. This shift from posterior to anterior articulation or vice versa takes enough time that it can overlap with voicing and thus affect the F1 of the vowel. This gives rise to intermediate vocalization at various positions along the tongue dorsum, and thus to the realization of /i/ as a phonetic (noncontrastive) diphthong like [e̯i] or [ie̯].

Many of the coastal Northern Tlingit dialects have phonemicized uvular lowering so that /i/ is now /e/. The result of this is shown in (13) with the same words as in (12). Even with the reanalysis as /e/ and a consequent target of [e], the phonetic realization still features a very short non-phonemic intermediate vowel represented here as [ᵊ] following Bird & Leonard (2009).

(13) *rephonemicized uvular lowering*

	orth.	IPA	gloss		realization
a.	*ge̯ey*	/qè:j/	'bay'	→	[qᵊè:j]
b.	*ge̯in*	/qé:n/	'red willow'	→	[qᵊé:n]
c.	*eik̲*	/ʔè:q/	'copper'	→	[ʔè:ᵊq]
d.	*éik̲*	/ʔé:q/	'beach'	→	[ʔé:ᵊq]

The other context for lowering of /i/ is at the end of a word, particularly when the end of the word coincides with the end of the utterance. Like uvular lowering, word-final lowering has been rephonemicized as /e/ in some of the coastal Northern dialects, as seen by root lexicon variation such as $\sqrt[1]{ni^h}$ /ni/ ~ $\sqrt[1]{ne^h}$ /ne/ 'occur, happen; do' and $\sqrt[2]{t'i^h}$ /t'i/ ~ $\sqrt[1]{t'e^h}$ /t'e/ 'find, discover'. This rephonemicization of word-final lowering is not universal throughout the lexicon, so that a speaker with e.g. $\sqrt[1]{ne^h}$ and $\sqrt[1]{t'e^h}$ will still have $\sqrt[1]{ti^h}$ /tʰi/ 'be, exist' and not *$\sqrt[1]{te^h}$ */tʰi/. The phonetic details and motivations for word-final lowering are still undocumented.

The mid back vowel [o] is not normally phonemic in Tlingit but it occurs regularly in a couple of interjections like *hó hó* /hóhó/ 'emphasis' and *ahó* /ʔàhó/ 'oh I see' as well as in various English loanwords like *Jóono* /tʃú:nò/ 'Juneau' and *fón* /fó:n/ 'phone'. Speakers of the Teslin variety of Tlingit and perhaps of other Inland varieties have phonetic uvular lowering of /u/ to something like [o] as illustrated in (14). This lowering of /u/ in the vicinity of uvulars parallels the uvular lowering of /i/, and similarly does not seem to be phonemic since in my experience speakers who have /u/ → [o] recognize forms with [u] instead of [o] as being identical.

(14) *phonetic uvular lowering*

	orth.	IPA	gloss		realization
a.	*k̲óok*	/qʰʷú:kʷ/	'box'	→	[qʰʷó:kʷ]
b.	*kóok̲*	/kʰʷú:qʷ/	'pit'	→	[kʰʷó:qʷ]
c.	*tł'ook̲*	/tɬ'ù:qʷ/	'open sore'	→	[tɬ'ò:qʷ]
d.	*g̲ooch*	/qʷù:tʃ/	'wolf'	→	[qʷò:tʃ]

All Tlingit dialects contrast short and long vowels, distinguishing words like *x̲át* /χát/ 'first person singular' and *x̲áat* /χá:t/ 'fish, salmon' as well as morphological differences like *a ká* /ʔà kʰá/ 'its horizontal surface' and *a káa* /ʔà kʰá-μ/ → [ʔà kʰá:] 'on top of its horizontal surface'. The long/short

ratio of vowel length is generally somewhere between 1.5/1 and 2/1 depending on dialect, stress, and phonetic context. The surface realization of short vowels can differ markedly from long vowels, so much so that e.g. Boas (1917) and Story (1966) among others describe a tense/lax contrast rather than long/short. For example, the noun /ʔáː/ 'lake' is usually pronounced as [ʔáː] or [ʔáː], but the pronoun /ʔá/ 'it' is typically [ʔʌ́] or [ʔɛ́]. Maddieson, Smith, & Bessell (2001) argue that the differences between short and long realizations are due to phonetic centralization of the short vowels and that length is the primary contrast, noting especially that there are cases where short vowels fail to centralize. This accords with Leer (1991) and is borne out by my informal perception experiments where speakers are given forms like [ʔʌ́ː ʔʌ́.wɛ́] and prefer 'that's a lake' over 'that's it'.

Although length is contrastive, there are no phonemic diphthongs. Tlingit prohibits more than one vowel per syllable and also prohibits sequences of vowels across syllables because onsetless syllables are impossible. Despite this, there is some non-phonemic diphthongization in the realization of long vowels. Articulatory conflict between high front /i/ and uvulars can introduce phonetic diphthongs as noted above, and the mid front long vowel /eː/ is often partially fronted to [eɪ] or [ei]. In contrast, neither /a/ nor /u/ is ever realized as a phonetic diphthong. Syllables with coda sonorants like *yáay* /jáːj/ 'whale', *Dzéiwsh* /tséːwʃ/ (personal name), and *náaw* /náːw/ 'liquor' must not be mistaken for diphthongs.

Tone is phonologically significant, indicating lexical differences like low tone *x̲aat* /χàːt/ 'root' versus high tone *x̲áat* /χáːt/ 'fish, salmon' and morphological differences like low tone *ax̲ jee* /ʔàχ tʃìː/ 'my possession' versus high tone *ax̲ jee-H* /ʔàχ tʃìː-H/ → *ax̲ jée* [ʔàχ tʃíː] 'in my possession'. The Northern dialect of Tlingit has a tonal contrast between high (H) and low (L) tone that occurs on all vowels. The pitch difference between tones is fairly small, with Boas (1917) finding an H:L ratio of 15:14 giving a mean multiple of 1.07. Maddieson, Smith, & Bessell (2001) confirm Boas's findings with an onset mean multiple of 1.07 and an offset mean multiple of 1.22, and a pitch declination over vowels of 30 Hz for H tones and 35 Hz for L tones. All studies of tone in Northern Tlingit have been limited to isolated words without context, so both the phonetics and phonology of tone in Tlingit are fruitful areas for further research.

As discussed in section 3, the Southern Tlingit dialect has an additional falling contour tone represented as either /V̂ː/ or /V́V̀/ that occurs only on long vowels; there is no corresponding rising contour tone. The Tongass Tlingit dialect does not have phonemic tone. Instead Tongass Tlingit distinguishes monomoraic short vowels from bimoraic long vowels, and long vowels can be either plain /Vː/ or laryngealized. Laryngealized vowels in Tongass Tlingit are either glottalized /Vˀ/ or fading /Vʰ/. The Tongass vowel system is detailed further in section 3. There are no published phonetic analyses of either Southern tone or Tongass laryngeal vowels, but there are audio recordings suitable for acoustic analysis.

Nasalization is not generally contrastive in Tlingit although some speakers are familiar with Dene languages where nasalization is contrastive (e.g. Southern Tutchone, Tagish, Kaska, Tahltan). In general a vowel preceding a nasal is regularly nasalized. Vowels following nasals may be nasalized but need not be; the conditions of this perseveratory nasalization are still unknown. The Inland dialects spoken in British Columbia and the Yukon have distinct nasalization triggered by /m/ > /w̃/ and */ŋ/ > /ũɫ/ that has been more or less lost in other dialects. In these cases nasalization on the preceding vowel is obligatory but not phonemic because there are no minimal pairs. Research on Inland nasalization is lacking however, so the phonemic status of nasalization in these dialects is

still debatable. Leer only marks nasalization for a couple of words in his Inland noun dictionary: Teslin Tlingit *mąą* [mã̀ː] 'how' versus Atlin and Carcross/Tagish *máa* [máː] 'how' and the interjections *ąą* [ʔã̀ː] 'yes', *ę́ihę́'* [ʔè:hẽ́ʔ] 'hmph; annoying, disappointing', andf *ą́hǫ́* [ʔã́hṍ] 'oh yeah; I get it' (Leer, Hitch, & Ritter 2001: xii).

2.3. Syllables

The minimal syllable in Tlingit is *CV* with an onset and a vowel. Onsetless syllables like *V* and *VC* are prohibited, and where they might otherwise occur there is always an epenthetic consonant of /j/ (or /ɥ/), /w/, or /ʔ/ depending on the phonological context. Syllables *CVC* with coda consonants are very common. Coda consonants are restricted in comparison to onset consonants in two ways. First, glottal /ʔ/ and /h/ and their labialized counterparts are relatively common in the onset but are prohibited in the coda. This prohibition on glottal consonants in the coda is violated only by a couple of interjections like *hó'* [hóʔ] 'oh!' and *eh* [ʔèh] 'ugh'. Second, coda consonants cannot be aspirated so that they only contrast between unaspirated e.g. /t/ and ejective e.g. /t'/ but not /tʰ/. This prohibition is actually inviolable, but the orthographies give all coda unaspirated consonants as though they were aspirated so that e.g. *g̱aat* 'sockeye' actually represents [qàːt] and not *[qàːtʰ]; see section 4 for further discussion.

Syllables can have complex onsets or complex codas, or both. Complex onsets are relatively rare and have no more than two consonants. Complex onsets are known in both native vocabulary and in borrowings, although they are more common among borrowings. All attested complex onsets begin with a plain (non-ejective) anterior fricative, i.e. one of /s/, /ʃ/, or /ɬ/. Both native vocabulary and borrowings from English may have [sC] or [ʃC] onsets, but only native vocabulary has [ɬC] onsets.

(15) a. *ldakát* [ɬtà.kʰát] 'all, every' *native vocabulary with complex onsets*
b. *l.uljíni* [ɬʔùɬ.tʃí.nì] 'vest'
c. *lk̲ul.áx̲ji* [ɬqʰʷùɬ.ʔáχ.tʃì] 'deaf person'
d. *ls'aatí* [ɬs'àː.tʰí] 'masterless'
e. *lkeeyiyáag̲aa* [ɬkʰìː.jì.jáː.qàː] 'unnecessarily long time'
f. *Lk̲'ayáak'w* [ɬq'à.jáːk'ʷ] person's name
g. *sdaat'aay* [stàː.t'àːj] 'neck scarf'
h. *shda.ús'gu át* [ʃtà.ʔús'.kʷù ʔát] 'washing machine'

(16) a. *shdéen* [ʃtíːn] 'steel' *borrowed vocabulary with complex onsets*
b. *sdóox* [stúːxʷ] 'stove'
c. *sdóo* [stúː] 'stew'
d. *shgóon* [ʃkʷúːn] 'school'
e. *shgóonaa* [ʃkʷúː.nàː] 'schooner'

Complex codas are much more common in comparison to complex onsets. Lexical entries are apparently limited to two consonants in the coda, but the addition of a consonantal suffix can give rise to codas that contain three consonants. At least one of the two consonants in a lexical complex coda is an affricate or fricative, but suffixation can result in sequences of stops in the coda.

	Tongass			*Southern*			*Northern*			
	vow.	*orth.*	*IPA*	*vow.*	*orth.*	*IPA*	*vow.*	*orth.*	*IPA*	*gloss*
a.	ˈV	sha	[ʃa]	ˈV́	shá	[ʃá]	ˈV́	shá	[ʃá]	'head'
b.	V	shaseet	[ʃa.ˈsiːt]	V̀	shaséet	[ʃà.ˈsíːt]	V̀	shaséet	[ʃà.ˈsíːt]	'head-braid'
c.	Vʰ	shaà	[ʃaʰ]	V̀V̀	shaa	[ʃàː]	V̀V̀	shaa	[ʃàː]	'mountain'
d.	VʰR	aàn	[ʔaʰn]	V̀V̀R	aan	[ʔàːn]	V̀V̀R	aan	[ʔàːn]	'land, town'
e.	Vˀ	k̲aá	[qʰaˀ]	V́V̀	k̲áà	[qʰâː]	V́V́	k̲áa	[qʰáː]	'man'
f.	VˀR	yaáÿ	[jaˀuɻ]	V́V̀R	yáày	[jâːj]	V́V́R	yáay	[jáːj]	'whale'
g.	Vː	shaa	[ʃaː]	V́V́	sháa	[ʃáː]	V́V́	sháa	[ʃáː]	'woman'
h.	VːR	gaan	[kaːn]	V́V̀R	gáàn	[kâːn]	V́V́R	gáan	[káːn]	'outside'

Table A.3: Tone correspondences between Tongass, Southern, and Northern Tlingit

(17) a. *sháchk* [ʃátʃk] 'muskeg' *nouns with complex codas*
b. *tsálk* [tsʰáɬk] 'ground squirrel, gopher'
c. *tá<u>k</u>l* [tʰáqɬ] 'hammer'
d. *ts'ís<u>x</u>'w* [ts'ísχʼʷ] 'snail'
e. *shís'<u>k</u>* [ʃís'q] 'green wood'

(18) a. *náal<u>x</u>* [náːɬχ] 'wealth' *nouns with complex codas*
b. *shéesht* [ʃíːʃt] 'gambling stick'

(19) a. *diheis<u>k</u>w* [tì.hèːsqʷ] 'they are few' *verbs with complex codas*

Multiple stops in a complex coda must all be released, so that *hítt* 'to the house' is [hítᵊtᵊ] and *as<u>k</u>ú<u>k</u>k* 'he's coughing' is [ʔàsqʰúqᵊkᵊ]. Unlike many languages, there are no 'invisible schwas' in such clusters – i.e. *[hítət] and *[ʔàsqʰúqək] – because the obligatory release burst is never voiced and does not correspond in length to either short or long vowels.

3. Dialects and varieties

Tlingit can be divided into three primary dialects based on tonal phonology: Tongass, Southern, and Northern. Tongass Tlingit lacks tone and instead has a system of laryngealized vowels that reflect the pre-tonogenesis system reconstructed for the rest of Tlingit (Leer 1991, 2001; Crippen 2013b). Both Southern and Northern Tlingit have a phonemic lexical contrast between H and L tones on both short and long vowels, but Southern Tlingit has an HL contour tone on long vowels that is absent in Northern Tlingit (Leer 1991, 2001). The basic tone correspondences between the dialects are shown in table A.3. This schema is not entirely accurate for functional items (agreement morphology, particles, etc.), but it is more or less correct for lexical items; further investigation is necessary to account for the correspondences between dialects in the functional lexicon.

The symbol /ˈV/ in table A.3 stands for a short vowel in a syllable that has primary word-level stress. As shown by row (a) a short vowel with primary word stress has high tone in both Southern

and Northern Tlingit where without primary stress the vowel generally has low tone as in row (b). Tongass /Vʰ/ corresponds reliably with long low tone /V̀V̀/ in both other dialects as shown in rows (c) and (d). Southern Tlingit has two distinct contexts where its unique HL tone occurs: (i) corresponding to Tongass /Vˀ/ as in rows (e) and (f), and corresponding to Tongass /V:/ followed by a sonorant /R/ as in row (h). Northern Tlingit has only /V́:/ in both contexts. Only coda sonorants seem to reliably affect either laryngealization or tone of the vowel, but there is an incomplete correlation between /Vˀ/ and coda ejective consonants in Tongass Tlingit lexical entries with corresponding patterns involving coda ejectives and tone in the other two dialects.

Below this highest level of dialectology, the most salient patterns of variation are at the community level. Among the Coastal communities there are some larger scale groupings possible based on phonological variation that are partly predicted by geography, clan relationships, and settlement histories. The speech varieties of Inland communities are less amenable to larger groupings because there is apparently considerable variation within each community although this has not been seriously investigated. In the past I have represented the variation in each dialect and across all dialects with a tree model but I now consider this to be misleading: dialect-internal relations especially in Northern Tlingit are very complex with convergent evolution, extensive mixing. I offer four subgroupings in section 3.3 but these should be taken more as as guides than definitive statements on Northern Tlingit variation.

Although coarse grained dialect differences are well characterized, finer distinctions between varieties are underreported. This is exacerbated by the documentary overrepresentation of the Central varieties of Northern Tlingit, particularly of speakers from Angoon, Sitka, Hoonah, and Juneau. The extant description and documentation of variation in Tlingit is mostly phonological and lexical. Morphosyntactic and semantic differences between varieties are almost entirely undescribed. I suspect this lack of detail is partly because morphosyntactic differences between dialects are much more uncommon and hence subtle than phonological or lexical differences. I have also encountered situations where a speaker understands a structure but does not use it in their own variety, or likewise regularly produces a structure that other speakers understand but do not use. If speakers do not comment explicitly on these sorts of production/comprehension asymmetries then they are eeasily missed and so not represented in description. To avoid this I have taken to explicitly asking speakers about their production and perception of less common structural patterns.

3.1. Tongass Tlingit

Tongass Tlingit is the primary dialect of the *Taànt'a K̲waan* who claim the lower Portland Canal and areas further north along the coast to Ketchikan (Thornton 2012: 171–174). The Tongass dialect is mostly documented from two married individuals (Williams, Williams, & Leer 1978) with additional information in placename records from some earlier anonymous consultants (Waterman 1922). Tongass Tlingit is primarily characterized on the one hand by a laryngeal vowel system that corresponds with tone in the other dialects (Leer 1991, 2001; Crippen 2013b), and on the other hand by the retention of Pre-Tlingit */ŋ/ as the voiced velar approximant /ɥ/ which is apparently never nasalized [ɥ̃] nor [ŋ]. Krauss (1973b, 1979), Hamp (1979), and others have repeatedly noted the significance of Tongass Tlingit's laryngeal vowels as a primary factor in establishing the genealogical relationship between Tlingit and Dene-Eyak languages, and thus the validity of the Na-Dene language family. Interestingly, Proto-Na-Dene **Vˀ* apparently corresponds to Tongass Tlingit /Vʰ/ and the source of

its /Vˀ/ is still unclear (Leer 2008).

Produced as part of Leer's investigation of this dialect, there are audio recordings from the 1970s of the last two speakers available from the Alaska Native Language Archive along with a body of written notes (Leer 1965, 1973b,c, 1975a,b,e, 1978d) and unpublished manuscripts (Leer 1974a,b,c, 1976b, 1979c). There is no published description of Tongass Tlingit in systematic comparison with other dialects beyond the short discussion in Williams, Williams, & Leer 1978 and various restatements elsewhere. There seem to be a number of undescribed phonological processes involving laryngeal features, epenthesis and syncope, assimilation and dissimilation, and labialization spread. Detailed investigation of these from archival sources would help shed light on similar phonological issues in the other dialects. The orthographic representation of the texts in Williams, Williams, & Leer 1978 obscures many phonetic details that are probably significant for phonological analysis; fortunately the audio recordings are available in digital form for all of these narratives. Impressionistically, the morphology and syntax seem to be more or less identical with other Tlingit dialects aside from morphophonological differences to be expected from its distinct phonological system.

3.2. Southern Tlingit

Southern Tlingit is the primary dialect of the *Saanyaa K̲wáàn* of the Behm Canal area around Ketchikan (Thornton 2012: 174–176) and of the *Heinyaa K̲wáàn* and *Tak̲jik.aan K̲wáàn* on the outer (western) coast of Prince of Wales Island. Southern Tlingit is underdocumented in comparison with the Tongass Tlingit and Northern Tlingit dialects. Early documentation of Southern Tlingit from Velten (1939, 1944) and Harrington (1939b) fails to capture the HL tone, presumably because these linguists were working from Swanton's and Boas's descriptions of Northern Tlingit where HL tone does not exist (Swanton 1911; Boas 1917). Leer worked with some Southern Tlingit consultants in the 1970s and a small body of his notes are available at the Alaska Native Language Archive (Leer 1965, 1969, 1975a,c); it is in these notes that the HL tone is first reliably documented as e.g. ⟨âa⟩ for /â:/. Aside from the narratives transcribed by Velten, the only other published narrative in Southern Tlingit is one by *Táakw K'wát'i* Frank Johnson of Klawock (Dauenhauer & Dauenhauer 1987: 138–151). The transcriber *K̲eixwnéi* Nora Marks Dauenhauer was a Northern Tlingit speaker and admittedly 'northernized' the transcription (N.M. Dauenhauer p.c. 2009), but a digital version of the recording is available for detailed phonetic investigation.

The Southern Tlingit dialect can be divided into two major varieties: Sanya[13] Tlingit and Henya[14] Tlingit. **Sanya Tlingit** is associated with the *Saanyaa K̲wáàn* around Behm Canal near Ketchikan, and **Henya Tlingit** is associated with the *Heinyaa K̲wáàn* around Klawock and Craig on Prince of Wales Island. The *Tak̲jik.aan K̲wáàn* of northwestern Prince of Wales Island probably spoke a distinct variety of Southern Tlingit but this was obscured by the forced relocation of Tuxekan residents to Klawock in the early 20th century. It is possible that some of the *Kooyú K̲wáan* of Kuiu Island spoke Southern Tlingit, but the dispersal of *Kooyú K̲wáan* people to *K̲'éex̲' K̲wáan* and *Heinyaa K̲wáàn* communities after smallpox epidemics in the 19th century (Thornton 2012: 127) has obscured the evidence.

The differences between Sanya and Henya Tlingit are primarily in verbal prefix morphophonol-

13. English /ˈsɑn.jʌ/ from Tlingit *Saanyaa* [ˈsà:n.jà:] < **saʰ* 'southerly' + *nÿaʰ* 'direction'; cf. *sáanáx̲* 'southerly wind' (Leer 1973a: 09/23, 1978c: 36).

14. English /ˈhɛn.jʌ/ or /ˈhem.jʌ/ from Tlingit *Heinyaa* [ˈhè:n.jà:] < **he* 'mesioproximal; over here' + + *nÿaʰ* 'direction'; cf. *héide* 'over here' (Leer 1973a: 01/106, 1978c: 2).

ogy according to Leer (Williams, Williams, & Leer 1978; Leer 1991). I have noted that some Sanya speakers occasionally employ Tongass forms – distinctly marked by laryngeal vowels – in historical narrative contexts, but this apparently never occurs among Henya speakers who would have much less contact with Tongass Tlingit. There is so little description of either Sanya or Henya Tlingit that it is difficult to establish any other reliable distinctions between the two varieties. Both Sanya and Henya Tlingit have had extensive contact with Alaskan Haida and to a lesser extent with other Haida dialects and with Coast Tsimshian and Nisga'a. Multilingualism was reportedly very widespread in the 19th century,[15] but there has been no investigation of language contact phenomena in either Sanya or Henya Tlingit.

Aside from the limited discussions in Williams, Williams, & Leer 1978, Leer 1991, and Leer 2001, there is no published description of Southern Tlingit. There is a moderate quantity of audio recordings of Southern Tlingit speakers at the Alaska Native Language Center and at the Sealaska Heritage Institute, including a 12 hour set of narratives recorded by Leer in the mid 1990s with Clara Peratrovich of Klawock relating her life history. Southern Tlingit has never been seriously investigated by any linguists since Leer, but I have studied recordings of Henry Denny (Sanya) and Clara Peratrovich (Henya) and I have worked with Jim Martinez and Angela Roberts (both Henya) so I have some preliminary exposure and can confirm the essentials of Leer's descriptions.

3.3. Northern Tlingit

Northern Tlingit is the umbrella term for all Tlingit varieties that have tone and lack the HL contour tone on long vowels. Beneath this umbrella we can delineate three or four major groupings of community-level language varieties. But there has always been extensive population movement between communties due to marriage, commerce, conflict, exploration, resource exploitation, and other social phenomena, so even the identification of community-level varieties is problematic. The presentation here is meant only as a guide and not as a definitive description; it is based mostly on my personal impressions of language variation and discussion with well-travelled L1 speakers.

I have previously identified three major groups of language varieties within Northern Tlingit: Transitional, Inland, and Central. I add to this a Gulf Coast group which shows some differences from the Central group. The Transitional varieties (sec. 3.3.1) are geographically and linguistically 'in between' the Southern Tlingit and Northern Tlingit dialects, though linguistically they are best characterized as Northern. The Inland varieties (sec. 3.3.2) show the retention of many conservative features as well as unique innovations, some of which may be influenced by contact with Dene languages. The Inland and Transitional varieties share some features that suggest a closer connection in the past, or perhaps represent shared retentions that were obscured in other Northern Tlingit varieties. The Central varieties (sec. 3.3.3) represent the largest population centres as well as the largest speech communities and are the basis for most published Tlingit materials. As such, the Central varieties predominate in linguistic discussion and are often taken to be representative of all of Tlingit, but this is misleading and can be inaccurate. The Gulf Coast varieties (sec. 3.3.4) are very close to Central varieties but show some conservative retentions and a few unique innovations as well as influence from contact with Eyak and Dene languages.

15. One consultant said that his maternal grandparents spoke Tlingit, Haida, Tahltan, Coast Tsimshian, and Chinook Jargon fluently, and could manage a bit of English along with a few words in Russian.

3.3.1. Transitional varieties of Northern Tlingit

Transitional Tlingit is documented from Wrangell (*K̲aachx̲an.áak'w*[16]) and Kake (*K̲'éex̲'*) and thus the *Shtax'héen K̲wáan* and *K̲'éex̲' K̲wáan*, but it undoubtedly included other communities like *S'awdáan K̲wáan* and *Kooyú K̲wáan* which became depopulated in the 19th century. Transitional Tlingit is a Northern variety with the level H and L tone system, but speakers may occasionally show optional, non-contrastive falling pitch where the HL contour would be mandatory for Southern speakers. Prefix phonology is essentially the same as other Northern varieties except that there is optional syncopation of unstressed high vowels [ì] and [ù] like in the Southern and Tongass dialects. Transitional Tlingit is largely undescribed; it is documented in a small number of audio recordings and in Swanton's transcriptions of *K̲aadishaan* John Kadishan from Wrangell (Swanton 1909). Southern features are more commonly present for Wrangell speakers than for Kake speakers, probably reflecting social relationships with communities to the north and south. I am an L2 speaker of the Wrangell variety.

The data in (20) illustrate the optional application of Southern-like features in Wrangell Tlingit. The form in (20a) is more or less the same as other Northern Tlingit varieties. The form in (20b) shows the optional syncopation of the unstressed high vowels [ù] and [ì] in *tuwáa* and *sigóo* respectively. The apparent syncopation might actually be devoicing, i.e. [tʰu̥.ˈwáː si̥.ˈkʷúː], but this needs to be verified by acoustic analysis.

(20) a. Héen gí i tuwáa sigóo? *Wrangell Tlingit without syncope*
[híːn kí ʔì tʰùˈwáː sìˈkʷúː]
héen gí i tú- ÿá -μ s- i- ¹√gu-μH
water YN 2SG·PSS mind-face-LOC XTN-STV-¹√joy-VAR
'Do you want water?'

b. Héen gí i twáa sgóo? *Wrangell Tlingit with syncope*
[hîːn kí ʔì tʰwáː skʷúː]
héen gí i tú- ÿá -μ s- i- ¹√gu-μH
water YN 2SG·PSS mind-face-LOC XTN-STV-¹√joy-VAR
'Do you want water?'

The noun *héen* /híːn/ 'fresh water; river' also exhibits optional falling pitch before a sonorant in (20b). Despite this apparent HL tone, the two long vowels in *twáa* and *sgóo* lack the HL contour that would be expected in Southern Tlingit dialects. Since the falling pitch is optional, since there is a phonetic trigger for it, and since there is a lack of contrastive falling pitch in other contexts, I consider this to be non-phonemic. It suggests either a partial acquisition of contrastive HL from speakers of Southern varieties who moved into the area or perhaps a historic levelling of the HL and HH tone patterns with noncontrastive phonetic residue.

There seems to be a difference in pitch targets for the L tone in contrast with other Northern varieties. My impression is that stressed L is marked by a distinct downward deflection of pitch that is minimal or absent in other Northern varieties where instead there is only the absence of upward deflection. This presumably contributes to what other Northern speakers describe as a 'sing-song'

16. From *k̲aa* 'someone's' + *jín* 'hand' + *x̲án* 'near' + *áa-k'w* 'lake-DIM', and thus "Convenient Little Lake" referring to its position near the Stikine River mouth. Compare *du chx̲án* [tù tʃχán] ~ *du jix̲án* [tù tʃìˈχán] 'near his/her hand; handy, convenient for him/her' and perhaps *dachx̲án* [tàtʃˈχán] 'grandchild' < *daa* 'around' + *jix̲án* 'near at hand'.

quality in Transitional Tlingit that is reputedly shared with Southern dialects. There are to date no acoustic analyses of Transitional Tlingit so my description of this phenomenon is still speculative.

The lexical documentation shows a number of unusual lexical items in Transitional Tlingit. Some of these are otherwise undocumented Russian loanwords like *yúxgaa* [ˈjúxʷ.kàː] 'skirt' from юбка *júbka* 'skirt', *ginéikw* [kìːˈnéːkʷ] 'eucharist' from хлеб *xleb* 'bread', and *wáasdlaa* [ˈwáːs.tɬàː] 'butter' from масло *máslo* 'butter'. One is a Chinook Jargon loanword *nawéin* [nàːˈwéːn] 'oatmeal, cornmeal mush' from CJ *lawén* [ləˈwen] 'oats' < Can. Fr. *l'avoine* [lavˈwen] (Zenk 2012: 130); there is also the conservative *gwít* [kʷít] 'dime' < CJ *bit* 'dime' < Eng. *bit* '⅛ dollar' where other Northern varieties have *gút* [kʷút] with labialization spread. Some are conservative Southern forms like *ik̲yéis'* [ʔìq.ˈjéːs'] 'iron' versus other Northern *g̲ayéis'* [qàːˈjéːs'] which is etymologically from *eek̲* [ʔìːq] 'copper' + *yéis'* [jéːs'] 'dark, discoloured' but which is now opaque in the rest of Northern Tlingit.[17] A small number of lexical items are unique to Transitional Tlingit; most are etymologically obvious and may be local innovations or reflect documentary gaps for other dialects, but a few like *kéigán* [ˈkʰéː.kán] 'snowy owl' (*Bubo scandiacus* L.), *gáxtl'* [káxtɬ'] 'pumice', and *yaal'ak'á* [jàː.ɬ'àˈk'á] 'mortuary post' are completely unknown elsewhere.

Transitional Tlingit has had extensive contact with Tahltan via the Stikine River (Swanton 1908; Emmons 1911; Olson 1967), and some clans in Wrangell and Kake trace their histories to places that are now in Tahltan country. This contact has had a considerable effect on Tahltan with a wide variety of loanwords and some preservation of sounds lost in neighbouring Dene languages that are clearly influenced by Tlingit bilingualism (Nater 1989, 2018). But unlike the contact situation of Inland Tlingit varieties (sec. 3.3.2), there does not seem to be any significant influence in the other direction. I have found no unique loanwords, no significant phonological differences, and no local idioms or sayings in Transitional Tlingit due to contact with Dene languages that cannot also be found in other coastal Tlingit dialects without direct Dene contact. This does not rule out the possibility of undocumented effects, but they must be remarkably uncommon.

3.3.2. Inland varieties of Northern Tlingit

The Inland[18] varieties of Northern Tlingit are traditionally treated as a unitary "Inland Tlingit" dialect but this conceals considerable variation. They are more accurately described as a complex web of language varieties whose documentation in the late 20th century comes from four communities in Canada: Atlin in British Columbia and Carcross, Tagish, and Teslin in the Yukon. Through the early 20th century there was considerable population mobility as well as concentration from other communities like Johnston Town, Old Post, Johnson's Crossing, Lower Marsh Lake, Upper Atlin Lake, Inklin, etc. (McClellan 1975a). Because of this history of population movement, today's settlements show a mix of varieties that are associated with former residences and family lineages. Thus a single community cannot be said to have a single distinct variety. The extant documentation of the Inland varieties obscures some of this variation and principled sociolinguistic investigation has yet to be attempted. My summary of the Inland varieties here is still based in the traditional descriptive framework and I acknowledge that it is necessarily problematic.

17. The etymology is *eek̲* + *yéis'* → *ik̲yéis'* > **i̲gayéis'* > *g̲ayéis'* with epenthesis and then onset syncope.
18. Although Leer has used the label 'Interior' (Sidney & Leer 1980; Leer 1991, 1992; Nyman & Leer 1993; Leer, Hitch, & Ritter 2001), my consultants have unanimously preferred 'Inland' as an approximation of Tlingit *Dak̲ká K̲wáan* [tàq.ˈkʰá qʰʷáːn] 'Inland People' (from *dáak̲* 'inland, up from shore' and *ká* 'horizontal surface').

The Inland varieties all feature only minimal phonemicization of uvular lowering, final lowering, and labialization spread in the root lexicon (apx. B sec. 4.2). Thus roots like √*k̲in* /qʰin/ 'pl. fly', √*t'ih* /t'i/ 'find', and √*ti'w* /tʰiw/ 'count, read' are typical though individual speakers may have any of √*k̲en* /qʰen/, √*t'eh* /t'e/, or √*tu'w* /tʰuw/ depending on their backgrounds and personal histories. As such, Inland Tlingit speech often seems phonologically closer to Transitional Tlingit varieties than to its immediate neighbours among the Central varities. This probably reflects the preservation of conservative features due to limited contact with innovative varieties on the coast, and I suspect that the neighbouring Central varieties around Juneau were phonologically closer to the Inland varieties before the gold rushes of the late 19th century.

In my experience, speakers from Teslin often show noncontrastive uvular lowering of /u/ to [o], a mirror of the /i/ to [e] attested elsewhere. Thus a Teslin speaker is likely to pronounce *g̲ooch* /qùːtʃ/ 'wolf' something like [qòːtʃ] and *kóok̲* /kʰʷúːqʷ/ 'pit' like [kʰʷóːq]. I have the sense that this uvular lowering of /u/ is not phonemic, but there has been no investigation of this phenomenon and it is otherwise unreported. I have not noticed this phenomenon in the speech of people from Carcross, Tagish, or Atlin, but this could simply be an oversight on my part. Interestingly, the uvular lowering of /u/ to [o] is independent of the uvular lowering of /i/ to [e] because, as mentioned above, this is only rarely found among Teslin speakers.

Most of the Inland varieties preserve a phonemic /m/ that contrasts with /w/; see section 2.1 for examples. This contrast is notably absent in the documentation from Atlin speakers and the few I have worked with have completely lacked it. Since /m/ is a conservative retention, it seems likely that people in Atlin and the Taku River valley shifted /m/ > /w/ at around the same time as on the coast in the late 19th century. This is plausibly explained by the extensive contact between Taku River residents and coastal Tlingit in the Juneau area (McClellan 1975a,b). There is evidence for earlier /m/ on the coast in the mid-19th century, such as Veniaminov's occasional indication of Cyrillic ⟨м⟩ in Sitka (Veniaminov 1840, 1846) and English placename borrowings like *Sumdum* [ˈsʌm.dʌm] from Tlingit *S'awdáan* [s'àw.ˈtáːn] that includes *s'áaw* [s'áːw] 'Dungeness crab' (*Cancer magister* Dana, 1852) from earlier **s'aʔm* (cf. Tahltan *ts'áːm* 'crab' in Nater 2018). Some word-final instances of *m* /m/ in Teslin, Carcross, and Tagish have been lenited to a nasalized labial-velar approximant *w̃* [w̃] as in *s'áaw̃* [s'áːw̃] 'Dungeness crab', *séew̃* [síːw̃] 'rain', *s'oow̃* [s'ùːw̃] 'blue', *noow̃* [nùːw̃] 'low flat hill; fort'. This [w̃] may contrast with both /m/ and /w/ but it needs further investigation.

Presumably because of the presence of phonemic /m/, borrowings from English in Inland Tlingit varieties often preserve a labial where it would be replaced by a labialized velar in coastal Tlingit varieties. Thus English *Vancouver* [væŋ.ˈkʰu.vɚ] is *Bankóobaa* [pàn.ˈkʰʷúː.pàː] rather than the *Wankóowaa* [wàn.ˈkʰʷúː.wàː] of my coastal consultants, and English *apples* [ˈæ.pl̩z] is *áabíns* [ˈʔáː.píns] rather than *áagwíns* [ˈʔáː.kʷíns] or *áagúns* [ʔáː.kʷúns]. Most borrowings that come to Inland varieties via coastal speakers show the expected replacement of a labial stop, but a few exceptions show hypercorrection such as *smádaa* [ˈsmá.tàː] 'sweater' vs. coastal *swádaa* [ˈswá.tàː] and *gamdáan* [kàm.ˈtáːn] 'horse' vs. coastal *gawdáan* [kàw.ˈtáːn] from CJ *kayudán* 'horse'.

Most Inland varieties at least partially maintain a reflex of the 'gamma' *ÿ* sound that is usually documented as a voiced velar approximant /uɣ/ (sec. 2.1). In the rest of present-day Northern Tlingit this sound has merged with *y* /j/ and *w* /w/ (sec. 6.1.3). But many Inlanders have various nasalized realizations of *ÿ* such as *ỹ* [ũɣ̃], *ỹ* [j̃], and *ŋ* [ŋ] that reflect this sound's reconstructed form as a nasal velar stop **ŋ*. This is particularly notable with combinations of the perfective prefix and

the second person subjects, where for example *yeeysiteen* 'you (pl.) saw him/her/it' has otherwise unexpected nasalization as [ˌjɨ̃ːj̃.sì.ˈtʰìːn] or [ˌjɨ̃ːŋ.sì.ˈtʰìːn]. Although it is often not represented orthographically, it may be indicated by *ỹ* or *ÿ*. The unpredictable nasalization entails the existence of a distinct phoneme rather than an abstract phonemic category like the /j ~ w/ variation in other Northern Tlingit varieties.

As noted earlier in section 2.1, the Inland varieties have a voiced lateral approximant *ḷ* /l/ that occurs in borrowings from Dene languages. The town name *Deisḷeen* [tèːs.ˈlìːn] 'Teslin' notably includes this sound, as do *daḷeiyí* [tà.ˈlèː.jí] 'lake trout' (*Salvelinus namaycush* Walbaum, 1792) and *chiḷaaskaaḷé* [tʃʰì.ˌlàːs.kʰàː.ˈlé] 'swallow' (*Hirundo rustica* L. or *Tachycineta bicolor* Vieillot, 1808) as documented by Leer (Leer, Hitch, & Ritter 2001: T·4, T·9). This *ḷ* /l/ also occurs in some Tlingit borrowings of English personal names like *Áaḷís* [ˈʔáː.lís] 'Alice' and *Paal* [pʰàːl] 'Paul', but it is lacking in other English borrowings like *óondách* [ˈʔúːn.tátʃ] 'Old Dutch (boogeyman); kind of owl' (Leer, Hitch, & Ritter 2001: T·81) which is not e.g. **óoḷdách* *[ˈʔúːl.tátʃ]. The lateral approximant /l/ is otherwise absent in the Tlingit lexicon.

3.3.3. Central varieties of Northern Tlingit

The Central varieties of Northern Tlingit are those spoken by people in the northern half of southeastern Alaska including the communities of Angoon, Sitka, Hoonah, Juneau, Haines, Klukwan, and Skagway. These encompass the ḵwáans of *Xootsnoowú Ḵwáan*, *Sheet'ká Ḵwáan*, *Xunaa Ḵáawu*, *T'aaḵú Ḵwáan*, *Áak'w Ḵwáan*, *Jilḵaat Ḵwáan*, and *Jilḵoot Ḵwáan*. Speakers of Central varieties make up the majority of Tlingit speakers today, and the vast majority of Tlingit language documentation, description, and educational material is based on these Central varieties. The Central varieties of Northern Tlingit form a kind of de facto norm and are often (sometimes erroneously) assumed to be representative of all Tlingit varieties.

There are a variety of characteristic differences between each community that make it so many if not most speakers can often identify another speaker's ḵwáan on the basis of their speech. The details of this variation have yet to be empirically investigated. There is considerable complexity introduced by the long standing aristocractic tradition of marrying outside one's community which has become even more widespread with easier travel and relaxed social restrictions on marriage in the 20th century. Another major complicating factor is the large population shift toward Juneau in the 1890s and throughout the 20th century which may have caused varieties in the Juneau area to tend toward those of the Lynn Canal, Sitka, and Hoonah, and away from their neighbouring Atlin and Sumdum varieties. Because of these and other issues, I only offer a few sketchy notes on variation.

The most signficant phonetic distinctions to my ear are (i) a gradual tendency toward phonemic reinterpretation of /i/ as /u/ due to anticipatory labialization as one moves further north and (ii) a similar northward tendency toward phonemic reinterpretation of uvular lowering of /i/ to /e/. For (i), a speaker in Angoon will have *yanéekw* [jà.ˈníːkʷ] 's/he/it is sick' where another speaker in Hoonah or Klukwan could have either the same or *yanóok* [jà.ˈnúːkʷ]. For (ii), in Angoon a speaker may have either *g̱eey* [qìːj] or *g̱eiy* [qèːj] 'bay' and *eeḵ* [ʔìːq] or *eiḵ* [ʔèːq], but in Hoonah or Klukwan a speaker will exclusively have *g̱eiy* [qèːj] and *eiḵ* [ʔèːq].

Like all other coastal varieties of Tlingit, the Central varieties today lack *m* and *ÿ*. There are signs of both having existed in the recent past. For example, a few speakers I have met from Klukwan have an unexpectedly nasalized [w̃] where *m* would be expected in Teslin (e.g. *aw̃sikóo* [ʔàw̃.sì.ˈkʰʷúː] 's/he

has come to know it'), and *ÿ* is documented by Swanton in Sitka in the late 19th century. Similarly, some recordings of *Kichnáalx̱* George Davis of Angoon show him using both *m* and *ÿ* (as [ɥ]) in a few places where normally he has *w* and *y*. The voiced lateral *l̲* appears to be entirely absent; the couple of speakers recorded with it are actually speakers of Gulf Coast varieties whose families are from Dry Bay and Yakutat.

There is much more to be said about the particulars of phonetic variation in the Central varieties of Northern Tlingit. There is an ample body of good quality recordings that are suitable for phonetic investigation, but there is currently no extensive phonetic transcription to work from. There is probably some grammatical variation as well, but it is essentially undocumented. In my experience speakers of Central varieties have never explicitly commented upon any grammatical differences between different communities, so if there is any significant grammatical variation it is likely to be subtle.

3.3.4. Gulf Coast varieties of Northern Tlingit

The Gulf Coast varieties of Northern Tlingit are those spoken by people in Yakutat or with recent lineages from now depopulated communities along the shores of the Gulf of Alaska: Lityua Bay, Dry Bay, Icy Bay, Katalla, etc. (De Laguna 1972: 58–106) and from some mixed Southern Tutchone and Tlingit communities on the Tatshenshini and Alsek Rivers (McClellan 1975a: 23–25). Speakers of Central Northern varieties describe Gulf Coast as fully intelligible but noticeably different in many minor ways. There was probably a dialect continuum ranging from Hoonah and Apolosovo (Engstrom 2008) along the entire coast to the mouth of the Copper River, modulated by considerable population mobility in the region as well as intermarriage and regular contact with people from more distant Northern Tlingit communities. This dialect continuum had extensive contact with Eyak, Southern Tutchone, and Ahtna including considerable intermarriage (De Laguna 1972); a few clans in Yakutat identify as Ahtna and Eyak descendants, and Dry Bay residents are called *G̲unax̱oo K̲wáan* from *g̲unanaa* 'other people; Dene' and *x̱oo* 'among'. To a much lesser extent there was contact with Alutiiq/Sugpiaq, but this was limited by long term conflict. The early and mid-20th century saw concentration of the majority of Gulf Coast speakers in Yakutat so that today's Gulf Coast varieties are documented from a single community, but there are still signs of more extensive variation that have yet to be investigated.

The documentation of Gulf Coast Tlingit varieties is scattered and unorganized and needs collation from extant materials. Naish & Story offer an eight-page summary of differences they encountered between the Tlingit of Angoon and that of Yakutat, including notes on phonetics, phonology, morphology, and the lexicon (Naish & Story 1967). De Laguna includes a wide variety of lexical items in her ethnography (De Laguna 1972). Leer's lexical documentation includes occasional entries marked with "(Y)" for Yakutat (Leer 1973a). Harrington collected a large volume of mostly lexical notes with detailed phonetic transcriptions from George Johnson of Yakutat, but these have yet to see any critical review (Harrington 1940a,b,c,d,e,f,g,h). There are also some early wordlists from Davydov (1810), Malaspina (1885b,a), Suria (1791), de Lamanon (1799), and La Pérouse (1798). Beyond textual sources, there are also several good recordings of Gulf Coast speakers such as *Seig̲eig̲éi* Emma Marks, *Kaasgéiy* Susie James, and *Kuchéin* Frank Italio, the last recorded by De Laguna in the 1950s.

Naish & Story (1967) describe several vowel correspondences between Angoon (Central Northern) and Yakutat (Gulf Coast): /i/ or /e/ corresponding with /a/, /i/ corresponding with /e/, /a/, /i/

corresponding with /u/ via labial spreading, /u/ unpredictably corresponding with /e/ or /i/, and syncope of /a/ in some unstressed /Ca/ syllables. Among consonants, they note the lack of expected ejectivity on some stops (e.g. /kʷ/ for expected /k'ʷ/), the retention of contrastive /uɻ/ (written ⟨g̨⟩) as [uɻ] or [w], the presence of /j/ instead of expected /uɻ/ in some words, and some differences in specific lexical items. They record the uvular lowering of /u/ to [o] as described in Inland Tlingit varieties (sec. 3.3.2), but note that this only occurred with one speaker. They report differences in tone and intonation but do not supply much detail:

> Some differences [in tone and intonation] were noted, but a longer acquaintance with the dialect would be necessary before definite statements could be made. The most noticeable difference was in the intonation tails, where there was a tendency for a high-low contour to occur on the last two syllables. (Naish & Story 1967: 6)

Naish & Story also list a number of lexical differences: distinct lexical items, different senses of the same lexical item, and several otherwise unattested nouns. Among these are some Russian and Eyak borrowings such as *cháashga* [tʃʰá:ʃ.kà] 'cup' < Ru. чашка *čáška* 'cup' (dimin. of чаша *čáša* 'bowl') and *kwáashk'* 'humpback salmon' (*Oncorhynchus gorbuscha* Walbaum, 1792) < Eyak *ka:šk'* < **kʷa:šk'* 'humpback salmon' (Krauss 1970: 1168). Leer's lexical documentation includes many more examples that need to be organized for ease of reference.

The Eyak language is probably the source of two distinct features of some Gulf Coast speakers that have not been reported previously, namely the shift of /n/ > /l/ (cf. sec. 2.1) and the appearance in some lexical items of the ejective affricates /ts'/ and /tɬ'/ in place of the ejective fricatives /s'/ and /ɬ'/ used elsewhere. Eyak underwent a shift of */n/ > /l/ which left only a few instances of /n/ despite the presence of both /m/ and phonemic vowel nasalization (Krauss 1965a). Although still unproven, this is a likely source for the shift of /n/ > /l/ in Tlingit because the speakers documented with this shift are all from Gulf Coast communities. The use of ejective affricates instead of fricatives could be due to Ahtna and Southern Tutchone influence just as much as Eyak. Only some lexical items are documented with this shift and then only for some speakers, so its penetrance is limited. Evidence of this partial shift can be found in transcriptions from Harrington and De Laguna among others.

4. Orthographies

Tlingit has three orthographies in current use as well as a few others that are encountered in older publications that still see frequent reference. I discuss the current orthographies in section 4.1 and the older orthographies in section 4.2. All the orthographies discussed are based on the Latin alphabet; there were attempts to write Tlingit in Cyrillic during the Russian colonial period and by Russian Orthodox church members afterward, but these never saw any popular adoption.

All current orthographies and most obsolete orthographies use voiced symbols like ⟨d⟩ and ⟨dl⟩ to represent unaspirated stops and affricates like /t/ and /tɬ/, and voiceless symbols like ⟨t⟩ and ⟨tl⟩ to represent aspirated stops and affricates like /tʰ/ and /tɬʰ/. This practice of representing unaspirated as 'voiced' and aspirated as 'voiceless' is shared with the orthographies of languages like Navajo (Young & Morgan 1987), Ahtna (Kari 1990), Tłı̨chǫ (Saxon & Siemens 1996), and Eyak (Krauss 2015) along with most other Na-Dene languages.

All orthographies represent a coda contrast between aspirated /Cʰ/ and ejective /C'/ following analyses by Boas (1917) and Story (1966), but this is phonologically inaccurate. Maddieson, Smith, &

Bessell (2001: 143–145) argue from spectrographic evidence that Tlingit actually has coda unaspirated /C/, and that aspirated /Cʰ/ only occurs in the onset. The 'aspiration' heard by many researchers is actually a burst from obligatory release because all coda obstruents must be released. Thus *x̱aat* 'root' is [χàːt⁼][19] and not aspirated *[χàːtʰ] or unreleased *[χàːt̚]. The release bursts of unaspirated obstruents are easily confused with aspiration, but the VOT of an aspirated obstruents is always longer than an unaspirated obstruents, and the VOT of unaspirated obstruents is nearly identical in the onset and coda.

The representation of unaspirated coda obstruents as 'aspirated' leads to an artificial 'voicing' phenomenon that exists only in the orthographic form and does not reflect any actual phonetic phenomena in Tlingit. As shown in (21) suffixation can cause resyllabification of a coda consonant into a new onset position.

(21) a. x̱aat *unsuffixed, in coda*
[χàːt]
root
'root'

b. ax̱ x̱aadí *with suffix, unaspirated in onset*
[ʔàχ ˈχàː.tí]
ax̱ x̱aat-í
my root -PSS
'my root'

c. *ax̱ x̱aatí **with suffix, aspirated in onset*
[ʔàχ ˈχàː.tʰí]
ax̱ x̱aat-í
my root -PSS
'my root'

The orthography in (21b) represents the new onset consonant as 'voiced' and thus unaspirated even though it is 'voiceless' and thus supposedly aspirated in coda position as in (21a). But phonetically there is no difference in release burst between (21a) and (21b). If the coda stop in (21a) were truly aspirated then we would expect (21c) where its aspiration is retained with its shift into the onset, but this is ungrammatical. See Maddieson, Smith, & Bessell 2001 for further discussion.

4.1. Current orthographies

There are three orthographies currently in use for Tlingit: (i) the Revised Popular orthography, (ii) the Leer orthography, and (iii) the Email orthography. I address each of these orthographies in turn, focusing on the Revised Popular orthography and contrasting the other two against it. All three orthographies are phonemic and all are isomorphic although there is as yet no automated tool for orthography conversion. The Revised Popular orthography sees the widest use and has the most associated publications; it may be considered the standard orthography for Tlingit today and is the one used throughout this dissertation.

The **Revised Popular** (RP) orthography has been in continuous use with minor modifications since the mid-1970s (cf. Dauenhauer 1973; Dauenhauer 1974; Naish, Story, et al. 1976). My label for

19. The symbol [C⁼] indicates unaspirated release following Duckworth et al. 1990.

it is from Richard Dauenhauer (p.c. 2009); it is a development from the Naish-Story orthographies discussed in section 4.2. The Dauenhauers' publications about Tlingit oral literature (Dauenhauer 1981; Dauenhauer & Dauenhauer 1981, 1987, 1990, 1994, 1998b, 2003, 2012; Dauenhauer, Dauenhauer, & Black 2008) as well as their teaching materials (Dauenhauer & Dauenhauer 1999, 2000, 2002) have been extremely influential in establishing the Revised Popular orthography as the most widespread orthography. The consonant inventory is given in table A.4 on page 811 and the vowel inventory for Northern Tlingit (including length and tone) is given in table A.5 on page 812. Consonants are further discussed in section 4.1.1 and vowels in section 4.1.2.

The Revised Popular orthography has become the de facto standard in the entire Tlingit community, adjoined by the Email orthography in electronic communication. There are still complaints about the Revised Popular orthography, although surprisingly few people other than linguists object to its Englishy vowel representation. Richard Dauenhauer (p.c. 2012) fervently wished that a 'double-vowel' system like for Navajo and Haida was in place instead, so e.g. ⟨é⟩ /é/ versus ⟨ée⟩ /é:/ just like ⟨á⟩ /á/ versus ⟨áa⟩ /á:/, but he felt that there had already been too many modifications to orthographic practice (see sec. 4.2 below) and that the community would probably not tolerate any further changes. Nonetheless some small changes have crept in without any official promotion, such as the occasional use of ⟨ł⟩ instead of ⟨l⟩ for the voiceless lateral fricative /ɬ/, and the adoption of short final vowels for suffixes like allative *-dé* that vary between short and long.

4.1.1. RP consonants

Unaspirated obstruents are represented by 'voiced' symbols like ⟨d⟩ /t/ and ⟨g⟩ /k/, and **aspirated obstruents** are represented by 'voiceless' symbols like ⟨t⟩ /tʰ/ and ⟨k⟩ /kʰ/. As discussed earlier in section 4, the 'voiceless' symbols are used for coda obstruents even though these are actually unaspirated. The distinction between 'voiced' and 'voiceless' is maintained for the two labial stops so that ⟨b⟩ represents /p/ and not */b/; this is in keeping with actual L1 pronunciation of these borrowed labials: ⟨Bankóobaa⟩ 'Vancouver' is [pàn.ˈkʷʰú:.pà:] and not *[bàn.ˈkʷʰú:.bà:].

Uvulars are differentiated from velars by the addition of an underline diacritic as e.g. velar ⟨g⟩ /k/ and ⟨x⟩ /x/ versus uvular ⟨g̲⟩ /q/ and ⟨x̲⟩ /χ/. This practice dates from the days of typewriters when a combination of typing backspace and underscore was straightforward. Since this is no longer straightforward on computers, the Leer and Email orthographies developed an alternative strategy of velar + ⟨h⟩. The underscore diacritic is represented in Unicode with ⟨̲⟩ U+0331 Combining Macron Below; this matches the canonical decomposition of ⟨K̲⟩/⟨k̲⟩ U+1E34/U+1E35 Latin Capital/Small Letter K With Line Below into U+004B/U+006B + U+0331 (Allen et al. 2015).

The **voiceless lateral fricative** /ɬ/ is always given as the unadorned symbol ⟨l⟩. Consequently, the underscore diacritic is also used to represent the **voiced lateral approximant** /l/ in its two different contexts. When voiced /l/ appears in loanwords from English or Dene languages, the RP orthography uses ⟨l̲⟩ as in ⟨dal̲eiyí⟩ for /tà.ˈlè:.jí/ 'lake trout'. When /l/ appears instead of otherwise expected /n/ – i.e. for the denasalized nasal /ñ/ – the RP orthography may use ⟨n̲⟩. Thus *Kaasgéiy* Susie James says ⟨héen̲⟩ /hí:ñ/ [hí:l] 'fresh water; river' for the more common ⟨héen⟩ /hí:n/. The same ⟨n̲⟩ may also be used to indicate other atypical realizations of /n/, e.g. *Goonaanastí* Thomas Ukas who is recorded pronouncing his name ⟨Goon̲aan̲astí⟩ [kʷù:.dà:.dàs.ˈtʰí] by replacing /n/ with voiced [d] due to a nasal passage disorder. In the past the underscore diacritic was also used to represent /uɥ/ as ⟨y̲⟩ but this has been completely replaced by ⟨ÿ⟩ (see below). As such, the underscore diacritic has been

	anterior					*posterior*					
	bilabial	*alveolar*	*postalv.*	*lateral*	*palatal*	*velar*	*lab.-vel.*	*uvular*	*lab.-uvu.*	*glottal*	*lab.-glot.*
unaspirated stop	(b)	d				g	gw	g̲	g̲w		
aspirated stop	(p)	t				k	kw	k̲	k̲w		
ejective stop		t’				k’	k’w	k̲’	k̲’w	.	(.w)
nasal stop	(m)	n		(n̲)							
plain fricative		s	sh	l		x	xw	x̲	x̲w	h	(hw)
ejective fricative		s’		l’		x’	x’w	x̲’	x̲’w		
unaspirated affricate		dz	j	dl							
aspirated affricate		ts	ch	tl							
ejective affricate		ts’	ch’	tl’							
approximant				(l̲)	y	(ÿ)	w				

Table A.4: Tlingit consonant inventory in RP.

generalized from a uvular marker to a generic modifier for consonant symbols which indicates that they are different in some unspecified way from the unmodified symbol.

Ejectives are indicated by an apostrophe ⟨’⟩ after the grapheme that indicates the corresponding aspirated obstruent or plain fricative. Thus the ejective alveolar stop is ⟨t’⟩ which matches IPA /t’/, and the ejective alveolar fricative is ⟨s’⟩ which matches IPA /s’/. The apostrophe can be represented in Unicode as ⟨’⟩ U+0027 Apostrophe but it is more properly represented with ⟨’⟩ U+02BC Modifier Letter Apostrophe since it is effectively a letter rather than punctuation. The ejective apostrophe always appears after the symbol that indicates the primary place of articulation, consistent with IPA usage. Digraphs like ⟨ts⟩ for /t͡sʰ/ then have an ejective counterpart ⟨ts’⟩ and never *⟨t’s⟩ for /t͡s’/; a symbol like ⟨t’s⟩ would instead represent a sequence of /t’/ followed by /s/ which is phonologically possible in Tlingit.

The **glottal stop** is normally represented by a period ⟨.⟩. The apostrophe cannot be used for glottal stop because Tlingit has possible sequences of /Cʔ/ that are distinct from ejective /C’/ and ⟨C’⟩ would fail to distinguish these. Word-internal glottal stop is always explicitly indicated by a period as in ⟨k̲ee.á⟩ /qʰìːʔá/ ‘dawn’ and ⟨l.uljíni⟩ /ɬʔùɬtʃíni/ ‘vest’. In word-intial position the glottal stop is implicit as in ⟨át⟩ /ʔát/ ‘thing’ and ⟨óonaa⟩ /ʔúːnà/ ‘gun, rifle’. It is sometimes explicitly indicated to avoid ambiguity, particularly in linguistic analysis. Normally glottal consonants are prohibited in the coda, so a sentence-final period after a vowel is unambiguously punctuation. The small handful of interjections which end with a glottal stop are indicated with an apostrophe after the vowel: ⟨há’⟩ /háʔ/ ‘wow’, ⟨hú’⟩ /húʔ/ ‘ouch’.

The period ⟨.⟩ is also used as a **grapheme separator** in cases where a sequence of symbols might otherwise be interpreted as representing a single sound. For example, the polygraph ⟨sh⟩ /ʃ/ is distinct from the sequence ⟨s.h⟩ /sh/. The latter can occur across a syllable boundary such as in ⟨as.héix̲⟩

	low tone /V̀/						*high tone /V́/*					
	short /V̀/			*long /V̀:/*			*short /V́/*			*long /V́:/*		
	front	*central*	*back*	*front*	*central*	*back*	*front*	*central*	*back*	*front*	*central*	*back*
high	i		u	ee		oo	í		ú	ée		óo
mid	e			ei			é			éi		
low		a			aa			á			áa	

Table A.5: Northern Tlingit vowel inventory in RP.

[ʔàs.ˈhéːχ] 'he is erasing it' versus ⟨ashéix̱⟩ [ʔà.ˈʃéːχ] 'he repeatedly marries her'.

Labialization is represented by the addition of ⟨w⟩ to the end of a symbol as in ⟨gw⟩ for /kʷ/ which is the labialized counterpart of ⟨g⟩ /k/, and ⟨x̱'w⟩ /χ'ʷ/ which is the labialized counterpart of ⟨x̱'⟩ /χ'/. Since the ⟨w⟩ symbol is also used for /w/ there is the potential for confusion between labialized consonants and sequences of a consonant followed by /w/. This is resolved using the grapheme separator ⟨.⟩ as in ⟨ák.wé?⟩ /ʔákwé/ 'is that it?' which is not *⟨ákwé⟩ */ʔákʰʷé/. This collides with the use of ⟨.w⟩ for the labialized glottal stop /ʔʷ/ but the labialized glottal stop is so rare that in practice there is rarely any ambiguity.

The obsolete **velar approximant** 'gamma' sound /ɥ/ is represented today with ⟨ÿ⟩, iconically indicating a 'changed ⟨y⟩'. This sound was earlier represented with ⟨y̱⟩ indicating a 'back ⟨y⟩' by orthographic parallel with the underscore diacritic for uvulars (e.g. Williams, Williams, & Leer 1978) as well as occasionaly with an overstruck ⟨ɏ⟩ in some typescripts (e.g. Leer 1978c). Some realizations of /ɥ/ are nasalized which reflects Pre-Tlingit */ŋ/. In these cases the resulting surface sound [ɥ̃] or [j̃] may be represented by ⟨ỹ⟩. The nasalized [w̃] reflecting earlier /m/ can similarly be ⟨w̃⟩.

4.1.2. RP vowels

The vowel representations of the Revised Popular orthography are given in table A.5. Short vowels are represented by a single symbol and long vowels by a digraph. The short vowels are identical to their IPA representations: ⟨i, e, a, u⟩ = /i, e, a, u/. The long vowel /aː/ is simply represented by doubling the symbol as ⟨aa⟩. The other three long vowels are based on English orthography, so long /iː/ is ⟨ee⟩, long /eː/ is ⟨ei⟩, and long /uː/ is ⟨oo⟩. This is a holdover from the Naish-Story orthographies (see sec. 4.2).

Tone is indicated only for the H tone by the addition of an acute diacritic ⟨ ́⟩. This is only applied to the first of the two graphs in a vowel digraph so that for example long /íː/ is ⟨ée⟩ and not *⟨éé⟩. Low tone is never indicated, unlike in the earlier Naish-Story orthographies where stressed low tone on a long vowel was indicated with a grave diacritic (sec. 4.2).

As noted earlier in section 2.2, the mid back vowel [o] is not normally phonemic but occurs in a couple of interjections and in English loanwords. It is represented with ⟨o⟩ for short vowels, but there is no consensus on how to represent long /oː/ since ⟨oo⟩ is already in use for long /uː/.

	anterior					*posterior*					
	bilabial	*alveolar*	*postalv.*	*lateral*	*palatal*	*velar*	*lab.-vel.*	*uvular*	*lab.-uvu.*	*glottal*	*lab.-glot.*
unaspirated stop	(b)	d				g	gw	gh	ghw		
aspirated stop	(p)	t				k	kw	kh	khw		
ejective stop		t’				k’	k’w	kh’	kh’w	.	(.w)
nasal stop	(m)	n		(l)							
plain fricative		s	sh	ł		x	xw	xh	xhw	h	(hw)
ejective fricative		s’		ł’		x’	x’w	xh’	xh’w		
unaspirated affricate		dz	j	dl							
aspirated affricate		ts	ch	tl							
ejective affricate		ts’	ch’	tl’							
approximant				(l)	y	(ÿ)	w				

Table A.6: Tlingit consonant inventory in Leer orthography.

4.1.3. Leer orthography

The Leer orthography was developed by Jeff Leer in the mid-1980s, first used in publication in Nyman & Leer 1993 but appearing earlier in some of his unpublished materials (e.g. Leer 1990a).[20] This new orthography was rejected by a review committee on the coast (R. Dauenhauer p.c. 2009) as an unnecessary change from an accepted system which had accumulated a number of publications (e.g. Naish, Story, et al. 1976; Dauenhauer 1973; Dauenhauer 1974, 1981; Dauenhauer & Dauenhauer 1981, 1987; Kamenskii 1985; Kan 1989). But Leer did find an interested audience at the Yukon Native Language Centre (YNLC) in Whitehorse and among the Inland Tlingit communities. As a consequence of this geographic split, the Leer orthography has been known as the “Inland“ orthography, the “Yukon” orthography, and the “Canadian” orthography as well as the eponymous “Leer” orthography. It was officially employed by organizations and governments in Atlin, Teslin, Carcross, Tagish, and Whitehorse from the early 1990s through to the early 2010s, but as of 2018 all Inland Tlingit communities and the YNLC have switched back to the Revised Popular orthography. Although no organizations continue to use the Leer orthography, some individuals still use it in unpublished materials such as notes, posters, business cards, and in social media. There are only two major publications that use this orthography: the previously mentioned narrative collection from *Seidayáa* Elizabeth Nyman (Nyman & Leer 1993) and the noun dictionary compiled by Jeff Leer (Leer, Hitch, & Ritter 2001).

The consonant inventory is shown in the Leer orthography in table A.6. A major innovation is the combination of ⟨C⟩ + ⟨h⟩ to represent uvular sounds, so uvular ⟨gh⟩ /q/ is distinct from velar ⟨g⟩ /k/ and uvular ⟨xh’w⟩ /χ’ʷ/ from velar ⟨x’w⟩ /x’ʷ/. This abandonment of the underscore diacritic makes it much easier to type on computers.

20. Leer had earlier designed an orthography similar to that used for Kaska where long vowels had a macron ⟨ā⟩ /à:/ and high tone was an added acute ⟨ǎ⟩ /á:/. There are traces of this system in his dissertation (Leer 1991).

	low tone /V̀/						*high tone /V́/*					
	short /V̀/			*long /V̀:/*			*short /V́/*			*long /V́:/*		
	front	*central*	*back*	*front*	*central*	*back*	*front*	*central*	*back*	*front*	*central*	*back*
high	i		u	ì		ù	í		ú	î		û
mid	e			è			é			ê		
low		a			à			á			â	

Table A.7: Northern Tlingit vowel inventory in Leer orthography.

Because the Inland varieties of Tlingit have a small number of loanwords with voiced /l/ contrasting against voiceless /ɬ/, the Leer orthography distinguishes voiceless ⟨ł⟩ /ɬ/ and voiced ⟨l⟩ /l/. But only ⟨l⟩ is used in digraphs like ⟨tl⟩ /tɬʰ/ where the contrast between /ɬ/ and /l/ is irrelevant.

Neither of these differences from RP seem to be particularly controversial. The difficulty of typing 'barred ell' ⟨ł⟩ for the very frequent /ɬ/ can be problematic, and the use of ⟨C⟩ + ⟨h⟩ can lead to orthographic sequences that are very large such as the ⟨khwxh'⟩ for /qʷχ'ʷ/ that occurs in ⟨tl'ekhwxh'axhdakhín⟩ /tɬ'èqʷχ'àχtàqʰín/ 'hummingbird' (cf. RP ⟨tl'ek̲wx̲'ax̲dak̲ín⟩).

The primary issue people raise for rejecting the Leer orthography is the combination of length and tone into a single diacritic. As shown in table A.7, short low tone vowels are unmarked as ⟨a⟩ /à/ and short high tone vowels have an acute as ⟨á⟩ /á/ which is identical with the Revised Popular orthography given earlier in table A.5. But instead of digraphs, a long low tone vowel has a grave diacritic ⟨à⟩ /à:/ and a long high tone vowel has a circumflex ⟨â⟩ /á:/. The vowel diacritics thus have two distinct phonological features represented by single graphical element in the diacritic. Leer's reasoning was that L1 speakers becoming literate had a tendency to neglect writing both tone and length, filling these in mentally during reading (Leer p.c. 2011). By encoding both features into a single diacritic they could be dispensed with at the same time. But this practice of ignoring tone and length is very difficult for L2 learners because they lack instinctive knowledge of both phenomena. People who have rejected the Leer orthography generally point out its tone and length diacritics as its most problematic feature.

4.1.4. Email orthography

The Email orthography is an anonymous development from the RP orthography that arose during the late 1990s and early 2000s. It adopts the same ⟨C⟩ + ⟨h⟩ representation for uvulars as in the Leer orthography, but maintains the rest of the RP system. Thus the noun /qì:j/ 'bay' is written ⟨gheey⟩ in the Email orthography as compared to ⟨g̲eey⟩ in RP and ⟨ghìy⟩ in Leer.

The Email orthography arose anonymously as a solution to the problem of typing underscore diacritics in the late 1990s during the spread of email and Internet access among the Tlingit population in Alaska. It quickly became popular and is explicitly taught to L2 learners as a fallback alternative to the Revised Popular system. Some people prefer one or the other, but everyone who uses one also knows the other. I assigned the name "Email orthography" on the basis of its initial context of use, but it is frequently seen on social media websites like Facebook and in SMS text messaging, as well as occasionally on printed ephemera like signs, business cards, and flyers.

Figure A.1: Constance Naish and Gillian Story (courtesy Edwell John Jr.).

4.2. Older orthographies

There are a few obsolete orthographies whose materials have not yet been converted into a modern system. Two earlier orthographies from Constance Naish and Gillian Story (figure A.1) persist in some long-lived publications; I have named these the First Naish-Story orthography (NS1) and the Second Naish-Story orthography (NS2). Beyond these are some materials from the Russian Orthodox church written in Cyrillic orthographies, and in the orthography developed by Kelly and Williard in the early 1900s.

The NS1 system was first described in an unpublished manuscript by Naish (1962). Publications using NS1 that have never been converted into newer systems include the Gospel of John translated into Tlingit by Naish, Story, and *Asx̲'áak* George Betts (Anonymous 1969), a few narratives from the Old Testament (Naish & Story 1963b), a couple of collections of Christian hymns (Naish & Story 1960, 1963c), and some literacy materials (Naish & Story 1961, 1963d). The first edition of the small noun dictionary was printed using this orthography (Naish & Story 1963a). Since this dictionary had a green cover it was known as the "Green Book" or "Green Dictionary" and so the NS1 orthography became metonymically known as "the Green Book orthography".

The NS1 orthography is characterized by a very English-like set of vowel symbols along with tone marking that reflects stress. The short /a/ is represented by ⟨u⟩ as in English *but*, whereas the long /aː/ is written ⟨a⟩ as in English *tall*. Short /u/ is ⟨o⟩ and long /uː/ is ⟨oo⟩; the other vowels are as in the Revised Popular orthography which descends from this one. This system of vowels might seem bizarre from our current perspective, but it should be noted that Naish and Story thought of Tlingit as having a tense/lax distinction rather than a long/short one. A further complication is that monographic word-final vowels are followed by an unpronounced ⟨h⟩, but digraphic word-final vowels have no following ⟨h⟩, so e.g. ⟨Hah Ank̲áwoo⟩ 'Our Lord' is [hàː ʔàːn.ˈqʰáː.wuː] with ⟨a⟩ /aː/ versus ⟨ah⟩ /aː/ versus ⟨oo⟩ /uː/. Low tone is marked on long vowels when the syllable bears word stress, and then following syllables with predictable high tone are not marked. Examples of this are ⟨naxèin⟩ [nàː.ˈxèːn] 'Chilkat blanket' versus ⟨ux̲ naxèinee⟩ [ʔàχ nàː.ˈxèː.níː] 'my Chilkat blanket'.

> Tléinux̱ yuteeyee ul'óonee uyúh, g̱owukàn-g̱áh wook̲òox̱. L'éiw yéit k̲óox̱ uyúh, héenee woogòot. Yei ushookawutée du yàkw tíx'ee. (Naish & Story 1963d: 31)

> Tléinax̱ yateeyi al'óoni áyá, g̱uwakaang̱áa wook̲oox̱. L'éiw yéit k̲óox̱ áyá, héeni woogoot. Yei ashukaawatée du yaakw tíx'i.
>
> It was a lone hunter who went by boat for deer. Coming upon a sandy place, he went in the water. He put down his boat's line.

Rather infamously, the street called 'Yandukin Drive' by the airport in Juneau derives from a representation in the NS1 orthography. The Tlingit term is actually *yaa ndak̲ín* /jàː‿ntàqʰín/ 'it is flying along', which in the NS1 orthography would be either ⟨Yanduk̲ín⟩ or ⟨Yah nduk̲ín⟩. This spelling has unfortunately led people to pronounce it as [jæn.ˈdʌ.kɪn] or [jæn.ˈdu.kɪn] in English, and it is uninterpretable by modern Tlingit readers.

The second Naish-Story orthography (NS2) was developed at some point in the mid-1960s. Story (2014) notes "reconsideration of vowel symbols !!" for October 1960 while she and Naish were in Angoon, so this can be considered the terminus post quem for NS2. Several works by the Dauenhauers in this orthography were later redone in the Revised Popular orthography, but some are still only available in NS2 such as *Doo G̲òojee Yeenàa-dei* (Dauenhauer 1972) which notably contains Tlingit translations of poetry by e.e. cummings and Bashō as well as an explanation of changes to the earlier NS1 orthography. The NS2 orthography is used particularly in the *Tlingt verb dictionary* (Story & Naish 1973) which has never been republished in a newer orthography but remains an essential reference for Tlingit verbs.

The NS2 orthography established the vowel system used in the Revised Popular orthography, with monographic short vowels versus digraphic long vowels and no superfluous final ⟨h⟩. Tone is still indicated as in NS1 however, so the previous examples repeated in this system are ⟨Haa Aank̲áawoo⟩ [hàː ʔàːn.ˈqʰáː.wuː] 'Our Lord' and ⟨naaxèin⟩ [nàː.ˈxèːn] 'Chilkat blanket' versus ⟨ax̱ naaxèinee⟩ [ʔàχ nàː.ˈxèː.níː] 'my Chilkat blanket'. The marking of stressed low tone versus lack of marked suffixal high tone is a particularly important issue for linguists. Since the *Tlingit verb dictionary* which uses this orthography is widely available, linguists have been tempted to use it for reference without understanding the orthographic differences from the better documented Revised Popular orthography, with consequent misunderstanding of tonal and suprasegmental phonology.

> Haa àayee haa Éesh aadoo sá dikée yéi yatee. Dáa gax̱lasàayee ee àayee ee sàayee; dáa hàa-t g̱agòot haa tl'átgee kàa-dei ee àayee. (Dauenhauer 1972: 57)

> Haa aayí haa Éesh aadóo sá dikée yéi yatee. Dáa gax̱lasaayí i aayí i saayí; dáa haat g̱agoot haa tl'átgi kaadé i aayí.
>
> Ours, our father, who is above. May yours, your name, be glorified; may your things come here on our land.

Preceding these two major Naish-Story orthographies there were two others intended for use by actual Tlingit speakers, although neither saw any popular adoption. The Russian Orthodox church produced various liturgical materials in Tlingit from the 1840s through the early 20th century, with a variety of different attempts at capturing Tlingit phonology in the Cyrillic alphabet. Later the Presbyterian missionary William Kelly collaborated with Tlingit speakers Frances Willard (name and clan

	alveolar	*postalv.*	*lateral*	*palatal*	*velar*	*lab.-vel.*	*uvular*	*lab.-uvu.*	*glottal*
unasp. stop	d				g	g^{oo}	ġ	ġ^{oo}	
asp. stop	t				c~k	k^{oo}	k̲~ḳ	qu	
ejv. stop	dt				g′	g′^{oo}	(k̲~ḳ)	—	—
nasal	n								
plain fric.	s	sh	hl		CH	CH^{oo}	ʻh	ʻh^{oo}	h
ejv. fric.	sz		(DL)		gʻ	gʻ^{oo}	ġ	ġ^{oo}	
unasp. aff.	—	j	dl						
asp. aff.	ts	ch	tl						
ejv. aff.	dts	dj	DL						
approx.				y		w~ŭ			

Table A.8: Consonant inventory in Kelly and Willard's orthography (Kelly & Willard 1905)

unknown) and *K̲aalyát'* Matilda Paul (*Teeyhittaan*), culminating in a little-known publication called *Grammar and vocabulary of the Hlingŭt language of Southeastern Alaska* (Kelly & Willard 1905).

The Kelly and Willard orthography (Kelly & Willard 1905) is phonologically very accurate despite its peculiar appearance. Swanton had just spent time in Sitka working on Tlingit so it seems likely that he influenced Kelly and Willard's work. But they rejected the Americanist transcription that Swanton used, instead developing a system based on Webster's dictionary pronunciation:

> The authors are aware that the scientific orthography, in which the vowels have their continental sounds and the consonants their English pronunciation, is now in general use by ethnologists. But as this grammar is intended for colloquial use only, we have adhered mainly to the Websterian orthoepy and phonetic principles of spelling. (Kelly & Willard 1905: 715)

Willard was a fluent L1 Tlingit speaker literate in English and so, with Swanton's background influence, the system that Kelly and Willard developed is almost phonemically complete. In fact, their system is more accurate than Swanton's contemporary transcription. But their insistence on a 'colloquial' (for who?) orthography makes working with their materials very awkward and difficult, with copious diacritics and polygraphs requiring careful decryption. Kelly and Willard do not indicate tone reliably but they do have a kind of stress marking that often makes the tones recoverable. Table A.8 shows Kelly and Willard's consonant inventory and table A.9 covers their vowel inventory. To illustrate Kelly and Willard's orthography I have retranscribed the following portion of their translation of *The Lord's Prayer* into Tlingit. Note that this is not the same translation as that used today.

> Hä Ish′ dĭcï-g″-yā-yŭ-tē-yĭ, gŭʻh-tŏŏ-hlŭ-gä′-wŏŏ E sä-yĭ′, E än-ĭ′ cä-dŭʻh hät-ġŭ-gōōt E hlŭ-tsēn-ĭ′, yä′DLŭt′-c ŭt′-cŏŏ-nŭ-āqu, djŭ ä-dā′ wā′ dici-g″ ŭt′-ŭt-cē-yŭ-ä-ġŏŏ-yĕ-yŭʻh.
> (Kelly & Willard 1905: 750)

> Haa Éesh, dikéex' yéi yateeyí, ga x̲tulagaawú I saayí, I aaní kaadáx̲ haat g̲agoot I latseení, yá tl'átkx' at kuna.áak̲w, ch'a aadé wé dikéex' át at kaawa.aag̲u yé yáx̲.

	IPA	*Example*	*RP*	*IPA*	*Gloss*
ā	eː	dā	dei	tèː	trail, way, path
ä	aː	ät	aat	ʔàːt	maternal aunt
â	ə	—			
aŭ	aːw	dtaŭ	t'aaw	t'àːw	feather
ē	iː	hēn	héen	híːn	fresh water, river
ĕ	e	tĕ	té	tʰé	stone, rock
ī	aːj	yī	yáay	jáːj	whale
ĭ	i	jĭn	jín	tʃín	hand, arm
ū	juː	ū′dā	yóode	ˈjúːdè	that way
ŭ	a	ġŏwŭcän	guwakaan	qʷùwàˈkʰàːn	deer
ōō	uː	gōōn	góon	kʷúːn	spring
ŏŏ	u	ha-gŏŏ	haagú	hàːˈkú	come here
ē-ē	iːj	yē-ē	yéeyi	ˈjíːji	former

Table A.9: Vowel inventory in Kelly and Willard's orthography

> Our Father, which he is above, we will make Your name loud; across Your land should come Your power; on this land direct things, just like the way that the things are directed above.

Although Kelly and Willard's orthography nearly captures all the phonemic distinctions in Tlingit, its inordinate host of diacritics, its unusual typesetting requirements, and its internal inconsistency meant that it was doomed to die on the vine. If Kelly and Willard had continued to compile more materials using it we would have a rich harvest of early Tlingit, but it seems that their system was so onerous that they abandoned it shortly after its development. I am unaware of any materials using their orthography other than Kelly & Willard 1905, but it is possible that more may be unearthed from historical archives.

5. Documentation and description

Tlingit has a relatively large body of documentary materials but a fairly limited inventory of descriptive work. Although a lot of documentary materials are widespread and easily obtainable, most of Tlingit's grammatical descriptions are unpublished and hence hard to find. The primary descriptions of Tlingit are the unpublished master's theses Story 1966 and Naish 1966 and the unpublished PhD dissertation Leer 1991; though all three are wide ranging, none really constitutes a coherent reference grammar of the language and all are couched in obsolete frameworks. Eggleston 2013 (another unpublished PhD dissertation) restates much of Leer 1991 in clearer terms with much more illustration and a focus on wholly synchronic phenomena. In addition there are several works that mostly repeat the same information but occasionally offer novel perspectives: Story 1972 (an obscure typescript), the appendix in Story & Naish 1973: 345–392, the sketch in Dauenhauer & Dauenhauer 1987: 48–59, the glossary in Dauenhauer & Dauenhauer 1990: 443–520, and the introduction in Edwards 2009: 11–43.

Figure A.2: Ivan Veniaminov / Иванъ Вениаминовъ, St. Innocent / Санктъ Іннокентій (Alaska State Library – Historical Collection ASL-Veniaminov-Ivan-3 and ASL-P243-3-097).

5.1. Early materials

Early descriptive materials from the period 1741–1900 are of minimal value for grammatical analysis but provide invaluable information about the language's history. The earliest coherent grammatical description is from Veniaminov (1846) who followed a Greek and Latin model. Being a Russian Orthodox priest (fig. A.2), Veniaminov's transcription is of course in Cyrillic. He seems to have been assisted at times by Cyrillic-literate Tlingit speakers who contributed a variety of subtle diacritics that are easily overlooked but which apparently capture phonemic contrasts not easily perceived by Russian speakers.[21] Veniaminov was the first to develop orthographies for and author grammars of Alaska Native languages and was later canonized as Saint Innocent of Alaska, so he can be thought of as the unofficial patron saint of Alaskan linguists.

Several other people produced lesser known works in Cyrillic, continuing into the American colonial era with the Russian Orthodox church. Authors include Vladimir Donskoi (Donskoi 1895; Donskoi & Sinkiel 1901), Sergei Kostromitinov (Veniaminov & Kostromitinov 1901), Ivan Nadezhdin (Nadezhdin 1855, 1873, 1896), and Andrew P. Kashevaroff (Kashevaroff & Panteleev 1920; Kashevaroff & Phillips 1922; Kashevaroff 1939). Krauss (1976) is dimissive of the quality of some of the Orthodox materials, but he notes that others represent very good Tlingit despite poor transcription. The Cyrillic materials are the earliest extensive records of Tlingit so we would benefit from critical editions.

21. There were probably bilingual Tlingit and Russian speakers, but the historical record is frustratingly silent on this so far. In general we hear of Tlingit speakers taught to speak Russian as adults within the Church.

Figure A.3: An example of Leopold Radloff's notes (Radloff 1861)

There is a considerable body of materials recorded by Leopold Radloff – numbering in the thousands of manuscript pages – which have yet to see any serious review by Tlingit experts. As quoted from Schiefner in Krauss's bibliography, "by happy circumstances a chief of the Tlingit tribe visited St. Petersburg in 1861–62, which gave L. Radloff the opportunity to investigate at first hand the Tlingit language, which he thitherto had known only from Resanov's, Holmberg's, and Middendorff's materials" (Krauss 1976: 8–9). Krauss obtained illicit photocopies of Radloff's materials during the Soviet era (p.c. 2011) and deposited them in the Alaska Native Language Archive at the University of Alaska, Fairbanks (Radloff 1861, 1873). The current status of the originals is unclear. A sample page from one of Radloff's notebooks is given in figure A.3. Recently Krauss has had a large chunk of Radloff's opaque German schrift deciphered and transcribed, so that much of the notes are now open to exploration. The Tlingit content still requires complete transcription from Radloff's handwriting into something readable by modern linguists, and then transliteration into modern Tlingit and translation into English still await. This would be an unreasonable amount of work but for the fact that his materials represent a vast treasure trove of 19th century Tlingit phonology, morphology, and syntax. Since Radloff's Tlingit materials have yet to be reviewed, it is difficult to evaluate the accuracy of his transcription, but my initial glance suggests something not much worse than Swanton (sec. 5.2) and thus decipherable by specialists.

Perhaps the most infamous of all the early Tlingit recorders was George Emmons (figure A.4). His woefully inadequate transcription for Tlingit continues to puzzle linguists today, but his invaluable notes include many obscure terms and phrases accompanied by descriptions of their sociocultural contexts. Frederica De Laguna was rather generous in her description of Emmons's transcription:

> Emmons had his own way of writing Tlingit. It did not form a system, since the same sound

Figure A.4: George T. Emmons (Emmons 1991).

Figure A.5: John R. Swanton (NAA inv. 0287–1900)

> might be rendered by different letters or combinations of letters approximating their value in English, but inadequate to reflect Tlingit sounds. To him, his spelling was perfectly clear, and when Miss Bella Weitzner attempted to secure a consistent system of orthography from him, he brushed this aside as unnecessary. (De Laguna in Emmons 1991: xiv)

Some of Emmons's written records were deciphered by Jeff Leer and given with an Americanist transcription in De Laguna's edited volume of Emmons's written work on Tlingit culture (Emmons 1991). There are still many of his materials which have not been reviewed (though see e.g. Crippen 2013a for an initial effort), and even in De Laguna's volume there are forms that Leer was unable to interpret.

Other early materials are essentially wordlists. Most are phonologically inadequate to the point that they offer little or no information about the speech practices of the time, and so are more of historical than linguistic interest. The most linguistically interesting phenomena in the early wordlists are the appearance or absence of reflexes of *ÿ* /ɯ/ < **ŋ* and *m* /m/ which can be used to date and map recent sound changes. For further information on early Tlingit sources see the extensive description and commentary in Krauss 1976 which surveys more or less all of the documentation from 1741 to 1973.

5.2. Swanton, Boas, Shotridge, and Harrington

After Veniaminov and Radloff, John R. Swanton (fig. A.5) was the next linguist to study Tlingit with actual speakers (Steward 1960; Jones 2017). Although widely available and regularly cited, Swanton 1911 is an unsuitable reference for Tlingit (Krauss 1976). Recent typological studies unfortunately continue to cite it even though much better resources are available, presumably because it is easy to find and out of copyright.

More specifically, all of Swanton's transcriptions and translations of Tlingit (Swanton 1908, 1909, 1911) have a number of flaws that can only be overcome with specialist knowledge of the language. His word divisions are unreliable and inconsistent with occasional incorrect sentence breaks. His

translations are often misleading, with both interpolations and gaps. He constantly confuses velar and uvular stops and fricatives even in very frequent vocabulary like the first person singular possessive *ax̲* /ʔàχ/ 'my' which he always writes ⟨ax⟩ i.e. [ʌx]. Swanton is also inconsistent with ejective fricatives and ejective affricates and never represents glottal stops. He does not indicate tone which in his defence was not well understood at the time (Krauss 1980, 1986), but he does often transcribe stress which is usually not indicated in later transcriptions. Swanton also does fairly well at capturing vowel length although he is still unreliable with both this and vowel quality in short vowels. He generally indicates gamma /ɥ/ as ⟨y̲⟩ distinct from ⟨y⟩ /j/ and ⟨w⟩ /w/, but the diacritic of a dot below is easily mistaken for a flyspeck or copying error; there are many instances of ⟨y̲⟩ and ⟨y⟩ in his transcriptions that do not accord with other documentation as well as random inconsistencies for single speakers. I am particularly suspicious of the transition from manuscript to print in Swanton's work, having encountered many spots where errors could have been introduced by miscopying his notoriously bad handwriting.[22] The following quote compares Swanton's transcription and translation with my own interpretation of his data.

> Wuckē′t wuḷîx̣ā′cî g̣āy̲ē′s! xā′wu yax îda′ axtunatī′tc. axhu′nx tc!a′ya gaxłax̣ā′c. Tc!anī′djt gułax̣ā′c. Guts! tū′dî wux̣ī′x̣î g̣agā′n yax ida′ axtunatī′tc axła′. acga′ Łīngît-ā′nî kanacgê′ttc.
>
> "I always compare you to a drifting log with iron nails in it. Let my brother float in, in that way. Let him float ashore on a good sandy beach. I always compare you, my mother, to the sun passing behind the clouds. That is what makes the world dark." (Swanton 1909: 395)

> Wooshkéit wudlihaashi g̲aÿéis' x̲áawu yáx̲ i daa ax̲ tunateech. Ax̲ húnx̲w ch'a yaa gax̲laháash. Ch'a neecht gulaháash. Góos' tóode wuxeexí g̲agaan yáx̲ i daa ax̲ tunateech, ax̲ tláa. Ash g̲áa Leengít Aaní kanashg̲ítch.
>
> 'My mind is all about you as iron logs having drifted together. My elder brother shall just float along. Just let him float ashore. My mind is all about you as the sun having fallen into the clouds, my mother. After her the world becomes dark.'

The problems with Swanton's materials were known from an early date. Boas privately disparaged the quality of Swanton's grammar sketch (Swanton 1911) soon after its publication in a letter to Sapir about Tlingit materials:

> When Swanton sent me his Tlingit sketch, I hesitated very much to accept it ... I wish now very much that the grammar were out of the book... (Boas 1913)

The extent of material recorded by Swanton is remarkable, but their form and presentation are fundamentally unreliable. His materials are an extremely valuable record of Tlingit speech from highly skilled orators and storytellers, but they require careful interpretation by experts. All of the narrative, oratory, and song texts in Swanton 1909: 252–415 urgently need to be retranscribed and retranslated for the community and for linguistic research (cf. Dauenhauer 1971; Leer 1977; Dauenhauer 1981; Littlefield et al. 2003).

Boas 1917 is the first adequate analysis of the phoneme inventory with the inestimable assistance of *Stoowuk̲áa* Louis Shotridge (*Kaagwaantaan*, *Jilk̲áat K̲wáan*). Boas's discussion features the occasional useful comment but has generally been superseded by modern work. I agree with Krauss

22. Many linguists who have worked on Tlingit display atrocious handwriting, especially Boas, Swanton, Harrington, and Krauss. In contrast, manuscripts from Naish, Story, and Leer are excellent.

Figure A.6: *Stoowuḵáa* Louis Shotridge (Sealaska Heritage Institute)

Figure A.7: Franz Boas (Am. Phil. Soc. Digital Library graphics:5373)

(1976: 24) that Shotridge did not receive enough credit for his contributions to Boas's description of the language. Boas's morphological analysis is still very preliminary, but he lays out a basic templatic structure for verbs which he says "are built up of a number of elements that enter into very intimate phonetic relation" (Boas 1917: 22). He is apparently the first to identify stem variation, noting that there are differences between stems with a single form, stems with two forms, stems with three forms, and stems with four forms, plus some subvariation in each of these patterns (Boas 1917: 25). Boas is also the first to apply the label 'classifier' to the prefix complex immediately preceding the stem, and he immediately suggests an analysis where the single phonological prefix is composed of three subsyllabic elements (Boas 1917: 27).

The data presented in Boas 1917 are a mix of forms from Shotridge and from Swanton's texts. It is not immediately clear if Shotridge had any influence in the interpretation of data taken from Swanton 1909, but the translations given for Swanton's data are not always Swanton's originals. Also included is a transcribed and glossed narrative from Shotridge called *The Origin of the Mosquitoes* (Boas 1917: 168). There is a shift in tone marking about halfway through the transcription with the appearance of overt low tone indication. This suggests that one of Boas or Shotridge may have made the initial transcription and then the other modified part of it. I am inclined to believe that Shotridge was the original transcriber and that Boas modified only the first part of the text, and furthermore that Boas may have introduced some inaccuracies. Part of the original audio recording has survived to the present and is available from various archives.

Shotridge learned to transcribe Tlingit from Boas and went on to produce his own materials. Most of Shotridge's personal linguistic notes have been lost but the remaining fragments contain valuable insights (Shotridge 1912, 1914, 1915, 1917a); his early death was a tragic blow for Tlingit linguistics. Shotridge's series of articles on Tlingit anthropology – one coauthored with his wife Florence – contains the occasional pearl of linguistic analysis as well as rich details on Tlingit life in the late 19th century (Shotridge & Shotridge 1913; Shotridge 1917b, 1919a,b, 1920, 1921, 1929a,b, 1928). Florence Shotridge (*Lukaax̱.ádi*, n.n.) also had one article of her own published alongside Louis's articles (Shotridge 1913). A critical edition of the extant Shotridge notes and papers would be invaluable for

linguists, anthropologists, and Tlingit people.

The foreword to one issue of *The Museum Journal* containing Shotridge's *Ghost of Courageous Adventurer* (Shotridge 1920) suggests that Louis transcribed at least one Tlingit narrative:

> Listening to an elder tribesman, he recorded this narrative in his native language and afterwards translated it into English, always searching for the forms that convey most faithfully the thought, and reproduce most accurately the style and character of the original idiom. The result is a faithful translation which preserves in some degree the epic character of the Tlingit narrative. Of the literary value of the document there is no need to speak. (Gordon 1920: 6)

Shotridge's translation does indeed reflect Tlingit syntactic structure fairly closely: "Amongst alien tribe thither walked Tlingit" (Shotridge 1920: 24) could be *G̱unanaa x̱oo, aadé has woo.aat, Lingít*. Even if the original Tlingit transcription is no longer available, we should be able to reconstruct a close approximation of it from Shotridge's translation and the documentation of his speech in his notes and in Boas 1917. To my knowledge there is no other version of this story recorded, so this back translation would be a valuable addition to the corpus of Tlingit narrative.

John P. Harrington worked with Tlingit speakers during World War II. He started with Thomas Skeek while in Seattle (e.g. Harrington 1939b) and later travelled to Yakutat to work with George Johnson and others (e.g. Harrington 1939a, 1940f). As expected from Harrington, his transcription is very detailed although he misheard some ejectives and was occasionally confused by dialect variation: Skeek spoke Southern Tlingit, Sheldon James was from Sitka, and Johnson was from Yakutat and bilingual in Eyak.

During Harrington's visit some speakers in Yakutat still retained the velar approximant 'gamma' sound /uɣ/ and Harrington reliably indicates this as ⟨ɣ̤⟩,[23] e.g. ⟨nɪɣ̤ɣ̤ɑɑ'ά̈t⟩ /nìuɣà:ʔát/ for *nïyaa.át* 'shield' (Harrington 1940b: 3/24). De Laguna (1972: 11) says that Harrington represented uvulars with bold face, but this is only true in his typescripts and in his manuscript notes he uses symbols like ⟨ʁ⟩ for /q/ as in ⟨'iiʁ-khαhhɑɑ-ʁhʷâɑn⟩ (Harrington 1940h: 29) for *Eek̲ Kaháa K̲wáan* /ʔì:q kʰàhá: qʰʷá:n/ 'Copper River Ahtna' (lit. 'copper mining people'). The text in (22) is repeated from figure A.8 which illustrates Harrington's record of a sentence from George Johnson.

(22) 'ɑkkhɑɑná̈x̤ ɣ̤ɑɑnnɑx̤tɑtt'ά̈tc

A	kaa	-nax̲	ÿaa=	nax̲dat'ách.
3N·PSS	HSFC-PERL		along=PROG.1SG.MID.swim·SFC	

"I am g. to swim across." (lit. 'I am swimming across the surface of it.')

Unfortunately, Harrington only recorded phrases and sentences rather than complete texts; all his narratives are only in English. We do have audio recordings of some of Harrington's consultants from De Laguna who visited Yakutat about a decade later. But it would have been particularly interesting to see Harrington's phonetic skill applied to even a short Tlingit narrative.

5.3. Modern lexicographic sources

Tlingit lexicography is extensive but problematic. The first dictionary to offer full descriptive adequacy for verbs is Edwards 2009. This however is limited to a small fraction of the documented range

23. I use a diaeresis below ⟨◌̤⟩ (Unicode U+0324 Combining Diaeresis Below) for Harrington's vertical two dots below ⟨◌̣⟩ (2 × U+0323 Combining Dot Below) because the latter tends to collide with the following line of text.

Figure A.8: An example from J.P. Harrington's notes (Harrington 1940b: 1/71)

of roots and forms; some additional coverage is in Eggleston 2017 which includes extensive paradigmatic material but is still far from complete. Although Story & Naish 1973 is widely available, has good breadth, and has excellent example sentences, it is crippled by a lack of unpredictable lexical information like lexical aspect, conjugation class, and imperfective aspect form.

The most detailed documentation of the Tlingit lexicon is the enormous mass of unpublished notes by Leer: circa 8000 pages from a wide variety of sources in Leer 1973a, around 900 manuscript pages in Leer 1976a, and 80 dense pages in Leer 1978c. Navigating these materials requires specialized knowledge of Leer's analysis and notation as well as their change over time.

Nouns have usually been documented separately from verbs: Naish & Story 1963a, Naish, Story, et al. 1976, Leer, Hitch, & Ritter 2001. There is no coherent lexicographic presentation of other parts of speech though both Leer 1973a and Leer 1978c include a possibly comprehensive inventory aside perhaps from interjections.

5.4. Modern documentary sources

The documentary record of Tlingit is richer than its description. Pride of place rests in the incomparable contributions of *K̲eixwnéi* Nora Marks Dauenhauer and *Xwaayeenák̲* Richard Dauenhauer (fig. A.9) whose collections of traditional narratives and oratory are the foundation of all modern description and language teaching (Dauenhauer 1972; Dauenhauer & Dauenhauer 1981, 1987, 1998b, 1990, 1994, 2003, 2012; Dauenhauer, Dauenhauer, & Black 2008). They also developed a phrase book with examples and discussion (Dauenhauer & Dauenhauer 2002) as well as a wide variety of teaching materials and academic publications.

Naish and Story translated the *Gospel of John* into Tlingit with the help of several people in Angoon, particularly *Aasx̲'aak* George Betts, and the result (127 pp.) was published anonymously in the NS1 orthography (Anonymous 1969). Krauss describes this translation as "very readable if not totally natural" (Krauss 1976: 33). Story (1972) includes two short narratives from *Aasx̲'aak* George Betts and a number of unique example sentences, and Story (1995) offers a rare example of a procedural text.

Leer worked with the last two speakers of Tongass Tlingit (sec. 3.1) to prepare a collection of five texts in that dialect (Williams, Williams, & Leer 1978). He later worked with *Seidayaa* Elizabeth Nyman of Atlin to publish over 250 pages of narrative and personal history as Nyman & Leer 1993. There are also a number of unpublished transcriptions by both Leer and the Dauenhauers in

Figure A.9: *K̲eixwnéi* Nora Marks Dauenhauer and *Xwaayeenák̲* Richard Dauenhauer (photograph by Thomas King, 2012).

archives, though most of these lack translations and some of the associated audio recordings have since been lost (e.g. Leer 1969; Dauenhauer 1973).

Boas (1917) includes one traditional narrative from Shotridge. Velten (1939, 1944) offers several short narratives from *Yeex̲aas* Lester Roberts which follow Boas's transcription; unfortunately this obscures the distinct tone system of Southern Tlingit (sec. 3.2). And as noted in section 5.2, Swanton 1909 provides a wealth of narratives and songs with some oratory from consultants in Sitka and Wrangell, though.

Beyond transcriptions there is a very large body of audio recordings at the Alaska Native Language Archive (ANLA), the Yukon Native Language Archive (YNLC), and the Sealaska Heritage Institute (SHI). The largest single collection is the personal recordings of *K̲eixwnéi* Nora Marks Dauenhauer which clocks in at around 1000 hours of narrative, oratory, song, and occasional conversation. Most speakers in this collection are from northern coastal communities like Sitka, Hoonah, Angoon, Juneau, and Haines, though she also recorded a few speakers from other locations like Teslin, Yakutat, and Kake. The entirety of this collection has been digitized and is available from SHI and ANLA. The YNLC has a large collection of audio recordings from speakers of Inland varieties, most of which has yet to be digitized. The ANLA includes most or all of Leer's recordings including all of his work with the Tongass Tlingit speakers *Kalnáakw* Emima Williams and *Geetwéin* Frank Williams, all of his work with *Seidayaa* Elizabeth Nyman from Atlin, and a variety of other linguistic, educational, and historical recordings.

Figure A.10: Na-Dene language family

6. Historical situation

The Tlingit language is a member of the Na-Dene[24] family as shown in figure A.10. This tree uses the traditional though technically inaccurate geographic subgrouping of the Dene languages first proposed by Powell (1891). Rice offers a more historically motivated Dene subgrouping of eight branches that is presented by Mithun in her *Languages of Native North America* (Mithun 1999). Tuttle & Hargus (2004) review Rice's proposal and describe a newer subgrouping by Leer into five branches which has not been published elsewhere, though see Leer's massive but poorly referenced *Comparative Athabaskan Lexicon* manuscript (Leer 1996b).

Regardless of changes to the internal organization of the Dene family, the structure of the greater Na-Dene family has not changed since Krauss's mid-20th century proposals (Krauss 1964, 1965b, 1969, 1973b, 1977b; Krauss & Leer 1981). Eyak is the sister of the whole Dene family and thus one of two descendants of the Proto-Dene-Eyak language, the other being the Proto-Dene language. Tlingit is the aunt of Eyak, the sister of the Proto-Dene-Eyak language and thus one of two descendants of Proto-Na-Dene (Leer 1989, 1990c,b, 2007, 2008, 2010; Hamp 1979; Thompson 1996). There is ample evidence for Tlingit's inclusion in the family, although there is no one publication which lays out all of the supporting facts. Perhaps the best current source is Leer 2008 (published in modified and reduced form as Leer 2010), but this takes the reconstruction of Proto-Dene as given (cf. Leer 1996a). The evidence includes a number of morphological irregularities such as the areal used as the indefinite human subject in a speech verb like the pair in (23) for Tlingit and Koyukon; the *k̲u-* and *hʉ-* are cognates from PND **qu-* 'area, spatial extent' although the roots are not cognate.

24. Usually pronounced as either [nɑ.ˈdɛ.neɪ] or [nɑ.də.ˈneɪ], i.e. with either penultimate or ultimate stress.

(23) a. Yéi kuyaawakaa. *Tlingit areal as indefinite human subject*
yéi= ku- ÿ- wu-i- $^{1}\sqrt{}$ka-μ
thus=AREAL-QUAL-PFV-STV-$^{1}\sqrt{}$say-VAR
'People said so.'

b. Dehudegheenee'. *Koyukon areal as indefinite human subject*
de- hu- d- ghee-√nee-'
thus-AREAL-QUAL-ΓCNJ- √say -VAR
'People said so.' (Jetté & Jones 2000: 437)

From the mid-1990s to the 2000s the Na-Dene family was alternatively known by the unwieldy label 'Athabaskan-Eyak-Tlingit' in an effort to explicitly exclude Haida (e.g. Leer 2008). With the recent rejection of the label 'Athabaskan' in favour of 'Dene' by several Dene groups at the Dene Languages Conference (Bellingham WA, 2012), researchers have generally shifted back to using 'Na-Dene' with an implicit understanding of Haida's exclusion, though a 'Dene-Eyak-Tlingit' has also occasionally seen use. In an effort to strengthen the exclusion of Haida, Leer (2007, 2008, 2010) proposed a new label "Tlina-Dene", but this has not been embraced by the field. At present the label 'Na-Dene' is generally accepted by specialists in the family.

Sapir (1915) first proposed the Na-Dene family as including all the Dene languages, Tlingit, and Haida. The name "Dene" is derived from the Proto-Dene noun **dəne:* 'man, person'. For his "Na" portion of the name, Sapir compared the **ne:* part of **dəne:* with the Tlingit *naa* < PT **na^h* 'clan, nation, people' and the Haida *naa* ~ *nee* 'house, building' (Enrico 2005: 211–213). I quote Sapir's discussion here in full for reference (note that Sapir was unaware of Eyak):

> The name that I have chosen for the stock, Na-dene, may be justified by reference to no. 51 of the comparative vocabulary. "Dene," in various dialectic forms, is a wide-spread Athabaskan term for "person, people"; the element **-ne* (**-n*, **-ŋ*) which forms part of it is an old stem for "person, people" which, as suffix or prefix, is frequently used in Atahbaskan in that sense. It is cognate with [Haida] *na* "to dwell; house" and [Tlingit] *na* "people." The compound term "Na-dene" thus designates by means of native stems the speakers of the three languages concerned, besides continuing the use of the old term Dene for the Athabaskan branch of the stock.
> (Sapir 1915: 558)

Haida is nowadays excluded from the Na-Dene family and is instead argued to be an isolate with extensive contact influence from Tlingit (Levine 1979; Krauss 1973b, 1977b; Krauss & Leer 1981; Leer 2008, 2010). Linguists specializing in the Dene family will cite data from Eyak and Tlingit for comparative analysis, but no Dene specialist finds a productive basis for comparison in Haida. The only recent supporter of Haida inclusion is Enrico (2004) who is a Haida specialist and has little experience with Tlingit, Eyak, or the Dene languages. The few potential cognates given in Enrico's article are generally better explained as borrowings from Tlingit which preserve internally reconstructed Pre-Tlingit phonology. The structure of verbs in Haida is also strikingly unlike that of the Na-Dene languages; Tlingit verbal morphology has overwhelmingly obvious parallels with even the very innovative Navajo and Slave languages, but vanishingly little in common with the internal structure of Haida verbs despite being an immediate neighbour in close contact for many centuries.

Vajda (2010) recently resurrected an old proposal linking the Yeniseian languages of central Siberia with the Na-Dene family of North America (excluding Haida). If confirmed this would be

the first substantial linguistic connection between the Asian and North American continents aside from the localized back-and-forth of some (non-Inuit) Eskimoan languages along the Bering Strait (Krauss 1973a; Fortescue, Jacobson, & Kaplan 2010; Johns 2010). Vajda's preliminary evidence has been well received by historical specialists in the Na-Dene family (Krauss, Leer, Kari, Rice, Hargus, etc.), but at present the data are too thin to conclusively establish a connection by the comparative method. More detailed reconstruction of both Proto-Na-Dene and Proto-Yeniseian is needed, and unfortunately the Yeniseian family may be too poorly documented to make much more headway even with heroic effort. Further clouding this problem is that the Yeniseian languages have been heavily affected by long contact with surrounding Uralic, Tungusic, and Turkic languages which have contributed to radical restructuring of the morphology and lexicon. I am personally inclined to favour the Dene-Yenieseian hypothesis based on what has been demonstrated so far, but I cannot unhesitatingly accept it at present.

6.1. Internal reconstruction

There are no published internal reconstructions of Pre-Tlingit from its modern and historical attestations and dialect variation. Leer (1990c, 1991, 2001, 2007, 2008) offers scattered descriptions of individual changes within Tlingit that would serve as a basis for an internal reconstruction of the language, but no complete system has been worked out. The non-tonal vowel system of Tongass Tlingit lead Leer to use Tongass with some ad hoc additions as a basis for his synchronic description of the language (e.g. Leer 1991). This is not a complete internal reconstruction however, since many predictable phonological and morphological phenomena in Leer's 'Pan-Tlingit' are not accounted for.

There are many issues in the internal reconstruction of Tlingit that are moderately well known but not published in any easily accessible forms. Some of these issues include occult labialization, front high vowel lowering (uvular, laryngeal, and word-final), the development of ejective fricatives, the evolution of front mid *e* from **ay*, the earlier evolution of **ə* > **a*, the development of **Vʔ* > **Vʰ* and the separate innovation of **Vʔ*, syncope and compensatory lengthening with laryngealization like **VCə* > **VʰC*, and consonantal and vocalic epenthesis. The two best documented issues in the internal reconstruction of Tlingit are tonogenesis and the gamma sound *ÿ* /uɣ/. I summarize them here since both have some bearing on the data I present in the rest of this dissertation.

6.1.1. Missing *sh'*

The lack of /ʃ'/ is a notable gap in the consonant inventory since otherwise Tlingit has ejective fricatives that correspond with every plain fricative (sec. 2.1). The internal reconstruction of **sh'* and subsequent loss via merger with **sh* is supported by sporadic patterns of consonant alternations in the root lexicon. For example, the roots √*has'* /has'/ 'vomit', √*hatl'* /hatɬ'/ 'crap; detritus', and √*hach'* /hatʃ'/ 'shameful' form a semantically related group of roots that probably derive ultimately from a single proto-root through consonant alternations that are now reflected by multiple correspondence (Leer 1990c; Crippen 2010). Since there is no /ʃ'/ there is no root **√hash'* /haʃ'/, but there is a root √*hesh* /hesh/ 'disgrace' which is plausibly related. A similar possibility arises from the pair √*shis'* /ʃis'/ 'squeeze out contents' and *–shéesht* [ʃíːʃt] 'squeeze out contents'. The alternation between the *-ch'án* [tʃ'án] and *-shán* [ʃán] allomorphs of the intensive suffix (apx. B sec. 3.3.1.4) also supports the reconstruction of **sh'*.

6.1.2. Tonogenesis

Tonogenesis is the development of tone in the Southern and Northern dialects of Tlingit from a system that closely resembled the Tongass dialect's laryngeal vowel phonology and stress; see table A.3 (p. 799) for correspondences. The Tongass fading vowel /Vʰ/ uniformly coresponds to long low tone /V̀ː/ in Northern Tlingit. Tongass glottalized /Vˀ/ and long /Vː/ both correspond to long high tone /V́ː/ in Northern Tlingit. The Tongass short vowel however corresponds with both short low tone /V̀/ and short high tone /V́/ in Northern Tlingit, though the latter only when the vowel is stressed. Thus both laryngealization and stress contribute to the development of tone in Northern Tlingit. The coda consonants have no regular influence on Northern Tlingit tone, although as described in section 3 the coda sonorants are one source of falling tone in Southern Tlingit.

Leer (1991: 16) describes the development of high tone on stressed short vowels as due to an ill-defined phonological "upstep" register phenomenon. I find a simpler solution in the general phonetics and phonology of stress. Although stress has no unique phonetic properties crosslinguistically, it is typical for stressed syllables to have higher pitch, longer duration, and greater amplitude than their unstressed counterparts (Kager 2007: 195). I propose that Pre-Tlingit stressed syllables had an associated upward deflection of pitch, and this can be detected in Tongass Tlingit recordings with careful acoustic analysis. When tonogenesis led to the interpretation of laryngeal features as tone, the higher pitch of some stressed syllables was also reinterpreted as phonemic tone.

This analysis is supported by the fact that not all stressed short vowels have high tone, only those which carry a cumulative word-level or primary stress. Lexical high tone is suppressed on non-head elements in a compound. Thus in long words with several feet like *dzísk'w lutux'úx'u* [ˈtsísk'ʷ ˌɬù.tʰù.ˈx'ʷú.x'ʷù] 'moose's nasal membrane' only the primary stress of the head appears with high tone. The word *lutux'úx'u* 'nasal membrane' is a compound of *–lú* 'nose', *–tú* 'inside hollow object', and *x'úx'* 'membrane; paper, book' along with the possessive *-í* suffix. All three nouns in *lutux'úx'u* have lexical high tone, but surface high tone is only realized on the head noun with primary stress. Indicating the foot structure makes this phenomenon clearer: in [(ˌɬù.tʰù)(ˈx'ʷú.x'ʷù)] the stressed syllable in the second trochaic foot has high tone, but the stressed syllable in the first trochaic foot has low tone instead.

6.1.3. Gamma

The sound represented as *ÿ* /ɥ/ is traditionally called 'gamma' (Dauenhauer & Dauenhauer 2002: 87) but this is something of a misnomer because it was not normally pronounced as [ɣ]. It is attested in audio recordings from the three most peripheral areas of Tlingit country: Tongass Tlingit in the far south, Inland Tlingit in the far northeast, and Gulf Coast Tlingit in the far northwest. Its realization in Tongass Tlingit and Gulf Coast Tlingit recordings is the same, specifically a voiced velar approximant [ɥ] with an allophone [w] in labialized environments, and so is represented as a phoneme /ɥ/. Its realization among Inland Tlingit speakers is only distinct from /j/ when it occurs in a syllable coda without labialization where it is strongly nasal as [j̃] or [ɥ̃] or occasionally [ŋ]. Its basic Inland Tlingit phonemic form is plausibly /j̃/ or /ɥ̃/ in contrast with /j/.

Gamma *ÿ* was clearly present in other varieties of Tlingit up through the early 20th century. Some speakers without *ÿ* today recognize the sound from their youth in the remembered speech of grandparents or older generations. In the 19th and 20th centuries it was transcribed in almost every attested variety except for Southern Tlingit, represented variously as ⟨y̰⟩, ⟨ɣ⟩, ⟨y̱⟩, ⟨ÿ⟩, ⟨ɣ̈⟩, ⟨r⟩,

⟨g⟩, ⟨gh⟩, ⟨ng⟩, and Cyrillic ⟨г⟩, ⟨ġ⟩, and ⟨ğ⟩. The earliest evidence for its absence comes from Sitka, so I suggest that its loss began along the outer coast of southeastern Alaska (Sitka, Kooyu, Tuxekan, Klawock) and spread outward from there in every direction through the 19th century. This leaves the three peripheries mentioned above where it was retained until audio recordings were possible.

All varieties of Tlingit without gamma *ÿ* have undergone a reductive primary split: *ÿ* merged with *w* in the vicinity of labialization and otherwise merged with *y*. Since both *w* and *y* existed independently, and since *ÿ* no longer has an independent existence in these varieties, the result is a complete split-merger: **y* > *y* < **ÿ* > *w* < **w*. This is the only unambiguous example of a fully documented reductive primary split (cf. Blust 2012). Speakers without *ÿ* still regularly distinguish between *y* that labializes to *w* versus *y* that never labializes, so they must have y_1 and y_2 phonemes with different phonologies (cf. De Wolf 1977). This suggests something like an archiphoneme in the sense of Trubetskoy (cf. e.g. Akamatsu 1988; Patri 2002), but synchronic and diachronic formalization are still lacking.

Giving the *ÿ* sound as /ɥ/ is a convenient representation for varieties that have it in a [ɥ] ~ [w] alternation. But this is a less useful representation for Inland Tlingit varieties where it is more like [j̃] ~ [w̃]. Early records of *ÿ* suggest that it was nasalized [ɥ̃] or [ŋ]. For example, Veniaminov gives ⟨raґá⟩ for 'hot' (горячій *gorjáčiĭ*) but ⟨ґaġ⟩ for 'hot spring'[25] and ⟨ґağ⟩ for 'warmth' or 'hot' (тепло *tepló* or жарко *žárko*) (Veniaminov 1846: 48, 75). Veniaminov's ⟨raґá⟩ is probably *ÿat'aa* [ɥàt'àː] 'it is hot', but his ⟨ґaġ⟩ reflects *t'aaỹ* [t'àːj̃] or *t'aaỹ* [t'àːɥ̃] 'hotsprings' and his ⟨ґağ⟩ probably something similar (cf. *k̲ut'aay* 'hot weather').

I reconstruct gamma as a progression from Pre-Tlingit **ŋ* through a nasalized velar approximant **ỹ* [ɥ̃] to attested *ÿ* [ɥ] and finally merged with *y* [j]. The labialized counterpart was probably **ŋʷ* in keeping with the more or less regular contrast between non-labialized and labialized posterior consonants (sec. 2.1). It is unclear if **ŋʷ* was simply the labialized allophone of **ŋ* or if it could contrast with **ŋ* in contexts without an independent trigger for labialization. The status of **ŋʷ* as a phoneme is complicated by the reconstruction of the bilabial nasal **m* which must exist because of its existence in Inland Tlingit and its reflection in earlier historical sources. The perfective prefix *wu-* (ch. 6 sec. 2.2) alternates between coda *m* and onset *w* in Inland Tlingit varieties suggesting a reconstruction **mu-*, but it is unambiguously attested as *ÿu-* /ɥu/ in Tongass Tlingit and early Northern Tlingit which instead suggests **ŋʷu-*. This implies some kind of interaction between **ŋʷ* and **m*. Given attested *m* > *w̃* > *w* in various contexts, there could have also been **ŋʷ* > **w̃* > *w* so that these sounds historically overlapped. This network of relationships still needs clarification and formal modelling.

The reconstruction of **ŋ* is supported not only by the nasalization in Inland Tlingit, but also by evidence from loanwords out of Pre-Tlingit into neighbouring languages. For one example, the Tlingit noun *shayéen* [ʃà.ˈjíːn] 'nail (fastener)' has a corresponding form *saŋíin* [sàŋíːn] in Alaskan Haida (Enrico 2004: 274). This would be expected from Pre-Tlingit **shaŋiːn* and indeed Tongass Tlingit has *shaÿeen* [ʃa.ˈɥiːn]. Although this noun is now opaque, it probably arose from a combination of **sha* 'head' and the reconstruction **√ŋiŋ́* < **√ÿiʔÿ* of the root *√yiʔy* 'tie together long objects'.

Leer suggests the existence of **ŋ* in his discussion of Tlingit sonorants in the context of the work-

25. Veniaminov has горячіе ключи *gorjáčīe ključí* (sg. ключъ *kljúč"*) which is a Siberian dialect variant of modern горячий источник *gorjáčiĭ istóčnik* 'hot spring'.

ing paper *Athabaskan, Eyak, and Tlingit Sonorants* (Krauss & Leer 1981). He does not actually cite any synchronic data, but does mention encountering nasalization in Inland Tlingit and describes transcriptions from Veniaminov that indicate nasalization in Sitka in the early 19th century (Krauss & Leer 1981: 146–149). I conclude that Leer was on the right track, so that gamma *ÿ* certainly derives from **ŋ* in Pre-Tlingit along with an allophone or perhaps separate phoneme **ŋʷ*. Despite its reconstruction as a voiced velar nasal stop I usually indicate the sound as *ÿ* because this is the most well known representation. Where nasalization is significant I usually mention as *ÿ* < **ỹ* < **ŋ* explicitly instead of giving **ŋ* without comment.

B The verb stem

In the particular is contained the universal.

James Joyce in R. Ellmann 1959, p. 520

1 Stem phonotactics . . . 838
2 Stem variation . . . 840
2.1 Ejective coda √*CVC'* roots prohibit -*μ* . . . 842
2.2 'Glottalized' √*CV'C* roots prohibit -*μ* . . . 844
2.3 Open syllable √$CV^{(h)}$ roots may ablaut with -*eH* and -*e* . . . 847
2.4 'Fading' √CV^{h} roots occur with both -*μH*/-*eH* and -*μ*/-*e* . . . 851
2.5 Sonorant -*ÿ* instead of ablaut with √$CV^{(h)}$ roots . . . 854
2.6 Truncation deletes a final segment . . . 856
2.7 Absence of null stem variation . . . 859
2.8 Comparison with Leer 1991 . . . 862
3 Invariable stems instead of invariable roots . . . 864
3.1 Kinds of derived invariable stems . . . 868
3.2 Monosyllabic stems with complex codas . . . 870
3.3 Disyllabic stems . . . 874
4 Root phonotactics . . . 885
4.1 Onset consonants . . . 887
4.2 Vowels . . . 890
4.3 Coda consonants . . . 894

The **Stem domain** is the phonological domain containing the VP and any morphemes linearized to the right of it within the phonological verb word. The minimal Stem domain in Tlingit corresponds with the traditional **verb stem** of Na-Dene languages. This term 'verb stem' is usually presented without any definition (cf. e.g. Li 1930a; Golla 1977; Leer 1979a, 2005b; Kari 1989, 1992; Rice 2005), but specialists seem to agree in what they pick out as a verb stem for any given Na-Dene language so there is implicit agreement about the term's referent. As I have come to understand it, a verb stem is prototypically a single syllable of the shape [$_{\sigma}$CV(V)(C)] in every Na-Dene language. Since the majority of Na-Dene verbal morphology is prefixal, the verb stem is usually the rightmost

syllable of the phonological verb word. Verb stems are taken to represent the core lexical semantics of the verb (e.g. 'eat', 'go', 'be heavy') but they can additionally reflect other inflectional and derivational phenomena like aspect, plurality, quality, and manner. In the crudest terms, the verb stem is the part at the end of the verb that carries its main lexical meaning.

Although sometimes presented as such, verb stems are not monomorphemic. Most specialists today identify an abstract root whose lexical entry is composed of consonants and a vowel. In addition there is **stem variation** that represents the paradigmatic variation in suprasegmental properties of the vowel – length, tone, nasalization, and/or laryngealization – as well as certain consonantal suffixes in some languages. The verb stem is thus the at the same time the surface exponence of a verb root and the exponence of stem variation.

The forms in (1) illustrate some partial morphophonological paradigms of stem variation for three typical verb roots $^{1}\sqrt{ta^{h}}$ 'sg. sleep', $^{1}\sqrt{gut}$ 'sg. go', and $^{2}\sqrt{tlet'}$ 'lick' in Tlingit. I use the symbol √ to indicate a verb root and follow Leer (2005a, 2008) by using an en-dash '–' to precede a verb stem.

(1)

root		-μ (long low)		-μH (long high)		-H (short high)		-eH-n (ablaut high)	
orth.	IPA	orth.	IPA	orth.	IPA	orth.	IPA	orth.	IPA
$^{1}\sqrt{ta^{h}}$	/tʰa/	–taa	[tʰàː]	–táa	[tʰáː]	–tá	[tʰá]	–téin	[tʰéːn]
$^{1}\sqrt{gut}$	/kʷut/	–goot	[kʷùːt]	–góot	[kʷúːt]	–gút	[kʷút]	*	
$^{2}\sqrt{tlet'}$	/tɬʰet'/	*		–tléit'	[tɬʰéːt']	–tlét'	[tɬʰét']	*	

The details of (1) are described in section 2 on stem variation. One feature to note here is that the paradigm of stem variation is dependent on the lexical phonology of the root. For instance, closed syllable roots like $^{1}\sqrt{gut}$ and $^{2}\sqrt{tlet'}$ do not exhibit the *-eH* (long ablauted vowel with high tone) kind of stem variation. In addition there is variation between different subclasses of roots such as closed syllable roots with an ejective coda like $^{2}\sqrt{tlet'}$ (never low tone) versus closed syllable roots without an ejective coda like $^{1}\sqrt{gut}$ (low tone possible).

Depite the differences between stem paradigms for different classes of roots, the suprasegmental variation can be isolated as an orthogonal dimension of patterning across all stem paradigms. As indicated in (1), I analyze these patterns in Tlingit using suprasegmental suffixes like *-μ* (long vowel with low tone) and *-μH* (long vowel with high tone), and I argued in chapter 2 section 2 that these are the phonological exponents of the V head. The Tlingit verb stem is thus composed a verb root and a stem variation suffix which correspond to the first merge of the syntactic atoms √ and V, so a stem is an ordered pair (√, V) and thus constitutes the first merge [$_{VP}$ √ V]. In main clauses the root and stem variation usually spell out a single syllable as illustrated in in (2), with the whole Stem domain highlighted in each example.

(2) a. Xaxá. *activity imperfective*
[χà.ˈχáː]
x- $^{2}\sqrt{xa}$ -H
1SG·S-$^{2}\sqrt{eat}$-VAR
'I eat it.', 'I'm eating it.'

b. Aawajáḵ. *perfective*
[ˌʔàː.wà.ˈtʃáq]
a- wu- i- ^{2}√jaḵ-H
ARG-PFV-3·S-^{2}√kill-VAR
'S/he killed it.'

c. X̱wasiteen. *perfective*
[ˌχʷà.sì.ˈtʰìːn]
wu- x̱- s- i- ^{2}√tin -μ
PFV-1SG·S-XTN-STV-^{2}√see-VAR
'I have seen it.'

d. Wutuwasháat. *perfective*
[wùˌ.tʰù.wà.ˈʃáːt]
wu- tu- i- ^{2}√sha't-μH
PFV-2SG·S-STV-^{2}√grab -VAR
'We grabbed it'

But the Stem domain may contain more than just √ and V. There are a variety of suffixes which can be added to the end of the (√, V) pair, some of which may affect the phonological form beyond simply adding segments. The simplest case is the addition of a segment to the end of the stem as in (3). Two more complex cases are shown in (4) with the addition of *-s'* /s'/ and *-t* /t/ to open syllable roots which triggers ablaut of the stem vowels /a/ and /u/ to [e].

(3) a. X̱ajákx̱. *repetitive imperfective*
[χà.ˈtʃáqχ]
x̱- ^{2}√jaḵ-H -x̱
1SG·S-^{2}√kill-VAR-REP
'I repeatedly kill it.'

b. Yei x̱achúx̱ch. *repetitive imperfective*
[χà.ˈtʃʰúχtʃ]
yei= x̱- ^{2}√chux̱-H -ch
ZPFV-1SG·S-√kill -VAR-REP
'I repeatedly mooch it.'

(4) a. X̱aḵéis'. *repetitive imperfective*
[χà.ˈqʰéːs']
x̱- ^{2}√ḵa -eH -s'
1SG·S-^{2}√stitch-VAR-REP
'I repeatedly stitch it.'

b. X̱adzeit. *repetitive imperfective*
[χà.ˈtsèːt]
x̱- ^{2}√dzuʰ -e -t
1SG·S-√throw-VAR-REP
'I repeatedly throw at it.'

Other verb suffixes contain vowels which must be realized in surface forms. These vowels require additional syllables because Tlingit prohibits diphthongs, so the result can be polysyllabic. To take one such suffix for illustration, the relative clause suffix *-i* adds its vowel to the end of the stem, either entailing an epenthetic consonant (*ÿ* /uɻ/ > *y* /j/ or *w* /w/) or resyllabification of a coda consonant into the onset of the new syllable. The verbs in (2) are repeated here in (5) as relative clauses with an appropriate external head noun.

(5) a. Xwaaxáayi x'áax'.
[ˌχʷàː.ˈχáː.jì x'áːx']
wu-x- i- ²√xa-μH-i x'áax'
PFV-1SG·S-STV-²√eat-VAR-REL apple
'An apple that I ate.'

b. Aawajági jánwu.
[ˌʔàː.wà.ˈtʃá.qì ˈtʃán.wù]
a- wu-i- ²√jak-H -i jánwu
ARG-PFV-STV-²√kill -VAR-REL mtn·goat
'A mountain goat that s/he killed.'

c. Xwasiteeni keitl.
[ˌχʷà.sì.ˈtʰìː.nì kʰèːtɬ]
wu-x- s- i- ²√tin-μ -i keitl
PFV 1SG·S-XTN-STV-²√see -VAR-REL dog
'A dog that I saw.'

d. Wutuwasháadi té.
[wùˌtʰù.wà.ˈʃáː.tì tʰé]
wu-tu- i- ²√sha't-μH-i té
PFV-2SG·S-STV-²√grab -VAR-REL rock
'A rock that we grabbed.'

The examples above in (3)–(5) highlight more than the (√, V) pair. If this pair is taken to be the 'verb stem' per se then it is possible that the Stem domain is larger than the stem. The descriptive literature sometimes refers to a (√, V) pair and additional suffixes together as a 'verb stem', but other times the (√, V) 'verb stem' is distinguished from suffixes. For example, the enclitic auxiliaries like *neech* ~ *nooch* in (6) are rarely if ever included in definitions of the 'verb stem' but their presence nonetheless has phonological consequences for the shape of the stem.

(6) a. Kukaxáa.
[ˌkʰʷù.qʰà.ˈχáː]
w- g- g- x- ²√xa-μH
IRR-GCNJ-MOD-1SG·S-²√eat-VAR
'I'm going to eat it.'

b. Kukaxaa nooch.
[ˌkʰʷù.qʰà.ˈχàː nùːtʃ]
w- g- g- x- ²√xa-μ =nooch
IRR-GCNJ-MOD-1SG·S-²√eat-VAR=HAB·AUX
'I'm always going to eat it.'

I try to use the term 'verb stem' only for the spellout of the (√, V) pair. I then describe the rest of the phonological material after this verb stem as simply part of the Stem domain. Thus the Stem domain consists of at least the stem but may also include suffixes and enclitics. This suggests a hierarchy of [$_{\text{Stem}^+}$ [$_{\text{Stem}}$ √ -V] -… =…] which deserves exploration.[1]

Some verbal suffixes have polar tone, resulting in alternating high and low or low and high tones from the stem rightward akin to Obligatory Contour Principle phenomena in other languages (Odden 1986; Yip 1988). The *-í* subordinate clause suffix is one of such suffix as illustrated in (7) where it surfaces with high tone and in (8) where it surfaces with low tone. As can be seen here, the polar tone is usually indicated with a lexical high tone but this is merely a convention and the actual specification of polar tones is still an open question.

(7) a. Aawahoon. *L*
[ˌʔàː.wà.ˈhùːn]
a- wu-i- ^{2}√hun-μ
ARG-PFV-STV-^{2}√sell -VAR
'S/he sold it.'

b. Aawahooní. *L . H*
[ˌʔàː.wà.ˈhùː.ní]
a- wu-i- ^{2}√hun-μ -í
ARG-PFV-STV-^{2}√sell -VAR-SUB
'When/that s/he sold it.'

(8) a. Aawasháat. *H*
[ˌʔàː.wà.ˈʃáːt]
a- wu- i- ^{2}√sha't-μH
ARG-PFV-STV-√grab -VAR
'S/he grabbed it.'

b. Aawasháadi. *H . L*
[ˌʔàː.wà.ˈʃáː.tì]
a- wu- i- ^{2}√sha't-μH -í
3·O-PFV-STV-√grab -VAR-SUB
'When/that s/he grabbed it.'

Not all vocalic suffixes have polar tone, so for example the relative clause suffix *-i* always surfaces with low tone regardless of the verb stem. This was seen above where the verb *x̱wasiteen* [ˌχʷà.sìˈtʰìːn] 'I have seen it' in (2c) has the relativized form *x̱wasiteeni* [ˌχʷà.sìˈtʰìː.nì] in (5c) with low tone on the relative clause suffix. Polar tone on suffixes (including on epenthetic vowels) is actually a more general issue in Tlingit since it also occurs with noun suffixes – e.g. *ax̱ téel-i* [ʔàχˈtʰíː.ɬì] 'my shoe-PSS' vs. *ax̱ seid-í* [ʔàχˈsèː.tí] 'my necklace-PSS' – so research on polar tone in nouns should also lead to a better understanding of Stem domain tone in verbs.

1. Compare the 'stem' versus 'macrostem' distinction in Bantu languages (cf. e.g. Downing 2003: 7; Kisseberth & Odden 2003: 61; Kisseberth 2003: 557; Hyman 2007: 204–205; Hyman, Inkelas, & Sibanda 2009: 287).

Figure B.1: Categories of monosyllabic stems in Northern Tlingit

At first glance the phonology of the Stem domain may seem 'flat' without any internal structure, showing little correspondence to the syntactic structure of the verb other than the fixed left edge of the domain at the VP. There is some evidence of phonological structure matching the syntax however. The first merge of √ and V is distinct from the rest of the stem domain, having a specified tone which becomes the basis for alternation in subsequent syllables. In addition, epenthesis is completely prohibited within the (√, V) unit. The rightmost edge of the Stem domain also shows evidence of syntactic structure since the presence of an auxiliary verb enclitic can shift the surface forms of T and C heads off of the verb stem to the auxiliary. So the Stem domain is not simply flat, and further analysis might uncover more phonological indications of structure. Much of the phonology of the Stem domain corresponds with the phonology of nouns, so presumably Stem domain phenomena can be separated into verb-specific morphophonology and more general word phonology.

1. Stem phonotactics

With the verb stem established as a regular unit within the Stem domain, we can review the attested surface phonological shapes of verb stems in Tlingit. Figure B.1 illustrates all the possible surface forms of monosyllabic stems in Northern Tlingit, including those which are ungrammatical. To read the figure, the stem is first divided into short vowels V and bimoraic long vowels VV. These may have either low (L) or high (H) tone. Under each tone category the stem can have either no coda V# or some positive number of coda consonants VC$^+$#; here # is the word boundary when there are no suffixes other than stem variation. Stems with a coda may have either one or two consonants. The leaves of the tree in figure B.1 are then all of the logically possible stem shapes. Not all logically possible stems are grammatical; in particular stems with a short vowel V and L tone are prohibited (the first three terminal nodes on the left).

Stems with three coda consonants are absent from figure B.1 because they are ungrammatical. Surface syllables with three coda consonants do occasionally arise from suffixation to a biconsonantal coda, although they are more often epenthesized into separate syllables along with the second coda consonant. Such suffixes – the repetitive suffixes like *-k* /k/ and *-ch* /tʃ/ (ch. 2 sec. 2.3) – are within the Stem domain but outside of the (√, V) pair.

Some of the stem shapes in figure B.1 are inflectionally irregular even though they are attested. The rules of inflectional stem variation described in section 2 constrain the logically possible stems

so that only a subset of the shapes in figure B.1 are realizable by regular morphosyntax. The remainder of shapes except for the three ungrammatical ones are still possible, but they can only arise with lexicalized stems that are not formed by regular processes. For instance all stems with two coda consonants have a single form throughout their expected stem variation paradigms; these are by definition are invariable and thus must be lexically specified rather than inflected by regular stem variation. Nonetheless, the logical atoms of stem variation – the suffixes *-μ*, *-μH*, etc. – can be used to produce all of the shapes in figure B.1 from abstract roots. Thus the lexicalized stem *–náalx̲* [náːɬχ] 'wealthy' is irregular but analyzable as a combination of the root *√nalx̲* /naɬχ/ 'wealthy' and the *-μH* stem variation suffix. The difference between inflectionally regular and irregular (lexicalized) stems is thus due entirely to the stem variation rules and not to the inventory of possible (√, V) pairs. The issue of how irregular stem shapes come to be specified in the lexicon is essentially a morphological and lexical issue, and so from the perspective of stem phonology it is irrelevant whether a stem arises from a variable or invariable root. See section 4 for more discussion.

Disyllabic stems are relatively rare though there are a small handful of lexically specified disyllables as well as a few that arise from derivational suffixation. Disyllabic stems are never produced by regular inflection, so all disyllabic stems are invariable with a single form across their entire inflectional paradigms. The data in (9) illustrate the 16 logically possible combinations of low and high tone with short and long vowels in two syllables.

(9)	$\sigma_1.\sigma_2$	V.V		V.VV		VV.V		VV.VV	
	L . L	*		*		?		?	
	L . H	*		*		ˈqèː.wú	'seine'	ˈʔìː.ʃáːn	'poor, sad'
	H . L	ˈtʰá.nù	'gripe'	ˈtʃʰí.kàː	'fierce'	ˈtɬéː.kʷù	'lullabye'	ˈx'áː.ʃàː	'fool'
	H . H	ˈkít.ákʷ	'show off'	ˈqʰíː.nás	'in-law lend'	ˈtʃ'íː.jáqʷ	'slow'	?	

The data in (9) have '*' to indicate that a form is ungrammatical and '?' to indicate that a form is unattested but not ruled out in principle by the phonology. The four possibilities with a low tone short vowel in the first syllable are ungrammatical because Tlingit prohibits short low tone vowels under stress */ˈV̀/ and the first syllable of a stem always bears both foot stress and culminative word stress. The remaining three unattested forms /V̀V̀.V̀/, /V̀V̀.V̀V̀/, and /V́V́.V́V́/ might occur but have not been found anywhere in the lexicographic documentation. Both might be prohibited due to some OCP-like constraint on tone, but the attestation of a number of /V́.V́/ disyllables counters this explanation. I suspect that stress-induced tonogenesis has contributed to all three gaps, but I have not investigated this any further. See section 3.3 for more data and discussion.

Because Tongass Tlingit lacks tone and has laryngeal vowels (apx. A sec. 3) it has a different inventory of logically possible stems as illustrated in figure B.2. The organization first distinguishes between monomoraic vowels V_{μ} and bimoraic vowels $VV_{\mu\mu}$. Then the bimoraic vowels are divided into long vowels $VV_{\mu\mu}$ and laryngealized vowels $VV^{[\text{LAR}]}_{\mu\mu}$. The laryngealized vowels are further divided into the fading vowels V^{h} and the glottalized vowels $V^{ʔ}$, and then the lowest divisions across the tree are based on codas. This pattern of possible stems gives rise to a different inventory of stem variation suffixes as discussed further in section 2. Tongass disyllablic stems seem to be the same as for Northern Tlingit but there is the expected lack of tone contrasts and the presence of laryngeal vowel contrasts. I have not reviewed the lexical documentation for data on disyllabic stems in Tongass Tlingit so I cannot yet provide any generalizations.

Figure B.2: Categories of monosyllabic stems in Tongass Tlingit

2. Stem variation

Stem variation is the paradigmatic change of (mostly) suprasegmental phonology in the verb stem. I argued in chapter 2 section 2 that stem variation is the phonological realization of V which merges with the root √ to form the verb stem. I established a set of six suffixes {*-μ*, *-μH*, *-H*, *-e*, *-eH*, -⊗} which account for all surface forms of stems. The symbols are iconic, with *μ* for an additional mora i.e. lengthening, *H* for high tone,[2] *e* for an additional mora that replaces the root vowel with /e/, and ⊗ for truncation i.e. deletion of a final segment. The combination of these suffixes with roots is more or less transparent as sketched in (10) for √*CV* roots and in (11) for √*CVC* roots.

(10) a. √CV + -H → –CV́
b. √CV + -μ → –CV̀V̀
c. √CV + -μH → –CV́V́
d. √CV + -e → –Cèè
e. √CV + -eH → –Céé
f. *√CV + -⊗

(11) a. √CVC + -H → –CV́C
b. √CVC + -μ → –CV̀V̀C
c. √CVC + -μH → –CV́V́C
d. *√CVC + -e
e. *√CVC + -eH
f. √CVC + -⊗ → –CV́

The selection of specific stem variation suffixes is largely inflectional, depending on the presence or absence of various functional heads in the syntax together with lexical properties like conjugation class as detailed in chapter 2. But not all inflectionally predictable combinations can occur because lexical phonology sometimes intervenes. For example, only open syllable roots with /a/ or /u/ can occur with ablaut symbolized by *-e* and *-eH*, and only a very few closed syllable roots can undergo truncation with -⊗. The phonology of stem variation establishes several classes of root shapes that have different patterns of potential combination with stem variation suffixes. These classes are listed exhaustively in table B.1.

The top of table B.1 lists all the stem variation suffixes along with rough IPA representations of their realizations in surface forms. The final column is a placeholder for the non-existent stem variation [V̀] where short vowels with low tone never occur. The right side of table B.1 enumerates

2. There is no *L* because low tone is assumed to be the default as elsewhere in Northern Tlingit (Leer 2001).

		-μ [V̀ː]	-μH [V́ː]	-H [V́]	-eH [éː]	-e [èː]	-⊗ [~~μ~~]	[V̀]
open	√CV	CV̀V̀	CV́V́	CV́	Céː	*	*	*
	√CVʰ	CV̀V̀	CV́V́	CV́	Céː	Cèː	*	*
closed	√CVC	CV̀V̀C	CV́V́C	CV́C	*	*	CV́	*
	√CVC'	*	CV́V́C'	CV́C'	*	*	*	*
	√CV'C	*	CV́V́C	CV́C	*	*	*	*

Table B.1: Possible monosyllabic stem shapes from combined root and stem variation

all the lexically defined root shapes. These are organized into two subclasses: open syllable roots without a coda consonant and closed syllable roots with a coda consonant. Each of these two major classes has further divisions with different constraints on stem variation.[3] Some of the subclasses can be derived from overt phonological properties, but others appear to require lexical specification (e.g. diacritics). The conventional representations of the subclasses are traditionally derived from Tongass Tlingit forms where their behaviour is more predictable.

I address each of the root subclasses in the following subsections, illustrating the constraints and properties that distinguish each subclass from the others, suggesting some paths for synchronic analyses, and noting diachronic facts that have led to the current system. I start in section 2.1 with the contrast between closed syllable √*CVC* and √*CVC'* roots where the latter have a coda ejective consonant. I then compare the 'glottalized' √*CV'C* roots with the √*CVC* and √*CVC'* roots in section 2.2. I address the open syllable roots √*CV* and √*CVʰ* in section 2.3 with a discussion of the ablaut phenomenon, then in section 2.4 I show how tone distinguishes the two subclasses. I go on to detail the unexplained insertion of coda sonorants after open syllable √*CV*$^{(h)}$ roots in section 2.5. I then describe the unusual truncation of closed syllable √*CVC* roots in section 2.6 and the hypothesized absence of a *-Ø* stem variation suffix in section 2.7.

The stem variation system shown in table B.1 is limited to the regular, inflectionally specified stem variation that is the norm for Tlingit verbs. There are a significant number of verb roots which appear to have a fixed or invariable form in every inflectional context. I analyze these as combinations of any of the five regular root shapes with one lexically specified stem variation suffix. Discussion of these lexicalized stems is postponed until section 3, and the rest of this section focus exclusively on the regular inflectionally variable stems.

The stem variation system described above is specific to the Northern Tlingit dialect. The Tongass Tlingit dialect lacks tone and has a system of laryngeal vowels instead (apx. A sec. 3). I have not attempted a synchronic analysis of Tongass Tlingit stem variation, but I believe the system is similar in structure to that of Northern Tlingit even though the phonology and phonetic realizations differ. In Crippen 2013b I argued that the Tongass Tlingit laryngeal vowels are composed from an initial vocalic component and a second laryngeal component, each of which is moraic. The stem variation system in Tongass Tlingit appears to mostly involve different second components: modal *-μ*, fading

3. For simplicity I have not distinguished between open roots with /a/ or /u/ that can undergo ablaut with *-eH* or *-e* versus open roots with /i/ or /e/ that cannot undergo ablaut. See section 2.3 for details.

-^{h}, and glottal -^{ʔ}. The root vowels supply the vocalic component and the stem variation supplies the laryngeal component or a modal vowel mora. The equivalent to Northern *-H* does not exist, and instead Tongass apparently requires a null stem variation suffix where the stem is realized as e.g. *–CV* [CV] or *–CVC* [CVC] with a short modal vowel. An alternative to null stem variation would be assuming that roots are underspecified for moras, and thus the equivalent to *-H* would be a single mora *-μ* with a double mora *-μμ* for modal long vowels and *-μμ*^{h} and *-μμ*^{ʔ} for laryngealized long vowels. This same analysis could be ported back to the Northern Tlingit dialect; I leave this thread of research dangling for now.

My approach to stem variation is inspired by Leer's analysis in his dissertation (Leer 1991) and is based on his documentation for Northern and Tongass Tlingit (Leer 1974a,b,c, 1976b, 1978b, 1979c). I depart from Leer's model in presenting an exclusively synchronic analysis with the twin goals of minimizing descriptive complexity and modelling only what must be necessary for the grammar of a single speaker. Because of this radically different approach, my model of stem variation is incommensurate with Leer's. I discuss some differences between the two models in section 2.8, noting the advantages and disadvantages of both approaches.

2.1. Ejective coda √*CVC'* roots prohibit -*μ*

Some of the restrictions on stem variation in table B.1 can be accounted for by surface phonological constraints, but others must be specified in the lexicon. One example of a restriction derivable from surface phonology involves the ejective coda roots √*CVC'*. Stems of these roots cannot have low tone at all, and hence never occur with *-μ* stem variation. Thus row 4 (√*CVC'*) column 1 (*-μ*) in table B.1 has an asterisk indicating ungrammaticality: *√*CVC'-μ*. In any inflectional context where *-μ* might be expected for a √*CVC'* root the *-μH* stem variation appears instead, and thus the stem surfaces with high tone rather than low tone. This is specified as a morphophonological rule in (12).

(12) -μ → -μH / √CVC'_ *ejective coda root rule*

To illustrate the prohibition of *√*CVC'-μ*, compare the √*CVC* root √*s'it* 'wrap, bind' illustrated in (13) with the √*CVC'* root √*s'el'* 'tear, rip' in (14); the latter has a lateral ejective fricative /ɬ'/ in the coda. Both of these roots are lexically specified for the *∅*-conjugation class (ch. 2 sec. 1.3.1.4, ch. 6 sec. 3.4.4). As a consequence of *∅*-conjugation class membership, the affirmative perfective aspect stem is predictably short high tone *-H*. The negative perfective aspect stem is predictably long low tone *-μ* which is exactly what occurs in (13b) for the √*CVC* root. But long low tone *-μ* is ungrammatical in (14b) for the √*CVC'* root with the ejective coda, and instead long high tone *-μH* in (14c) is the grammatical form.

(13) a. Kax̱wlis'ít. *affirmative ∅-conj. perfective with -H*
[ˌkʰàχʷ.ɬì.ˈs'ít]
k- wu- x̱- l- i- √s'it -H
QUAL-PFV-1SG·S-XTN-STV-√wrap-VAR
'I wrapped it.'

b. Tléil kax̱wlas'eet. *negative ∅-conj. perfective with -μ*
[tɬʰéːɬ ˌkʰàχʷ.ɬà.ˈs'ìːt]
tléil k- u- wu- x̱- l- √s'it -μ
NEG QUAL-IRR-PFV-1SG·S-XTN-√wrap-VAR
'I didn't wrap it.'

(14) a. Kax̱wlis'él'. *affirmative Ø-conj. perfective with -H*
[ˌkʰàχʷ.ɬì.ˈs'éɬ']
k- wu- x̱- l- i- √s'el' -H
QUAL-PFV-1SG·S-XTN-STV-√tear-VAR
'I tore it.'

b. *Tléil kax̱wlas'eil'. **negative Ø-conj. perfective with -μ*
[tɬʰé:ɬ ˌkʰàχʷ.ɬà.ˈs'ì:t]
tléil k- u- wu- x̱- l- √s'el' -μ
NEG QUAL-IRR-PFV-1SG·S-XTN-√tear-VAR
intended: 'I didn't tear it.'

c. Tléil kax̱wlas'éil'. *negative Ø-conj. perfective with -μH*
[tɬʰé:ɬ ˌkʰàχʷ.ɬà.ˈs'é:ɬ']
tléil k- u- wu- x̱- l- √s'el' -μ
NEG QUAL-IRR-PFV-1SG·S-XTN-√tear-VAR
'I didn't tear it.'

The prohibition against a stem like *–*s'eil'* [s'è:ɬ'] could be straightforwardly analyzed as a constraint against low tone followed by an ejective, i.e. *[V̀C']. But suffixation on the verb stem can also produce long low tone vowels before ejectives as shown in (15b). This only occurs with the suffixes *-x'* /x'/, *-t'* /t'/, *-s'* /s'/ and *-l'* /ɬ'/ together with √*CVʰ* roots; see section 2.3 for more discussion.

(15) a. Du x̱aawaag̱í ká akaawax'óo. *Ø-conj. perfective of √CVʰ root with -μH*
[tù ˌχà:.ˈwà:.qí kʰá ʔà.ˌkʰà:.wà.ˈx'ʷú:]
du x̱aaÿ- waak̲-í ká a- k- wu-i- ²√x'uʰ-μH
3H·PSS sauna-eye -PSS HSFC ARG-HSFC-PFV-STV-²√nail -VAR
'He's nailed up his windows.' (orig. tr.) (Story & Naish 1973: 138.1859)

b. T'áa yátx'i kadux'weis'. *rep. impfv. of √CVʰ root with -e-s'*
[t'á: ˈját.x'ì ˌkʰà.tù.ˈx'ʷè:s']
t'áa ÿát -x' -í k- du- ²√x'uʰ-e -s'
board child-PL-PSS HSFC-4H·S-²√nail -VAR-REP
'They're nailing shingles.' (orig. tr.) (Story & Naish 1973: 138.1860)

Similar patterns of low tone before ejectives can be found in the noun lexicon such as *t'ooch'* [t'ù:tʃ'] 'charcoal'. The *[V̀C'] prohibition must therefore be due to the specific lexical phonology of roots and verb stems and cannot be simply modelled as a general constraint on surface phonology. I have yet to address Southern Tlingit with its unique falling tone /V̂:/. If this is analyzed instead as /V́V̀/ then there are many instances of [V́V̀C'] occur which would be wrongly ruled out by *[V̀C'] although not by e.g. *[V̀V̀C'].

Tonogenesis produced tone from a combination of laryngeal vowels and stress (apx. A sec. 6.1). The Tongass Tlingit dialect did not undergo tonogenesis and so cannot have a constraint like *[V̀V̀C']. It does however show a very similar prohibition *[Vʰ C'] against a fading vowel /Vʰ/ before an ejective in exactly the same contexts. The fading vowel is one historical correspondence of low tone in the other dialects, so *[Vʰ C'] is the phonological parallel in Tongass Tlingit for *[V̀V̀C'] elsewhere.

The Tongass constraint could be modelled as a prohibition on the sequence of [spread glottis] immediately followed by [constricted glottis]. The replacement stem is a modal (non-laryngeal) bimoraic vowel, i.e. *[V^{h}C'] → [Vːc'], The Tongass equivalent to the rule in (12) is given in (16) where the stem variation -^{h} for a fading vowel is replaced by -ː for a long modal vowel.

(16) -^{h} → -ː / √CVC'_ *Tongass ejective coda root rule*

2.2. 'Glottalized' √*CV'C* roots prohibit -*μ*

The constraint *[V̀V̀C'] discussed in the previous section prohibits √*CVC'* roots with ejective coda consonants from occurring with long low tone -*μ* stem variation. This constraint can be induced from surface phonology since it depends on two surface properties – low tone [V̀V̀] and ejective [C'] – as they appear in stem forms. But there are other restrictions on stem variation in table B.1 that cannot be induced from surface phonology alone. Instead these restrictions must instead be attributed to lexically specified phonological properties of the root.

Some lexically specified phonological properties are limited to one one or two roots and so are simply considered as irregular peculiarities. But a few are widespread and so form large phonological subclasses. The canonical example of this is the 'glottalized' roots that are represented symbolically as √*CV'C*.[4] These roots have a constraint against the long low tone -*μ* so that -*μH* occurs instead as represented by the rule in (17). This is identical to the ejective coda √*CVC'* roots discussed in section 2.1, but unlike the ejective coda roots there is no surface phonological property (no coda ejective) that can be associated with their failure to occur with low tone.

(17) -μ → -μH / √CV'C_ *glottalized root rule*

The constraint against -*μ* with glottalized √*CV'C* roots is illustrated here by comparing affirmative and negative perfective stems of glottalized √*si't* 'braid' and plain √*xit* 'scratch, furrow'. Both are lexically specified members of the *Ø*-conjugation class so they predictably have an affirmative perfective aspect form with a short high -*H* stem. The plain √*xit* 'scratch, furrow' also has a negative perfective aspect form with expected long low -*μ* as in (18b). But the same -*μ* is ungrammatical in (19b) for the glottalized root √*s'it* 'braid', and instead -*μH* is the grammatical form in (19c).

(18) a. Kax̱wlixít. *affirmative Ø-conj. perfective with -H*
[ˌkʰàχʷ.ɬì.ˈxít]
k- wu-x̱- l- i- ^{2}√xit -H
QUAL-PFV-1SG·S-XTN-STV-^{2}√scratch-VAR
'I furrowed it.'

b. Tléil kax̱wlaxeet. *negative Ø-conj. perfective with -μ*
[tɬéːɬ ˌkʰàχʷ.ɬà.ˈxìːt]
tléil k- u- wu-x̱- l- ^{2}√xit -μ
NEG QUAL-IRR-PFV-1SG·S-XTN-^{2}√scratch-VAR
'I didn't furrow it.'

4. As explained later, these are only glottalized in Tongass Tlingit; in Northern Tlingit they have irregular high tone.

(19) a. Kax̱wlisít. *affirmative Ø-conj. perfective with -H*
[ˌkʰàχʷ.ɬì.ˈsít]
k- wu-x̱- l- i- ²√si't -H
QUAL-PFV-1SG·S-XTN-STV-²√braid-VAR
'I braided it.'

b. *Tléil kax̱wlaseet. **negative Ø-conj. perfective with -μ*
[tɬé:ɬ ˌkʰàχʷ.ɬà.ˈsì:t]
k- u- wu-x̱- l- ²√si't -μ
QUAL- IRR-PFV-1SG·S-XTN-²√braid-VAR
'I didn't braid it.'

c. Tléil kax̱wlaséet. *negative Ø-conj. perfective with -μH*
[tɬé:ɬ ˌkʰàχʷ.ɬà.ˈsí:t]
k- u- wu-x̱- l- ²√si't -μH
QUAL- IRR-PFV-1SG·S-XTN-²√braid-VAR
'I didn't braid it.'

The negative perfective stem of √*si't* 'braid' is high tone –*séet* [sí:t] in (19c) rather than expected low tone *–*seet* [sì:t], but unlike the ejective coda root √*s'el'* 'tear' in section 2.1 there is no surface reason – no ejectivity or other distinctive phonological properties – that the root √*si't* 'braid' should not surface with low tone. Indeed, the attested stem forms –*sít* [sít] and –*séet* [sí:t] have no laryngeal features at all given that fricatives are not [s.g.] (though cf. Vaux 1998), and there are other lexical items like √*sin* 'hide, conceal' + -*μ* → –*seen* [sì:n] and a noun *seet* [sì:t] 'Sitka spruce canoe' which show that the gap *–*seet* is surprising from a broader view of Tlingit phonology.

A complete review of glottalized roots has never been undertaken, but I have not found any segmental properties shared among them that form a natural class. I therefore conclude that there are no unifying phonological properties, and that all glottalized roots must be lexically specified as such. For example, √*CV'C* roots may be stop-final (20), fricative-final (21), affricate-final (22), or sonorant-final (23). They may also be glottal-initial (24), ejective-initial (25), or sonorant-initial (26) among other possibilities.

(20) *stop-final √CV'C roots*

	orth.	*IPA*	*gloss*
a.	√si't	sit	braid, plait
b.	√ne'ḵ	neq	slushy
c.	√sha't	ʃat	grab, catch, snatch
d.	√t'u'k	t'ukʷ	shoot arrow

(21) *fricative-final √CV'C roots*

	orth.	*IPA*	*gloss*
a.	√tsi'x̱w	tsʰiχʷ	dam, block, obstruct
b.	√x̱e'l	χeɬ	crumble
c.	√gwa'sh	kʷaʃ	hop on one leg
d.	√su's	sus	pl. scatter, fall

(22) *affricate-final √CV'C roots*

	orth.	*IPA*	*gloss*
a.	√xi'tl	xitɬ	fish with rake
b.	√x̲'e'ch	χ'etʃ	list, tilt, lean
c.	√gwa'tl	kʷatɬ	roll, rock; fold, hunch
d.	√xu'ts	xʷuts	scorch, burn black

(23) *sonorant-final √CV'C roots*

	orth.	*IPA*	*gloss*
a.	√t'iÿ	tʰij	chisel
b.	√ye'n	jen	twirl, wave, wag
c.	√ta'w	tʰaw	steal
d.	√su'n	sun	bubble, fizz

(24) *glottal-initial √CV'C roots*

	orth.	*IPA*	*gloss*
a.	—		(none attested with /i/)
b.	√.e'k	ʔek	shocked, paralyzed
c.	√ha't	hat	herd
d.	√.u'n	ʔun	shoot gun

(25) *ejective-initial √CV'C roots*

	orth.	*IPA*	*gloss*
a.	√ch'i'n	tʃ'in	tie up hair
b.	√ts'e'n	ts'en	crease
c.	√x̲'a'kw	χ'akʷ	salmon turn red
d.	√l'u'n	ɬ'un	hunt

(26) *sonorant-initial √CV'C roots*

	orth.	*IPA*	*gloss*
a.	√ÿi't	jit	stretch
b.	√ne'ÿ	nej	fiddle, twiddle
c.	√wa't	wat	mature, grow up
d.	√yu'k	jukʷ	shake

Although rare, there are a few documented minimal pairs of √*CVC* and √*CV'C* roots: √*da*x̲ 'hew with adze' and √*da'*x̲ 'move under momentum'; √*x'an* 'smoke food' √*x'a'n* 'angry'; √x̲*ash* 'juicy (root)' and √x̲*a'sh* 'curved'; √k̲*an* 'quarrel' and √k̲*a'n* 'encourage to be strong'. Some pairs appear to be semantically related like √*.an* 'rest' and √*.a'n* 'bedridden' (but cf. √*.an* 'rinse in snow'); √*.ak* 'weave' and √*.a'k* 'stagger'; √*dat* 'bruised' and √*da't* 'bounce back'; the triplet of √*hat* 'lug heavy object' and √*hat* 'cover' and √*ha't* 'herd' could also be potentially related. The possibility of semantic connections between √*CVC* and √*CV'C* roots suggests a diachronic derivational relationship but there is no regular synchronic connection. There is at least one homophonous pair of √*CV'C* roots √k̲*a't* 'abandoned; nobody exists' and √k̲*a't* 'split (wood)', but both are poorly documented and could be very divergent instances of the same root.

In Tongass Tlingit the glottalized √*CV'C* roots actually feature a glottalized vowel [Vˀ] in their stems, hence the label 'glottalized'. The equivalent stems of √*si't* 'braid' in Tongass are –*sit* [sit] and –*seét* [siˀt], and the fading vowel stem *–*seèt* [siʰt] that corresponds to Northern long and low tone *–*seet* is likewise ungrammatical. The Tongass equivalent to the rule in (17) is given in (27).

(27) $\text{-}^{h} \rightarrow \text{-}^{ʔ}$ / √CV'C_ *glottalized root rule*

The prohibition on *[V^{h}C'] presumably also holds for glottalized roots, so the difference in Tongass Tlingit between ejective coda and glottalized roots is the replacement element: a glottalized vowel [Vʔ] versus a long modal vowel [Vː]. This suggests an analysis where Tongass Tlingit has a lexically specified [c.g.] laryngeal feature. One possible analysis for Northern Tlingit is that glottalized roots like √*si't* 'braid' have a lexically specified high tone. Then the *-μ* stem variation suffix could be applied given that it has no specified tone, and there would not need to be a special selection requirement for *-μH*. I have not explored the consequences of this analysis however, so I leave this issue for future root phonology research.

2.3. Open syllable √*CV*$^{(h)}$ roots may ablaut with -*eH* and -*e*

Ablaut in Tlingit is the change of either /a/ or /u/ to [e]. Ablaut only occurs with open syllable roots (√*CV*, √*CV*^{h}). Ablaut does not occur with /i/; ablaut of /e/ is impossible to detect and so is assumed to not occur. The data in (28)–(30) illustrate ablaut triggered by the repetitive suffix -*x̲* (ch. 2 sec. 2.3). The root $\sqrt[1]{.i}$ 'cook' in (28) does not show ablaut since (28c) is ungrammatical. The roots $\sqrt[2]{x̲a}$ 'eat' in (29) and $\sqrt[1]{xu}$ 'steam' in (30) both exhibit ablaut with -*x̲* and the lack of ablaut with -*x̲* is ungrammatical.

(28) a. X̲wasi.ée. *Ø-conj. perfective with -μH*
[ˌχʷà.sì.ˈʔíː]
wu-x̲- s- i- $\sqrt[1]{.i}$ -μH
PFV-1SG·S-CSV-STV-$\sqrt[1]{}$COOK-VAR
'I cooked it.'

b. X̲asa.éex̲. *repetitive imperfective with -μH*
[ˌχà.sà.ˈʔíːχ]
x̲- s- $\sqrt[1]{.i}$ -μH-x̲
1SG·S-CSV-$\sqrt[1]{}$COOK-VAR-REP
'I repeatedly cook it.'

c. *X̲asa.éix̲. **repetitive imperfective with -eH*
[ˌχà.sà.ˈʔéːχ]
x̲- s- $\sqrt[1]{.i}$ -eH-x̲
1SG·S-CSV-$\sqrt[1]{}$COOK-VAR-REP
'I repeatedly cook it.'

(29) a. X̲waax̲áa. *Ø-conj. perfective with -μH*
[ˌχʷàː.ˈχáː]
wu-x̲- i- $\sqrt[2]{x̲a}$-μH
PFV-1SG·S-STV-$\sqrt[2]{}$EAT-VAR
'I ate it.'

b. *X̲ax̲áax̲. *repetitive imperfective with -μH*
[χa.ˈχáːχ]
x̲- $\sqrt[2]{x̲a}$-μH-x̲
1SG·S-$\sqrt[2]{}$EAT-VAR-REP
'I repeatedly eat it.'

c. Xaxéix. *repetitive imperfective with -eH*
[χa.ˈχé:χ]
x- ^{2}√xa-eH-x
1SG·S-^{2}√eat-VAR-REP
'I repeatedly eat it.'

(30) a. Xwasixóo. *∅-conj. perfective with -μH*
[ˌχʷà.sì.ˈxʷú:]
wu-x- s- i- ^{1}√xu -μH
PFV-1SG·S-CSV-STV-^{1}√steam-VAR
'I steamed it.'

b. *Xasaxóox. **repetitive imperfective with -μH*
[ˌχà.sà.ˈxʷú:χ]
x- s- ^{1}√xu -μH-x
1SG·S-CSV-^{1}√steam-VAR-REP
'I repeatedly steam it.'

c. Xasaxwéix. *repetitive imperfective with -eH*
[ˌχà.sà.ˈxʷé:χ]
x- s- ^{1}√xu -eH-x
1SG·S-CSV-^{1}√steam-VAR-REP
'I repeatedly steam it.'

The representation of the ablauting stem variation in (29c) and (30c) is the suffix *-eH*. This indicates the vowel /e/ and high tone, parallel to the non-ablaut stem variation suffix *-μH*. Just as with *-μ* versus *-μH*, there is also a stem variation suffix *-e* for ablaut with low tone which is similarly restricted to open syllable roots. I postpone discussion of this *-e* stem variation until section 2.4 because it only occurs with *√CV^h* roots and never with *√CV* roots.

Note that the ablauted stem *–xwéi* [xʷé:] of the root *√xu* /xʷu/ 'steam' in (30c) retains the labialization of the onset consonant even though the vowel is no longer labial /u/. Posterior consonants must be labialized before a labial vowel /u/ (cf. apx. A sec. 2.1 and Weber 2012) but the stem has no such vowel. The retention of labialized [xʷ] in the surface form without [u] means that the onset consonant of *√xu* must be labialized in the lexical entry as /xʷu/ rather than derived from /xu/ by labial spread with regular phonology.

The same retention of implicit labialization is the distributional basis for the phonemic distinction between the glottals /ʔ/ and /h/ and their labialized counterparts /ʔʷ/ and /hʷ/. Some speakers have phonemic labialized glottals and so will retain the underlying labialization under ablaut as shown by (31b). Most speakers in my experience do not have labialized glottals and so cannot preserve labialization as in (31c).[5]

5. There is no *√.u* to show *-eH*, only *√.u^h* which would have *-e* instead, for which see section 2.4.

(31) a. Daak xwaahóo. *Ø-conj. perfective with -μH*
[ˌtàːk ˌχʷàː.ˈhʷúː]
daak= wu-x- i- ¹√hu -μH
seaward=PFV-1SG·S-STV-¹√wade-VAR
'I waded out.'

b. Daak xahwéix. *repetitive imperfective with -eH and [hʷ]*
[ˌtàːk χà.ˈhʷéːχ]
daak= wu-x- ¹√hu -eH-x
seaward=PFV-1SG·S-¹√wade-VAR-REP
'I repeatedly wade out.'

c. Daak xahéix. *repetitive imperfective with -eH and [h]*
[ˌtàːk χà.ˈhéːχ]
daak= wu-x- ¹√hu -eH-x
seaward=PFV-1SG·S-¹√wade-VAR-REP
'I repeatedly wade out.'

There is one exceptional root √*gu* /qʷu/ 'wipe' which has irregular labialization behaviour under ablaut. The combination of √*gu* + *-eH* + *-k* results in a stem *–géikw* [qéːkʷ] instead of expected *–*gwéik* [qʷéːk] or *–*gwéikw* [qʷéːkʷ]. But with *-eH* + *-n* (see below) it is the expected *–gwéin* [qʷéːn] and not *–*géin* [qéːn].

Ablaut of √*Ca*(ʰ) roots is nearly always triggered by an Adv suffix (ch. 2 sec. 2.3). Most of these Adv suffixes are the repetitive suffixes *-x* /χ/, *-k* /k/, *-ch* /tʃ/, *-t* /t/, *-t'* /t'/, *-x'* /x'/, *-s'* /s'/, *-l'* /ɬ'/. In addition the sonorant *-n* /n/ triggers ablaut, but the sonorant *-ÿ* /j ~ w/ < /uɥ/ does not. Ablaut very rarely occurs on its own without a suffixal trigger, but it is attested in a very few irregular cases that are all apparently lexically specified imperfectives. The root ¹√*tlaʰ* 'stout' shows this in (32). The comparative state imperfective in (32a) predictably has *-μH* like all comparative derivations (ch. 6 sec. 4.3.1), verifying that this root has the vowel /a/. The lexical state imperfective in (32b) surprisingly occurs with the stem vowel [èː], implying that this form must have the ablaut stem variation suffix *-e* since the root vowel is /a/.

(32) a. Yéi kootláa *comparative state imperfective with -μH*
[ˌjéː ˌkʰʷùː.ˈtɬʰáː]
yéi= k- u- i- ¹√tlaʰ -μH
thus=CMPV-IRR-STV-¹√stout-VAR
'It is comparatively stout, big around.'

b. Yatlei. *lexical state imperfective with -e*
[jà.ˈtɬʰèː]
i- ¹√tlaʰ -e
STV-¹√stout-VAR
'It is stout, big around.'

There are two roots of the shape √*Ca* that irregularly do not undergo ablaut, namely √*na* 'die' and √*ya* 'pack, carry on back' (Leer 1991: 165). These roots also exhibit occult labialization (see apx.

A sec. 6.1) so they are more accurately represented as *√naʷ* and *√yaʷ* respectively. The progressive forms in (33b) and (34b) are unexpectedly grammatical with *-μH* stem variation and the *-eH* stem variation that is otherwise predicted in this context is ungrammatical in (33c) and (34c).

(33) a. Woonaa. *n-conj. perfective with -μ*
[ˌwùː.ˈnàː]
wu-i- ^{1}√naʷ-μ
PFV-STV-^{1}√die -VAR
'S/he/it died.'

b. Yaa nanáan. *progressive with -μH*
[ˌjàː nà.ˈnáːn]
ÿaa= n- ^{1}√naʷ-μH-n
along=NCNJ-^{1}√die -VAR-NSFX
'S/he/it is dying.'

c. *Yaa nanéin. **progressive with -eH*
[ˌjàː nà.ˈnéːn]
ÿaa= n- ^{1}√naʷ-eH-n
along=NCNJ-^{1}√die -VAR-NSFX
intended: 'S/he/it is dying.'

(34) a. X̱waayaa. *g-conj. perfective with -μ*
[ˌχʷàː.ˈjàː]
wu-x̱- i- ^{2}√yaʷ -μ
PFV-1SG·S-STV-^{2}√pack-VAR
'I packed it (on back).'

b. Yaa nx̱ayáan. *progressive with -μH*
[ˌjàː n.χà.ˈjáːn]
ÿaa= n- x̱- ^{1}√yaʷ -μH
along=NCNJ-1SG·S-^{2}√pack-VAR
'I am packing it (on back).'

c. *Yaa nx̱ayéin. **progressive with -eH*
[ˌjàː n.χà.ˈjéːn]
ÿaa= n- x̱- ^{1}√yaʷ -eH
along=NCNJ-1SG·S-^{2}√pack-VAR
intended: 'I am packing it (on back).'

Leer (1991: 165 fn. 4) suggests that the irregularity of *√naʷ* 'die' and *√yaʷ* 'pack' in failing to ablaut is due to the historical presence of a final **w* which has been lost. This hypothesis is supported by the occult labialization that occurs with these roots. This is shown for example by the relative clause suffix *-i* that unexpectedly surfaces as *wu* [wù] in (35a) for ^{1}√*naʷ* 'die', where the otherwise expected surface form *yi* [jì] is ungrammatical in (35b). Similarly, the root ^{2}√*yaʷ* 'pack' combines with the plural repetitive suffix *-x'* that surfaces unexpectedly as *x'w* [xʼʷ] in (36a) and the ortherwise expected *x'* [xʼ] is ungrammatical in (36b).

(35) a. Woonaawu kx̱áa. *relative clause with ...wu*
[ˌwùː.ˈnàː.wù] qʰáː
wu-i- ^{1}√na^w-μ -i kx̱áa
PFV-STV-^{1}√die -VAR-REL man
'A man that died.'

b. *Woonaayi kx̱áa. **relative clause with ...yi*
[ˌwùː.ˈnàː.jì] qʰáː
wu-i- ^{1}√na^w-μ -i kx̱áa
PFV-STV-^{1}√die -VAR-REL man
intended: 'A man that died.'

(36) a. Ayáax'w. *pluractional with x'w*
[ʔà.já:x'^{w}]
a- ^{2}√ya -μH-x'
ARG-^{2}√pack-VAR-PL
'S/he repeatedly packs them (on back).' (Leer 1976a: 169)

b. *Ayáax'. **pluractional with x'*
[ʔà.já:x']
a- ^{2}√ya -μH-x'
ARG-^{2}√pack-VAR-PL
intended: 'S/he repeatedly packs them (on back).'

But Leer also notes a couple of other roots √*x̱a^w* 'paddle' and √*sha^w* 'marry' that feature similar occult labialization but which actually do undergo ablaut: *–x̱éin* [χéːn], *–shéin* [ʃéːn]. Thus occult labialization is not itself the reason for failure of ablaut. At present I have no better solution for this blocking of ablaut other than to posit a lexically specified stem variation prohibition such as a rule *-eH* → *-μH* / √*na^w*_ or an ad hoc constraint like *√*na^w-eH*.

In this section I have only addressed the *-eH* ablauting stem variation which is realized as a long [éː] vowel with high tone. The *-e* ablauting stem variation without high tone is similarly realized as a long [èː] vowel with low tone with open syllable roots containing /a/ or /u/. This distinct stem variation is associated specifically with the 'fading' √*CV^h* roots which I detail in the following subsection.

2.4. 'Fading' √*CV^h* roots occur with both *-μH/-eH* and *-μ/-e*

The open syllable roots √*CV* have a lexically specified counterpart class known as 'fading' roots and represented as √*CV^h*. As with the contrast between plain √*CVC* and glottalized √*CV'C* roots, the contrast between plain √*CV* and fading √*CV^h* roots is realized in Northern Tlingit by tonal differences in stems that have no clear explanation from surface phonology.

Specifically √*CV* roots appear with high tone (and possibly ablaut) when followed by an obstruent suffix such as one of the repetitive suffixes in the set {*-k*, *-ch*, *-x̱*, *-t*, *-s'*, *-l'*, *-x'*, *-t'*}. The √*CV^h* roots in this same context have low tone rather than high tone. This is illustrated in (37) and (38) with the two otherwise homophonous roots ^{1}√*ta* 'boil (food)' and ^{1}√*ta^h* 'sg. sleep' respectively. The forms in (37a) and (38a) show that both of these roots can occur in stems with high tone. The plain √*CV* root has high tone with the suffix *-x̱* in (37b), but the fading √*CV^h* root instead has low tone with *-x̱* in (38c).

(37) a. Kukasatáa. *prospective with -μH*
[kʰʷù.ˌqʰà.sà.ˈtʰá:]
w- g- g- x- s- ^{1}√ta -μH
IRR-GCNJ-MOD1SG·S-CSV-^{1}√boil-VAR
'I will boil it.'

b. Xasatéix. *repetitive imperfective with -eH*
[ˌχà.sà.ˈtʰé:χ]
x- s- ^{1}√ta -eH-x
1SG·S-CSV-^{1}√boil-VAR-REP
'I am repeatedly boiling it.'

c. *Xasateix. **repetitive imperfective with -e*
[ˌχà.sà.ˈtʰè:χ]
x- s- ^{1}√ta -e -x
1SG·S-CSV-^{1}√boil-VAR-REP
intended: 'I am repeatedly boiling it.'

(38) a. Kukatáa. *prospective with -μH*
[ˌkʰʷù.qʰà.ˈtʰá:]
w- g- g- x- ^{1}√taʰ -μH
IRR-GCNJ-MOD1SG·S-^{1}√sleep·SG-VAR
'I will sleep.'

b. *Xatéix. **repetitive imperfective with -eH*
[ˌχà.ˈtʰé:χ]
x- ^{1}√taʰ -eH-x
1SG·S-^{1}√sleep·SG-VAR-REP
intended: 'I am repeatedly sleeping.'

c. Xateix. *repetitive imperfective with -e*
[ˌχà.ˈtʰè:χ]
x- ^{1}√taʰ -e -x
1SG·S-^{1}√sleep·SG-VAR-REP
'I am repeatedly sleeping.'

It could be supposed that (38b) is ungrammatical because of a prohibition against high tone. But this cannot be the case since the long high tone *-μH* stem is grammatical in (38a). Perhaps instead there could be a prohibition against *-eH*. But this also cannot be the case since the √*CV^h* root is grammatical in (39) with *-eH* in the progressive just like the √*CV* root in (40). The √*CV^h* roots must therefore be modelled with a specific prohibition on the combination of *-eH* and an obstruent (not sonorant) suffix.

(39) a. Yaa nxatéin. *progresive with -eH*
[ˌjà: n.χà.ˈtʰé:n]
ÿaa= n- x- ^{1}√taʰ -eH-n
along=NCNJ-1SG·S-^{1}√sleep·SG-VAR-NSFX
'I am sleeping.', 'I am falling asleep.'

b. *Yaa nx̱atein. **progresive with -e*
[ˌjàː n.χà.ˈtʰèːn]
ÿaa= n- x̱- ^{1}√ta^h -e -n
along=NCNJ-1SG·S-^{1}√sleep·SG-VAR-NSFX
intended: 'I am sleeping.', 'I am falling asleep.'

(40) a. Yaa nax̱satéin. *progresive with -eH*
[ˌjàː ˌnàχ.sà.ˈtʰéːn]
ÿaa= n- x̱- s- ^{1}√ta -eH-n
along=NCNJ-1SG·S-CSV-^{1}√boil-VAR-NSFX
'I am boiling it.'

b. *Yaa nax̱satein. **progresive with -e*
[ˌjàː ˌnàχ.sà.ˈtʰèːn]
ÿaa= n- x̱- s- ^{1}√ta -e -n
along=NCNJ-1SG·S-CSV-^{1}√boil-VAR-NSFX
intended: 'I am boiling it.'

As with the glottalized √*CV'C* roots, the representation of the fading √*CV^h* roots derives from their phonology in Tongass Tlingit. In this case, the unexpected phonological form is a fading vowel [V^h] instead of a modal long vowel [Vː], with or without ablaut. The same roots ^{1}√*ta* 'boil food' and ^{1}√*ta^h* 'sg. sleep' with the suffix -*x̱* have the stems –*teix̱* [tʰeːχ] and –*teix̱* [tʰeʰχ]; with the -*n* suffix both stems are –*tein* [tʰeːn]. Fading √*CV^h* roots cannot be analyzed as having a lexically specified fading vowel /Vʰ/ without resorting to deletion of the laryngeal feature to give the long vowel in –*tein* [tʰeːn]. It is still unclear to me how these √*CV^h* roots should be phonologically represented in the Tongass Tlingit lexicon.

The problem of representing Northern Tlingit 'fading' roots √*CV^h* is similar to that of Tongass Tlingit. Northern Tlingit otherwise seems to have a contrast between unmarked lack of tone and privative H tone, with lack of tone realized as low pitch versus the high pitch of H tone (cf. Leer 2001). This is the reasoning behind the representation of the long low tone stem variation as -*μ*, for example. At first glance the √*CV^h* roots apparently require a unique L tone to be lexically specified. The reverse approach is to make the √*CV* roots with consistently high tone as lexically specified for H. This appears to be a simpler solution, but again I have not worked out the details and so I leave the problem for future research. In any case, there must be some lexical property that distinguishes √*CV* from √*CV^h* roots in much the same way as the distinction between √*CVC* and √*CV'C* roots discussed in section 2.2. The two phenomena might be unifiable in Northern Tlingit although this is probably impossible for Tongass Tlingit. I have never examined how either class of roots works in Southern Tlingit.

There is one √*CV^h* root which irregularly has low tone (Tongass fading) in the progressive stem with *n* as well as the stem with obstruent suffixes. This root is √*ÿa^h* 'resemble', where we would expect the progressive to have the stem *–*ÿéin* [ɥéːn] ~ *–*yéin* [jéːn] in Northern Tlingit and *–*ÿein* [ɥeːn] in Tongass Tlingit but it is actually –*ÿein* [ɥèːn] ~ –*yein* [jèːn] in Northern Tlingit and –*ÿeìn* [ɥeʰn] in Tongass Tlingit (Leer 1991: 168 fn. 6). The stems inflected from this root are otherwise regular. The reason for this irregularity is unknown and Leer does not offer any diachronic or synchronic

explanations. A trivial synchronic solution for this irregularity is to lexically specify √*ÿaʰ* with a special selection of *-e* rather than *-eH*, but there may be cleaner solutions using other abstract lexical properties.

There are a small number of roots that form minimal pairs of √*CV* and √*CVʰ*. Because of homophony, there are also minimal triplets and quadruplets. Some typical minimal pairs are: $\sqrt[1]{ne}$ 'work; knit, play with hands; direct' and $\sqrt[1]{ne^h}$ 'occur, happen; do, handle plural', $\sqrt[2]{ti}$ 'handle' and $\sqrt[1]{ti^h}$ 'be, exist', $\sqrt[1]{shu}$ 'end, extend, hang' and $\sqrt[1]{shu^h}$ 'intoxicate', $\sqrt[2]{ku}$ spit liquid; hold liquid in mouth' and $\sqrt[2]{ku^h}$ 'know', $\sqrt[1]{tla}$ 'sediment settle' and $\sqrt[1]{tla^h}$ 'stout, big around', and $\sqrt[2]{sha}$ 'marry' and $\sqrt[2]{sha^h}$ 'bark'. These show that in some cases valency can distinguish the two, but that there is no regular association between the lexical phonology of √*CV* versus √*CVʰ* and the lexical syntax of valency.

Minimal triplets are of course unbalanced between the two phonological categories: $\sqrt[2]{shi}$ 'hope' versus $\sqrt[2]{shi^h}$ 'sing' and $\sqrt[2]{shi^h}$ 'reach, touch; search; help', $\sqrt[1]{ge}$ 'stingy' and $\sqrt[1]{ge}$ 'intelligent, wise' versus $\sqrt[1]{ge^h}$ 'big', $\sqrt[2]{ÿa}$ 'lower, hang; spread out' versus $\sqrt[1]{ÿa^h}$ 'move uncertainly' and $\sqrt[2]{ÿa^h}$ 'resemble', and $\sqrt[2]{na}$ 'inherit' and $\sqrt[2]{na}$ 'carry bundle' versus $\sqrt[2]{na^h}$ 'dampen; drink'. As far as I am aware there is no regular bias toward one or the other category, so that for one set of roots the pattern may be 2× √*CV* to 1× √*CVʰ* and for some other set of roots the pattern may be 1× √*CV* to 2× √*CVʰ* with no phonological, syntactic, or semantic correlates among these patterns.

The largest complex of homophonous roots are probably the /ha/ roots. These are spead across √*CV* and √*CVʰ* forms. There are four √*CV* /ha/ roots: $\sqrt[1]{ha}$ 'move invisibly', $\sqrt[2]{ha}$ 'move mass, dig, gather', $\sqrt[1]{ha}$ 'become located', and $\sqrt[1]{ha}$ 'unobvious'. There are also three √*CVʰ* /ha/ roots: $\sqrt[1]{ha^h}$ 'many', $\sqrt[2]{ha^h}$ 'willing', and $\sqrt[2]{ha^h}$ 'wrestle'. Some of theese might be unified with further lexical investigation, but the /ha/ roots are still the greatest locus of root homophony across √*CV* and √*CVʰ* subclasses, and are probably the greatest locus of root homophony anywhere in the lexicon.

2.5. Sonorant -Ÿ instead of ablaut with √CV⁽ʰ⁾ roots

Ablaut of /a, u/ → [e] is expected for any √*Caʰ* or √*Cuʰ* root when followed by an obstruent suffix (secs. 2.3 & 2.4). There is one case where ablaut regularly does not occur, specifically with *∅*-conjugation habituals that occur with the *-ch* suffix (ch. 6 sec. 2.2.1.2). Instead of the expected ablaut *-e* or *-eH* the non-ablaut *-μ* or *-μH* occurs followed by the 'gamma' sonorant *ÿ* /j ~ w/ < /uɣ/ between the stem and the *-ch* suffix. The sonorant can be analyzed as blocking the ablaut triggered by the obstruent suffix, but there is no clear explanation for why the sonorant should be inserted.

To illustrate this effect, consider the two roots √*x̲a* /χa/ 'eat' in (41) and √*xu* /xʷu/ 'steam' (42). Both of these roots are lexically specified members of the *∅*-conjugation class so they have a repetitive imperfective form with the *-x̲* suffix that regularly triggers ablaut as shown in (41a) and (42a). Their habitual forms in (41b) and (42b) feature the *ÿ* analyzed as a suffix *-ÿ* that intercedes between the *-μH* stem and the *-ch* suffix. The root vowel does not undergo apophony regardless of the absence (41c)/(42c) or presence (41d)/(42d) of the *-ÿ* suffix.

(41) a. X̲ax̲éix̲. *repetitive imperfective with -eH*
[χà.ˈχéːχ]
x̲- $\sqrt[2]{x̲a}$-eH-x̲
1SG·S-$\sqrt[2]{\text{eat}}$-VAR-REP
'I repeatedly eat it.'

b. Xwaxáaych. *Ø-conj. habitual with -μH-ÿ*
[χʷà.ˈχá:jtʃ]
u- x- ²√xa-μH-ÿ -ch
ZPFV-1SG·S-²√eat-VAR-ŸSFX-REP
'I have regularly eaten it.'

c. *Xwaxéich. **Ø-conj. habitual with -eH*
[χʷà.ˈχé:tʃ]
u- x- ²√xa-eH-ch
ZPFV-1SG·S-²√eat-VAR-REP
intended: 'I have regularly eaten it.'

d. *Xwaxéiych. **Ø-conj. habitual with -eH-ÿ*
[χʷà.ˈχé:jtʃ]
u- x- ²√xa-eH-ÿ -ch
ZPFV-1SG·S-²√eat-VAR-ŸSFX-REP
intended: 'I have regularly eaten it.'

(42) a. Xasaxwéix. *repetitive imperfective with -eH*
[ˌχà.sà.ˈxʷé:χ]
x- s- ²√xu -eH-x
1SG·S-CSV-¹√steam-VAR-REP
'I repeatedly steam it.'

b. Xwasaxóowch. *Ø-conj. habitual with -μH-ÿ*
[ˌχʷà.sà.ˈxʷú:wtʃ]
u- x- s- ²√xu -μH-ÿ -ch
ZPFV-1SG·S-CSV-¹√steam-VAR-ŸSFX-REP
'I have regularly steamed it.'

c. *Xwasaxwéich. **Ø-conj. habitual with -eH*
[ˌχʷà.sà.ˈxʷé:tʃ]
u- x- s- ²√xu -eH-ch
ZPFV-1SG·S-CSV-¹√steam-VAR-REP
intended: 'I have regularly steamed it.'

d. *Xwasaxwéiych. **Ø-conj. habitual with -eH-ÿ*
[χʷà.sà.ˈxʷé:jtʃ]
u- x- s- ²√xu -μH-ÿ -ch
ZPFV-1SG·S-CSV-¹√steam-VAR-ŸSFX-REP
'I have regularly steamed it.'

Leer (1991) explains the sonorant diachronically as a retention of *ÿ* which has otherwise been lost in stems like the *Ø*-conjugation perfective *–CV́V́*. He unites these stems together with the *Ø*-conjugation habituals with his *-ÿ* stem variation class. Thus the perfectives *xwaaxáa* [ˌχʷà:.ˈχá:] 'I ate it' and *xwasixóo* [ˌχʷà.sì.ˈxʷú:] 'I steamed it' would have been Pre-Tlingit **χʷaʰχa:ÿ* and **χʷasixu:w* which would closely parallel the reconstructed habituals **χʷaχa:ÿch* and **χʷasaxu:wch*. Given that

ÿ reconstructs to **ŋ*, further forms would be perfective **χʷaʰχaːŋ* and **χʷasixuːŋ* versus habitual **χʷaχaːŋch* and **χʷasaxuːŋch*. The **-ŋ* suffix would then probably be cognate with the final **-n* in Proto-Dene that is often found as nasalization in some perfectives and stative imperfectives ('neuters'). See section 2.8 for further discussion.

The diachronic explanation with a now-lost coda sonorant *ÿ* instead of ablaut is intriguing and worth further investigation, but it does not contribute to a synchronic analysis because speakers cannot possibly know about a segment that never occurs. Presumably the *-μH* stem variation of both perfectives and habituals is morphologically identical, but this provides no affordances for explaining the inserted sonorant of habituals. As far as I have been able to work out, the only sane synchronic solution is analyzing the inserted sonorant as a meaningless suffix *-ÿ* which is specified by the conjugation class. This is strikingly similar to the apparently meaningless *-n* of progressives (cf. ch. 2 sec. 2.3), so perhaps examining the two together could lead to a more explanatory analysis.

2.6. Truncation deletes a final segment

Truncation is a lexically rare stem variation phenomenon where the final segment of a stem is deleted. I represent this by the suffix -⊗ for congruence with the other stem variation classes even though deletion is not usually analyzed as a kind of affixation. Truncation occurs exclusively in imperatives with the three roots √*gut* /kʷut/ 'sg. go', √*.at* /ʔat/ 'pl. go', and √*nuk* /nukʷ/ 'sg. sit'.[6] Since only these three roots are involved, only √*CVC* roots are affected and the √*CVC'* and √*CV'C* classes are uninvolved. The realization of truncation is a *–CV́* stem with a short vowel and high tone. The high tone arises presumably because of the regular prohibition on short vowels with low tone in positions of primary word stress such as the verb stem (sec. 2.7).

Compare the data in (43) and (44) with the data in (45) and (46). The forms in (43) and (44) illustrate the regular case of a root $\overset{1}{\sqrt{}}$*kux* 'go by boat, other vehicle'. As a baseline, the *∅*-conjugation perfective forms in (43) show that the root has a coda /χ/. The *∅*-conjugation imperative forms in (44) show that this coda /χ/ is preserved in the imperative.

(43) a. Át eeyakúx. *∅-conj. perfective with CV́C*
[ʔát ˌʔìːjàˈqʰʷúχ]
á -t u- i- i- $\overset{1}{\sqrt{}}$kux -H
3N-PNCT ZPFV-2SG·S-STV-$\overset{1}{\sqrt{}}$go·boat-VAR
'You boated/drove there.'

b. * Át eeyakú. **∅-conj. perfective with CV́*
[ʔát ˌʔìːjàˈqʰʷú]
á -t u- i- i- $\overset{1}{\sqrt{}}$kux -⊗
3N-PNCT ZPFV-2SG·S-STV-$\overset{1}{\sqrt{}}$go·boat-VAR
intended: 'You boated/drove there.'

(44) a. Át kúx! *∅-conj. imperative with CV́C*
[ʔát qʰʷúχ]
á -t $\overset{1}{\sqrt{}}$kux -H
3N-PNCT ZCNJ 2SG·S $\overset{1}{\sqrt{}}$go·boat-VAR
'Boat/drive there!'

6. The semantically expected √*ki* /qʰi/ 'pl. sit' has no coda and so cannot participate in truncation.

b. *Át kú! **Ø-conj. imperative with CV́*
[ʔát qʰʷú]
á -t ¹√kux -⊗
3N-PNCT ZCNJ 2SG·S ¹√go·boat-VAR
intended: 'Boat/drive there!'

The data in (45) and (46) illustrate truncation with the root ¹√*gut* 'sg. go'. The *Ø*-conjugation perfective forms in (45) show that the root has a coda /t/ and that the stem can be short and high as *–gút*. The *Ø*-conjugation imperative forms in (46) show that the coda /t/ must be absent unlike the regular forms in (44).

(45) a. Át eeyagút. *Ø-conj. perfective with CV́C*
[ʔát ˌʔìː.jà.ˈkʷút]
á -t u- i- i- ¹√gut -H
3N-PNCT ZPFV-2SG·S-STV-¹√go·SG-VAR
'You went there.'

b. *Át eeyagú. **Ø-conj. perfective with CV́*
[ʔát ˌʔìː.jà.ˈkʷú]
á -t u- i- i- ¹√gut -⊗
3N-PNCT ZPFV-2SG·S-STV-¹√go·SG-VAR
intended: 'You went there.'

(46) a. *Át gút! **Ø-conj. imperative with CV́C*
[ʔát kʷút]
á -t ¹√gut -H
3N-PNCT ZCNJ 2SG·S ¹√go·SG-VAR
intended: 'Go there!'

b. Át gú! *Ø-conj. imperative with CV́*
[ʔát kʷú]
á -t ¹√gut -⊗
3N-PNCT ZCNJ 2SG·S ¹√go·SG-VAR
'Go there!'

The truncation phenomenon is not related to conjugation class. This is shown by the *n*-conjugation forms in (47) and (48) for the same root ¹√*gut* 'sg. go'. Although the *n*-conjugation perfective takes *-μ* instead of *-H*, the *n*-conjugation imperative in (48) requires the same truncation as the *Ø*-conjugation imperative in (46).

(47) a. Aadé yeegoot. *n-conj. perfective with CV̀V̀C*
[ˈʔàː.té ˌjìː.ˈkʷùːt]
á -dé wu-i- i- ¹√gut -μ
3N-ALL PFV-2SG·S-STV-¹√go·SG-VAR
'You went there.'

b. *Aadé yeegoo. **n-conj. perfective with CV̀V̀*
['ʔàː.té ˌjìː.ˈkʷùː]
á -dé wu-i- i- ¹√gut -⊗
3N-ALL PFV-2SG·S-STV-¹√go·SG-VAR
intended: 'You went there.'

(48) a. *Aadé nagút! **n-conj. imperative with CV́C*
['ʔàː.té nà.ˈkʷút]
á -dé n- ¹√gut -H
3N-ALL NCNJ-2SG·S ¹√go·SG-VAR
intended: 'Go there!'

b. Aadé nagú! *∅-conj. imperative with CV́*
['ʔàː.té nà.ˈkʷú]
á -dé n- ¹√gut -⊗
3N-ALL NCNJ-2SG·S ¹√go·SG-VAR
'Go there!'

The data in (49) and (50) give similar pairs of imperatives that show truncation for the other two roots ¹√*.at* 'pl. go' and ¹√*nuk* 'sg. sit'.

(49) a. *Aadé nay.át! **n-conj. imperative with CV́C*
['ʔàː.té nàj.ˈʔát]
á -dé n- ÿi- ¹√.at -H
3N-ALL NCNJ-2PL·S ¹√go·PL-VAR
intended: 'Go there!'

b. Aadé nay.á! *∅-conj. imperative with CV́*
['ʔàː.té nàj.ˈʔá]
á -dé n- ÿ- ¹√.at -⊗
3N-ALL NCNJ-2PL·S ¹√go·PL-VAR
'Go there!'

(50) a. *Ǥanúk! **ǥ-conj. imperative with CV́C*
[qà.ˈnúk]
ǥ- ¹√nuk -H
ǤCNJ-2SG·S ¹√sit·SG-VAR
intended: 'Sit down!'

b. Ǥanúk! *ǥ-conj. imperative with CV́*
[qà.ˈnú]
ǥ- ¹√nuk -⊗
ǤCNJ-2SG·S ¹√sit·SG-VAR
'Sit down!'

Truncation is uniform across all dialects according to the extant documentation, occurring with only the three roots √*gut* /kʷut/ 'sg. go', √*.at* /ʔat/ 'pl. go', and √*nuk* /nukʷ/ 'sg. sit'. These three roots

are basic vocabulary and their imperative forms are highly frequent in child-directed speech as well as speech directed to L2 language learners. This high frequency presumably supports their irregularity, preventing their levelling with a restored coda consonant. I suspect that the truncation developed by debuccalization of the coda consonant such as *–*gút* [kʷút] > *–*gúʔ* [kʷúʔ] > –*gú* [kʷú] which has been subsequently lexicalized.

Truncation could be analyzed as suppletion where a form like –*gút* is replaced by –*gú*. But this approach misses the obvious point that the 'suppletive' stem with the missing consonant can be synchronically derived from the root by a phonological operation even though this operation is irregular. There are other phonological deletion processes in Tlingit such as the deletion of *d-* in Voice (ch. 5 sec. 2.1), so this process is not implausible. Deletion of coda segments is rare, but the allomorphy of locative *-x'* versus *-ʔ* in Tongass Tlingit is a candidate for a similar process; compare for example *a ka-x'* → *a kax'* [ʔa kʰax'] ~ *a kaá* [ʔa kʰaʔ] 'on top of it'. So despite the relative rarity of phonological deletion in Tlingit, it is present elsewhere in the language and I believe is a better model for truncation than stem suppletion.

2.7. Absence of null stem variation

I exclude the possibility of 'null' stem variation, so that there is no stem variation suffix *-Ø*. Stem variation is always present because it is the realization of the V head and roots never occur bare in Tlingit. Stem variation always has phonological exponence because roots are never specified for tone and length, and a vowel without these suprasegmental properties is unpronounceable in the language. Earlier analyses have posited a class of so-called 'invariable roots' that are specified for tone and length and lack stem variation. These are meant to account for stem paradigms where there is no inflectional variation of the stem vowel. I analyze these 'invariable roots' as lexicalized stems, i.e. (√, V) pairs stored in the lexicon (sec. 3). The 'invariable roots' per se do not exist, and instead there is a contrast between variable stems and lexicalized invariable stems. A consequence of this analysis is that there is no *-Ø* stem variation for the invariable stems because there is always some phonological content in V regardless of its lexical or inflectional status. See section 3 for further details on lexicalized stems.

Apart from the 'invariable' roots, Leer (1991) suggests an absence of stem variation for some stems built from 'variable' roots. He specifically says "the ÿ-stem of open roots loses its stigma[7] before the attributive suffix *-i*" (Leer 1991: 169). This means that when open syllable roots with *-μH* stem variation occur with the relative clause suffix *-i* they will instead occur with a short vowel and low tone. Compare the main clause form in (51a) with the relative clause form in (51b). Although he does not explicitly indicate stem variation in this context, I represent Leer's "deleted stigma" here as *-Ø* in (51b) following my argument that V must exist.

(51) a. Wé x'úx' kei aawatée. *main clause Ø-conj. perfective*
[wé x'ʷúx'ʷ ˌkʰèː ˌʔàː.wà.ˈtʰíː]
wé x'úx' kei= a- wu-i- ^{2}√ti -μH
MDST book up= ARG-PFV-STV-^{2}√handle-VAR
'S/he picked up the book.'

7. Stem variation is roughly equivalent to Leer's "stigma". See section 2.8 and Leer 1991: 12–18, 160–164.

b. Wé kei aawatiyi x'úx'. *relative clause Ø-conj. perfective*
[wé ˌkʰèː ˌʔàː.wà.ˈtʰì.jì x'ʷúx'ʷ]
wé kei= a- wu-i- $\sqrt[2]{\text{ti}}$ Ø -i x'úx'
MDST up= ARG-PFV-STV-$\sqrt[2]{\text{handle}}$-VAR-REL book
'The book that s/he picked up.'

c. Wé kei aawatéeyi x'úx'. *relative clause Ø-conj. perfective*
[wé ˌkʰèː ˌʔàː.wà.ˈtʰíː.jì x'ʷúx'ʷ]
wé kei= a- wu-i- $\sqrt[2]{\text{ti}}$ -μH-i x'úx'
MDST up= ARG-PFV-STV-$\sqrt[2]{\text{handle}}$-VAR-REL book
'The book that s/he picked up.'

I have found that the apparent loss of stem variation like in (51b) is not mandatory, and that speakers can alternatively use forms like (51c) where the stem variation is preserved in exactly the same context.[8] This optionality suggests that although there is a real phonological phenomenon involved in the contrast between (51a) and (51b), it is not due to morphosyntax. I propose instead that the difference between (51b) and (51c) is a consequence of phonological phrasing. The verb word and the clause-external head noun can be parsed together as a single phonological phrase in which case the verb stem is 'reduced' as in (51b). Alternatively, the verb word can be parsed into its own phonological phrase apart from the head noun, in which case the verb stem is pronounced similarly to a main clause. If this analysis is correct then the alternation is not syntactic and there is no *-Ø* stem variation: the same *-μH* stem may be realized normally or 'reduced'.

First consider the metrical grid in (52) which represents the main clause perfective form analyzed above in (51a). The syllables are initially grouped into feet; the stem has obligatory stress, as does the preverb *kei=* 'up'. The unstressed [wà] syllable is grouped with the preceding [ʔàː] syllable but it could alternatively be grouped with the stem. The feet are then grouped into two words, one for the lone proclitic and the other for the verb word, and the stem hosts the primary word stress. This assignment of primary word stress to the verb stem is paralleled in nouns where the head noun and hence rightmost noun in a single-word compound is assigned the primary word stress. Vowels of suffixes in both verbs and nouns cannot host primary word stress, so this is not simply a right edge assignment. Finally the phonological phrase groups the proclitic word together with the verb word, and the phrasal accent is assigned to the rightmost stress-bearing word which is the verb stem.

(52) *main clause Ø-conj. perfective*

```
( ·       · ·       * )   phrase
( * ) ( · ·       * )   word
( * ) ( * · ) ( * )   foot
  kʰèː   ʔàː wà   tʰíː   syllable
```

The grids in (53) and (54) reflect the two relative clauses in (51b) and (51c) respectively. The 'reduced vowel' case in (53) shows a single phonological phrase which has one cumulative stress on

8. When asked about the difference between the two patterns, *K̲eixwnéi* Nora Dauenhauer said that forms like (51b) represent a 'fast' or 'conversational' pronunciation whereas forms like (51c) represent a 'careful' pronunciation. In elicitation the careful pronunciation is often used to ensure accurate recording and transcription. I believe it is also used in child-directed speech, language teaching, clarifications or corrections, and in other contexts where precise communication is required.

the clause-external head noun. The 'full vowel' case in (54) shows two phonological phrases, one for the verb and one for the noun, with cumulative stress on the verb stem just as in a main clause.

(53)
```
( ·       · ·       · ·       *    )   phrase
( *   ) ( ·   ·     *   · ) (    *    )   word
( *   ) ( *   · ) ( *   · ) (    *    )   foot
  kʰèː    ʔàː wà    tʰì jì    x'ʷúx'ʷ     syllable
```
one-phrase relative clause

(54)
```
( ·       · ·       *   · ) (    *    )   phrase
( *   ) ( ·   ·     *   · ) (    *    )   word
( *   ) ( *   · ) ( *   · ) (    *    )   foot
  kʰèː    ʔàː wà    tʰíː jì   x'ʷúx'ʷ     syllable
```
two-phrase relative clause

Even though I have yet to do an acoustic analysis, I expect that these 'reduced' vowels should show a significant increase of pitch when compared to the preceding and following low tone vowels, and that this compressed high pitch should also be lower than the high pitch of the stressed high tone in the head noun that follows the verb stem. This follows more generally from my claim that pitch is not only a realization of tone in Tlingit, but also a realization of stress or accent, and that pitch excursions specified by lexical and morphological tone can be either compressed or expanded for phrasal phonology and intonation.

There is a similar phenomenon with closed syllable roots where an expected short vowel high tone stem as *–CV́C* is transcribed with a low tone *–CV̀C*. Leer (1991) does not seem to give an explicit rule for this, but it is universally present in his transcriptions. Once again native speaker transcriptions vary in the same context, and I likewise argue that this represents a 'careful' versus 'relaxed' speech style distinguished by a two-phrase versus one-phrase phonological parse of the NP.

One further piece of evidence supporting the lack of a null stem is that ablauted stems show the same 'reduction' from a long vowel with high tone to a short vowel with low tone. This is significant because ablaut requires stem variation for the root vowel to be modified. Leer notes one instance of this involving the root $\sqrt[2]{\underline{k}a}$ /qʰa/ 'stitch, sew' (Leer 1991: 171 fn. 8). This has a regular *∅*-conjugation perfective *aawaḵáa* [ˌʔàː.wà.ˈqʰáː] 's/he sewed it' with the *-μH* stem. It also occurs with the *-s'* repetitive suffix that triggers ablaut as in *aḵéis'* [ʔà.ˈqʰéːs'] 's/he is repeatedly stitching it'. Leer gives two alternatives for a relative clause form – (i) *akéis' át* [ʔà.ˈqʰéːs' ˈˈʔát] and (ii) *aḵes' át* [ʔà.ˈqʰès' ˈˈʔát] – both meaning 'thing that s/he is repeatedly stitching'. The first form is the 'full vowel' case with *-eH* stem variation as expected for a *√Ca* root with the *-s'* suffix. The second form is the 'reduced vowel' case as detailed above. If the stem variation in the second form were truly deleted we would expect **aḵas' át* [ʔà.ˈqʰàs' ˈˈʔát] with the root vowel /a/ and not the ablauted [e].

A signficant result of this alternative approach is that relative clause stems are identical with main clause stems. Leer (1991: 170) provides special rules to derive relative clause stems from main clause stems to deal with the differences in length and tone, but if I am correct then relativization is simply the addition of relative clause morphology with no morphophonological change to stem variation. The same is not true for subordinate clause stems which show consistent morphophonological differences from main clause stems (ch. 2 sec. 2.10). The lack of distinct stem variation for relative clauses also accords well with their aspectual similarity to main clauses in contrast with the more aspectually restricted subordinate clauses and nominalizations.

Figure B.3: Mapping of synchronic and diachronic stem variation systems to stem forms

2.8. Comparison with Leer 1991

I contrast my stem variation analysis with that of Leer (1991) particularly in that my analysis is based on purely synchronic phonology where Leer's is based on diachronic phonology. Figure B.3 is a mapping diagram from root and stem variation classes to surface stem forms in both systems. On the left side of figure B.3 my synchronic analysis shows the combination of root classes and stem variation suffixes, with lines indicating which elements in each column can cooccur. The lines from stem variation suffixes to stem forms indicate the output of combining root shape and stem variation, with individual lines labeled by their input root shapes.

To trace one example through the left side of the diagram in figure B.3, start with the √*CVC* root shape. There are four lines emanating from this root shape, showing that √*CVC* roots can be combined with -⊗, *-H*, *-μH*, and *-μ* stem variation suffixes. Following √*CVC* to *-μ*, there are then lines from *-μ* to *CV̀V̀*, and *CV̀V̀C*. One of these lines, the lowest one, is annotated with √*CVC*; this line indicates that a √*CVC* root with *-μ* stem variation will produce a *–CV̀V̀C* stem. Symbols for both root shapes and stem forms use a few abbreviations to reduce duplication. For example the symbol ⁽'⁾ indicates the presence or absence of glottalization or ejectivity so that the stem *–CV́C*⁽'⁾ represents stem forms like both *–CV́C* and *–CV́C'*. Overall there is some complexity in the mapping between root shapes and stem variation suffixes because this relationship is many-to-many, but in the second mapping between stem variation and stem form there is a simple one-to-many mapping; the only exception is a many-to-one mapping of truncation -⊗ and short high *-H* to the stem *–CV́*.

The right half of figure B.3 represents my understanding of Leer's diachronically oriented stem variation system. The same diagrammatic interpretations hold on the right as on the left side of the

figure. It is immediately apparent that this diachronic system is much more complex even though it is based on the same inventory of root phonological shapes and surface stem forms. The opacity of the diachronic system is also readily apparent since the mapping between stem variation and stem form is many-to-many rather than one-to-many. This complexity and opacity lead me to believe that the diachronic system is not a learnable grammar, and hence that it cannot possibly exist in any actual Tlingit dialect. Although I have not formalized the stem variation of Tongass Tlingit yet, I believe it is similar in complexity to the synchronic system of Northern Tlingit.

The major advantage of the diachronic system is a simplified mapping between grammatical aspect and stem variation selection. To take one inflectional context as a basis of comparison, the perfective aspect exhibits a remarkable amount of stem variation depending on the lexical properties of verbs and their roots. There are at least five variables involved: (i) root shape, (ii) conjugation class, (iii) negation, (iv) tense, and (v) clause type. If we look only at affirmative non-past main clause forms then selection of a stem still depends on root shape (i) and conjugation class (ii). The implications of root shape were discussed in detail previously so I do not repeat them here, only noting that the three closed syllable root shapes (√*CVC*, √*CVC'*, √*CV'C*) and two open syllable root shapes (√*CV*, √*CV^h*) must be addressed. The conjugation classes are the quaternary set represented by the prefixes *∅-*, *n-*, *g̲-*, and *g-*; of these only the contrast between *∅-* and non-*∅*-conjugation matters for the perfective aspect. In the synchronic system the possible choices of stem variation here are *-H*, *-μH*, and *-μ*. The root shape constrains away some of these, such as *-μ* not occurring with √*CVC'* roots. The conjugation class completes the selection for perfective aspect, with *∅*-conjugation selecting *-H* for closed syllable √*CV$^{(')}$C$^{(')}$* roots and *-μH* for open syllable √*CV$^{(h)}$* roots, and non-*∅*-conjugation selecting *-μ* except for *-μH* when *-μ* is banned. The paradigm is illustrated in (55) where the conjugation classes are listed horizontally and the root shapes vertically. Each conjugation class column covers a pair of the stem variation suffix and the corresponding stem form.

(55)

	∅-conj.		*n-conj.*		*g̲-conj.*		*g-conj.*	
	var.	*stem*	*var.*	*stem*	*var.*	*stem*	*var.*	*stem*
√CV	-μH	–CV́V́	-μ	–CV̀V̀	-μ	–CV̀V̀	-μ	–CV̀V̀
√CV^h	-μH	–CV́V́	-μ	–CV̀V̀	-μ	–CV̀V̀	-μ	–CV̀V̀
√CVC	-H	–CV́C	-μ	–CV̀V̀C	-μ	–CV̀V̀C	-μ	–CV̀V̀C
√CV'C	-H	–CV́C	-μH	–CV́V́C	-μH	–CV́V́C	-μH	–CV́V́C
√CVC'	-H	–CV́C'	-μH	–CV́V́C'	-μH	–CV́V́C'	-μH	–CV́V́C'

In contrast, the diachronic system specifies only two stem variation suffixes, *-ÿ* for *∅*-conjugation and -' for non-*∅*-conjugation. This is illustrated in (56) with the same organization as (55). The many-to-many realization of the stem variation suffixes ensures that the simple inflectional specification of *-ÿ* or -' can produce all of the relevant stem forms by following the appropriate phonological transformation rules, so that for example *-ÿ* becomes *–CV́V́* with an open syllable √*CV$^{(h)}$* root but *–CV́C$^{(')}$* with a closed syllable √*CV$^{(')}$C$^{(')}$* root. The diachronic system thus trades complexity in the calculation of phonological outputs for inflectional simplicity in selecting stem variation suffixes.

(56)

	Ø-conj.		*n-conj.*		*g̲-conj.*		*g-conj.*	
	var.	*stem*	*var.*	*stem*	*var.*	*stem*	*var.*	*stem*
√CV	-ÿ	–CV́V́	-‘	–CV̀V̀	-‘	–CV̀V̀	-‘	–CV̀V̀
√CVʰ	-ÿ	–CV́V́	-‘	–CV̀V̀	-‘	–CV̀V̀	-‘	–CV̀V̀
√CVC	-ÿ	–CV́C	-‘	–CV̀V̀C	-‘	–CV̀V̀C	-‘	–CV̀V̀C
√CV’C	-ÿ	–CV́C	-‘	–CV́V́C	-‘	–CV́V́C	-‘	–CV́V́C
√CVC’	-ÿ	–CV́C’	-‘	–CV́V́C’	-‘	–CV́V́C’	-‘	–CV́V́C’

It may be possible to capture some of the inflectional simplicity of the diachronic system by positing an additional layer of abstraction where surface morphemes like *-μ* and *-μH* are unified. I have yet to explire this possibility and I leave it for future research.

3. Invariable stems instead of invariable roots

The system of stem variation described in section 2 focuses on stems that are formed by regular inflectional processes. Such stems form paradigms based on a single root, such as the root $^{1}\sqrt{\textit{k̲ux̲}}$ /qʰʷuχʷ/ ‘go by boat, other vehicle’ that has regular stem forms *–k̲úx̲* [qʰʷúχʷ] with *-H*, *–k̲oox̲* [qʰʷùːχʷ] with *-μ*, and *–k̲óox̲* [qʰʷúːχʷ] with *-μH* or the root $\sqrt{\textit{shi}^{h}}$ /ʃi/ ‘sing’ that has regular stem forms *–shí* [ʃí] with *-H*, *–shee* [ʃìː] with *-μ*, and *–shée* [ʃíː] with *-μH*. But there are also a variety of verbs which have the same stem form in every context, such as the root $^{1}\sqrt{\textit{nikw}}$ /nikʷ/ ‘sick’ which only occurs as *–néekw* [níːkʷ] with *-μH*, or the root $^{2}\sqrt{\textit{t'i}^{h}}$ /t’i/ ~ $^{2}\sqrt{\textit{t'e}^{h}}$ /t’e/ ‘find’ which only occurs as *–t’ee* [t’ìː] or *–t’ei* [t’èː] with *-μ* (Leer 1991: 160; Eggleston 2013: 105). These patterns are shown in (57).

(57)

	Root	*IPA*	*Gloss*	*-H*	*-μ*	*-μH*	*variable vs. invariable stems*
a.	√k̲ux̲	/qʰʷuχʷ/	‘go by boat’	[qʰúχʷ]	[qʷʰùːχʷ]	[qʰʷúːχʷ]	
b.	√shiʰ	/ʃi/	‘sing’	[ʃí]	[ʃìː]	[ʃíː]	
c.	√nikw	/nikʷ/	‘sick’	*	*	[níːkʷ]	
d.	√t’iʰ	/t’i/	‘find’	*	[t’ìː]	*	

To illustrate the lack of inflectional variation in actual verbs, compare the root $^{2}\sqrt{\textit{shi}^{h}}$ /ʃi/ ‘sing’ in (58) with the root $^{2}\sqrt{\textit{t'i}^{h}}$ /t’i/ ~ $^{2}\sqrt{\textit{t'e}^{h}}$ /t’e/ ‘find’ in (59). Both roots are lexically specified for *g*-conjugation and so show a predictable *-μ* stem in the perfectives in (58a) and (59a). The prospective aspect regularly has a stem with *-μH* as in (58b). But this is ungrammatical in (59b) and instead the root $^{1}\sqrt{\textit{t'i}^{h}}$ ‘find’ persists with the irregular *-μ* stem in (59c).

(58) a. X̲waashee. *g-conj. perfective with regular-μ*
[ˌχʷàː.ˈʃìː]
wu-x̲- i- $^{2}\sqrt{\text{shi}^{h}}$-μ
PFV-1SG·S-STV-$^{2}\sqrt{\text{sing}}$ -VAR
‘I sang it.’

b. Kei kk̲washée. *g-conj. prospective with regular -μH*
[ˌkʰèːk.qʰʷàˈʃíː]
kei=w- g- g̲- x̲- $^{2}\sqrt{\text{shi}^{h}}$-μ
up= IRR-GCNJ-MOD-1SG·S-$^{2}\sqrt{\text{sing}}$ -VAR
‘I will sing it.’

c. *Kei kk̲washee. **g-conj. prospective with irregular-μ*
[ˌkʰèːk.qʰʷà.ˈʃìː]
kei=w- g- g̲- x̲- ²√shiʰ-μ
up= IRR-GCNJ-MOD-1SG·S-²√sing -VAR
'I will sing it.'

(59) a. X̲waat'ee. *g-conj. perfective with regular -μ*
[ˌχʷàː.ˈt'ìː]
wu-x̲- i- ²√t'iʰ -μ
PFV-1SG·S-STV-²√find-VAR
'I found it.'

b. *Kei kk̲wat'ée. **g-conj. prospective with regular -μH*
[ˌkʰèːk.qʰʷà.ˈt'íː]
kei=w- g- g̲- x̲- ²√t'iʰ -μ
up= IRR-GCNJ-MOD-1SG·S-²√find-VAR
'I will find it.'

c. Kei kk̲wat'ee. *g-conj. prospective with irregular -μ*
[ˌkʰèːk.qʰʷà.ˈt'ìː]
kei=w- g- g̲- x̲- ²√t'iʰ -μ
up= IRR-GCNJ-MOD-1SG·S-²√find-VAR
'I will find it.'

The root ²√*t'iʰ* ~ ²√*t'eʰ* 'find' in (59) has the same *-μ* stem variation throughout its inflectional paradigm, even when it occurs with suffixes like *-n* and *-ch*. Similar facts hold for many other roots, where the stem shows no sensitivity to regular processes of inflectional variation. This has led to a descriptive distinction between 'variable roots' that have regularly varying stem paradigms versus 'invariable roots' that have a single stem form throughout their inflectional paradigms. The invariable roots are traditionally thought of as having their tone and length lexically specified as part of the root lexical phonology which then blocks the application of stem variation phenomena. This then implies that invariable roots lack stem variation. The lack of stem variation is incompatible with my model where stem variation is the realization of V which must exist in every verb. Thus my model prohibits the existence of invariable roots.

I replace the traditional distinction between variable roots and invariable roots with a distinction between variable stems and invariable stems. **Variable stems** are the regular case where the value of V and thus the phonological realization of the verb stem is determined by V-agreement (ch. 2 sec. 2) along with the phonological constraints discussed in section 2. **Invariable stems** are the irregular case where the value of V is lexically specified. The lexical specification of invariable stems is not part of the root. Instead the lexical entries of invariable stems are (√, V) pairs that are selected as a unit by the syntax, so that the lexicon effectively contains small $[_{VP}$ √ V] trees that can be thought of as morphophonological idioms. This approach makes at least four predictions unavailable to an 'invariable root' approach: (i) roots can form both variable and invariable stems, (ii) partial invariability can occur within a single paradigm, (iii) invariable stems use the same stem variation as variable stems, and (iv) invariable stems are derived. All four of these predictions are borne out by the available evidence, so I conclude that the invariable stem approach is superior.

Root	*Gloss*	*(Im)perfective*	*Translation*	*O*	*S*	*Eventuality*	*Conj.*
$^{1}\sqrt{.at'}$	'cold'	*awsi.át'*	's/he made it cold'	+	+	achievement	∅
$^{1}\sqrt{.at'}$	'cold'	*k̲usi.áat'*	'it is cold weather'	–	–	state (-μH inv.)	*g*
$^{2}\sqrt{.ak̲w}$	'try'	*akoo.aak̲w*	's/he plans it'	+	+	activity (-μ)	∅
$^{2}\sqrt{.ak̲w}$	'try'	*akoo.aak̲w*	's/he tries it'	+	+	activity (-μ inv.)	*n*
$^{1}\sqrt{chish}$	'obtain'	*awlichísh*	's/he obtained it easily'	+	+	achievement	∅
$^{1}\sqrt{chish}$	'obtain'	*lichéesh*	'it is easily obtained'	+	–	state (-μH inv.)	*g*
$^{1}\sqrt{gul'}$	'one-eye'	*aawagúl'*	's/he winked'	–	+	achievement	∅
$^{1}\sqrt{gul'}$	'one-eye'	*wak̲shigóol'*	's/he is one-eyed'	+	–	state (-μH inv.)	*g*
$^{2}\sqrt{hech}$	'suspect'	*ayaawahéch*	's/he watched it covertly'	+	+	achievement	∅
$^{2}\sqrt{hech}$	'suspect'	*ooheich*	's/he accused him/her'	+	+	activity (-μ inv.)	*n/g*
$^{1}\sqrt{lel}$	'limp'	*kawlilél*	'it became limp, slack'	+	–	achievement	∅
$^{1}\sqrt{lel}$	'limp'	*wulileil*	'it became flabby, saggy'	+	–	achievment (-μ inv.)	*g̲*
$^{2}\sqrt{nik}$	'tell'	*akanéek*	's/he reports, tells about it'	+	+	activity (-μH)	*n*
$^{2}\sqrt{nik}$	'tell'	*aklaneek*	's/he tells it (story)'	+	+	activity (-μ inv.)	*n*
$^{1}\sqrt{t'ix'}$	'hard'	*uwat'íx'*	'it became hard'	+	–	achievement	∅
$^{1}\sqrt{t'ix'}$	'hard'	*yat'éex'*	'it is hard'	+	–	state (-μH inv.)	*g*
$^{1}\sqrt{ts'it'}$	'full'	*shaawats'ít'*	'it became full (liquid)	+	–	achievement	∅
$^{1}\sqrt{ts'it'}$	'full'	*woots'éet'*	'it (boat) is overloaded	+	–	achievement (-μH inv.)	*g̲*
$^{1}\sqrt{x̲itl}$	'bless'	*akla x̲éetl*	's/he blesses him/her/it'	+	+	activity (-μH)	∅
$^{1}\sqrt{x̲itl}$	'bless'	*lix̲éetl*	's/he is blessed, lucky'	+	–	state (-μH inv.)	*g*
$^{1}\sqrt{yel}$	'deceive'	*awliyél*	's/he deceived him/her'	+	+	achievement	∅
$^{1}\sqrt{yel}$	'deceive'	*kaliyéil*	's/he is cunning, tricky'	+	–	state (-μH inv.)	*g*

Table B.2: Some pairs of variable and invariable stem verbs

Prediction (i) is well supported. The lexical documentation contains many roots where one verb based on a root exhibits regular inflectionally determined stem variation and another verb based on the same root has an invariable stem. A few pairs of variable and invariable stem verbs are given in table B.2; the first verb in each pair has a variable stem and the second an invariable stem. These pairs are generally not exhaustive because there can be many other verbs based on the same root. The pairs in table B.2 show some correlations between conjugation class and variability but this may be accidental. There is no consistent relationship between eventuality class and variability, nor between argument structure and variability, so invariable stems cannot be reliably predicted.

If roots were the locus of lexical specification for variability then there would have to be separate lexical entries for each member of the pairs in table B.2. The translations in table B.2 militate against this, strongly implying that these pairs are based on the same root with the same underlying meaning. Thus even though *akanéek* 's/he reports, tells about it' is variable (perfective *akaawaneek* 's/he reported it', habitual *akananíkch* 's/he has regularly reported it', prospective *akakg̲wanéek* 's/he will report it') and *aklaneek* 's/he tells it (story)' is invariable (perfective *akawlineek* 's/he tells it', ha-

bitual *akanalneekch* 's/he has regularly told it', and prospective *akaguxlaneek* 's/he will tell it') both of these verbs clearly involve communication about an eventuality and both share the same phonological basis of /nik/. Instead of separating these verbs with distinct variable and invariable roots, it is more parsimonious to suppose that both verbs are based on the same root with differences in the variability of their stem paradigms. Thus the same root can occur in both variable and invariable stems; the locus of invariability is the lexical entry of $[_{\text{VP}}\ \sqrt{}\ \text{V}]$ and not just $\sqrt{}$.

Prediction (ii) is also well supported. Although the common case of an invariable stem is one where the same stem occurs throughout the inflectional paradigm of a verb, there are a number of lexical exceptions where the stem occasionally varies. The only one noted by Leer (1991: 170) is the root $\overset{1}{\sqrt{}}$*k'e* 'good' which usually occurs with a *-μH* stem *–k'éi* [k'é:] but under negation in the imperfective aspect it has a *-H* stem *–k'é* [k'é]. Eggleston (2013: 168–173) finds nine more roots that appear mostly invariable but which have one or two inflectional contexts with an otherwise unexpected stem: $\overset{1}{\sqrt{}}$*gu* 'enjoy', $\overset{0}{\sqrt{}}$*.at'* 'cold', $\overset{2}{\sqrt{}}$*t'ex* 'hook', $\overset{2}{\sqrt{}}$*l'ex* 'dance', $\overset{2}{\sqrt{}}$*ti'w* ~ $\overset{2}{\sqrt{}}$*tu'w* 'count, read', $\overset{2}{\sqrt{}}$*nik* 'tell', $\overset{2}{\sqrt{}}$*xux* 'summon', $\overset{2}{\sqrt{}}$*his'* 'borrow', $\overset{2}{\sqrt{}}$*xut'* 'fish with rod', and $\overset{2}{\sqrt{}}$*xut'* 'adze, chop'. I suspect the latter two are the same root, and note that nearly all of these roots are also found in verbs where they have variable stems. Eggleston identifies five inflectional contexts where verbs based on the above roots have an unexpected stem intstead of their invariable forms: (i) negative state imperfective, (ii) progressive, (iii) repetitive imperfective, (iv) prohibitive, and (v) conditional. There does not seem to be any morphosyntactic or semantic reasons why these particular inflectional contexts should have unusual stems, but perhaps further lexical investigation may find correlations.

Lexically specifying invariability in the root cannot account for partially invariable paradigms without ad hoc morphosyntactic exceptions or even less palatable ad hoc phonological exceptions lacking independent motivation. If partial invariability is instead modelled as a property of stems rather than roots then the phenomenon becomes an instance of partial blocking: some parts of the regular paradigm based on $\sqrt{}$ are blocked by the irregular form based on $[_{\text{VP}}\ \sqrt{}\ \text{V}]$, but other parts of the regular paradigm are not blocked. Given that total blocking occurs already with fully invariable stems, the occurrence of partial blocking in stem variation is not surprising. Although partial blocking is a theoretical challenge (Bresnan 2001; Aissen 2003; Arregi & Nevins 2014), it is nonetheless a well described crosslinguistic phenomenon. The occurrence of partial blocking raises an interesting challenge for the model since paradigms in this system arise from derivational operations and are not theoretical structures of their own, but this is a well known problem for syntactic theories of morphology.

Prediction (iii) falls out of modelling invariable stems with the same machinery as variable stems, namely with the set of *-H*, *-μ*, *-μH*, *-e*, *-eH*, and *-⊗* stem variation suffixes. This prediction says that there should not be any invariable stems that require a stem variation suffix which is not also required by variable stems. This prediction is tentatively borne out; I have not encountered any invariable stems that require anything other than *-H*, *-μ*, *-μH*, or *-eH* in all of the Northern Tlingit documentation. But there is still no dedicated, comprehensive inventory of invariable stems which is necessary to conclusively verify this prediction.

Prediction (iv) is the hardest to evaluate because it requires particular explanations for every single invariable stem and this is a huge undertaking. Nevertheless, I have the impression that it is correct. Most invariable stems in my experience show signs of being derived from either nouns or from other verb stems. Both cases may be zero-derived or may include additional suffixation with a

consonantal, vocalic, or syllabic suffix. Many of the suffixes can be connected to the repetitive suffixes, in which case the invariable stem is probably formed by secondary aspectual derivation from a repetitive imperfective form. The remaining invariable stems appear instead to be frozen, having been derived in the past with now non-functional morphology. I sketch these three derivational patterns further in section 3.1, concluding that prediction (iv) is plausibly true.

It seems to me that most invariable stems are monosyllabic stems either without a coda consonant as *–CV́*, *–CV̀V̀*, or *–CV́V́*, or with a single coda consonant as *–CV́C*, *–CV̀V̀C*, or *–CV́V́C*. But there are sizable inventories of two other kinds of invariable stems: monosyllabic stems with complex codas and disyllabic stems. I review the lexical documentation of monosyllabic stems with complex codas in section 3.2, dividing them into suffixed stems, denominal stems, and inscrutable stems with opaque etymology. I then look at the disyllabic stems in section 3.3, similarly dividing them into suffixed stems and denominal stems.

3.1. Kinds of derived invariable stems

There are three major kinds of derived invariable stems: (i) a **denominal invariable stem** where a verb stem is derived from a noun stem, (ii) a **deverbal invariable stem** where a verb stem is derived from another verb stem, and (iii) a **frozen invariable stem** where a verb stem appears to be derived from another verb stem but the derivational material is unique or semantically opaque. These three categories make up the vast majority of the invariable verb stems that I have encountered in the lexical documentation. This means that many invariable verb stems are actually semi-regular although they are formed by less common morphosyntactic processes.

Table B.3 lists an abritrary selection of roots that appear both as nouns and as verbs with monosyllabic invariable stems. The two entries √*ges* 'dog call' and √*shich* 'female' are not actually nouns: *géis* [kéːs] is an interjection used to call dogs and *sheech* [ʃìːtʃ] is a prenominal adjective. All of the corresponding verbs are semantically related to the nouns according to their translations, and since the invariable stems of the verbs are identical with the nouns it is reasonable to conclude that the verbs are derived directly from the nouns.

This denominal derivation contrasts with roots that give rise to separate nouns and verbs where the verb is derived directly from the root rather than from the noun. In this case the verbs have variable stems. Thus the root √*wat* 'armspan' supports a noun *waat* 'fathom' and a verb 'measure by armspan' with a variable stem *–wát* : *–wáat* : *–waat* as in (60).

(60) Déix̱ waat yéi x̱waawát.
[téːχ wàːt jéː ˌχʷàː.ˈwát]
déix̱ √wat -μ yéi= wu-x̱- i- ²√wat -H
two √armspan-VAR$_N$ thus=PFV-1SG·S-STV-²√armspan-VAR$_V$
'I measured off two fathoms.' (orig. tr.) (Story & Naish 1973: 133.1778)

The second category of deverbal invariable stems comprises invariable verb stems that are semantically related to variable verb stems. The deverbal invariable stems often include an additional **derivational suffix** that supplies some additional meaning, may affect the phonological form of the stem (e.g. ablaut), and is associated with the shift from variable to invariable. The derivational suffixes are not well understood, being identified only by review of the lexical documentation and still needing to be explored through elicitation. See sections 3.2.1 and 3.3.1 for more details.

Root	*Gloss*	*Noun*	*Translation*	*(Im)perfv.*	*Translation*	*O*	*S*	*Eventuality*	*Cnj.*
√*.an*	'land'	*aan*	'town, land'	*wudzi.aan*	's/he settled'	–	+	ach. (-*μ* inv.)	*g*
√*chan*	'stink'	*chán*	'stench'	*lichán*	'it stinks'	+	–	state (-*H* inv.)	*g*
√*dlet*	'snow'	*dleit*	'snow'	*k̲ulidleit*	'it is snowy weather'	–	–	state (-*μ* inv.)	*g*
√*ges*	'dog call'	*géis*	'dog call' (intj.)	*akagéis*	's/he calls it (dog)'	+	+	activity (-*μH* inv.)	*n?*
√*hin*	'water'	*héen*	'water'	*aklahéen*	's/he waters it down'	+	+	activity (-*μH* inv.)	*n*
√*l'ew*	'sand'	*l'éiw*	'sand'	*al'éiw*	's/he puts sand on it'	+	+	activity (-*μH* inv.)	*n*
√*l'ut'*	'tongue'	*l'óot'*	'tongue'	*lil'óot'*	'it has a tongue'	+	–	state (-*μH* inv.)	*g*
√*nakw*	'drug'	*náakw*	'medicine'	*anáakw*	's/he medicates him/her'	+	+	activity (-*μH* inv.)	*n*
√*naw*	'bilge'	*naaw*	'bilge water'	*linaaw*	'it leaks in'	+	–	state (-*μ* inv.)	*n?*
√*nikw*	'sick'	*néekw*	'sickness'	*yanéekw*	's/he is sick'	+	–	state (-*μH* inv.)	*g*
√*nis'*	'urchin'	*nées'*	'urchin'	*aawanées'*	's/he ate urchin'	–	+	ach. (-*μH* inv.)	*n*
√*siw*	'rain'	*séew*	'rain'	*k̲uliséew*	'it is rainy weather'	–	–	state (-*μH* inv.)	*g?*
√*shïÿ*	'knot'	*sheey*	'wood knot'	*lisheey*	'it is knotty'	+	–	state (-*μ* inv.)	*g?*
√*shich*	'female'	*shéech*	'female' (adj.)	*wulishéech*	's/he acted effeminate'	+	–	ach. (-*μH* inv.)	*Ø?*
√*tsa*	'seal'	*tsaa*	'seal'	*altsaa*	's/he belches'	–	+	activity (-*μ* inv.)	*n*
√*wes'*	'louse'	*wéis'*	'louse'	*dliwéis'*	's/he/it has lice'	+	–	state (-*μH* inv.)	*g?*
√*x̲an*	'near'	*x̲án*	'nearby'	*asix̲án*	's/he loves him/her'	+	+	state (-*H* inv.)	*g*
√*x̲'at'*	'unripe'	*kax̲'át'*	'green berry'	*kadlix̲'át'*	'it is green, unripe'	+	–	state (-*H* inv.)	*g*
√*ÿa'sh*	'platform'	*kaÿáash*	'platform'	*aklayáash*	's/he adds platform to it'	+	+	activity (-*μH* inv.)	*n/g̲*
√*ÿat*	'child'	*ÿát*	'child'	*ash koolyát*	's/he plays'	–	+	activity (-*H* inv.)	*n*

Table B.3: Pairs of nouns and denominal invariable verb stems

Three derivational suffixes with relatively clear meanings are the restorative *-án* 'restore to previous (normal) state' (sec. 3.3.1.3), the amissive *-x̲aa* 'miss target of aiming' (sec. 3.3.1.1), and the deprivative *-k̲* ~ *-ák̲w* 'lacking, removed, deprived' (secs. 3.2.1 & 3.3.1.2). These give rise to patterns like *wudihaan* 's/he stood up' versus *a tóox̲ yawdudzihaanán* 'people reelected him/her to it', *aawadzóo* 's/he threw at it' versus *ayawlidzéix̲aa* 's/he threw at it and missed', and *dzix̲áaw* 's/he/it is hairy' versus *wudlix̲aayák̲w* 's/he lost hair, it shed'. Other suffixes are obscure because they are only attested with one or two verbs; one example is *-nás'* which occurs in *wudlix̲aanás'* 's/he went by raft' (Leer 1976a: 787) based on √*x̲a* 'paddle' or possibly √*x̲a* 'flotilla' and another example is *-ách'* which occurs in *–g̲eig̲ách'* 'swing in hammock' (Leer 1976a: 847) based on √*g̲ik̲* ~ √*g̲ek̲* 'swing'.

Each of the derivational suffixes has different phonological effects. For example the *-án* suffix is associated with *-μ* stem variation (e.g. √*nak̲* 'pl. stand' and *–naag̲án* 'restore confidence by reelection', √*tan* 'handle wooden/container' and *–taanán* 'reconsider; reset bone or joint') but the *-x̲aa* suffix is associated with either *-H* or *-eH* stem variation (e.g. √*.un* 'shoot with gun' and *–.únx̲aa* 'miss shot', √*dzu* 'throw round object' and *–dzéix̲aa* 'miss throw'). But all the derivational suffixes form invariable stems. This is similar to how the addition of a repetitive suffix forms an invariable stem (ch. 2 sec. 2.3) so it is likely that these two phenomena are related.

The addition of a derivational suffix forms an invariable stem either with a complex coda or that is disyllabic. Thus √*til* 'shoe' with deprivative *-k̲* forms a complex coda stem *–téelk̲* [tʰíːɬq] 'shoeless' and √*tl'e'l* 'milt, fish semen' with deprivative *-ák̲w* forms a disyllabic stem *–tl'éiláw* [ˈtɬ'éːɬáqʷ]

'remove milt from fish; gut fish'.[9] All attested stems that have complex codas or are disyllables are invariable stems, and the overwhelming majority show clear signs of being derived (secs. 3.2 & 3.3). It is therefore probable that all stems with complex codas or disyllables are derived.

Setting aside the already identified denominal and deverbal invariable stems, the remaining invariable stems are then the frozen invariable stems which I believe reflect derivations that are no longer productive. Monosyllabic frozen stems with complex codas include *–núkts* 'sweet', *–tált* 'dissuade', *–gwéinsh* 'tinker, fiddle', *–heisk̲w* 'few, sparse', and *–xweix̲k* 'silent, still'. Disyllabic frozen stems include *–koodzí* 'amazing', *–tánu* 'gripe, complain', *–tleilk'ú* 'make string figures', *–ch'éeyák̲w* 'slow, late', and *–néegwál'* 'paint'. Each of these can be logically decomposed into a root, stem variation, and a derivational suffix, but in each case the root and derivational suffix are difficult to identify.

If it is true that most invariable stems are derived stems, then it is not unreasonble to suppose that all invariable stems are derived stems, at least in a purely syntactic and phonological sense. Consequently even an obviously denominal verb stem like *–dáanaa* in *jididáanaa* 's/he is moneyed, wealthy' (Leer 1976a: 321) from *dáanaa* 'money, silver, dollar' (< CJ *dála* 'money, silver, dollar' < Eng. *dollar*) should logically have a decomposition like √*dan* + *-μH* + *-aa* which parallels derivations like √*ki'n* 'bother by noise' + *-μH* + *-aa* → *–kéenaa* 'annoyingly noisy' in *shikéenaa* 's/he is annoyingly noisy' (sec. 3.3.2). Such structures are presumably precomputed and stored in the lexicon as idioms, but they still fit neatly into the syntax and phonology of verb stems. Likewise, the pairs of variable and invariable stems like those in table B.2 should also reflect derivational phenomena although they have yet to be elucidated. One particularly common case is the pairing of a variable activity or achievement with an invariable state (six in table B.2) and this may reflect a derivational process involving Ɛ and/or *g*-conjugation class in Asp.

3.2. Monosyllabic stems with complex codas

In the following subsections I outline three groups of stems with complex codas. These three groups follow the three classes described in section 3.1 so that there is a denominal class, a deverbal class, and a frozen class. The deverbal class of monosyllabic stems with complex codas is formed by more or less transparent suffixation of obstruents and is addressed in section 3.2.1. The denominal class of monosyllabic stems with complex codas is derived from monosyllabic nouns with complex codas as detailed in section 3.2.2. Finally, there are two frozen stems with unknown etymologies that are discussed in section 3.2.3.

3.2.1. Suffixed monosyllabic stems with complex codas

The vast majority of invariable stems with complex codas appear to be derived from other synchronically attested roots with the addition of various obstruent suffixes (sec. 3.1). The basis roots are regular closed roots that can be identified in the verbal and nominal lexical documentation. The suffixes are mostly repetitive suffixes like *-k* and *-ch* (ch. 2 sec. 2.3, ch. 6 sec. 2.1.1.2), although the deprivative *-k̲* 'lacking' and the diminutive *-k'* ~ *-k'w* also occur.

The stems with repetitive suffixes are lexicalizations of otherwise ordinary repetitive forms where the repetitive has escaped from its usual imperfective aspect and has developed a complete paradigm of aspects with a single invariant stem.[10] The *-k* ~ *-kw* repetitive suffix is the most prolific,

9. The conditioning factors determining selection of *-k̲* versus *-ák̲w* are still unclear.
10. Compare Leer's epiaspect (Leer 1991: 215–218, 497–505) and the similar Dene superaspect from e.g. Kari (1992).

with the set in (61) being illustrative but nowhere near exhaustive.

(61)	*Stem*	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–k̲útl'kw*	[qʰʷútɬ'kʷ]	*√k̲utl'-H-kw*	'muddy'	←	*√k̲utl'*	/qʰʷutɬ'/	'mud'
b.	*–tl'únkw*	[tɬ'únkʷ]	*√tl'un-H-kw*	'mutter, grumble'	←	*√tl'un*	/tɬ'un/	'squint'
c.	*–x̲íl'k*	[χíɬ'k]	*√x̲il'-H-k*	'drool'	←	*√x̲il'*	/χiɬ'/	'slime'
d.	*–x̲'íl'k*	[χ'íɬ'k]	*√x̲'il'-H-k*	'slippery'	←	*√x̲'il'*	/χ'iɬ'/	'slip, slide'

An otherwise unknown root *√hat* has given rise to two stems with complex codas *–sátk* [sátk] 'fast, quick; early' (Leer 1973a: 01/81, 09/32–33) and *–haatk* [hà:tk] 'tremble uncontrollably' (Leer 1973a: 01/86) that include *-k*, but only the latter stem seems to have a compositional interpretation available for *-k*. The *–sátk* stem is seen in the verb *yasátk* [jà.ˈsátk] 's/he/it is fast or early' which has a Tongass Tlingit cognate *ÿa-s-i-√hat-k* → *ÿasi̯hatk* [uɻas.ˈhatk] (Leer 1973a: 01/82),[11] suggesting **ÿa-s-i-√hat-H-k* > **ÿa-√sat-H-k* > *i-√sat-H-k* in Northern Tlingit. The *√hat* root cannot be identified but is not obviously the same as *√hat* 'carry heavy object', *√hat* 'feel around', *√hat* 'current, flow', *√hat-μ-í* 'crazy', *√ha't* 'cover', or *√ha't* 'herd'. Leer (1978c: 36) implies a derivation from *√ha* but does not say which of the homophonous roots this should be.

Among the other repetitive suffixes besides *-k* ~ *-kw*, there are also documented stems with frozen *-x̲*, *-ch*, *-s'*, and *-l'*. The data in (62)–(65) may be exhaustive for the documentation.

(62)	*Stem*	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–ch'ách'x̲*	[tʃ'átʃ'χ]	*√ch'ach'-H-x̲*	'spotted'	←	*√ch'ach'*	/tʃ'atʃ'/	'spots'
b.	*–ch'ál'x̲*	[tʃ'áɬ'χ]	*√ch'al'-H-x̲*	'pale spotted'	←	*√ch'al'*	/tʃ'aɬ'/	'pale spots'
c.	*–káx'x̲*	[kʰáx'χ]	*√kax'-H-x̲*	'spotted'	←	*√kax'*	/kʰax'/	'spots'

(63)	*Stem*	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–.áax̲ch*	[ʔá:χtʃ]	*√.ax̲-μH-ch*	'understand'	←	*√.ax*	/ʔaχ/	'hear'
b.	*–gúkch*	[kʷúkʷtʃ]	*√guk-H-ch*	'teach how'	←	*√guk*	/kʷukʷ/	'know how'

(64)	*Stem*	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–gúnl'*	[kʷúnɬ']	*√gu'n-H-l'*	'try hard'	←	*√gu'n*	/kʷun/	'get opportunity'
b.	*–gúkl'*	[kʷúkʷɬ']	*√guk-H-l'*	'eager to learn'	←	*√guk*	/kʷukʷ/	'know how'

(65)	*Stem*	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–x̲ék̲s'*	[χéqs']	*√x̲ek̲-H-s'*	'be early riser'	←	*√x̲ek̲*	/χeq/	'wake early'

The roots *√ch'al'* and *√kax'* in (62) have related nouns *ch'áal'* [tʃ'á:ɬ'] 'willow' (*Salix* L.) and *kaax'* [kʰà:x'] 'spruce grouse' (*Falcipennis canadensis* L.). The stem *–káx'x̲* is also attested as *–gáx'x̲* [káx'χ] (Leer 1973a: f06/47) even though *√kax'* ≠ *√gax'*. The stem *–.áax̲ch* 'understand' in (63) is exceptional because it has unexpected *-μH* where *√CVC* roots normally occur with *-H* when suffixed by an obstruent. The root *√x̲ek̲* in (65) is also attested as *√x̲ik̲* in some dialects without the lexicalized application of uvular lowering.

11. Tongass and Southern Tlingit regularly lose the vowel of *i-* in Ɛ when it is preceded by overt *v* (ch. 3 sec. 2.1.6).

There are several roots with complex codas that show lexicalized suffixes other than the repetitive suffixes. Most common is the *-k̲* deprivative suffix meaning 'lacking, deprived, without' for which some examples are listed in (66). Some of these stems are derived from attested nouns like *téel* [tʰíːɬ] 'shoe' and *tsáax'* [tsʰáːx'] 'mitten', but others have more obscure etymologies. The stem *–ÿáshk̲* [ɥáʃq] 'scarce' seems to come from an unkonwn *√ÿash* which might be related to the pair *√ÿach'* and *√ÿatl'* (implying *sh* < **sh'*, apx. A sec. 6.1.1), both meaning 'too short' in modern Tlingit. The stem *–x'wás'k̲* [x'ʷás'q] seems to derive from a lost root **√x'was'* which might reflect the noun *x'wás'* 'club, beater' and/or the noun compound *hintakx'wás'gi* [ˌhìn.tʰàk.ˈx'ʷás'.kì] 'bufflehead duck' (*Bucephala albeola* L.) from *héen-táak-x'wás'-k-i* 'water-below-club?-REP-PSS'.

(66)

	Stem	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–shís'k̲*	[ʃís'q]	*√shis'-H-k̲*	'raw'	←	*√shis'*	/ʃis'/	'strip, squeeze out'
b.	*–téelk̲*	[tʰíːɬq]	*√til-μH-k̲*	'shoeless'	←	*√til*	/tʰiɬ/	'shoe'
c.	*–tsáax'k̲*	[tsʰáːx'q]	*√tsax'-μH-k̲*	'mittenless'	←	*√tsax'*	/tsʰax'/	'mitten'
d.	*–x'wás'k̲*	[x'ʷás'q]	*√x'was'-H-k̲*	'numb'	←	*√x'was'*	/x'ʷas'/	(unknown)
e.	*–ÿáshk̲*	[jáʃq]	*√ÿash-H-k̲*	'scarce'	←	*√ÿash*	/jaʃ/	(unknown)

There are two monosyllabic complex coda stems in (67) that feature an unidentified suffix *-k̲* and the plural suffix *-x'*. Their basis roots are attested elsewhere so these stems are clearly derived, but the *-k̲* suffix does not appear to be related to the deprivative *-k̲* above because the stems in (67) lack deprivative meanings. The *-k̲* could be analyzed as part of each root except that there are basis roots attested with obviously related meanings.

(67)

	Stem	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–tsínk̲x'*	[tsʰínqx']	*√tsin-H-k̲-x'*	'pl. expensive'	←	*√tsin*	/tsʰin/	'strong; expensive'
b.	*–ÿát'k̲x'*	[ját'qx']	*√ÿat'-H-k̲-x'*	'pl. long'	←	*√ÿat'*	/jat'/	'long'

Several stems with complex codas in (68) appear to be derived from other roots by regular suffixation but the basis roots for their derivations are unattested. The suffixes involved are all repetitives. Thus the stem *–k̲áchk* 'lame' is potentially derived from *√k̲ach* 'swell, inflate' and repetitive *-k* but the resulting meaning is not obvious. The stem *–kéxwk* 'fluffy, insubstantial' also appears in a noun phrase *té kéxwk* 'pumice' with *té* 'stone'; this is sometimes just *kéxwk* suggesting that the verb stem could be denominal (sec. 3.2.2) but this still does not account for the underlying *√kexw*.

(68)

	Stem	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–dzánl'*	[tsánɬ']	*√dzan-H-l'*	'lumpy face'	←	*√dzan*	/tsan/	(unknown)
b.	*–hél'k*	[héɬ'k]	*√hel'-H-k*	'weak'	←	*√hel'*	/heɬ'/	(unknown)
c.	*–kéxwk*	[kʰéxʷkʷ]	*√kexw-H-k*	'fluffy, insubstantial'	←	*√kexw*	/kʰexʷ/	(unknown)
d.	*–k̲áchk*	[qʰátʃk]	*√k̲ach-H-k*	'lame'	←	*√k̲ach*	/qʰatʃ/	(unknown)
e.	*–núkch*	[núkʷtʃ]	*√nuk-H-ch*	'helpless'	←	*√nuk*	/nukʷ/	(unknown)
f.	*–tálɬ*	[tʰáɬt]	*√tal-H-t*	'dissuade'	←	*√tal*	/tʰaɬ/	(unknown)

There are several stems listed in (69) with obscure etymology that seem to have regular suffixes but that exhibit unexpected stem variation. All of these would be normally expected to have *-H* stem variation since their input roots would be of the shape *√CVC*. Compare the stem *–.áax̲ch* 'understand' in (63) above for a more semantically transparent example of unexpected stem variation.

(69)

	Stem	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–heiskw*	[hèːskʷ]	√*hes-μ-kw*	'few'	←	√*hes*	/hes/	(unknown)
b.	*–s'óoshkw*	[s'úːʃkʷ]	√*s'ush-μH-kw*	'pinch'	←	√*s'ush*	/s'uʃ/	(unknown)
c.	*–shéesht*	[ʃíːʃt]	√*shish-μH-t*	'squeeze out'	←	√*shish*	/ʃiʃ/	(unknown)
d.	*–xweix̱k*	[xʷèːχk]	√*xwex̱-μ-k*	'silent, still'	←	√*xwex̱*	/xʷeχ/	(unknown)

The stems *–shéesht* and *–s'óoshkw* could plausibly be realted to the root √*shis'* 'strip, squeeze out'. The *-μH* stem variation rather than *-μ* could reflect glottalized √*CV'C* roots. But since it is likely that some *sh* < **sh'* (apx. A sec. 6.1.1), they could also be connected to reconstructions with ejectives like *√*sh'ish'* and *√*sh'ush'*, with later confusion between alveolar and postalveolar places that is well attested elsewhere in the lexicon.

All of the stems in this section are typically reported to be invariable roots. But they all show signs of being derived from simpler roots, in every case a √*CVC* root with a simple rather than complex coda. Since all of these stems are lexicalized in one way or another, this suggests that units even larger than [√ V] can be stored in the lexicon. Specifically, all of these are [√ V] units with an adjunct suffix, i.e. [[√ V] Adv].

3.2.2. Denominal monosyllabic stems with complex codas

Denominal stems are formed by conversion of a noun to a verb. There are a considerable number of denominal roots of both √*CV* and √*CVC* shapes as discussed in section 3.1, but of interest here are the few which have complex codas listed in (70) below. This list is probably exhaustive for the lexical documentation, but there are many more nouns with complex codas that could plausibly be derived as verbs. The derivations suggested here entail that the nouns are also derived from √*CVC* roots, and thus the only difference between noun stem and verb stem is the syntactic category assigned to the stem variation suffix.

(70)

	Stem	*IPA*	*Morph.*	*Gloss*	←	*Noun*	*IPA*	*Gloss*
a.	*–.ánk'w*	[ʔánk'ʷ]	√*.an-H-k'w*	'bratty'	←	*ánk'w*	[ʔánk'ʷ]	'brat'
b.	*–gúnl'*	[kʷúnɬ']	√*gun-H-l'*	'have burl'	←	*gúnl'*	[kʷúnɬ']	'tree burl'
c.	*–.ít'ch*	[ʔít'tʃ]	√*.it'-H-ch*	'sparkle'	←	*ít'ch*	[ʔít'tʃ]	'obsidian, glass'
d.	*–náal̲x*	[náːɬχ]	√*nal-μH-x̱*	'wealthy'	←	*náal̲x*	[náːɬχ]	'large halibut'
e.	*–sháchk*	[ʃátʃk]	√*shach-H-k*	'swampy'	←	*sháchk*	[ʃátʃk]	'muskeg, swamp'

All of the suffixes *-k'w*, *-ch*, *-k*, *-l'*, and *-x̱* in (70) are attested elsewhere in verbs. The *-k'w* is an allomorph of the diminutive *-k'* and the others are repetitive suffixes (ch. 2 sec. 2.3, ch. 6 sec. 2.1.1.2). So even though they may not be semantically compositional in these stems, the coda consonants are all phonologically compatible with existing suffixes. They can therefore be analyzed as idioms.

Some of the roots in (70) are independently attested but their interpretations do fit with the glosses here. Thus for *–.ánk'w* 'bratty' there is √*.an* 'rinse in snow', √*.an* 'rest', √*.an* 'kind', √*.an* 'town, land; settle, make village', and √*a'n* 'bedridden' (cf. √*.an* 'rest'), but none of these is obviously related. Other roots in (70) are otherwise unattested such as √*.it'* and √*shach* (though cf. √*shash* 'wear out').

3.2.3. Inscrutable monosyllabic stems with complex codas

The two roots listed in (71) are inscrutable with both an unattested root and an unattested suffix, neither of which admits any coherent etymology. These two monosyllabic stems are the only documented stems with complex codas that do not correspond to any suffixes elsewhere in the language: *-ts* and *-sh* are otherwise unknown.

(71)		*Stem*	*IPA*	*Morphology*	*Gloss*
	a.	*–gwéinsh*	[kʷéːnʃ]	*√gwen-μH-sh*	'tinker, fiddle, mess with'
	b.	*–núkts*	[núkʷts]	*√nuk-H-ts*	'sweet'

The root *√gwen* has no corresponding forms elsewhere in the lexical documentation. There is a noun *gwéinli* [ˈkʷéːn.ɬì] ~ *gwéinl'i* [ˈkʷéːn.ɬʔì] 'hoof' (Leer 1973a: f05/209; Leer, Hitch, & Ritter 2001: T·19) but this does not appear to be related. The stem *–gwéinsh* could alternatively be analyzed with the *-n* suffix and ablaut as *√gwa*$^{(h)}$*-eH-n-sh*, but there is no attested *√gwa* or *√gwa*^{h}.

The root *√nuk* is phonologically identical to *√nuk* 'sg. sit' and to the otherwise unknown root in the obscure complex coda stem *–núkch* ← *√nuk-H-ch* 'helpless, undependable' (Leer 1973a: 04/215, 1976a: 309). The several roots of the form *√nikw* (e.g. 'feel', 'sick', 'fit', 'act') can undergo anticipatory labialization of the vowel to become *√nuk* in the more northerly varieties of coastal Northern Tlingit. But none of these has any obvious semantic relationship to sweetness so the *√nuk* in *–núkts* is apparently unique. The presence of the otherwise unknown *-ts* as a suffix is supported by its absence in the derived disyllabic stem *–nóokch'án* 'very delicious' that is discussed in section 3.3.1.4.

3.3. Disyllabic stems

All my discussion of verb stems up to this point has focused on monosyllabic stems because these are by far the majority of attested stems in Tlingit. Nonetheless there are a moderate number of disyllabic stems, some of which are basic vocabulary. All disyllabic stems are lexicalized and invariable so that they are inflectionally unpredictable and have a single fixed form throughout a verbal paradigm. All disyllabic stems are derived either from suffixation of monosyllabic verb stems (sec. 3.3.1) or from disyllabic nouns (sec. 3.3.2). I exclude from consideration here all disyllables derived by purely inflectional suffixation such as those with past tense *-ín* or with a clause type suffix like relativizing *-i* or subordinate *-í* because they are all inflectionally predictable.

All disyllabic stems have the same trochaic (× ⌣) stress pattern, with the first syllable stressed despite tone, length, or coda consonants. A few examples are shown in (72): the stem *–.únx̱aa* [ˈʔún.χàː] 'miss shot with gun' in (72a) is stressed with a short vowel and high tone, the stem *–nóox'áḵw* [ˈnúː.x'áqʷ] 'remove shell' in (72b) is stressed with a long vowel and low tone, and the stem *–g̱eiyáḵw* [ˈqèː.jáqʷ] 'remove from shell' in (72c) is stressed with a long vowel and high tone.

(72) a. Ayawsi.únx̱aa. *CV́.CV̀V̀*
[ʔà.ˌjàw.sì.ˈʔún.χàː]
a- ÿ- wu-s- i- ^{2}√.un -H -x̱aa
ARG-QUAL-PFV-XTN-STV-^{2}√shoot-VAR-MISS
'S/he shot (at) it and missed.'

b. Kadulnóox'ákw. *CV́V.CV́*
[ˌkʰà.tùɬ.ˈnúː.x'áqʷ]
k- du- d- l- ^{1}√nux'-μH-ákw
SRO-4H·S-MID-CSV-^{1}√shell -VAR-DPRV
'People remove it (shell).'

c. Kadulgeiyákw. *CV̀V̀.CV́*
[ˌkʰà.tùɬ.ˈqèː.jáqʷ]
k- du- d- l- ^{1}√ge -μ -ákw
SRO-4H·S-MID-XTN-^{1}√between-VAR-DPRV
'People scoop it out (of shell).'

I indicate stress explicitly in every phonological form for a disyllabic stem even though stress on the initial syllable is completely regular. This representation should not be taken as lexically specified. The assignment of stress on the initial syllable of a disyllabic stem is probably due to a general phonological constraint that primary word stress must be on the root syllable of the stem. If this constraint is accepted as such then all disyllabic stems must necessarily decompose into a monosyllabic root and some additional material, further reinforcing the approach to disyllabic stems as being derived from simpler structures.

3.3.1. Suffixed disyllabic stems

Most disyllabic stems are derived from monosyllabic verb roots or nouns with the addition of various derivational suffixes that contain vowels. I have assembled a nearly exhaustive inventory of these disyllabic stems. In each section below I present a list of stems that can be analyzed as derived with the same derivational suffix. In some cases the meanings of the stems allow a tentative identification of the suffix's semantic contribution, but in other cases the compositional interpretation of the suffix is still unknown.

3.3.1.1. Miss target *-xaa*

The textbook examples of derived disyllabic stems are those with the suffix *-xaa* /χàː/ 'miss target'. This suffix can be added to any verb root that denotes striking a target in some manner. Thed resulting derivation means 'attempt to strike a target and miss'. The stems in (73) are all that have been documented, but presumably any root that could be interpreted as striking a target would be compatible with this derivational suffix. The vowel of the open syllable root √*dzu* 'throw missile' undergoes ablaut stem variation *-eH* because the suffix *-xaa* triggers this just like the *-x* suffix.

(73)

	Stem	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–.únxaa*	[ˈʔún.χàː]	√*.u'n-H-xaa*	'shoot & miss'	←	√*.u'n*	/ʔun/	'shoot (gun)'
b.	*–t'áchxaa*	[ˈt'átʃ.χàː]	√*t'ach-H-xaa*	'slap & miss'	←	√*t'ach*	/t'atʃ/	'slap (hand)'
c.	*–t'úkxaa*	[ˈt'úkʷ.χàː]	√*t'uk-H-xaa*	'shoot & miss'	←	√*t'uk*	/t'ukʷ/	'shoot (arrow)'
d.	*–dzéixaa*	[ˈtséː.χàː]	√*dzu-eH-xaa*	'throw & miss'	←	√*dzu*	/tsu/	'throw'
e.	*–shátxaa*	[ˈʃát.χàː]	√*sha't-H-xaa*	'grab & miss'	←	√*sha't*	/ʃat/	'grab, catch'
f.	*–gwálxaa*	[ˈkʷáɬ.χàː]	√*gwal-H-xaa*	'hit & miss'	←	√*gwal*	/kʷaɬ/	'stab, punch, beat'
g.	*–k'íshxaa*	[ˈq'íʃ.χàː]	√*k'ish-H-xaa*	'strike & miss'	←	√*k'ish*	/q'iʃ/	'strike, slap (puck)'
h.	*–xíchxaa*	[ˈχítʃ.χàː]	√*xich-H-xaa*	'swat & miss'	←	√*xich*	/χitʃ/	'club, swat'

The *-x̱aa* suffix looks like it might be further decomposable into *-x̱* and *-aa*. There is a *-x̱* repetitive suffix (ch. 6 sec. 2.1.1.2) but extant examples of *-x̱aa* do not seem to entail iterativity. Section 3.3.1.6 details the *-áa* suffix which could be connected to *-x̱aa* but its semantics is unclear. Therefore at present I give *-x̱aa* as a monomorphemic element without internal structure or composition.

3.3.1.2. Deprivative *-áx̱w*

The deprivative suffix *-áx̱w* describes the removal of something. There is another allomorph *-x̱* which was noted earlier in section 3.2.1. The deprivative suffix *-áx̱w* is attested with a number of roots listed in (74) and (75). The stems in (74) are the most transparent examples that illustrate the interpretation of *-áx̱w* as 'deprived, removed, lacking'. The forms in (74a–e) all reflect nouns and so could be analyzed as denominal stems which then undergo the deprivative derivation. The form in (74f) however is based on a verbal root, so this is not an exclusively denominal derivation.

(74)	*Stem*	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–nóox'áx̱w*	[ˈnúː.x'áqʷ]	√*nux'-μH-áx̱w*	'remove shell'	←	√*nux'*	/nux'ʷ/	'shell'
b.	*–tl'éiláx̱w*	[ˈtɬ'éː.ɬáqʷ]	√*tl'e'l-μH-áx̱w*	'remove milt'	←	√*tl'e'l*	/tɬ'eɬ/	'milt'
c.	*–geïÿáx̱w*	[ˈqèː.jáqʷ]	√*ge-μ-áx̱w*	'scoop out of shell'	←	√*ge*	/qe/	'between'
d.	*–x̱aaÿáx̱w*	[ˈχàː.jáqʷ]	√*x̱aÿ-μ-áx̱w*	'shed, lose hair'	←	√*x̱aw*	/χaw/	'hair, fur'
e.	*–x'wánjáx̱w*	[ˈx'ʷán.tʃáqʷ]	√*x'wan-H-ch-áx̱w*	'remove boots'	←	√*x'wan*	/x'ʷan/	'boot'
f.	*–geïÿáx̱w*	[ˈkèː.jáqʷ]	√*ge'ÿ-μ-áx̱w*	'claim as payment'	←	√*ge'ÿ*	/kej/	'repay'

The stem *–x̱aaÿáx̱w* 'shed, lose hair' in (74d) is phonologically unexpected since the basis root is √*x̱aw* as in *x̱aaw* [χàːw] 'hair, fur'. We would instead expect something like **–x̱aawáx̱w*, **–x̱aawúx̱*, or **–x̱aawÿáx̱w*. It is possible that the root √*x̱aw* descends from an earlier *√*x̱aÿ* and that the stem *–x̱aaÿáx̱w* descends independently from this earlier form. Another possibility is that the form was originally **–x̱aawÿáx̱w* but has undergone an irregular contraction of sonorants.

The stem *–x'wánjáx̱w* 'remove boots' is unusual in that it includes a repetitive suffix *-ch* before the deprivative *-áx̱w*. This establishes that the deprivative is higher (further to the right) than the repetitive suffixes. The iterative semantics of *-ch* might be present because one usually removes two boots in succession. This should then predict **–x'wánáx̱w* for a single boot removal.

The stem *–geïÿáx̱w* 'claim as payment' is phonologically unusual. Given the root √*ge'ÿ* we would expect a form like **–géïÿáx̱w* with *-μH* rather than *-μ* because glottalized roots normally prohibit *-μ* (sec. 2.2). But the stem is clearly documented with *-μ* (Leer 1973a: f05/74). The root √*ge* 'stingy' is probably related (Leer 1973a: f05/60).

The six disyllabic stems listed in (75) have unclear etymologies. They all seem to contain deprivative *-áx̱w* but their basis roots have not been conclusively identified. In most cases this is because there is a phonological mismatch between the disyllabic stem and the probable basis root. But in the case of thee stem *–ch'éeÿáx̱w* 'slow, late' in (75e) there is no attested root like √*ch'i* or √*ch'e* that could be related. There are a couple of possibly related nouns *kuts'een* [kʰʷùˈtsʼìːn] 'rat', *ts'eegéeni* [tsʼìːˈqíː.nì] 'magpie', and *kooch'éet'aa* /kʰʷùːˈtʃʼíː.tʼàː/ 'ball', the latter of which is derived from another disyllabic stem *–ch'éet'aa* of unknown origin that I return to in section 3.3.1.6.

(75)	*Stem*	*IPA*	*Morph.*	*Gloss*	← *Root*	*IPA*	*Gloss*
a.	*–.éïÿáx̲w*	[ˈʔéː.ɥáqʷ]	*√.e-μH-áx̲w*	'injured limb'	← *√.ek*	/ʔek/	'weak, paralyzed'
b.	*–ÿaax̲áx̲w*	[ˈɥàː.χáqʷ]	*√ÿax̲-μ-áx̲w*	'plan, intend'	← *√ÿax̲w*	/jaqʷ/	'bequeath'
c.	*–tl'eitáx̲w*	[ˈtɬʼèː.tʰáqʷ]	*√tl'et-μ-áx̲w*	'pure, honest'	← *√tl'e'n*	/tɬʼen/	'impure, unclean'
d.	*–x̲oonáx̲w*	[ˈχùː.náqʷ]	*√x̲un-μ-áx̲w*	'drowned'	← *√x̲un*	/χun/	'clan member?'
e.	*–ch'éeïÿáx̲w*	[ˈtʃʼíː.ɥáqʷ]	*√ch'i-μH-áx̲w*	'slow, late'	← *√ch'i*	/tʃʼi/	(unknown)
f.	*–séewch'áx̲w*	[ˈsíːwtʃʼáqʷ]	*√siw-μH-ch'-áx̲w*	'tasteless'	← *√siw*	/siw/	'rain'

The stems *–.éïÿáx̲w* 'have injured limb', *–ÿaax̲áx̲w* 'plan, intend', and *–tl'eitáx̲w* 'pure, honest' in (75a–c) are all problematic partly because they are missing the final consonant of their proposed etyma *√.ek* 'weak, paralyzed', *√ÿax̲w* 'bequeath', and *√tl'e'n* 'impure, unclean', respectively. Furthermore, although the stem *–tl'eitáx̲w* 'pure, honest' in (75c) can be logically derived from *√tl'e'n* 'impure, unclean' with a literal meaning of 'lacking impurity', the stems in (75a) and (75b) do not transparently derive from the meaning of their etyma with the addition of deprivation.

The stem *–x̲oonáx̲w* 'drowned' is exceedingly rare, attested only in the Tongass Tlingit verb form *wudi̯x̲oònax̲w* [wut.ˈχʷuʰ.naqʷ] 's/he drowned' (Leer 1973a: f02/77). My best guess is that it derives from the root *√x̲un* as found in the noun *x̲oon* 'fellow clan member, relative; friend' with a literal meaning like 'be deprived of a relative'. Another possible etymon is *√x̲u* 'small tide', but this does not account for the [n] that precedes the deprivative *-áx̲w*.

The stem *–séewch'áx̲w* 'tasteless' in (75f) almost certainly derives from the root *√siw* as in *séew* 'rain' (< **siːm*), probably with an earlier literal interpretation like 'rain-flavoured' or 'watered down by rain'. It is unusual because it apparently includes a suffix *-ch'* that is otherwise unknown. This unknown *-ch'* might be identified with *-ách'* in the disyllabic stem *–g̲eig̲ách'* [ˈqèː.qátʃʼ] 'swing' derived from *√g̲ex̲* 'swing' (sec. 3.3.1.8), but the meaning of this *-ách'* is also unknown. Compare however the alternation between *sh* and *ch'* in the intensive *-shán* ~ *-ch'án* discussed in section 3.3.1.4.

3.3.1.3. Restorative *-án*

The restorative suffix *-án* is described by Story (1966: 56) as denoting the restoration of a previous normal state. It is attested in seven stems that are listed exhaustively in (76). The interpretation of this suffix is relatively transparent given the limited attestation, but the glosses given in (76) are abbreviated for space and researchers should refer to the lexical documentation for more details.

(76)	*Stem*	*IPA*	*Morph.*	*Gloss*	← *Root*	*IPA*	*Gloss*
a.	*–goodán*	[ˈkʷùː.tán]	*√gut-μ-án*	'return to walking'	← *√gut*	/kʷut/	'sg. go'
b.	*–haanán*	[ˈhàː.nán]	*√han-μ-án*	'reelect sg.'	← *√han*	/han/	'sg. stand'
c.	*–naag̲án*	[ˈnàː.qán]	*√nax̲-μ-án*	'reelect pl.'	← *√nax̲*	/naq/	'pl. stand'
d.	*–taanán*	[ˈtʰàː.nán]	*√tan-μ-án*	'reset bone'	← *√tan*	/tʰan/	'handle w/e'
e.	*–xeexán*	[ˈxìː.xán]	*√xix-μ-án*	'normalize'	← *√xix*	/xix/	'occur; fall; run'
f.	*–x̲áat'án*	[ˈχáː.tʼán]	*√x̲at'-μH-án*	'snark, sarcasm'	← *√x̲at'*	/χatʼ/	'spring, whip'
g.	*–x̲eenán*	[ˈχìː.nán]	*√x̲in-μ-án*	'rearticulate'	← *√x̲in*	/χin/	'dislocate joint'

The stem *–goodán* 'return to walking' in (76a) with *√gut* 'sg. go' implies the possibility of a stem **–.aadán* 'pl. return to walking' based on *√.at* 'pl. go', in parallel with the pair of *–haanán* 'reelect sg.' and *–naag̲án* 'reelect pl.'. But **–.aadán* is unattested and I have not attempted to elicit it.

The contrast between the general [V̀V̀.V́] pattern and the [V́V́.V́] pattern specifically with *–x̲áat'án* 'snark, sarcasm' in (76f) reflects regular root phonology. The root √*x̲at'* is √*CVC'* with a final ejective and so under regular stem variation the *-μ* is replaced by *-μH* (sec. 2.1). This suggests that, unlike some of the other derivational suffixes, the stem variation process associated with *-án* follows the usual constraints of inflectional stem variation.

3.3.1.4. Intensive *-ch'án ~ -shán*

The suffix *-ch'án ~ -shán* is part of the extraordinary state derivation described in chapter 6 section 4.3.4 but it also occurs outside of this derivation. I usually describe this suffix as 'intensifying', but its actual semantics is still largely unknown and it has never been subjected to elicitation. The stems listed in (77) and (78) are all of the stems I have encountered with this suffix. The forms in (77) are stems that occur with the *-ch'án* allomorph and the forms in (78) are those with the *-shán* allomorph. According to Story (1966: 56) the *-shán* [ʃán] allomorph occurs only after ejective consonants and the *-ch'án* [tʃ'án] allomorph is the elsewhere case. This seems to be mostly true given the data in (77) and (78). Since *–néis'ch'án* in (77) occurs with a suffix *-s'* the constraint must be limited to the root. The stem *–yéinshán* in (78) is a synchronic exception but since √*ye'n* is a glottalized root (sec. 2.2) it could have been *√*yeṅ* which would then satisfy a laryngeal dissimilation constraint. Unfortunately this reasoning causes *–.óowch'án* in (77) to become problematic since its root is the glottalized √*.u'w* predicting *√*ʔuẃ*, *√*ʔuṅ*, or *√*ʔuj́*.

(77)

	Stem	*IPA*	*Morph.*	*Gloss*	← *Root*	*IPA*	*Gloss*
a.	*–.áax̲ch'án*	[ˈʔáːχ.tʃ'án]	√*.ax̲-μH-ch'án*	'fascin. to hear'	← √*.ax̲*	/ʔaχ/	'hear'
b.	*–néekch'án*	[ˈníːk.tʃ'án]	√*nik-μH-ch'án*	'easy to tell'	← √*nik*	/nik/	'tell'
c.	*–néis'ch'án*	[ˈnéːs'.tʃ'án]	√*na-eH-s'-ch'án*	'easy to grease'	← √*na*	/na/	'grease'
d.	*–néitlch'án*	[ˈnéːtɬ.tʃ'án]	√*netl-μH-ch'án*	'gets fat easily'	← √*netl*	/netɬ/	'fat (hum.)'
e.	*–nóokch'án*	[ˈnúːk.tʃ'án]	√*nuk-μH-ch'án*	'very delicious'	← √*nuk-ts*	/nukʷ/	'sweet'
f.	*–.óoshch'án*	[ˈʔúːʃ.tʃ'án]	√*.ush-μH-ch'án*	'easily pout'	← √*.ush*	/ʔuʃ/	'pout'
g.	*–.óowch'án*	[ˈʔúːw.tʃ'án]	√*.u'w-μH-ch'án*	'easy to sell'	← √*.u'w*	/ʔuw/	'buy'
h.	*–t'áaych'án*	[ˈt'áːj.tʃ'án]	√*t'aʰ-μH-ÿ-ch'án*	'easy to heat'	← √*t'aʰ*	/t'a/	'hot'
i.	*–wáasch'án*	[ˈwáːs.tʃ'án]	√*was-μH-ch'án*	'nice to roast'	← √*was*	/was/	'roast'
j.	*–wáashch'án*	[ˈwáːʃ.tʃ'án]	√*wash-μH-ch'án*	'yawns a lot'	← √*wash*	/waʃ/	'yawn'

(78)

	Stem	*IPA*	*Morph.*	*Gloss*	← *Root*	*IPA*	*Gloss*
a.	*–.éits'shán*	[ˈʔéːts'.ʃán]	√*.ets'-μH-ch'án*	'delicate, fragile'	← √*.ets'*	/ʔets'/	'hdl. caref.'
b.	*–.óos'shán*	[ˈʔúːs'.ʃán]	√*.us'-μH-shán*	'easy to wash'	← √*.us'*	/ʔus'/	'wash'
c.	*–tées'shán*	[ˈtʰíːs'.ʃán]	√*tis'-μH-shán*	'fascin. to watch'	← √*tis'*	/tʰis'/	'stare'
d.	*–wáal'shán*	[ˈwáːɬ'.ʃán]	√*wal'-μH-shán*	'easy to break'	← √*wal'*	/waɬ'/	'break'
e.	*–wáas'shán*	[ˈwáːs'.ʃán]	√*was'-μH-shán*	'often asked for'	← √*was'*	/was'/	'ask'
f.	*–yéinshán*	[ˈjéːn.ʃán]	√*ye'n-μH-shán*	'nice to wave'	← √*ye'n*	/jen/	'wave'
g.	*–x̲éetl'shán*	[ˈχíːtɬ'.ʃán]	√*x̲itl'-μH-shán*	'dangerous'	← √*x̲itl'*	/χitɬ'/	'afraid'
h.	*–x̲'wáal'shán*	[ˈχʷáːɬ'.ʃán]	√*x̲'wal'-μH-shán*	'soft, downy'	← √*x̲'wal'*	/χʷaɬ'/	'down'

The stem *–nóokch'án* 'very delicious' deserves some comment. It is probably based on the stem *–núkts* 'sweet' as in the verb *linúkts* 'it is sweet'. This stem has a complex coda which, as discussed in

section 3.2.3, seems to include an otherwise unknown suffix *-ts*. The status of this affricate as a suffix is supported by its absence in *–nóokch'án* since we would normally expect *–*núktsch'án* which does not occur. Alternatively, the affricate may have been lost from an earlier form by processes similar to those discussed in section 3.3.1.2, in which case its absence offers no support for suffixation.

The *-ch'án* ~ *-shán* suffix looks as though it could be related to the restorative *-án* suffix in section 3.3.1.3, but the semantics is unclear. If *-án* is separately analyzable then the remaining *-ch'* ~ *-sh* could be potentially connected to the *-ách'* ~ *-ch'* suffix as discussed in sections 3.3.1.2 and 3.3.1.8, but its meaning would remain opaque.

3.3.1.5. Suffix *-í*

The *-í* suffix is homophonous with the subordinate clause suffix *-í* and the nominalizing suffix *-í* but it lacks any obvious effects on clause type, syntactic category, or agreement so it is analyzed as a distinct element. It appears with a variety of nouns as shown in (79) where it seems to supply the meaning 'have *X*' where *X* is the noun. Thus *lijíni* 'it has a hand, arm, sleeve' derives from *jín* 'hand, arm' and *ligúgu* 'it has an ear, handle' derives from *gúk* 'ear'. But there are similar verbs without this suffix such as *si<u>x</u>'éi* 'it has a mouth, opening' from *<u>x</u>'é* 'mouth', so the actual contribution of *-í* is still nebulous.

(79)

	Stem	*IPA*	*Morph.*	*Gloss*	←	*Noun*	*IPA*	*Gloss*
a.	*–gooshí*	[ˈkʷùː.ʃí]	√*gush-μ-í*	'projecting'	←	*goosh*	[kʷùːʃ]	'thumb'
b.	*–dleeÿí*	[ˈtɬìː.jí]	√*dliÿ-μ-í*	'meaty'	←	*dleeÿ*	[tɬìːj]	'meat'
c.	*–.ee<u>x</u>í*	[ˈʔìː.χí]	√*.i<u>x</u>-μ-í*	'oily, greasy'	←	*ee<u>x</u>*	[ʔìːχ]	'oil, grease'
d.	*–gúgu*	[ˈkʷú.kʷù]	√*guk-H-í*	'eared'	←	*gúk*	[kʷúkʷ]	'ear'
e.	*–jíni*	[ˈtʃí.nì]	√*jin-H-í*	'armed'	←	*jín*	[tʃín]	'arm, hand'
f.	*–<u>k</u>ooshí*	[ˈqʰʷùː.ʃí]	√*<u>k</u>ush-μ-í*	'infected'	←	*<u>k</u>oosh*	[qʰʷùːʃ]	'open sore'
g.	*–l'eedí*	[ˈɬìː.tí]	√*l'id-μ-í*	'tailed'	←	*l'eet*	[ɬìːt]	'tail'
h.	*–saaÿí*	[ˈsàː.jí]	√*sa-μ-í*	'famous'	←	*saa*	[sàː]	'name'
i.	*–tsáax'i*	[ˈtsʰáː.xʼì]	√*tsax'-μH-í*	'mittened'	←	*tsáax'*	[tsʰáːxʼ]	'mitten'
j.	*–<u>x</u>'oosí*	[ˈχʼʷùː.sí]	√*<u>x</u>'us-μ-í*	'footed'	←	*<u>x</u>'oos*	[χʼʷùːs]	'leg, foot'
k.	*–yaaÿí*	[ˈjàː.jí]	√*yaÿ-μ-í*	'submerged'	←	*yáaÿ*	[jáːj]	'whale'

The *-í* suffix is also found with a wide variety of verb roots, a very few of which are shown in (80). In this case the roots can also be found in verbs without *-í* so these are not denominal. The semantic contribution of *-í* here is less clear, but it seems to be similar to its contribution with nouns.

(80)

	Stem	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–háach'i*	[ˈháː.tʃʼì]	√*hach'-μH-í*	'shameful'	←	√*hach'*	/hatʃʼ/	'shame'
b.	*–háas'i*	[ˈháː.sʼì]	√*has'-μH-í*	'nauseating'	←	√*has'*	/hasʼ/	'vomit'
c.	*–héil'i*	[ˈhéː.ɬʼì]	√*hel'-μH-í*	'clumsy'	←	√*hel'*	/heɬʼ/	'weak'
d.	*–yéil'i*	[ˈjéː.ɬʼì]	√*yel'-μH-í*	'peaceful'	←	√*yel'*	/jeɬʼ/	'calm'
e.	*–yéis'i*	[ˈjéː.sʼì]	√*yes'-μH-í*	'easy to dye'	←	√*yes'*	/jesʼ/	'dye'
f.	*–yéigi*	[ˈjéː.kì]	√*yek-μH-í*	'make space'	←	√*yek*	/jek/	'roomy'
g.	*–waashí*	[ˈwàː.ʃí]	√*wash-μ-í*	'yanwsome'	←	√*wash*	/waʃ/	'yawn'
h.	*–déix'i*	[ˈtéː.xʼì]	√*dex'-μH-í*	'shameful'	←	√*dex'*	/texʼ/	'embarrass'

There are three stems listed in (81) that appear to be constructed from the *-í* suffix but whose roots are otherwise unknown. The stem *–koodzí* 'amazing, incredible, awesome' is certainly the most common of these, being used very frequently in everyday conversation in the state imperfective *likoodzí* 'it's amazing'. Leer (1978c: 75) suggests that this verb derives from an interjection *koodzí!* 'amazing!', but that only begs the question about the existence of the root √*kuts*.

(81)

	Stem	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–koodzí*	[ˈkʰʷùː.tsí]	√*kuts-μ-í*	'amazing'	←	√*kuts*	/kʰʷuts/	'(unknown)'
b.	*–tánu*	[ˈtʰá.nù]	√*tanʷ-H-í*	'gripe'	←	√*tanʷ*	/tʰan/	'(unknown)'
c.	*–yaaÿí*	[ˈjàː.jí]	√*ya*(*ÿ*)*-μ-í*	'weird, crazy'	←	√*ya*(*ÿ*)	/ja(j)/	'(unknown)'

The *–tánu* stem is problematic because it seems to exhibit unexpected labialization of the *-í* suffix, hence the representation of its root as √*tanʷ*. There is a suffix *-ú* but this forms locative predicates with nouns (e.g. *wé x'úx' nadáakw ká-wu* |MDST book table top-LOCP| 'the book is on top of the table') and would be both semantically and syntactically incompatible with a verb like 'gripe'.

Though unreported in the lexical documentation, the stem *–yaaÿí* 'weird, crazy' has been contracted to *–yéi* [jéː] by speakers from at least Angoon and Teslin in my experience, e.g. *kasiyéi* [ˌkʰà.sìˈjéː] 'it's weird' vs. *kasiyaayí* [ˌkʰà.sìˈjàː.jí] 'it's weird'. This predicts a new root √*ye* which would otherwise be unknown. There are a few roots of the form √*ya* and √*ÿaʰ* that might be related: √*ya* 'pack on back', √*ÿaʰ* 'move uncertainly; occur', √*ÿaʰ* 'reluctant', √*ÿaʰ* 'resemble', and √*ÿaʰ* 'spread out; lower'. Of these the root √*ÿaʰ* 'move uncertainly; occur' is perhaps the most likely candidate but it is documented with *ÿ* /ɥ/rather than *y* /j/ in dialects that maintain the distinction.

3.3.1.6. Suffix *-áa* ~ *-aa*

The suffix *-áa* ~ *-aa* is found in a very wide variety of disyllabic stems. It is probably underlyingly /-áː/ with high tone given a stem like *–tseenáa* [ˈtsʰìː.náː] 'exercise' based on the root √*tsin* 'alive, strong'. The low tone form then follows the pattern of other open syllable suffixes such as *-í* and *-dé*. The meaning of *-áa* is currently obscure; it is likely related to the homophonous instrument nominalization suffix as in *xeisáa* 'bird trap' ← √*xes* 'trap bird', *deenáa* 'seal harpoon' ← √*din* 'upset, bother, trouble', and *óonaa* 'gun' ← √*.u'n* 'shoot gun', but in verbs *-áa* is unclear.

The stems in (82) illustrate the *-áa* suffix in its simplest form with a handful of typical examples. The stem variation is apparently unpredictable, though this may be due to limited data. All of the stems in (82) are derived from verb roots except that the basis roots of *–chígaa* 'fierce, formidable' and *–dlénaa* 'tempt; touching game' are unattested.

(82)	*Stem*	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–chígaa*	[ˈtʃʰí.kàː]	√*chik-H-áa*	'fierce, formidable'	←	√*chik*	/tʃʰik/	(unknown)
b.	*–deegáa*	[ˈtìː.ká:]	√*dik-μ-áa*	'dipnet fish'	←	√*dik*	/tik/	'dipnet, rudder'
c.	*–dlénaa*	[ˈtɬé.nàː]	√*dlen-H-áa*	'touching game'	←	√*dlen*	/tɬen/	(unknown)
d.	*–góol'aa*	[ˈkʷúː.ɬʼàː]	√*gul'-μH-áa*	'wink'	←	√*gul'*	/kʷuɬʼ/	'wink'
e.	*–héexwaa*	[ˈhíː.χʷàː]	√*hixw-μH-áa*	'make magic (pos.)'	←	√*hixw*	/hiχʷ/	'bewitch'
f.	*–kéenaa*	[ˈkʰíː.nàː]	√*ki'n-μH-áa*	'annoyingly noisy'	←	√*ki'n*	/kʰin/	'bother'
g.	*–k'éinaa*	[ˈkʼé:.nàː]	√*k'e'n-μH-áa*	'jumping, twirling'	←	√*k'e'n*	/kʼen/	'jump'
h.	*–t'ájaa*	[ˈtʼá.tʃàː]	√*t'ach-H-áa*	'swim for fun'	←	√*t'ach*	/tʼatʃ/	'slap'
i.	*–tseenáa*	[ˈtsʰìː.ná:]	√*tsin-μ-áa*	'exercise'	←	√*tsin*	/tsʰin/	'alive, strong'
j.	*–ts'ígwaa*	[ˈtsʼí.kʷàː]	√*ts'ikw-H-áa*	'touchy, delicate'	←	√*ts'ik*	/tsʼik/	'whine, fuss'
k.	*–wéinaa*	[ˈwé:.nàː]	√*wu-eH-n-áa*	'powder face'	←	√*wu*	/wu/	pale

There is a disyllabic stem *–ts'ísxaa* [ˈtsʼís.xàː] 'sneeze' that varies in form, being attested also as as *–ts'ísxwaa* [ˈtsʼís.xʷàː], *–ts'ísaa* [ˈtsʼí.sàː], and *–ts'íxaa* [ˈtsʼí.xàː] among other forms. The *–ts'ísaa* form is morphophonologically analyzable as something like √*ts'is-H-áa* and *–ts'íxaa* likewise as √*ts'ix-H-áa*, but the *–ts'ísxaa* and *–ts'ísxwaa* forms require an otherwise unknown and inexplicable *-x* or *-xw* suffix. I find it more likely that this stem is onomatopoetic for the sound of a sneeze, especially since there is no basis root like *√*ts'is* and since the root √*ts'ix* 'damp, rotten' (cf. √*s'ix* 'spoil', √*s'ixw* 'sour') is semantically unrelated.

Many other disyllabic stems with *-áa* include a repetitive suffix. The most common is certainly *-ch* which appears in a large number of disyllabic stems that denote environmental phenomena. The result of combining *-ch* and *-áa* is sometimes analyzed as a single suffix *-jaa*. Most of the stems with *-ch-áa* are documented as nouns but are plausibly also useable as verbs. There are at least three listed in (83) that are unequivocally attesed in verbal forms.

(83)	*Stem*	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–dánjaa*	[ˈtán.tʃàː]	√*dan-H-ch-áa*	'snow fall heavy'	←	√*dan*	/tan/	'pile up'
b.	*–gíx'jaa*	[ˈqíχʼ.tʃàː]	√*gix'-H-ch-áa*	'squeak; bow (violin)'	←	√*gix'*	/qiχʼ/	'creak'
c.	*–sáÿjaa*	[ˈsáj.tʃàː]	√*saÿ-H-ch-áa*	'heat radiate'	←	√*saÿ*	/saj/	'sweaty'

The nouns in (84) contain *-ch* and *-áa* and are all clearly derived from verb roots. This is only a selection of the many such nouns attested in the lexical documentation. The nouns in (85) are similar to those in (84) but have additional qualifiers or incorporates that further reinforce the likelihood of having been derived from verbs.

(84)	*Stem*	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*k'úxjaa*	[ˈkʼʷúxʷ.tʃàː]	√*k'ux-H-ch-áa*	'distant noise'	←	√*k'ux*	/kʼʷuxʷ/	'knock'
b.	*l'íx'jaa*	[ˈɬʼíxʼ.tʃàː]	√*l'ix'-H-ch-áa*	'twig snap noise'	←	√*l'ix'*	/ɬʼix'/	'snap'
c.	*nút'jaa*	[ˈnútʼ.tʃàː]	√*nut'-H-ch-áa*	'gulping noise'	←	√*nut'*	/nutʼ/	'swallow'
d.	*óoxjaa*	[ˈʔúːxʷ.tʃàː]	√*.u'x-μH-ch-áa*	'wind'	←	√*.u'x*	/ʔuxʷ/	'blow'
e.	*tíxwjaa*	[ˈtʰíxʷ.tʃàː]	√*tixw-H-ch-áa*	'stomping noise'	←	√*tixw*	/tʰixʷ/	'stomp'
f.	*wál'jaa*	[ˈwáɬʼ.tʃàː]	√*wal'-H-ch-áa*	'loud racket'	←	√*wal'*	/waɬʼ/	'break'
g.	*x'úkjaa*	[ˈxʼʷúkʷ.tʃàː]	√*x'uk-H-ch-áa*	'steam'	←	√*x'uk*	/xʼʷukʷ/	'steam'

(85)	*Stem*	*IPA*	*Morph.*	*Gloss*	← *Root*	*Gloss*
a.	*k̲una.áax̲jaa*	[qʰʷù.nà.ˈʔáːχ.tʃàː]	*k̲u-n-√.ax̲-H-ch-aa*	'echo'	← *√.ax̲*	'hear'
b.	*kach'íshjaa*	[kʰà.ˈtʃ'íʃ.tʃàː]	*k-√ch'ish-H-ch-aa*	'splashing'	← *√ch'ish*	'splash'
c.	*kadánjaa*	[kʰà.ˈtán.tʃàː]	*k-√dan-H-ch-aa*	'dust, pollen'	← *√dan*	'pile up'
d.	*kas'éesjaa*	[kʰà.ˈs'íː.s.tʃàː]	*k-√s'is-H-ch-aa*	'blowing snow'	← *√s'is*	'windblown'
e.	*kaséex̲jaa*	[kʰà.ˈsíːχ.tʃàː]	*k-√six̲-H-ch-aa*	'drizzly mist'	← *√si⁽'⁾x̲*	(unknown)
f.	*x̲'asúnjaa*	[χ'à.ˈsún.tʃàː]	*x̲'e-√su'n-H-ch-aa*	'bubbling'	← *√su'n*	'bubble'
g.	*kat'ákwjaa*	[kʰà.ˈt'ákʷ.tʃàː]	*k-√t'akw-H-ch-aa*	'stirring air'	← *√t'akw*	'slap tail; fan'
h.	*kat'áx̲'jaa*	[kʰà.ˈt'áχ'.tʃàː]	*k-√t'ax̲'-H-ch-aa*	'popping noise'	← *√t'ax̲'*	'pop, spark'
i.	*katl'úk̲jaa*	[kʰà.ˈtɬ'úqʷ.tʃàː]	*k-√tl'uk̲-H-ch-aa*	'dripping leak'	← *√tl'uk̲*	'slow drip'
j.	*kax'áasjaa*	[kʰà.ˈx'áː.s.tʃàː]	*k-√x'as-H-ch-aa*	'running leak'	← *√x'as*	'cascade'
k.	*kax̲átjaa*	[kʰà.ˈχát.tʃàː]	*k-√x̲a't-H-ch-aa*	'fish jumping'	← *√x̲a't*	'fin show'

The noun *kaséex̲jaa* ~ *kaséix̲jaa* is listed in (85) with an unknown root. It could alternatively be derived from the noun *séew* [síːw] 'rain' (< **siːm*) with the addition of repetitive *-x̲* so that *kaséex̲jaa* < **ka-√sim-μ-χ-ǯ-aː* with subsequent loss of the labial sonorant.

The stems above all have the *-ch* repetitive suffix. There are at least two stems listed in (86) that occur with the *-x̲* repetitive suffix instead. The semantic differences between *-x̲* and *-ch* are still unknown so we cannot say what *-x̲* contributes instead of *-ch* in these two stems, although presumably it is also some kind of iterativity. Crucially neither of these stems has a meaning of 'miss target' so that this is not the *-x̲aa* suffix discussed in section 3.3.1.1.

(86)	*Stem*	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*–chánx̲aa*	[ˈtʃʰán.χàː]	*√chan-H-x̲-áa*	'think self stinks'	←	*√chan*	/tʃʰan/	'stink'
b.	*–dlénx̲aa*	[ˈtɬén.χàː]	*√dlen-H-x̲-áa*	'tempt, try out'	←	*√dlen*	/tɬen/	(unknown)

3.3.1.7. Suffix *-ákw*

The *-ákw* suffix is attested from two verb stems and one adverb as listed in (87). This suffix appears to be an epenthesized form of the repetitive suffix *-k* ~ *-kw* similar to the allomorphy of the deprivative *-k̲* and *-ák̲w* noted in section 3.3.1.2. Perhaps coincidentally, the adverb *kaldaag̲ákw* 'naked, clothesless' and the stem *–seig̲ákw* 'catch breath' combine the deprivative *-k̲* with *-ákw*.

(87)	*Stem*	*IPA*	*Morph.*	*Gloss*	←	*Root*	*IPA*	*Gloss*
a.	*kaldaag̲ákw*	[ˈkʰàɬ.tàː.qákʷ]	*k-l-√da-μ-k̲-ákw*	'naked'	←	*√daʰ*	/ta/	'around'
b.	*–gídákw*	[ˈkí.tákʷ]	*√git-H-ákw*	'show off'	←	*√git*	/kit/	'fall; act'
c.	*–seig̲ákw*	[ˈsèː.qákʷ]	*√sa-e-k̲-ákw*	'catch breath'	←	*√saʰ*	/sa/	'breathe'

The adverb *kaldaag̲ákw* 'naked, clothesless' derives from the root *√daʰ* 'around' as represented chiefly by the relational noun *daa* '(his/her/its) around, outsides, surrounding'. It can be interpreted as something like 'repeatedly lacking outsides' with the deprivative *-k̲* and repetitive *-ákw*.

The stem *–gídákw* is only attested in the sentence *ax̲ wak̲shiyeex' has koosgídákw* 'they're showing off in front of me' (Leer 1973a: f05/94). In that document Leer files it together with the root *√git* which he glosses as 'animate fall; act thus'. This suggests a literal interpretation like 'repeatedly act thus' with the pejorative 'show off' being a conventional implicature.

The stem *–seigákw* 'catch breath' is based on the root √*sa*ʰ 'breathe' with the deprivative *-k̲* and repetitive *-ákw*. Although Story & Naish (1973: 36) gloss it as "regain breath, get one's wind back" and Leer (1973a: 09/5) as "catch breath", *–seigákw* is probably more literally interpreted as something like 'repeatedly lacking breath'.

3.3.1.8. Six hapax suffixes

I have found six disyllabic stems that feature suffixes which are otherwise unattested (hapax legomena). These six stems are listed in (3.3.1.8). None of the suffixes are known anywhere else in either nouns or verbs and are only identifiable as such because the basis roots are attested.

(88)

	Stem	*IPA*	*Morph.*	*Gloss*	← *Root*	*IPA*	*Gloss*
a.	*–geigách'*	[ˈqèː.qátʃ']	√*gek̲-μ-ách'*	'swing'	← √*gek̲*	/qeq/	'swing'
b.	*–k̲áanaatsk'*	[ˈqʰáː.nàːtsk']	√*k̲a-μH-naatsk'*	'wealthy'	← √*k̲a*	/qʰa/	'gamble'
c.	*–k̲éenás*	[ˈqʰíː.nás]	√*k̲i-μH-nás*	'in-law trade'	← √*k̲i*	/qʰi/	'pay'
d.	*–k̲éil'út'*	[ˈqʰéː.ɬ'út']	√*k̲a-eH-l'út'*	'lick seam'	← √*k̲a*	/qʰa/	'stitch, sew'
e.	*–tl'éek'át*	[ˈtɬ'íː.k'át]	√*tl'i-μH-k'át*	'thread stick thru'	← √*tl'i'n*	/tɬ'in/	'tie hair, cloth'
f.	*–x̲aanás'*	[ˈχàː.nás']	√*x̲a-μ-nás'*	'travel by raft'	← √*x̲a*	/χa/	'paddle'

The stem *–geigách'* 'swing' may either be a denominal stem or the basis of a deverbal noun *geigách'* 'swing, hammock'. Its suffix *-ách'* may be an epenthesized form of the *-ch'* in the stem *–séewch'ák̲w* listed earlier in section 3.3.1.2. The same *-ch'* is phonologically identifiable in the *-ch'án* suffix in section 3.3.1.4 but there is no obvious semantic connection to push this analysis further.

The stem *–k̲áanaatsk'* is attested only once in the verb *jidi̥k̲áanaatsk'* 's/he is rich' from an unidentified Henya speaker (Leer 1973a: f01/38). Leer analyzes this as based on the root √*k̲a* 'gamble' (Leer 1978c: 74), but the etymology of the *-naatsk'* suffix is unknown. The final *-k'* could be identified as the diminutive suffix but its interpretation in this context is unclear.

The stems *–k̲éenás* 'in-law trade' and *–x̲aanás'* 'travel by raft' in are sometimes mistakenly identified as featuring the same suffix. This is incorrect: the former stem has final /s/ where the latter stem has final ejective /s'/ and my consultants have reliably distinguished the two in elicitation. Their semantic contributions are still unknown.

The stem *–k̲éil'út'* 'lick seam' is particularly unusual because it appears to be a compound of the basis root √*k̲a* 'stitch, sew' and the root √*l'ut'* 'tongue' as in the noun *l'óot'* [ɬ'úːt'] 'tongue'. It is attested once in the verb *ak̲éil'út'* 's/he is licking or wetting seams in making moccasins, to make them hard' (Leer 1973a: f01/26). There are no other examples of root compounds as verb stems, so this stem deserves further investigation.

The stem *–tl'éek'át* 'thread stick through to stiffen' is also attested as *–tl'éek'át'* with a final ejective stop. The phonologically and semantically closest root is √*tl'i'n* 'tie hair, cloth' which is used in verbs like *wuditl'ín* 's/he tied own hair into a bunch, ponytail' and *akatl'ínx̲* 's/he is putting gathers, ruffles in it (cloth)'. There is a noun *tl'éek'át* 'barbecue cross-piece' that denotes a stick threaded through a piece of meat or fish in order to stiffen it for cooking, so that the stem *–tl'éek'át* may actually be denominal. But this still does not explain the meaning of the suffix *-k'át*. There is a poorly documented particle phrase *ch'a k'át* 'at least' but its meaning does not seem to be related with the verbal suffix.

3.3.2. Denominal disyllabic stems

Denominal disyllabic stems are disyllabic stems that are derived from disyllabic nouns, or more loosely from any other non-verbal category that can be realized disyllabically. I have found only six unequivocal examples of denominal disyllabic verb stems, all of which are given in (89). Crucially, none of the nouns in (89) can be regularly derived from a verbal root. It is this lack of a verbal root that supports their analysis as denominal.

(89)

	Stem	*IPA*	*Gloss*	←	*Noun*	*IPA*	*Gloss*
a.	*–dáanaa*	[ˈtáː.nàː]	'moneyed'	←	*dáanaa*	[ˈtáː.nàː]	'money, silver'
b.	*–daawáa*	[ˈtàː.wáː]	'checkers'	←	*daawáa*	[ˈtàː.wáː]	'checkers'
c.	*–.eesháan*	[ˈʔìː.ʃáːn]	'poor, pathetic'	←	*eesháan*	[ˈʔìː.ʃáːn]	'poor thing!'
d.	*–g̱eiwú*	[ˈqèː.wú]	'seine'	←	*g̱eiwú*	[ˈqèː.wú]	'seine net'
e.	*–léelk'whás*	[ˈɬíːɬkʼʷ.hás]	'grandparent'	←	*léelk'w hás*	[ˈɬíːɬkʼʷ.hás]	'grandparent PL'
f.	*–tleilk'ú*	[ˈtɬʰèːɬ.kʼú]	'make string figs.'	←	*tleilk'ú*	[ˈtɬʰèːɬ.kʼú]	'string figure'

The stem *–dáanaa* 'moneyed' is notable for being a relatively recent introduction. The noun *dáanaa* 'money, silver, dollar' is a borrowing of Chinook Jargon *dála* 'money, silver, dollar' which is ultimately from English *dollar*. Note that the Tlingit and CJ interpretations are much broader than the English interpretation, showing that the Tlingit form was not borrowed directly from English. This stem is not well known because it is only attested in four example sentences in Leer 1973a: 05/40–41, but I have introduced it to some of my consultants who immediately grasp the meaning and at least one has gone on to use it independently.

The stem *–daawáa* 'play checkers' is very obscure, attested only from the form *aldaawáa* [ʔàɬˈtàː.wáː] 's/he is playing "indian chess"' in Leer 1973a: 05/31, apparently given by a speaker from Yakutat. The noun *daawáa* 'checkers' is also fairly obscure but slightly better known, attested from Emmons (De Laguna 1972: 557) and separately from Kelly & Willard (1905: 759) in the phrase *daawáa tayee t'áayi* 'checkerboard'. De Laguna suggests that the noun may be borrowed from Ahtna "*dámbà'*" (De Laguna 1972: 557). This is listed by Kari (1990: 149) as *dembah* ~ *demba'* 'checkers' in Ahtna, described as a borrowing of Russian дама *dáma* 'lady; queen at checkers'.

The stem *–.eesháan* is actually from an interjection *eesháan* 'poor thing!; too bad!' rather than a noun. This interjection has a still hazy etymology, but it seems to be derived from the root √*shan* 'old, elderly', perhaps preceded by a now frozen second person singular pronoun.

The stem *–g̱eiwú* 'seine' is from the disyllabic noun *g̱eiwú* 'fish net'. This noun is probably derived from the relational noun *g̱ei* 'between, enclosure', but the origin of the *wú* element is unclear particularly because there is no phonological trigger for labialization.

The stem *–tleilk'ú* 'make string figures' is from the disyllabic noun *tleilk'ú* 'string figure'. This noun is itself of unknown etymology. The *tleil* portion bears a resemblance to the negative particle *tléil* but there is no semantic connection. The *-k'ú* portion looks like the diminutive *-k'w* followed by a suffix *-í*, but neither of these has any obvious connection to the meaning of the whole noun. It is possible that this noun was borrowed from some other language, but there has been no reported investigation of this hypothesis in the documentation.

The stem *–léelk'whás* 'become grandparent' is a hapax legomenon derived from a noun phrase and not simply from a noun. This suggests that the morphosyntax of derivation must admit fairly

large nominal structures. The sentence in which this root appears is given in (90) below for reference. The referent of *ax̲ léelk'w hás* 'my grandparents' here is not literal, instead referring to contemporaries of the speaker (*Keik̲óok'* George Jim) who are members of the same clan as his grandparents. In this context he describes them as having become grandparents alongside him in their later years.

(90)

Ax̲	léelk'w	hás	x̲aan	wuliléelk'whás
[ʔàχ	ˈɬíːɬkʼʷ	hás	ˈχàːn	ˌwùˑɬìˑˈɬíːɬkʼʷˑhás]
ax̲	léelk'w	=hás	x̲a -n	wu- l- i- léelk'whás
1SG·PSS	grandparent	=PLH	1SG-INSTR	PFV-CSV-STV-grandparents

'My grandparents have become grandparents with me.' (Dauenhauer & Dauenhauer 1990: 300.21)

The syntax of denominal disyllabic stems must depend on the still unessayed analysis of disyllabic nouns. The substance of the analysis must be conversion (zero-derivation) in the same vein as for denominal monosyllabic stems. For example, the disyllabic stem *–dáanaa* appears to be constructed from a notional root √*dan*, the *-μH* stem variation, and a suffix *-aa* or *-áa*. This entails a noun with exactly the same structure but with *-μH* of category N rather than category V. The status of the *-aa* or *-áa* suffix is complicated in this context because it must not modify the category in both contexts and so should be syntactically like a modifier. There is the instrument noun suffix *-aa* mentioned in section 3.3.1.6 that can be applied to roots to give a noun denoting a tool or instrument as in √*.un* 'shoot gun' + *-μH* + *-aa* → *óonaa* [ˈʔúːˑnàː] 'rifle; gun', √*x̲ut'* 'adze, chop' + *-H* + *-aa* → *x̲út'aa* [ˈχúˑtʼàː] 'adze', and *ÿá* 'face' + √*wu* 'pale' + *-eH* + *-n* + *-aa* → *yawéinaa* 'face powder'. But in verbs the *-aa* suffix cannot be a nominalizing element unless there is a higher null element that converts the result back to a verb.

4. Root phonotactics

Roots are abstracted from the stem paradigms of verbs. Stems are (√, V) pairs that are formed by the first merge operation in a verbal clause. Setting aside the invariable stems (sec. 3), roots phonologically represent the invariant material of a stem paradigm. Roots can then be identified inside of invariable stems by phonological analogy with the invariant material of variable stems. This idea is not new: the existence of roots that underly stem variation paradigms has been assumed in Tlingit since at least Story (1966) and Naish (1966). Boas does not explicitly describe roots in his collections of stem paradigms but he seems to have had exactly such an abstraction in mind (Boas 1917: 24–27).

There is no principled study of root phonotactics in Tlingit. I sketch a few basic generalizations in this section and then delve specifically into onset consonants in section 4.1, vowels in section 4.2 and coda consonants in section 4.3. I use the terms 'onset' and 'coda' loosely here: roots have a segmental organization that corresponds to surface syllables, but the surface form of a root – i.e. a stem – does not necessarily have the same phonological structure as the root's lexical entry.

I have compiled an extensive and nearly exhaustive listing of verb roots in Northern Tlingit[12] based on the existing lexical documentation as well as elication and textual material. This catalogue should serve as a basis for the analysis of root phonotactics, but because roots are abstract elements the underlying forms of this catalogue are suspect given my reanalysis of stem morphophonology. For example, there are many roots which are traditionally supposed to be disyllabic but according

12. See https://github.com/jcrippen/tlingit-roots.

to section 3.3 these should all be decomposable into monosyllabic roots with suffixation. The entire catalogue of roots needs to be edited and reorganized to more carefully distinguish between surface forms and abstract lexical entries.

The possible shapes of monosyllabic roots are shown in (91). The minimal root is √*CV* so that all roots must have at least an onset (sec. 4.1) and a vowel (sec. 4.2). A single coda consonant can occur as √*CVC*, but further coda consonants are impossible (sec. 4.3). The √*CV* roots are generally referred to as **open roots** and the √*CVC* roots as **closed roots**. The general phonological constraints against aspirated obstruents and glottal stops and fricatives in the coda also applies to roots (sec. 4.3).

(91) *basic root shapes*

C	V	VC	VCC	CV	CVC	CVCC	CCV	CCVC	CCVCC
*	*	*	*	✓	✓	*	*	*	*

Single consonant roots like *√*C* are prohibited. This constraint is also specific to roots because there are many other morphemes that consist of a single consonant. Suffixes like the diminutive *-k'* /k'/ and punctual *-t* /t/ are of course single consonants, but there are also clitics consisting of a lone consonant such as the negative *l* [ɬ] (cf. *tléil* [tɬʰéːɬ]; ch. 6 sec. 4.5.1.2), argument pluralizing *s=* [s] (cf. *has=* [hàs]; ch. 7 sec. 2), and reflexive *sh=* [ʃ] (cf. *chush=* [tʃʰùʃ]; ch. 7 secs. 1.2.1.10 & 1.2.1.11).

Single vowel roots like *√*V* are also prohibited, as are onsetless roots like *√*VC* and *√*VCC*. Affixes like the second person singular subject prefix *i-* and the possessive suffix *-í* can consist of a lone *V*. In the latter case, when the possessive suffix would be realized as a lone vowel in its own syllable there is epenthesis of an onset. This raises the possibility that roots could actually be onsetless with an epenthetic onset inserted as necessary, just like how the second singular *i-* may be realized as [ʔi] and the possessive *-í* may be realized as [jí]. But if we supposed that the root √*.a* /ʔa/ 'end move' were actually underlyingly √*a* /a/, the surface realization would always be of the form [ʔa…] without exception. Similarly, if the root √*ya* /ja/ 'pack (on back)' were underlyingly √*a* /a/ it would always surface with a form like [ja…] without exception. This is distinctly unlike affixes where the onset can be formed from other morphology instead of epenthesis. Since these 'epenthetic' root onsets are exceptionless and invariable, it is more parsimonious to assume that they are part of the lexical entry rather than being inserted in the surface form by phonological phenomena.

Roots with more than one onset consonant like *√*CCV* are also prohibited. This constraint is specific to verbal roots because there are several nouns with more than one onset consonant such as *ch.xánk'* [tʃχánk'] 'grandchild (endearing)', *shdéen* [ʃtíːn] 'steel', and *sdoox* [stùːxʷ] 'stove'. There are instances of borrowings with complex onsets that have been turned into verbs in Tlingit, but they have undergone morphological reanalysis so that the former onset consonant is instead prefixal. The canonical example of this is the verb for 'study' illustrated in (92). The negative perfective in (92a) at first glance might seem to reflect a sequence of /st/ as in the English *study* [ˈstʌ.ˌdi], but shifting to an affirmative in (92b) shows that the /s/ has been reanalyzed as the prefix *s-* in *v* preceded by *d-* in Voice (ch. 5 sec. 2.1.4).

(92) a. *negative perfective*

Tléil awusdádi.
[tɬʰéːɬ ˌʔà.wùs.ˈtá.tì]
tléil a- u- wu-d- s- √dad -H -í
NEG ARG-IRR-PFV-MID-XTN-√study-VAR-SFX
'S/he didn't study it.' (*Ḵeixwnéi* Nora Marks Dauenhauer)

b. X̱wadzidádi. *affirmative perfective*
[χʷà.tsì.ˈtá.tì]
wu-x̱- d- s- i- √dad -H -í
PFV-1SG·S-MID-XTN-STV-√study-VAR-SFX
'I studied it.' (*X̱eixwnéi* Nora Marks Dauenhauer)

Given the minimum possible number of 42 consonants (apx. A sec. 2.1) and the four possible vowels (apx. A sec. 2.2), there are 42 × 4 = 168 possible *CV* patterns that could be lexical entries for open roots. This must be doubled because of the contrast between √*CV* and √*CVʰ* roots (sec. 2.4), so there are 336 possible open roots in Northern Tlingit. Searching my root list I find 75 √*CV* roots and 38 √*CVʰ* roots, and 113 is much less than 336 so the inventory of documented open roots is sparse.

Since there are constraints against aspirated obstruents and against glottal stops and glottal fricatives in coda consonants, the minimum possible number of coda consonants is 42 − 10 = 32. This means that the minimum possible number of *CVC* patterns that could be root lexical entries is 42 × 4 × 32 = 5376. To this we can add the √*CV'C* contrast (sec. 2.2); since this excludes the 14 ejective coda consonants, there are 42 × 4 × (32 − 14) = 3024 possible √*CV'C* roots in addition to the √*CVC*⁽'⁾ roots giving a total of 5376 + 3024 = 8400. Searching the root list I find only 917 matches, though this excludes a number of roots representing invariable stems (my current root list predates the analysis presented in this appendix). Thus the inventory of documented closed is also sparse.

Roots are not phonologically unique, meaning that two or more roots can be homophonous. Homophonous roots are distinguished syntactically and semantically, and different lexicographers have made different distinctions between roots. My model of the verb provides several different principled syntactic and semantic diagnostics for collapsing homophonous roots (e.g. valency, event structure) so I tend to posit fewer homophones than other researchers. Nonetheless there are still quite a few homphones despite the very large inventory of consonants available for forming roots. One particularly rich set of homophones are the seven /ha/ roots mentioned earlier in section 2.4. Root homophony is not particularly unusual in the lexical documentation, so the estimates above for actual versus possible roots in the lexicon must be modulated. The root inventory thus appears to be remarkably sparse; explanations for this sparseness have yet to be explored.

4.1. Onset consonants

All Tlingit roots have an onset consonant. Onsetless roots are documented in many languages, such as French *homme* /ɔm/ 'man' which picks up an onset from the preceding word like in *un homme* [ʔy.ˈnɔm] 'a man' and in *l'homme* [lɔm] 'the man', as well as hosting an epenthetic glottal stop when there is no preceding consonant as in *le mot 'homme'* [lə mɔ ʔɔm] 'the word "man"'. Many other Na-Dene languages have at least one onsetless root, but Tlingit prohibits such roots. I review this prohibition against onsetless roots here because it is familially somewhat remarkable.

Krauss illustrates some onsetless roots in Eyak and Navajo in his analysis of the classifier in Na-Dene languages (Krauss 1969: 60). I reanalyze his data in (93)–(96), adding morphological segmentations and IPA transcriptions. The forms in Eyak are *ɢ*-imperfectives and the forms in Navajo are *ɣ*-imperfectives; these are imperfective aspect expressions which include a conjugation prefix *ɢ-* in Eyak and *y-* < Proto-Dene **ɣ-* in Navajo (see ch. 6 sec. 2.1.2 for similar structures in Tlingit).

The first sets of forms in (93) and (94) use the cognate Eyak and Navajo roots √*we* /we/ 'swim' (Krauss 1970: 1930) and √*be* /pe/ 'swim' (Young, Morgan, & Midgette 1992: ??), both of which are lex-

ically specified with onset consonants.[13] These clearly show a lexically specified onset consonant that is preserved in every surface form, [w] for Eyak and [p] for Navajo.

(93) *Eyak*

a. ɢəxweːɬ *first person singular subject*
[qəx.ˈweːɬ]
ɢ- x- √we -μ -ɬ
GCNJ-1SG·S-√swim-VAR-ŁSFX
'I swim.' Krauss (1969: 60)

b. ɢiːweːɬ *second person singular subject*
[qiː.ˈweːɬ]
ɢ- iː- √we -μ -ɬ
GCNJ-2SG·S-√swim-VAR-ŁSFX
'You swim.' Krauss (1969: 60)

c. ɢəweːɬ (*null*) *third person subject*
[qə.ˈweːɬ]
ɢ- √we -μ -ɬ
GCNJ-√swim-VAR-ŁSFX
'S/he swims.' Krauss (1969: 60)

(94) *Navajo*

a. yishbéél *first person singular subject*
[jìʃ.ˈpéːɬ]
y- sh- √be -μH-ł
ΓCNJ-1SG·S-√swim-VAR-ŁSFX
'I swim.' Krauss (1969: 60)

b. yíbéél *second person singular subject*
[jí.ˈpéːɬ]
y- Hn- √be -μH-ł
ΓCNJ-2SG·S-√swim-VAR-ŁSFX
'I swim.' Krauss (1969: 60)

c. yibéél (*null*) *third person subject*
[jì.ˈpéːɬ]
y- √be -μH-ł
ΓCNJ-√swim-VAR-ŁSFX
'S/he swims.' Krauss (1969: 60)

The forms in (95) and (96) show contrasting examples with the cognate Eyak and Navajo onsetless roots √*a* /a/ 'sg. go' (Krauss 1970: 2688)[14] and √*a* /a/ 'sg. go' (Young, Morgan, & Midgette 1992:

13. Navajo √*be* < Proto-Dene *√*we* (Leer 1996b: w/71) < Proto-Dene-Eyak *√*we* > Eyak √*we*. Compare Tlingit √*hu* 'wade'.
14. Despite Krauss 1969, Krauss 1970 inexplicably gives the Eyak root as √*ʔa* with an onset glottal stop.

??).[15] The first person singular subject forms in (95a) and (96a) have the subject *x-* and *sh-* as the stem onset. The Eyak second person singular subject form in (95b) has an epenthetic onset *y* [j] conditioned by the vowel of the subject, and the Navajo second person singular subject form in (96b) has the nasal stop of the subject *Hn-* /ⓗn-/ as the stem onset. Finally the Eyak third person form in (95c) has the *ɢ*-conjugation prefix *ɢ-* as the stem onset and the corresponding Navajo form in (96c) has an epenthetic [k] as the stem onset. Thus with onsetless roots the stem gets an onset from something other than the root.

(95) *Eyak*

a. ɢəxaːɬ *first person singular subject*
[qə.ˈxaːɬ]
ɢ- x- √a -μ -ɬ
GCNJ-1SG·S-√go·SG-VAR-ŁSFX
'I go.' Krauss (1969: 60)

b. ɢiːyaːɬ *second person singular subject*
[qiː.ˈjaːɬ]
ɢ- iː- √a -μ -ɬ
GCNJ-2SG·S-√go·SG-VAR-ŁSFX
'You go.' Krauss (1969: 60)

c. ɢaːɬ (*null*) *third person subject*
[qaːɬ]
ɢ- √a -μ -ɬ
GCNJ-√go·SG-VAR-ŁSFX
'S/he goes.' Krauss (1969: 60)

(96) *Navajo*

a. yishááł *first person singular subject*
[jìˈʃáːɬ]
y- sh- √a -μH-ł
ΓCNJ-1SG·S-√go·SG-VAR-ŁSFX
'I go.' Krauss (1969: 60)

b. yínááł *second person singular subject*
[jíˈnáːɬ]
y- Hn- √a -μH-ł
ΓCNJ-2SG·S-√go·SG-VAR-ŁSFX
'You go.' Krauss (1969: 60)

c. yigááł (*null*) *third person subject*
[jìˈkáːɬ]
y- √a -μ -ł
ΓCNJ-√go·SG-VAR-ŁSFX
'S/he goes.' Krauss (1969: 60)

15. Navajo √*a* < PD *√*a* (Leer 1996b: Øh/2) < PDE *√*a* > Eyak √*a*. Cf. Tlingit √.*a* 'end move' and √.*at* 'pl. go'.

Tlingit verb stems never show varying onset consonants like Eyak in (95) or Navajo in (96). There are exactly two cases discussed in chapter 4 sections 2.1.2 and 2.1.3 where the stem onset is unusual and neither case is usefully analyzed as based on an onsetless root. In all other contexts every root in the language appears in all its stem forms with exactly the same onset consonant. As mentioned earlier, it is phonologically possible to analyze some of these roots as having epenthetic onset consonants but given the overwhelming lack of onset variation this approach is not parsimonious.

The onset consonant of a root can potentially be any phonemic consonant in the language. The two labialized glottals /hʷ/ and /ʔʷ/ are major exceptions to this rule. As discussed in appendix A section 2.1, the labialized glottals are marginal and not phonemic for many speakers. They can arise as onsets of stems due to ablaut of a root /u/ vowel as noted in section 2.3, but they are otherwise unknown without a following /u/ in the lexical entry. Another rare consonant is the voiced lateral approximant *l̲* /l/. Speakers that have the *n* /n/ > *l̲* /l/ shift (apx. A sec. 2.1) will have roots like √*na* 'die' > √*l̲a* 'die', but this is a historical accident. The *l̲* /l/ could also plausibly occur in roots borrowed from Dene languages but none are attested. The consonant *b* /p/, attested in English borrowings, is found in the borrowed *s-√bel-t* 'spell' which also contains *l̲* /l/ in its coda (Dauenhauer & Dauenhauer 1999).

As noted earlier, the onset of a Tlingit root only ever contains a single consonant including affricates like *dz* /ts/ and *tl'* /tɬ'/. This is unusual because Tlingit does allow for complex onsets of two consonants even if they are relatively rare. The canonical examples of complex onsets are the noun *l.uljíni* [ɬʔùɬ.ˈtʃí.nì] 'vest' (lit. 'armless'), the dubitative particle *kwshé* [kʷʃé] 'perhaps, maybe', and the quantifier *ldakát* [ɬtà.ˈkʰát] 'all, every'. There are no documented roots with complex onsets, and my attempts to create nonsense roots like *√*kshal* /kʃaɬ/ and *√*ldat* /ɬtat/ have been uniformly rejected by all of my consultants.

Unlike many Dene languages, Tlingit does not show any regular interactions between the onset of a root and the classifier prefixes that precede the stem. Thus for example Tlingit does not exhibit the so-called 'D-effect' (e.g. Howren 1971); *d-* in Voice does not affect the stem. Similarly, stem onset glottal stops do not coalesce with preceding phonological material, so for example the sequence *d-√.a'sh-μH* with √*.a'sh* /ʔaʃ/ 'sap run' will surface only as *da.áash* [tàʔá:ʃ] and never **t'áash* [t'á:ʃ].

4.2. Vowels

All roots are lexically specified for a vowel quality that is one of the four phonemic vowels /i/, /e/, /a/, or /u/. I refer specifically to 'vowel quality' and not just 'vowel' because roots do not specifiy length or tone which instead arises from stem variation (sec. 2). Autosegmentally a root always includes a segment that is specified for vowel features like [high] and [back], but it crucially does not include the specification of a mora or tone. Since all vowels must be moraic and specified for tone in surface forms, the lexical entry of a root is unpronounceable without additional phonological material.

All four vowel qualities are attested in the root lexicon. The list in (97) shows four open roots with the same onset consonant /tʰ/ and the four different vowel qualities along with four distinct meanings. The list in (98) shows four closed roots with the same onset consonant /ʔ/ and the same coda consonant /n/ together with the four different vowel qualities and distinct meanings.

(97)

	Root	*IPA*	*Gloss*
a.	√*ta*	/tʰa/	'boil'
b.	√*te*	/tʰe/	'rocky'
c.	√*ti*	/tʰi/	'handle'
d.	√*tu*	/tʰu/	'clever'

(98)

	Root	*IPA*	*Gloss*
a.	√*.an*	/ʔan/	'rest'
b.	√*.in*	/ʔin/	'gather'
c.	√*.en*	/ʔen/	'starve'
d.	√*.u'n*	/ʔun/	'shoot gun'

The data in (97) and (98) prove that it is possible for a root to be lexically specified for any of the four vowel qualities. But there are some mitigating factors that reduce the total number of logically possible roots. In particular, the /i/ and /u/ vowels may interact with both onset and coda consonants in the contexts of labialization spread and uvular lowering (both apx. A sec. 2.2). The vocalic changes in surface forms that result from these interactions can be reanalyzed as different vowels in the lexical entry, giving rise to root vowel differences between dialects. Another poorly understood source of similar variation is final lowering where the /i/ vowel in open roots is reanalyzed as /e/. There are also some sporadic differences between dialects in the vowels of specific roots that remain undescribed but can be found through careful review of the lexical documentation.

4.2.1. Variation between /i/ and /e/

The vowels /i/ and /e/ partially vary across dialects in the root lexicon. This variation is influenced by two phonological phenomena: uvular lowering and final lowering. The effects of uvular lowering are often nearly universal so that a speaker may completely lack /i/ before or after uvulars in all roots with only one or two exceptions. The effects of final lowering are much less predictable so that all speakers will retain at least some roots with final /i/.

Uvular lowering is sketched in appendix A section 2.2. In dialects without phonemicized uvular lowering a uvular preceding or following /i/ will phonetically alter the vowel, introducing a subphonemic 'passing vowel' between the uvular and [i]. Thus *geey* /qìːj/ 'bay' can be realized as [qè̝ːj] and *eek̲* /ʔìːq/ 'copper' can be realized as [ʔìːè̝q]. In dialects with phonemicized uvular lowering the passing vowel is reinterpreted as the phonemic target giving rise to e.g. *geiy* /qèːj/ 'bay' and *eik̲* /ʔèːq/ 'copper'. The examples here are nouns for simplicity of description but the same effect gives rise to dialect differences in the verb root lexicon. The pairs in (99) illustrate this variation with uvular onsets and the pairs in (100) do the same with uvular codas.

(99) *roots with onset uvular lowering*

	Root	*IPA*	*Root*	*IPA*	*Gloss*
a.	√*gin*	/qin/	√*gen*	/qen/	'look, examine'
b.	√*k̲in*	/qʰin/	√*k̲en*	/qʰen/	'pl. fly'
c.	√*k̲'ish*	/q'iʃ/	√*k̲'esh*	/q'eʃ/	'swat, bat'
d.	√*x̲il*	/χiɬ/	√*x̲el*	/χeɬ/	'foam'
e.	√*x̲'ix'*	/χ'ix'/	√*x̲'ex'*	/χ'ex'/	'wedge, squeeze'

(100) *roots with coda uvular lowering*

	Root	*IPA*	*Root*	*IPA*	*Gloss*
a.	√*jik̲*	/tʃiq/	√*jek̲*	/tʃeq/	'scale fish'
b.	√*nix̲*	/niχ/	√*nex̲*	/neχ/	'save, heal'
c.	√*tik̲'*	/tʰiq'/	√*tek̲'*	/tʰeq'/	'twist'
d.	√*tsix̲'*	/tsʰiχ'/	√*tsex̲'*	/tsʰeχ'/	'strangle'

Final lowering occurs only with open roots. In speakers without final lowering there is a sporadic and poorly understood tendency to phonetically lower some word-final (or utterance-final?) instances of /i/ to something like [e], [ɛ], or even [æ]. Thus for example a speaker may typically say *yéi yatee* [ˌjéː.jà.ˈtʰìː] 'it is so' but may occasionally instead say *yéi yatei* [ˌjéː.jà.ˈtʰèː] with no difference in meaning. Similarly, the same speaker may usually say *yan x̱wasinée* [ˌjàn.ˌχʷà.sì.ˈníː] 'I finished doing it' but occasionally instead say *yan x̱wasinéei* [ˌjàn.ˌχʷà.sì.ˈnéː]. This has led to some dialects reanalyzing the phonetically lowered /i/ as identical with /e/ just like with uvular lowering. Such speakers with this phonologized final lowering then have lexical entries with /e/ instead of /i/ like those shown in (101).

(101) *roots with final lowering*

	Root	*IPA*	*Root*	*IPA*	*Gloss*
a.	√*hiʰ*	/hi/	√*heʰ*	/he/	'pay shaman'
b.	√*liʰ*	/ɬi/	√*leʰ*	/ɬe/	'far, distant'
c.	√*ni*	/ni/	√*ne*	/ne/	'work, knit'
d.	√*niʰ*	/ni/	√*neʰ*	/ne/	'occur, happen'
e.	√*siʰ*	/si/	√*se*	/se/	'near, close'
f.	√*t'ïʰ*	/t'i/	√*t'eʰ*	/t'e/	'find'

There are at least two roots where both uvular lowering and final lowering conspire to make /i/ become /e/. These are listed in (102).

(102) *roots with uvular onsets and final lowering*

	Root	*IPA*	*Root*	*IPA*	*Gloss*
a.	√*k̲i*	/qʰi/	√*k̲e*	/qʰe/	'pl. sit'
b.	√*x̲i*	/χi/	√*x̲e*	/χe/	'overnight'

Both uvular lowering and final lowering are inconsistent in the root lexicon, so for any given speaker only some of the possible roots will show the shift from /i/ to /e/. The roots listed in (103) are not documented as undergoing final lowering in any dialect. The data for uvular lowering are incomplete so I cannot say whether there are any roots that never undergo uvular lowering in any dialect. But I have the feeling that √*x̲ich* /χitʃ/ 'throw sg. anim, obj. in container' could be one exception since I do not recall ever hearing something like ?*aawax̲eich* [ˌʔàː.wà.ˈχèːtʃ] 's/he threw it'.

(103) *roots without final lowering*

	Root	*IPA*	*Gloss*
a.	√*jiʰ*	/tʃi/	'think'
b.	√*shiʰ*	/ʃi/	'sing'
c.	√*shiʰ*	/ʃi/	'reach, run hand; search; help'
d.	√*tiʰ*	/tʰi/	'be, exist'

The general tendencies are that both uvular lowering and final lowering occur only in communities north of Kake and that instances of both are more extensive with increasing latitude. Thus a speaker from Yakutat is likely to have extensive uvular lowering and final lowering in their root lexicon whereas a speaker from Angoon is relatively unlikely to have much of either. Among the Inland dialects, in my experience speakers from Carcross and Tagish seem to have more uvular lowering and final lowering than speakers from Teslin or Atlin. This is probably due to the strong social connections between Carcross/Tagish and the Chilkat and Chilkoot communities on the coast.

There are a few signs of /i/ to /e/ having occurred in the vicinity of ejectives that are not uvular. The best attested example of this is the noun *kooch'éet'aa* [kʰʷùː.ˈtʃ'íː.t'àː] 'ball' which is usually *kooch'éit'aa* [kʰʷùː.ˈtʃ'éː.t'àː] in more northern communities like Klukwan and Hoonah. I have the impression that there are other examples but in my cursory search for the phenomenon I have not found any conclusive attestations in the lexical documentation.

4.2.2. Variation between /i/ and /u/

The vowels /i/ and /u/ partially vary across dialects in the root lexicon. This variation is determined by the phonological phenomenon of labial spreading (apx. A sec. 2.2). In short, a labialized coda consonant may see its labialization spread anticipatorily to an adjacent /i/ vowel causing it to be realized as [u]. This may then reinterpreted as the lexically specified vowel in the root lexical entry. The list of roots in (104) gives pairs of /i/ and /u/ roots; although extensive, this list is not exhaustive.

(104)

	Root	*IPA*	*Root*	*IPA*	*Gloss*	*roots with coda labial spreading*
a.	√*dlixw*	/tɬixʷ/	√*dlux*	/tɬuxʷ/	'peel skin'	
b.	√*jixw*	/tʃixʷ/	√*jux*	/tʃuxʷ/	'spin, roll on axis'	
c.	√*jix̱'w*	/tʃiχ'ʷ/	√*jux̱'*	/tʃuχ'ʷ/	'sling, fling'	
d.	√*likw*	/ɬikʷ/	√*luk*	/ɬukʷ/	'dazzle, glare'	
e.	√*lik'w*	/ɬik'ʷ/	√*luk'*	/ɬuk'ʷ/	'slurp meat out of shell'	
f.	√*l'ikw*	/ɬ'ikʷ/	√*l'uk*	/ɬ'ukʷ/	'blink'	
g.	√*l'ixw*	/ɬ'ixʷ/	√*l'ux*	/ɬ'uxʷ/	'close eyes'	
h.	√*nikw*	/nikʷ/	√*nuk*	/nukʷ/	'sick'	
i.	√*nik'w*	/nik'ʷ/	√*nuk'*	/nuk'ʷ/	'pivot, swivel'	
j.	√*s'ikw*	/s'ikʷ/	√*s'uk*	/s'ukʷ/	'crisp, toast, fry'	
k.	√*s'ixw*	/s'ixʷ/	√*s'ux*	/s'uxʷ/	'sour; spicy'	
l.	√*shik'w*	/ʃik'ʷ/	√*shuk'*	/ʃuk'ʷ/	'cramp, shock; blather'	
m.	√*ti'w*	/tʰiw/	√*tu'w*	/tʰuw/	'count, read'	
n.	√*tixw*	/tʰixʷ/	√*tux*	/tʰuxʷ/	'stamp feet; shuffle'	
o.	√*tsi'x̱w*	/tsʰiχʷ/	√*tsu'x̱*	/tsʰuχʷ/	'dam, block, obstruct'	
p.	√*ts'ik'w*	/ts'ik'ʷ/	√*ts'uk'*	/ts'uk'ʷ/	'pinch'	

It is theoretically possible for labialization in roots to spread from onset consonants, but there are no attested examples of this in the root lexicon. There is a borrowing *gwít* [kʷít] 'dime' (< CJ *bit* 'dime' < Eng. *bit* 'eighth of dollar') that has been reanalyzed as *gút* [kʷút], and there is also the noun *dagwitgiyáa* [tà.ˌkʷìt.kì.ˈjáː] 'hummingbird' which can be found as *dagutgiyáa* [tà.ˌkʷùt.kì.ˈjáː]. But there are no roots attested with an onset labialized consonant and /i/. This implies that perseveratory spreading of labialization from the onset converted all such roots to /u/ some time in the past, but this possibility has yet to be investigated.

The distribution of /u/ instead of /i/ due to labial spreading is very similar to that of uvular lowering and final lowering discussed in section 4.2.1. In principle these phenomena should be independent, so it is unclear why both phenomena seem to be geographically correlated. Studies of variation in Tlingit are still in their infancy however, so an explanation may be forthcoming with more work on the distribution of dialect features.

4.3. Coda consonants

Tlingit roots may or may not have a coda. Roots without a coda are described as open roots and roots with a coda are described as closed roots, based on the contrast between open (codaless) syllables and closed (codaful) syllables. The coda consonant of closed roots is usually realized as the coda of the stem syllable but suffixation can create additional syllables where it is shifted into the onset, e.g. √*.us'* + -*μH* + -*i* REL → –*.óos'i* [ˈʔúː.sʼì]. There is no information on the relative frequency of roots with or without codas, but impressionistically closed roots are very common and certainly constitute a very large portion of basic vocabulary.

Coda consonants in roots have a few characteristic constraints that distinguish them from onset consonants. Specifically, coda consonants cannot be aspirated like e.g. /qʰ/ or /tɬʰ/, and coda consonants cannot be glottal like /ʔ/ or /h/. Both of these constraints were noted earlier in appendix A section 2.1 and they actually apply to all phonological forms and not just to roots. As discussed in appendix A section 4, all of the current orthographies represent coda consonants with 'aspirated' symbols even though they are phonetically and phonologically unaspirated; thus √*gut* 'sg. go' is /kʷut/ and not */kʷutʰ/ and √*dluk̲* 'sticky, gooey' is /tɬuqʷ/ and not */tɬuqʰʷ/.

Traditionally there are supposed to be roots like √*hel'k* 'clumsy, helpless, weak', √*satk* 'quick, early', √*gunl'* 'try hard', and √*x̲ek̲s'* 'early riser' which have more than one coda consonant. As I argued in section 3, all of these can potentially be analyzed as derived from √*CVC* roots with additional suffixes. As such, there are no roots with more than one coda consonant. If however √*CVCC* roots are admitted, this must be the limit of coda complexity because there is no evidence for roots with more than two coda consonants.

Bibliography

Agrell, Sigurd. 1908. *Aspektänderung und Aktionsartbildung beim polnischen Zeitworte: Ein Beitrag zum Studium der indogermanischen Präverbia und ihrer Bedeutungsfunktionen*. (Lunds Universiteits Årsskrift, N.F. 4.2). Lund: Håkan Ohlssons Buchdruckerei.

Aissen, Judith. 2003. Differential coding, partial blocking, and bidirectional OT. In *Proceedings of the 29th annual meeting of the Berkeley Linguistics Society*, pp. 1–16. (Annual proceedings of the Berkeley Linguistics Society vol. 29.1). Berkeley: Berkeley Linguistics Society. BLS 3387.

Akamatsu, Tsutomu. 1988. *The theory of neutralization and the archiphoneme in functional phonology*. (Current issues in linguistic theory 43). Amsterdam: John Benjamins. ISBN 90-272-3537-6.

Al Kaabi, Meera & Dimitrios Ntelitheos. 2019. Rethinking templates: A syntactic analysis of verbal morphology in Emirati Arabic. *Glossa* 4(1): 132.1–46. DOI 10.5334/gjgl.428.

Allen, Julie D. et al. (eds.). 2015. *The Unicode standard, version 8.0: Core specification*. Mountain View, CA: Unicode Consortium. ISBN 978-1-936213-10-8.

Anonymous. 1969. *Dikée Anḵáwoo doo Yéet dàt John-ch kawshixidee Yoox̱'utúnk: The gospel of John in the Tlingit language*. Santa Ana, CA: Wycliffe Bible Translators. Alaska Native Language Archive TL959NS1969.

Arche, María J. 2014. The construction of viewpoint aspect: The imperfective revisited. *Natural Language & Linguistic Theory* 32(3): 791–831. DOI 10.1007/s11049-013-9209-5.

Arregi, Karlos & Andrew Nevins. 2014. A monoradical approach to some cases of disuppletion. *Theoretical Linguistics* 40(3/4): 311–330. DOI 10.1515/tl-2014-0014.

Axelrod, Melissa. 1989. Word-based morphology: Some problems from a polysynthetic language. *Colorado Research in Linguistics* 10: 1–8. DOI 10.25810/vdw9-r007.

— 1990. *The semantics of temporal categorization: The aspectual system of Koyukon Athabaskan*. Boulder: University of Colorado at Boulder, PhD dissertation.

— 1993. *The semantics of time: aspectual categorization in Koyukon Athabaskan*. (Studies in the anthropology of North American Indians). Lincoln, NE: University of Nebraska Press. ISBN 0803210329.

— 2000. The semantics of classification in Koyukon Athabaskan. In *The Athabaskan languages: Perspectives on a Native American language family*, Theodore B. Fernald & Paul R. Platero (eds.), pp. 9–27. (Oxford studies in anthropological linguistics 24). Oxford: Oxford University Press. ISBN 0-19-511947-9. Alaska Native Language Archive KO983A2000.

Bach, Emmon. 1986. The algebra of events. *Linguistics & Philosophy* 9(1): 5–16. DOI 10.1007/BF00627432.

Bache, Carl. 1982. Aspect and Aktionsart: Towards a semantic distinction. *Journal of Linguistics* 18(1): 57–72. DOI 10.1017/S0022226700007234. JSTOR 4175616.

Baker, Mark C. 1985. The Mirror Principle and morphosyntactic explanation. *Linguistic Inquiry* 16(3): 373–415. JSTOR 4178442.

— 1996. *The polysynthesis parameter*. (Oxford studies in comparative syntax). Oxford: Oxford University Press. ISBN 0-19-509307-0.

Ball, Martin J. 2001. On the status of diacritics. *Journal of the International Phonetic Association* 31(2): 259–264.

Ball, Martin J., John H. Esling, & B. Craig Dickson. 2018. Revisions to the VoQS system for the transcription of voice quality. *Journal of the International Phonetic Association* 48(2): 165–171. DOI 10.1017/S0025100317000159.

Ball, Martin J., Sara J. Howard, & Kirk Miller. 2018. Revisions to the extIPA chart. *Journal of the International Phonetic Association* 48(2): 155–164. DOI 10.1017/S0025100317000147.

Baltin, Mark R. & Chris Collins (eds.). 2001. *The handbook of contemporary syntactic theory*. (Blackwell handbooks in linguistics 9). Malden, MA: Blackwell. ISBN 0-631-20507-1. DOI 10.1002/9780470756416.

Banerjee, Neil. 2019. Templatic morphology through syntactic selection: Valency-changing extensions in Kinyarwanda. *Glossa* 4(1): 112.1–31. DOI 10.5334/gjgl.920.

Barrie, Michael & Éric Mathieu. 2016. Noun incorporation and phrasal movement. *Natural Language & Linguistic Theory* 34(1): 1–51. DOI 10.1007/s11049-015-9296-6.

Basso, Keith H. 1968. The Western Apache classificatory verb system: A formal analysis. *Southwestern Journal of Anthropology* 24(3): 252–266. JSTOR 3629347.

Beck, Sigrid & Arnim von Stechow. 2007. Pluractional adverbials. *Journal of Semantics* 24(3): 215–254. DOI 10.1093/jos/ffm003.

Binnick, Robert I. 1991. *Time and the verb: A guide to tense and aspect*. Oxford: Oxford University Press. ISBN 0-19-506206-X.

— 2001. Temporality and aspectuality. In *Language typology and language universals: An international handbook* (*vol. 1*), Martin Haspelmath et al. (eds.), ch. 42, pp. 557–567. (Handbücher zur Sprach- und Kommunikationswissenschaft vol. 20.1). Berlin: Walter de Gruyter. ISBN 3-11-011423-2.

— 2012. *The Oxford handbook of tense and aspect*. (Oxford handbooks). Oxford: Oxford University Press. ISBN 978-0-19-538197-9.

Bird, Sonya & Janet Leonard. 2009. Universality of articulatory conflict resolution: Evidence from Salish languages. *Northwest Journal of Linguistics* 3(2): 1–29. URL V003_N02/BirdLeonardConflictResolution.pdf.

Blackburn, Patrick & Klaus Frovin Jørgensen. 2016. Reichenbach, Prior, and hybrid tense logic. *Synthese* 193(1): 3677–3689. DOI 10.1007/s11229-015-0920-0.

Blake, Barry J. 1990. *Relational grammar*. (Linguistic theory guides). London: Routledge. ISBN 0-415-04660-2.

Blust, Robert. 2012. Primary split revisited. *Diachronica* 29(2): 129–138. DOI 10.1075/dia.29.2.01blu.

Boas, Franz (ed.). 1911. *Handbook of American Indian languages*. (Smithsonian Institution Bureau of American Ethnology Bulletins 40). Washington, DC: U.S. Government Printing Office. Internet Archive handbookamerica00fracgoog.

— 1913. *Letter from Boas to Edward Sapir regarding Tlingit and Na-Dene*. Unpublished correspondence. Alaska Native Language Archive CA913S1913a.

— 1917. *Grammatical notes on the language of the Tlingit Indians*. (University Museum Anthropological Publications 8.1). Philadelphia: University of Pennsylvania. Alaska Native Language Archive TL888B1917.

Bochnak, M. Ryan. 2016. Past time reference in a language with optional tense. *Linguistics & Philosophy* 39(4): 247–294. DOI 10.1007/s10988-016-9191-6.

Bogal-Albritten, Elizabeth. 2010. Distribution and function of comparative aspect in Athabaskan/Dene. In *Working papers in Athabaskan languages 2009*, Justin Spence & Siri G. Tuttle (eds.). (Alaska Native Language Center Working Papers 8). Fairbanks, AK: Alaska Native Language Center.

Bohnemeyer, Jürgen & Mary Swift. 2004. Event realization and default aspect. *Linguistics & Philosophy* 27(3): 263–296. DOI 10.1023/B:LING.0000023371.15460.43.

Bommelyn, Loren Me'Lashne. 1997. *The prolegomena to the Tolowa Athabaskan grammar*. Eugene, OR: University of Oregon, PhD dissertation.

Bonnor, G. Michael & Paul Boudewyn. 1990. *Taper-volume equations for major tree species of the Yukon Territory*. Hull, QC: Forestry Canada. ISBN 0-662-17988-9.

Bresnan, Joan. 2001. Explaining morphosyntactic competition. In *The handbook of contemporary syntactic theory*, Mark R. Baltin & Chris Collins (eds.), ch. 1, pp. 11–44. (Blackwell handbooks in linguistics 9). Malden, MA: Blackwell. ISBN 0-631-20507-1. DOI 10.1002/9780470756416.

Burge, Heather. 2017. *Prospective aspect in Tlingit*. Vancouver: University of British Columbia, master's thesis. HDL 2429/63413.

Burgess, John P. 2002. Basic tense logic. In *Handbook of philosophical logic, vol. 7*, Dov M. Gabbay & Franz Guenthner (eds.), pp. 1–42. 2nd edn. (Handbook of philosophical logic vol. 7). Dordrecht: Kluwer Academic Publishers. ISBN 1-4020-0599-7. DOI 10.1007/978-94-017-0462-5.

Caballero, Gabriela. 2010. Scope, phonology and morphology in an agglutinating language: Choguita Rarámuri (Tarahumara) variable suffix ordering. *Morphology* 20(1): 165–204. DOI 10.1007/s11525-010-9147-4.

Cable, Seth. 2006. *Syncope in the verbal prefixes of Tlingit: Meter and surface phonotactics*. (LINCOM studies in Native American linguistics 53). Berlin: LINCOM Europa. ISBN 3-89586-377-7.

— 2008. Covert A-scrambling in Tlingit. In *Papers for the 43rd international conference on Salish and neighboring languages*, Christiana Christodoulou & John M. Lyon (eds.), pp. 22–53. (University of British Columbia Working Papers in Linguistics vol. 23). Vancouver: University of British Columbia.

— 2010. *Radically discontinuous exponence in the inflectional morphology of Na-Dene languages*. Unpublished manuscript, handout from talk given at 2009 LSA Meeting.

— 2011. Insubordination in Tlingit: An areal feature? *Northwest Journal of Linguistics* 5(1): 1–38. URL V005_N01/CableTlingitInsubordination.html.

— 2014. Distributive numerals and distance distributivity in Tlingit (and beyond). *Language* 90(3): 562–606. DOI 10.1353/lan.2014.0055.

— 2015. Average conditional entropy of the Tlingit verbal inflection paradigm. In *Short 'schrift for Alan Prince*, Eric Baković (ed.). San Diego: University of California, San Diego.

— 2017a. The expression of modality in Tlingit: A paucity of grammatical devices. *International Journal of American Linguistics* 83(4): 619–678. DOI 10.1086/692975.

— 2017b. *The good, the 'not good', and the 'not pretty': Negation in the negative predicates of Tlingit*. Unpublished manuscript. LingBuzz 003645.

Cable, Seth. 2017c. The implicatures of optional past tense in Tlingit and the implications for 'discontinuous past'. *Natural Language & Linguistic Theory* 35(3): 635–681. DOI 10.1007/s11049-016-9355-7.

— 2018. *Expressing generalities in Tlingit: Imperfective mode vs. habitual mode* (*with a few notes on the ergative postposition*). Unpublished manuscript.

Carter, Robin M. 1976. Chipewyan classificatory verbs. *International Journal of American Linguistics* 42(1): 24–30.

Casati, Roberto & Achille C. Varzi. 2014. Events. In *The Stanford Encyclopedia of Philosophy*, Edward N. Zalta (ed.). Fall 2014. Stanford, CA: CSLI Publications. URL http://plato.stanford.edu/archives/fall2014/entries/events/.

Cates, Deborah et al. 2013. Location, location, location. *Sign Language Studies* 13(4): 433–461. DOI 10.1353/sls.2013.0014.

Chen, Jenn-Yeu. 2007. Do Chinese and English speakers think about time differently? Failure of replicating Boroditsky (2001). *Cognition* 104(2): 427–436. DOI 10.1016/j.cognition.2006.09.012.

Chomsky, Noam. 1995. *The Minimalist Program*. (Current studies in linguistics 28). Cambridge, MA: MIT Press. ISBN 0-262-03229-5.

— 2000. Minimalist inquiries: The framework. In *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, Roger Martin, David Michaels, & Juan Uriagereka (eds.), ch. 3, pp. 89–155. Cambridge, MA: MIT Press. ISBN 0-262-13361-X.

— 2001. Derivation by phase. In *Ken Hale: A life in language*, Michael Kenstowicz (ed.), pp. 1–52. (Current studies in linguistics 36). Cambridge, MA: MIT Press. ISBN 0-262-11257-4.

— 2008. On phases. In *Foundational issues in linguistic theory: Essays in honor of Jean-Roger Vergnaud*, Paul Friedin, Carlos P. Otero, & Maria Luisa Zubizarreta (eds.), pp. 133–166. (Current studies in linguistics 45). Cambridge, MA: MIT Press. ISBN 978-0-262-06278-7.

Chung, Sandra & William A. Ladusaw. 2004. *Restriction and saturation*. (Linguistic Inquiry monographs 42). Cambridge, MA: MIT Press. ISBN 0-262-03313-5.

Citko, Barbara. 2014. *Phase theory: An introduction*. (Research surveys in linguistics). Cambridge: Cambridge. ISBN 978-1-107-04084-7.

Collins, James. 1985. Pronouns, markedness, and stem change in Tolowa. *International Journal of American Linguistics* 51(4): 368–372.

Comrie, Bernard. 1976. *Aspect*. (Cambridge textbooks in linguistics). Cambridge: Cambridge University Press. ISBN 0-521-29045-7.

— 1985. *Tense*. (Cambridge textbooks in linguistics). Cambridge: Cambridge University Press. ISBN 0-521-28138-5.

Cook, Eung-Do. 1986. Athapaskan classificatory verbs. *Amerindia* 11: 11–24.

— 2004. *A grammar of Dëne Sųłiné* (*Chipewyan*). (Memoirs of Algonquian and Iroquoian linguistics 17). Winnepeg: Algonquian & Iroquoian Linguistics. ISBN 0-921064-17-9.

— 2013. *A Tsilhqút'ín grammar*. (First Nations Languages 6). Vancouver: University of British Columbia Press. ISBN 978-0-7748-2516-0.

Cook, Eung-Do & Keren Rice (eds.). 1989. *Athapaskan linguistics: Current perspectives on a language family*. (Trends in linguistics: State-of-the-art reports 15). Berlin: Mouton de Gruyter. ISBN 0-89925-282-6.

Cooley, Bessie. 2005. *Universal declaration of human rights, Tlingit translation*. Unpublished manuscript.

— 2010. *Trapline story*. Unpublished manuscript.

Coon, Jessica. 2012. Split ergativity and transitivity in Chol. *Lingua* 122(3): 241–256. DOI 10.1016/j.lingua.2011.11.005.

Corbett, Greville G. 2009. Canonical inflectional classes. In *Selected proceedings of the 6th Décembrettes: Morphology in Bordeaux*, Fabio Montermini, Gilles Boyé, & Jesse Tseng (eds.), pp. 1–11. Somerville, MA: Cascadilla Proceedings Project. ISBN 978-1-57473-433-1. URL http://www.lingref.com/cpp/decemb/6/index.html.

Cornyn, William S. 1950. *Beginning Russian*. New Haven, CT: Yale University Press.

Crippen, James A. 2009a. *Classificatory verbs in the Na-Dene languages*. Unpublished manuscript.

— 2009b. *People, weather, places, thoughts: Evidence for the areal prefix in Tlingit*. Handout from talk given at 2009 Athabaskan (Dene) Languages Conference, Berkeley, CA.

— 2010. *Multiple correspondences in Tlingit consonants with Proto-Athabaskan-Eyak*. Unpublished manuscript. Alaska Native Language Archive TL004C2010b.

— 2013a. *Emmons 1907: The Chilkat blanket.* Annotated list of Tlingit language items in Emmons's text. Alaska Native Language Archive TL004C2013b.

— 2013b. Laryngeal vowels in Tongass Tlingit. *University of British Columbia Working Papers in Linguistics*: 1–17. Alaska Native Language Archive TL004C2012a.

— 2014. *Thinking in Tlingit: Metaphoric structure in Tlingit verbs*. Talk given at SULA 8, 17 May 2014.

— 2016. *Tlingit ergativity and clause structure*. Unpublished manuscript. Presented at WSCLA 21, Université du Québec à Montréal.

Crippen, James A. & Rose-Marie Déchaine. 2016. Syntax and semantics of the Tlingit classifier. In *Proceedings of WSCLA 20: The Workshop on Structure and Constituency in Languages of the Americas*. Vancouver: UBC Department of Linguistics.

Crippen, James A. & Ryan Denzer-King. 2010. Tlingit loanword adaptation. In *Working papers in Athabaskan languages 2010*, Siri G. Tuttle & Olga C. Lovick (eds.), pp. 155–164. (Alaska Native Language Center Working Papers 9). Fairbanks, AK: Alaska Native Language Center.

Cristofaro, Sonia. 2012. Descriptive notions vs. grammatical categories: Unrealized states of affairs and 'irrealis'. *Language Sciences* 34(2): 131–146. DOI 10.1016/j.langsci.2011.08.001.

Csirmaz, Anikó. 2006. Aspect, negation and quantifiers. In *Event structure and the left periphery*, Katalin É. Kiss (ed.), pp. 225–254. (Studies in natural language and linguistic theory vol. 68). Dordrecht: Springer. ISBN 1-4020-4753-3.

Currie Hall, Kathleen. 2013. A typology of intermediate phonological relationships. *The Linguistic Review* 30(2): 215–275. DOI 10.1515/tlr-2013-0008.

D'Alessandro, Robert, Irene Franco, & Ángel J. Gallego (eds.). 2017. *The verbal domain*. (Oxford studies in theoretical linguistics 64). Oxford: Oxford University Press. ISBN 978-0-19-876788-6.

Dauenhauer, Nora Marks. 1971. *Transliterations from Velten and Swanton, and transcription of Olaf Abraham*. Unpublished manuscript. Alaska Native Language Archive TL968D1971b.

— 1972. *Doo G̱òojee Yeenàa-dei: Tlingit language workshop reader*. Sitka, AK: Tlingit Readers, Inc. Alaska Native Language Archive TL968D1972a.

— 1973. *The One Horned Goat told by David Kadashan*. Unpublished manuscript. Alaska Native Language Archive TL968D1973a.

Dauenhauer, Nora Marks & Richard Dauenhauer. 1971. *Tlingit classificatory verb stems: A preliminary report*. Unpublished manuscript. Alaska Native Language Archive TL970DD1971a.

Dauenhauer, Nora Marks & Richard Dauenhauer (eds.). 1981. *"Because we cherish you": Sealaska elders speak to the future*. Juneau, AK: Sealaska Heritage Foundation.

— 1987. *Haa shuká, our ancestors: Tlingit oral narratives*. (Classics of Tlingit oral literature 1). Seattle: University of Washington Press. ISBN 0-295-96495-2.

— 1990. *Haa tuwunáagu yís: For healing our spirit*. (Classics of Tlingit oral literature 2). Seattle: University of Washington Press. ISBN 0-295-96850-8.

— 1994. *Haa ḵusteeyí, our culture: Tlingit life stories*. (Classics of Tlingit oral literature 3). Seattle: University of Washington Press.

— 1998a. Technical, emotional, and ideological issues in reversing language shift: Examples from Southeast Alaska. In *Endangered languages: Language loss and community response*, Lenore A. Grenoble & Lindsay J. Whaley (eds.), ch. 3, pp. 57–98. Cambridge: Cambridge University Press. ISBN 0-521-59712-9.

— 1998b. Tracking "Yuwáan Gagéets": A Russian fairy tale in Tlingit oral tradition. *Oral Tradition* 13(1): 58–91. URL http://journal.oraltradition.org/issues/13i/dauenhauer.

— 1999. *Aan aduspelled x'úx': Tlingit spelling book*. 4th edn. Juneau, AK: Sealaska Heritage Institute.

— 2000. *Beginning Tlingit*. Juneau, AK: Sealaska Heritage Institute. ISBN 0-9679311-1-8.

— 2002. *Lingít x̱'éináx̱ sá! Say it in Tlingit: A Tlingit phrasebook*. Juneau, AK: Sealaska Heritage Institute. ISBN 0-9679311-1-8.

— 2003. Tlingit speeches for the removal of grief. *Arctic Anthropology* 40(2): 30–39. DOI 10.1353/arc.2011.0022.

— 2009. *The scatic categories of the Tlingit verb: A whimsical treatment of Tlingit verb paradigms* (*made painless with laughing gas*). Unpublished manuscript.

— 2012. Tense, aspect, and the organization and translation of Tlingit narrative. In *Working papers in Athabaskan languages 2011*, James A. Crippen (ed.), pp. 41–67. (Alaska Native Language Center Working Papers 10). Fairbanks, AK: Alaska Native Language Center.

Dauenhauer, Nora Marks, Richard Dauenhauer, & Lydia Black (eds.). 2008. *Anóoshi Lingít Aaní ká: Russians in Tlingit America – the battles of Sitka, 1802 and 1804*. (Classics of Tlingit oral literature 4). Seattle: University of Washington Press. ISBN 978-0-295-98601-2.

Dauenhauer, Richard. 1974. *Text and context of Tlingit oral tradition*. Madison, WI: University of Wisconsin at Madison, PhD dissertation.

— 1981. Notes on Swanton numbers 80 and 81. *The Journal of American Folklore* 94(373): 358–364. JSTOR 540158.

— 1997. *Conflicting visions in Alaskan education*. 2nd edn. Fairbanks, AK: University of Alaska. ISBN 1-877962-31-7.

— 2005. Seven hundred million to one: Personal action in reversing language shift. *Études Inuit / Inuit Studies* 29(1/2): 267–284.

Davidson, Donald. 1970. Events and particulars. *Noûs* 4(1): 25–32. JSTOR 2214289.

Davies, William D. 1986. *Choctaw verb agreement and universal grammar*. (Studies in natural language and linguistic theory). Dordrecht: D. Reidel. ISBN 978-90-277-2142-6. DOI 10.1007/978-94-009-4530-2.

Davydov, Gavriil Ivanovich. 1810. *Двукратное путешествіе въ Америку морскихъ офицеровъ Хвостова и Давыдова, писанное симъ послѣденимъ* (*Dual journey to America by naval officers Davydov and Khvostov, written by the latter*). Copy at the Bancroft Library, Berkeley, CA. Wordlist

photocopy in ANLA. Author name spelled Гавріилъ Ивановичъ Давыдовъ in contemporary orthography. St. Petersburg: Морская Типографія. Alaska Native Language Archive TL805D1812.

De Laguna, Frederica. 1972. *Under Mount Saint Elias: The History and Culture of the Yakutat Tlingit*. (Smithsonian Contributions to Anthropology 7 (in three parts)). Washington, DC: Smithsonian Institution Press.

De Wolf, Gaelan. 1977. *Tlingit phonology in a generative framework: an examination of phonological processes and abstract representation*. Vancouver: University of British Columbia, master's thesis.

Déchaine, Rose-Marie. 1999. What Algonquian morphology is really like: Hockett revisited. In *Papers from the Workshop on Structure & Constituency in Native American Languages*, Leora Bar-El, Rose-Marie Déchaine, & Charlotte Reinholtz (eds.), pp. 25–72. (MIT Occasional Papers in Linguistics vol. 17). Cambridge, MA: MIT Working Papers in Linguistics. LingBuzz 002489.

De Haan, Ferdinand. 2012. Irrealis: Fact or fiction? *Language Sciences* 34(2): 107–130. DOI 10.1016/j.langsci.2011.06.016.

De Lacey, Paul (ed.). 2007. *The Cambridge handbook of phonology*. (Cambridge handbooks in language and linguistics). Cambridge: Cambridge University Press. ISBN 978-0-521-84879-4.

De Lamanon, Robert de Paul. 1799. *Lituya Bay wordlist*. Unpublished notes. Alaska Native Language Archive TL786D1799.

Demonte, Violeta & Louise McNally (eds.). 2012. *Telicity, change, and state: A cross-categorial view of event structure*. (Oxford studies in theoretical linguistics 39). Oxford: Oxford University Press. ISBN 978-0-19-969349-8.

Denniss, Jessica. 2017. The meaning of antipassive: Evidence from Australian languages. *Toronto Working Papers in Linguistics* 39: 1–33. TWPL 28778.

Denzer-King, Ryan. 2013. *The acoustics of uvulars in Tlingit*. New Brunswick, NJ: Rutgers University, master's thesis.

De Reuse, Willem J. 2001. Prototypes and fuzziness in the system and usage of Apachean classificatory verb stems. In *Proceedings of the 2001 Athabaskan Languages Conference*, Siri G. Tuttle & Gary Holton (eds.), pp. 75–94. (Alaska Native Language Center Working Papers 1). Fairbanks, AK: Alaska Native Language Center.

De Swart, Henriëtte. 2012. Verbal aspect. In *The Oxford handbook of tense and aspect*, Robert I. Binnick (ed.), ch. 26, pp. 752–780. (Oxford handbooks). Oxford: Oxford University Press. ISBN 978-0-19-538197-9.

Diessel, Holger. 2012. Deixis and demonstratives. In *Semantics: An international handbook of natural language meaning*, Claudia Maienborn, Klaus von Heusinger, & Paul H. Portner (eds.), ch. 90, pp. 2407–2432. (Handbooks of linguistics and communication science vol. 33.3). Berlin: Walter de Gruyter. ISBN 978-3-11-025337-5.

Dixon, Robert M. W. 1994. *Ergativity*. (Cambridge studies in linguistics 69). Cambridge: Cambridge University Press. ISBN 0-521-44446-2.

Donskoi, Vladimir. 1895. *Молитвы на колошенскомъ нарѣчіи*. Unpublished manuscript. Alaska Native Language Archive TL895D1895.

Donskoi, Vladimir & Mikhail Sinkiel. 1901. *Краткая исторія ветхаго и новаго завѣта въ вопросахъ и отвѣтахъ на колошинско-русскомъ языкѣ*. Unpublished manuscript. Alaska Native Language Archive TL895D1901.

Downing, Laura J. 2003. Compounding and tonal non-transfer in Bantu languages. *Phonology* 20(1): 1–42. DOI 10.1017/S0952675703004457.

Dowty, David R. 1979. *Word meaning and Montague grammar*. (Synthese language library 7). Dordrecht: Kluwer Academic Publishers. ISBN 978-90-277-1009-3. DOI 10.1007/978-94-009-9473-7.

— 1989. On the semantic content of the notion 'thematic role'. In *Properties, types, and meaning, vol. II: Semantic issues*, Gennaro Chierchia, Barbara H. Partee, & Raymond Turner (eds.), pp. 69–129. (Studies in linguistics and philosophy vol. 39). Dordrecht: Kluwer Academic Publishers. ISBN 1-55608-069-7. DOI 10.1007/978-94-009-2723-0.

— 1991. Thematic proto-roles and argument selection. *Language* 67(3): 547–619. DOI 10.1353/lan.1991.0021.

Duckworth, Martin et al. 1990. Extensions to the International Phonetic Alphabet for the transcription of atypical speech. *Clinical Linguistics & Phonetics* 4(4): 273–280. DOI 10.3109/02699209008985489.

Duponceau, Peter S. 1819. Report of the corresponding secretary to the committee of his progress in the investigation committed to him of the general character and forms of the languages of the American Indians. *Transactions of the American Philosophical Society* 1: xvii–xivi. Internet Archive transactionsofhi01amer.

Eagleman, David M. et al. 2005. Time and the brain: How subjective time relates to neural time. *Journal of Neuroscience* 25(45): 10369–10371. DOI 10.1523/JNEUROSCI.3487-05.2005.

Edwards, Keri. 2009. *Dictionary of Tlingit*. Juneau, AK: Sealaska Heritage Institute. ISBN 978-1-44-040127-5. Alaska Native Language Archive TL005E2009.

Eggleston, Keri. 2013. *575 Tlingit verbs: A study of Tlingit verb paradigms*. Fairbanks, AK: University of Alaska, PhD dissertation. Alaska Native Language Archive TL005E2013.

— 2017. *Online Tlingit verb dictionary: A database of over 1,100 conjugated Tlingit verbs*. Unpublished online resource. URL http://ankn.uaf.edu/~tlingitverbs/.

Embick, David. 1996. Causativization in Hupa. In *Proceedings of the 22nd annual meeting of the Berkeley Linguistics Society*, pp. 83–94. (Annual proceedings of the Berkeley Linguistics Society vol. 22.1). Berkeley: Berkeley Linguistics Society. BLS 3149.

Emmons, George Thornton. 1911. *The Tahltan Indians*. (University Museum anthropological publications 4.1). Philadelphia: University of Pennsylvania. Internet Archive tahltanindians00emmouoft.

— 1991. *The Tlingit Indians*. Ed. by Frederica De Laguna. (Anthropological papers of the American Museum of Natural History 70). New York: American Museum of Natural History. ISBN 0-295-97008-1. HDL 2246/253.

Engstrom, Allan. 2008. Yakobi Island, the lost village of Apolosovo, and the fate of the Chirikov Expedition. In *Anóoshi Lingít Aaní ká: Russians in Tlingit America – the battles of Sitka, 1802 and 1804*, Nora Marks Dauenhauer, Richard Dauenhauer, & Lydia Black (eds.), pp. 11–20. (Classics of Tlingit oral literature vol. 4). Seattle: University of Washington Press. ISBN 978-0-295-98601-2.

Enrico, John. 2004. Toward Proto-Na-Dene. *Anthropological Linguistics* 46(3): 229–302. JSTOR 30028963.

— 2005. *Haida dictionary: Skidegate, Masset, and Alaskan dialects*. Fairbanks, AK: Alaska Native Language Center. ISBN 1-55500-087-8.

Evseeva, Natalia & Iker Salaberri. 2018. Grammaticalization of nouns meaning "head" into reflexive markers: A cross-linguistic study. *Linguistic Typology* 22(3): 385–435. DOI 10.1515/lingty-2018-0014.

Fernald, Theodore B. 2002. Restriction, saturation, and classificatory verbs. In *Proceedings of the 2002 Athabaskan Languages Conference*, Gary Holton (ed.), pp. 37–51. (Alaska Native Language Center Working Papers 2). Fairbanks, AK: Alaska Native Language Center.

Fernald, Theodore B. & Paul R. Platero (eds.). 2000. *The Athabaskan languages: Perspectives on a Native American language family*. (Oxford studies in anthropological linguistics 24). Oxford: Oxford University Press. ISBN 0-19-511947-9.

Fernando, Tim. 2015. The semantics of tense and aspect: A finite-state perspective. In *The handbook of contemporary semantic theory*, Shalom Lappin & Chris Fox (eds.), ch. 7, pp. 203–236. 2nd edn. (Blackwell handbooks in linguistics). Malden, MA: Wiley-Blackwell. ISBN 978-0-470-67073-6.

Filip, Hana. 2004. The telicity parameter revisited. In *Proceedings of Semantics and Linguistic Theory 14*, Robert B. Young (ed.). Ithaca, NY: Cornell University. DOI 10.3765/salt.v14i0.2909.

— 2011. Aspectual class and Aktionsart. In *Semantics: An international handbook of natural language meaning*, Claudia Maienborn, Klaus von Heusinger, & Paul H. Portner (eds.), ch. 48, pp. 1186–1217. (Handbooks of linguistics and communication science vol. 33.2). Berlin: Walter de Gruyter. ISBN 978-3-11-018523-2.

— 2012. Lexical aspect. In *The Oxford handbook of tense and aspect*, Robert I. Binnick (ed.), ch. 25, pp. 721–751. (Oxford handbooks). Oxford: Oxford University Press. ISBN 978-0-19-538197-9.

Finger, M., Dov M. Gabbay, & M. Reynolds. 2002. Advanced tense logic. In *Handbook of philosophical logic, vol. 7*, Dov M. Gabbay & Franz Guenthner (eds.), pp. 43–203. 2nd edn. (Handbook of philosophical logic vol. 7). Dordrecht: Kluwer Academic Publishers. ISBN 1-4020-0599-7. DOI 10.1007/978-94-017-0462-5.

Folli, Raffaella & Christiane Ulbrich (eds.). 2011. *Interfaces in linguistics: New research perspectives*. (Oxford studies in theoretical linguistics 31). Oxford: Oxford University Press. ISBN 978-0-19-956723-2.

Fortescue, Michael. 1992. Aspect and superaspect in Koyukon: An application of the Functional Grammar model to a polysynthetic language. In *Layered structure and reference in a functional perspective: Papers from the Functional Grammar Conference in Copenhagen 1990*, Michael Fortescue, Peter Harder, & Lars Kristoffersen (eds.), pp. 99–141. (Pragmatics & Beyond, New Series 23). Amsterdam: John Benjamins. ISBN 1-55619-291-6.

Fortescue, Michael, Steven A. Jacobson, & Lawrence Kaplan. 2010. *Comparative Eskimo dictionary with Aleut cognates*. 2nd edn. Fairbanks, AK: Alaska Native Language Center. ISBN 978-1-55500-109-4.

Fortescue, Michael, Marianne Mithun, & Nicholas Evans. 2017. Introduction. In *The Oxford handbook of polysynthesis*, Michael Fortescue, Marianne Mithun, & Nicholas Evans (eds.). (Oxford handbooks in linguistics). Oxford: Oxford University Press. ISBN 978-0-19-968320-8.

Fountain, Amy V. 1998. *An optimality theoretic account of Navajo prefixal syllables*. Tuscon: University of Arizona, PhD dissertation.

Frishberg, Nancy. 1975. Arbitrariness and iconicity: Historical change in American Sign Language. *Language* 51(3): 696–719. DOI 10.2307/412894. JSTOR 412894.

Fukui, Naoki. 2011. Merge and bare phrase structure. In *The Oxford handbook of linguistic minimalism*, Cedric Boeckx (ed.), ch. 4, pp. 73–95. (Oxford handbooks in linguistics). Oxford: Oxford University Press. ISBN 978-0-19-954936-8. DOI 10.1093/oxfordhb/9780199549368.001.0001.

Fulk, Robert D. 2018. *A comparative grammar of the early Germanic languages*. (Studies in Germanic linguistics 3). Amsterdam: John Benjamins. ISBN 978-90-272-6312-4.

Gabbay, Dov M. & Franz Guenthner (eds.). 2002. *Handbook of philosophical logic, vol. 7*. 2nd edn. (Handbook of philosophical logic 7). Dordrecht: Kluwer Academic Publishers. ISBN 1-4020-0599-7. DOI 10.1007/978-94-017-0462-5.

Genis, René. 2008. Perdurativity in Polish: 100 years after Agrell. *Studies in Slavic and general linguistics* 34: 109–143. JSTOR 40997583.

Gerdts, Donna B. 1991. Unaccusative mismatches in Halkomelem Salish. *International Journal of American Linguistics* 57(2): 230–250. JSTOR 3519767.

— 2003. The morphosyntax of Halkomelem lexical suffixes. *International Journal of American Linguistics* 69(4): 345–356. DOI 10.1086/382736.

Gerner, Matthias. 2014. Noncompositional scopal morphology in Yi. *Morphology* 24(1): 1–24. DOI 10.1007/s11525-014-9231-2.

Gick, Bryan & Ian Wilson. 2006. Excrescent schwa and vowel laxing: Cross-linguistic reponses to conflicting articulatory targets. In *Laboratory Phonology 8*, Louis Goldstein, D. H. Whalen, & Catherine T. Best (eds.), pp. 635–659. (Phonology and phonetics 4/2). Berlin: De Gruyter Mouton. ISBN 978-3-11-017678-0.

Givón, Talmy (ed.). 1994. *Voice and inversion*. (Typological studies in language 28). Amsterdam: John Benjamins. ISBN 1-55619-420-X.

Goddard, Pliny Earle. 1905. *The morphology of the Hupa language*. (University of California Publications, American Archaeology and Ethnology 3). Berkeley: University of California Press.

— 1909. *Kato texts*. (University of California Publications in American Archaeology and Ethnology 5.3). Berkeley: University of California Press.

— 1911. Athapascan (Hupa). In *Handbook of American Indian languages*, Franz Boas (ed.), pp. 85–159. (Smithsonian Institution Bureau of American Ethnology Bulletins 40). Washington, DC: U.S. Government Printing Office. Internet Archive handbookamerica00fracgoog.

Golla, Victor. 1970. *Hupa grammar*. Berkeley: University of California, Berkeley, PhD dissertation.

— 1977. A note on Hupa verb stems. *International Journal of American Linguistics* 43(4): 355–358. JSTOR 1264468.

— 1996. *Hupa language dictionary: Na:tinixwe Mixine:whe'*. 2nd edn. Hoopa, CA: Hoopa Valley Tribal Council. HDL 2148/48.

Good, Jeff. 2011. The typology of templates. *Language & Linguistics Compass* 5(10): 731–747. DOI 10.1111/j.1749-818x.2011.00306.x.

— 2016. *The linguistic typology of templates*. Cambridge: Cambridge University Press. ISBN 978-1-107-01502-9. DOI 10.1017/CBO9781139057479.

Gordon, George B. 1920. Foreword. *The Museum Journal* 11(1): 5–9.

Guseva, Elina & Philipp Weisser. 2018. Postsyntactic reordering in the Mari nominal domain: Evidence from suspended affixation. *Natural Language & Linguistic Theory* 35(4): 1089–1127. DOI 10.1007/s11049-018-9403-6.

Gvozdanović, Jadranka. 2012. Perfective and imperfective aspect. In *The Oxford handbook of tense and aspect*, Robert I. Binnick (ed.), ch. 27, pp. 781–802. (Oxford handbooks). Oxford: Oxford University Press. ISBN 978-0-19-538197-9.

Haegeman, Liliane M. 1994. *Introduction to government and binding theory*. 2nd edn. (Blackwell textbooks in linguistics 1). Oxford: Blackwell. ISBN 0-631-19067-8.

Hale, Ken. 2000. Remarks on the syntax of the Navajo verb. In *Diné bizaad naalkaah: Navajo language investigations*, Theodore B. Fernald & Ken Hale (eds.), pp. 55–96. (Working papers on endangered and less familiar languages vol. 3). Cambridge, MA: MIT.

— 2001. Navajo verb stem position and the bipartite structure of the Navajo conjunct sector. *Linguistic Inquiry* 32(4): 678–693. DOI 10.1162/002438901753373041. JSTOR 4179170.

— 2003. On the significance of Eloise Jelinek's Pronominal Argument Hypothesis. In *Formal approaches to function in grammar: In honor of Eloise Jelinek*, Andrew Carnie, Heidi Harley, & MaryAnn Willie (eds.), pp. 11–43. (Linguistik Aktuell / Linguistics Today vol. 62). Amsterdam: John Benjamins. ISBN 1-58811-348-5. DOI 10.1075/la.62.

Hale, Ken & Paul R. Platero. 1996. Navajo reflections of a general theory of lexical argument structure. In *Athabaskan language studies: Essays in honor of Robert W. Young*, Eloise Jelinek et al. (eds.), pp. 1–13. Albuquerque: University of New Mexico Press. ISBN 0-8263-1705-7.

Hall, Tracy A. 2007. Segmental features. In *The Cambridge handbook of phonology*, Paul de Lacey (ed.), ch. 13, pp. 311–334. (Cambridge handbooks in language and linguistics). Cambridge: Cambridge University Press. ISBN 978-0-521-84879-4.

Hamm, Friedrich & Oliver Bott. 2018. Tense and aspect. In *The Stanford Encyclopedia of Philosophy*, Edward N. Zalta (ed.). Fall 2018. Stanford, CA: CSLI Publications. URL https://plato.stanford.edu/archives/fall2018/entries/tense-aspect/.

Hamp, Eric P. 1979. Tongass Tlingit and Na-Dene. In *Proceedings of the 5th annual meeting of the Berkeley Linguistics Society*, pp. 461–470. (Annual proceedings of the Berkeley Linguistics Society vol. 5). Berkeley: Berkeley Linguistics Society. BLS 2160.

Hardy, Frank W. 1979. *Navajo aspectual verb stem variation*. Albuquerque: University of New Mexico, PhD dissertation.

— 1985. Pseudo-suffixes and optative stem shape prediction in Navajo. *International Journal of American Linguistics* 51(4): 435–438. JSTOR 1265293.

Hargus, Sharon. 1985. *The lexical phonology of Sekani*. Los Angeles: University of California Los Angeles, PhD dissertation.

— 1991. The disjunct boundary in Babine-Witsu Wit'ten. *International Journal of American Linguistics* 57(4): 487–513. JSTOR 3519736.

— 2007. *Witsuwit'en grammar: Phonetics, phonology, morphology*. (First Nations Languages 4). Vancouver: University of British Columbia Press. ISBN 978-0-7748-1382-2.

Hargus, Sharon & Keren Rice (eds.). 2005. *Athabaskan prosody*. (Current issues in linguistic theory 269). Amsterdam: John Benjamins. ISBN 90-272-4783-8.

Hargus, Sharon & Siri Tuttle. 1997. Augmentation as affixation in Athabaskan languages. *Phonology* 14: 177–220. JSTOR 4420100.

Harley, Heidi. 2011. Affixation and the Mirror Principle. In *Interfaces in linguistics: New research perspectives*, Raffaella Folli & Christiane Ulbrich (eds.), ch. 10, pp. 166–186. (Oxford studies in theoretical linguistics 31). Oxford: Oxford University Press. ISBN 978-0-19-956723-2.

Harrington, John P. 1939a. *Notes and vocabulary from George Johnson, Jack Ellis, and others, Sitka and Juneau*. Unpublished manuscript, Smithsonian Office of Anthropology Archives no. 4103.

— 1939b. *Velten and Boas forms rhd with* [*Thomas*] *Skeek*. Unpublished field notes. Alaska Native Language Archive TL939H1939c.

— 1940a. *Tlingit and Eyak flora and fauna terms*. Unpublished field notes. Alaska Native Language Archive TL939H1940h.

Harrington, John P. 1940b. *Tlingit and Eyak materials from George Johnson*. Unpublished field notes.
— 1940c. *Tlingit and Eyak materials from George Johnson*. Unpublished field notes. Alaska Native Language Archive TL939H1940e.
— 1940d. *Tlingit and Eyak materials from George Johnson*. Unpublished field notes. Alaska Native Language Archive TL939H1940f.
— 1940e. *Tlingit and Eyak materials from George Johnson*. Unpublished field notes. Alaska Native Language Archive TL939H1940g.
— 1940f. *Tlingit materials from George Johnson and a little from Sheldon James, Yakutat*. Unpublished field notes. Alaska Native Language Archive TL939H1940c.
— 1940g. *Yakutat texts*. Unpublished field notes. Alaska Native Language Archive TL939H1940b.
— 1940h. *Yakutat Tlingit materials*. Unpublished field notes. Alaska Native Language Archive TL939H1940a.
Haspelmath, Martin. 2018. The last word on polysynthesis: A review article. *Linguistic Typology* 22(2): 307–326. DOI 10.1515/lingty-2018-0011.
Henderson, Robert. 2013. *Ways of pluralizing events*. Santa Cruz, CA: University of California Santa Cruz, PhD dissertation.
Henry, David & Kay Henry. 1965. Koyukon classificatory verbs. *Anthropological Linguistics* 7(4): 110–116. JSTOR 30022546.
Higginbotham, James, Fabio Pianesi, & Achille C. Varzi (eds.). 2000. *Speaking of events*. Oxford: Oxford University Press. ISBN 0-19-512807-9.
Hintikka, Jaakko & Gabriel Sandu. 1994. Metaphor and other kinds of nonliteral meaning. In *Aspects of metaphor*, Jaakko Hintikka (ed.), pp. 151–188. (Synthese library vol. 238). Dordrecht: Kluwer Academic Publishers. ISBN 0-7923-2786-1. DOI 10.1007/978-94-015-8315-2.
Hipponensis, Aurelius Augustinus. 1995. *De Doctrina Christiana*. Trans. Latin by R.P.H. Green. (Oxford early Christian texts). Oxford University Press. ISBN 0-19-826334-1.
Hoijer, Harry. 1945a. Classificatory verb stems in the Apachean languages. *International Journal of American Linguistics* 11(1): 13–23. JSTOR 1262796.
— 1945b. The Apachean verb, part I: Verb structure and pronominal prefixes. *International Journal of American Linguistics* 11(4): 193–203. JSTOR 1262980.
— 1946a. Chiricahua Apache. In *Linguistic structures of Native America*, Harry Hoijer (ed.). (Viking Fund publications in anthropology vol. 6). New York: Viking Fund.
— 1946b. The Apachean verb, part II: The prefixes for mode and tense. *International Journal of American Linguistics* 12(1): 1–13. JSTOR 1263019.
— 1946c. The Apachean verb, part III: The classifiers. *International Journal of American Linguistics* 12(2): 51–59. JSTOR 1262968.
— 1948. The Apachean verb, part IV: Major form classes. *International Journal of American Linguistics* 14(4): 247–259. JSTOR 1262880.
— 1949. The Apachean verb, part V: The theme and prefix complex. *International Journal of American Linguistics* 15(1): 12–22. JSTOR 1262960.
Hollenbach, Barbara E. 1977. Reversal of Copala Trique temporal metaphors through language contact. *International Journal of American Linguistics* 43(2): 150–154. JSTOR 1264933.
Hope III, Andrew et al. 2003. *The traditional Tlingit map and tribal list*. 4th edn. Juneau, AK: Tlingit Readers, Inc. URL http://www.ankn.uaf.edu/ANCR/Southeast/TlingitMap/.

Hopper, Paul J. & Sandra A. Thompson. 1980. Transitivity in grammar and discourse. *Language* 56(2): 251–299. JSTOR 413757.

Hornstein, Norbert, Jairo Nunes, & Kleanthes K. Grohmann. 2005. *Understanding Minimalism*. (Cambridge textbooks in linguistics). Cambridge University Press. ISBN 978-0-521-53194-8.

Howren, Robert. 1968. Stem phonology and affix phonology in Dogrib (Northern Athapaskan). In *Papers from the Fourth regional meeting of the Chicago Linguistic Society, April 19–20, 1968*, Bill J. Darden, Charles-James N. Bailey, & Alice Davison (eds.), ?–? (Papers from the regional meetings of the Chicago Linguistic Society 1). Chicago: University of Chicago Press.

— 1971. A formalization of the Athabaskan 'D-effect'. *International Journal of American Linguistics* 37(1): 96–113. JSTOR 1264643.

Huang, Shuping. 2016. Time as space metaphor in Isbukun Bunun: A semantic analysis. *Oceanic Linguistics* 55(1): 1–24. DOI 10.1353/ol.2016.0002.

Huemer, Michael. 2011. Sense-data. In *The Stanford Encyclopedia of Philosophy*, Edward N. Zalta (ed.). Spring 2011. Stanford, CA: CSLI Publications. URL http://plato.stanford.edu/archives/spr2011/entries/sense-data/.

Huumo, Tuomas. 2017. The grammar of temporal motion: A Cognitive Grammar account of motion metaphors of time. *Cognitive Linguistics* 28(1): 1–43. DOI 10.1515/cog-2016-0015.

Hyman, Larry M. 2003. Suffix ordering in Bantu: A morphocentric approach. *Yearbook of Morphology* 2002: 245–281. DOI 10.1007/0-306-48223-1_8.

— 2007. Reconstructing the Proto-Bantu verbal unit: Internal evidence. *SOAS Working Papers in Linguistics* 15: 201–211. URL https://www.soas.ac.uk/linguistics/research/workingpapers/volume-15/file37809.pdf.

Hyman, Larry M., Sharon Inkelas, & Galen Sibanda. 2009. Morphosyntactic correspondence in Bantu reduplication. In *The nature of the word: Studies in honor of Paul Kiparsky*, Kristin Hanson & Sharon Inkelas (eds.), pp. 273–310. (Current studies in linguistics vol. 47). Cambridge, MA: MIT Press. ISBN 978-0-262-08379-9.

Inkelas, Sharon. 1993. Nimboran position class morphology. *Natural Language & Linguistic Theory* 11(4): 559–624. JSTOR 4047660.

International Phonetic Association. 1999. *Handbook of the International Phonetic Association*. Cambridge: Cambridge University Press. ISBN 0-521-65236-7.

Iordăchoia, Gianina & Elena Soare. 2007. Two kinds of event plurals: Evidence from Romanian nominalizations. In *Empirical issues in syntax and semantics 7*, Olivier Bonami & Patricia Cabredo Hoffherr (eds.), pp. 193–216. Paris: Colloque de Syntaxe et Sémantique à Paris. URL http://www.cssp.cnrs.fr/eiss7/index_en.html.

Janda, Laura A. et al. 2013. *Why Russian aspectual prefixes aren't empty: Prefixes as verb classifiers*. Bloomington, IN: Slavica. ISBN 978-0-89357-409-3.

Jelinek, Eloise. 2006. The Pronominal Argument parameter. In *Arguments and agreement*, Peter Ackema et al. (eds.), ch. 9, pp. 261–288. (Oxford linguistics). Oxford: Oxford University Press. ISBN 978-0-19-928573-0.

Jelinek, Eloise & Richard A. Demers. 1994. Predicates and pronominal arguments in Straits Salish. *Language* 70(4): 697–736. JSTOR 416325.

Jelinek, Eloise, Sally Midgette, et al. (eds.). 1996. *Athabaskan language studies: Essays in honor of Robert W. Young*. Albuquerque: University of New Mexico Press. ISBN 0-8263-1705-7.

Jetté, Jules. 1906. *On the language of the Ten'a.* Unpublished manuscript. Alaska Native Language Archive KO898J1906b.

Jetté, Jules & Eliza Jones. 2000. *Koyukon Athabaskan dictionary*. Ed. by James Kari. Fairbanks, AK: Alaska Native Language Center. ISBN 1-55500-063-0. Alaska Native Language Archive KO898JJ2000.

Johns, Alana. 2010. Eskimo-Aleut languages. *Language & Linguistics Compass* 4(10): 1041–1055.

Johnson, David E. 1979. *Toward a theory of relationally based grammar*. (Outstanding dissertations in linguistics). New York: Garland Publishing. ISBN 0-8240-9682-7.

Jones, Zachary R. 2017. *Haa daat akawshixít*, he wrote about us: Contextualizing anthropologist John R. Swanton's 1904 fieldwork on the Tlingit indians. *Alaska Journal of Anthropology* 15(1/2): 126–140.

Jung, Dagmar. 1999. *The dynamics of polysynthetic morphology: Person and number marking in Athabaskan*. Albuquerque: University of New Mexico, PhD dissertation.

Kager, René. 2007. Feet and metrical stress. In *The Cambridge handbook of phonology*, Paul de Lacey (ed.), ch. 9, pp. 195–227. (Cambridge handbooks in language and linguistics). Cambridge: Cambridge University Press. ISBN 978-0-521-84879-4.

Kahnemuyipour, Arsalan. 2009. *The syntax of sentential stress*. (Oxford studies in theoretical linguistics 25). Oxford: Oxford University Press. ISBN 978-0-19-921923-0.

Kamenskii, Anatolii. 1985. *Tlingit Indians of Alaska*. Trans. from the Russian and comm., with an introd., by Sergei Kan. (The Rasmuson Library Historical Translation Series 2). Fairbanks, Alaska: University of Alaska Press. ISBN 0-912006-18-8.

Kan, Sergei. 1989. *Symbolic immortality: The Tlingit potlatch of the nineteenth century*. (Smithsonian Series in Ethnographic Inquiry). Washington, D.C.: Smithsonian Institution Press. ISBN 1-56098-309-4.

Kandel, Eric R. et al. 2013. *Principles of neural science*. 5th edn. New York: McGraw-Hill. ISBN 978-0-07-139011-8.

Kari, James. 1975. The disjunct boundary in the Navajo and Tanaina verb prefix complexes. *International Journal of American Linguistics* 41(4): 330–345. JSTOR 1264556.

— 1976. *Navajo verb prefix phonology*. (Garland studies in American Indian linguistics). New York: Garland Publishing. Alaska Native Language Archive CA973K1976d.

— 1989. Affix positions and zones in the Athapaskan verb complex: Ahtna and Navajo. *International Journal of American Linguistics* 55(4): 424–454. JSTOR 1265241.

— 1990. *Ahtna Athabaskan dictionary*. Fairbanks, AK: Alaska Native Language Center. ISBN 1-55500-033-9. Alaska Native Language Archive AT973K1990.

— 1992. Some concepts in Ahtna Athabaskan word formation. In *Morphology now*, Mark Aronoff (ed.), pp. 107–131. (SUNY series in linguistics). Albany, NY: State University of New York Press. ISBN 0-7914-0816-7. Alaska Native Language Archive AT973K1992.

— 1993. Diversity in morpheme order in several Alaskan Athabaskan languages: Notes on the *gh*-qualifier. In *Proceedings of the 19th annual meeting of the Berkeley Linguistics Society: Special session on syntactic issues in Native American languages*, David Peterson (ed.), pp. 50–56. (Annual proceedings of the Berkeley Linguistics Society vol. 19.2). Berkeley: Berkeley Linguistics Society. DOI 10.3765/bls.v19i2.1549. BLS 3009.

Kari, James & Ben A. Potter (eds.). 2010. *The Dene-Yeniseian connection*. (Anthropological papers of the University of Alaska, new series 5.1–2). Fairbanks, AK: University of Alaska Press.

Kashevaroff, Andrew P. 1939. *Tlingit song texts*. Unpublished manuscript. Alaska Native Language Archive TL922K1939.

Kashevaroff, Andrew P. & Aleksandr Panteleev. 1920. *Russian Orthodox materials in Tlingit*. Unpublished manuscripts. Alaska Native Language Archive TL920A1920.

Kashevaroff, Andrew P. & Henry Phillips. 1922. *Tlingit proverbs*. Unpublished manuscript. Alaska Native Language Archive TL922KP1922.

Kastner, Itamar. 2019. Templatic morphology as an emergent property: Roots and functional heads in Hebrew. *Natural Language & Linguistic Theory* 37(2): 571–619. DOI 10.1007/s11049-018-9419-y.

Kelly, William A. & Frances H. Willard. 1905. Grammar and vocabulary of the Hlingĭt language of Southeastern Alaska. In *Report of the Commissioner of Education*, ch. 10, pp. 715–766. (Annual reports of the Department of the Interior for the fiscal year ended June 30, 1904 vol. 1). Washington, DC: U.S. Government Printing Office. Alaska Native Language Archive TL904KW1905.

Kibrik, Andrej A. 1992. Relativization in polysynthetic languages. *International Journal of American Linguistics* 58(2): 135–157. JSTOR 3519753.

— 1993. Transitivity increase in Athabaskan languages. In *Causatives and transitivity*, Bernard Comrie & Maria Polinsky (eds.), ch. 2, pp. 47–68. (Studies in language companion series vol. 23). Philadelphia: John Benjamins. ISBN 1-55619-375-0.

— 1996. Transitivity decrease in Navajo and Athabaskan: actor-affecting propositional derivations. In *Athabaskan language studies: Essays in honor of Robert W. Young*, Eloise Jelinek et al. (eds.), pp. 259–304. Albuquerque: University of New Mexico Press. ISBN 0-8263-1705-7.

Kisseberth, Charles. 2003. Makhuwa. In *The Bantu languages*, Derek Nurse & Gérard Philippson (eds.), ch. 27, pp. 546–565. (Routledge language family descriptions vol. 4). New York: Routledge. ISBN 978-0-700-71134-5.

Kisseberth, Charles & David Odden. 2003. Tone. In *The Bantu languages*, Derek Nurse & Gérard Philippson (eds.), ch. 4, pp. 59–70. (Routledge language family descriptions vol. 4). New York: Routledge. ISBN 978-0-700-71134-5.

Kiyota, Masaru. 2008. *Situation aspect and viewpoint aspect: From Salish to Japanese*. Vancouver: University of British Columbia, PhD dissertation.

Klein, Wolfgang. 1994. *Time in language*. (Germanic linguistics). New York: Routledge. ISBN 0-415-10412-2.

— 2009. How time is encoded. In *The expression of time*, Wolfgang Klein & Ping Li (eds.), pp. 39–81. (The expression of cognitive categories vol. 3). Berlin: Mouton de Gruyter. ISBN 978-3-11-019581-1.

Korotkova, Natalia & Yury Lander. 2010. Deriving affix ordering in polysynthesis: Evidence from Adyghe. *Morphology* 20: 299–319. DOI 10.1007/s11525-010-9185-y.

Korzybski, Alfred. 1933. *Science and sanity: An introduction to non-Aristotelian systems and general semantics*. Lancaster, PA: International Non-Aristotelian Library Publishing Company.

Kövecses, Zoltán. 2010. *Metaphor: A practical introduction*. Oxford: Oxford University Press. ISBN 978-0-19-537494-0.

Kratzer, Angelika. 1998. More structural analogies between pronouns and tenses. In *Proceedings of Semantics and Linguistic Theory 8*, Devon Strolovitch & Aaron Lawson (eds.), pp. 92–110. Ithaca, NY: Cornell University. DOI 10.3765/salt.v8i0.2808.

Krauss, Michael E. 1964. Proto-Athapaskan-Eyak and the problem of Na-Dene: The phonology. *International Journal of American Linguistics* 30(2): 118–131. JSTOR 1263479.

Krauss, Michael E. 1965a. Eyak: A preliminary report. *Canadian Journal of Linguistics* 10: 167–187. Alaska Native Language Archive CA961K1965b.

— 1965b. Proto-Athapaskan-Eyak and the problem of Na-Dene II: Morphology. *International Journal of American Linguistics* 31(1): 18–28. JSTOR 1264070.

— 1968. Noun-classification systems in Athapaskan, Eyak, Tlingit, and Haida verbs. *International Journal of American Linguistics* 34(3): 194–203. JSTOR 1263565.

— 1969. On the classifiers in the Athapascan, Eyak, and the Tlingit verb. *International Journal of American Linguistics* 35(4): 53–83. Alaska Native Language Archive CA961K1969a.

— 1970. *Eyak dictionary*. Unpublished manuscript. Alaska Native Language Archive EY961K1970b.

— 1973a. Eskimo-Aleut. In *Linguistics in North America*, Thomas A. Sebeok (ed.), pp. 796–902. (Current trends in linguistics vol. 10). The Hague: Mouton de Gruyter.

— 1973b. Na-Dene. In *Linguistics in North America*, Thomas A. Sebeok (ed.), pp. 903–978. (Current trends in linguistics vol. 10). The Hague: Mouton de Gruyter. Alaska Native Language Archive CA961K1973.

— 1976. *History of the documentation of the Tlingit language*. Unpublished manuscript. Alaska Native Language Archive TL964K1976.

— 1977a. *Proto-Athabaskan-Eyak fricatives and the first person singular*. Unpublished manuscript. Fairbanks, AK. Alaska Native Language Archive CA961K1977a.

— 1977b. *The Proto-Athabaskan and Eyak kinship system*. Unpublished manuscript. Alaska Native Language Archive CA961K1977b.

— 1979. Na-Dene and Eskimo-Aleut. In *The languages of Native America: Historical and comparative assessment*, Lyle Campbell & Marianne Mithun (eds.), pp. 803–901. Austin: University of Texas Press. ISBN 0-292-74624-5. Alaska Native Language Archive CA961K1979a.

— 1980. *On the history and use of Comparative Athabaskan linguistics*. Unpublished manuscript. Alaska Native Language Archive CA961K1981.

— 1981. *Eyak morpheme list*. Unpublished manuscript. Alaska Native Language Archive EY961K1976.

— 1986. Edward Sapir and Athabaskan linguistics. In *New perspectives in language, culture, and personality: Proceedings of the Edward Sapir Centenary Conference*, William Cowan, Michael K. Foster, & Konrad Koerner (eds.), pp. 147–191. (Studies in the history of the language sciences vol. 41). Amsterdam: John Benjamins. ISBN 90-272-4522-3.

— 2012. *Eyak stems*. Unpublished manuscript. Alaska Native Language Archive EY961K2009.

— 2015. *Eyak grammar*. Unpublished manuscript. Alaska Native Language Archive EY961K2015.

Krauss, Michael E. & Jeff Leer. 1981. *Athapaskan, Eyak, and Tlingit sonorants*. (Alaska Native Language Center Research Papers 5). Fairbanks, AK: University of Alaska. Alaska Native Language Archive CA962KL1981.

Kuhn, Steven T. & Paul Portner. 2002. Tense and time. In *Handbook of philosophical logic, vol. 7*, Dov M. Gabbay & Franz Guenthner (eds.), pp. 277–346. 2nd edn. (Handbook of philosophical logic vol. 7). Dordrecht: Kluwer Academic Publishers. ISBN 1-4020-0599-7. DOI 10.1007/978-94-017-0462-5.

La Pérouse, Jean-François de Galaup. 1798. *Voyage de La Pérouse, Autour du monde, pendant les années 1785, 1786, 1787, et 1788*. Ed. by M. L. A. Milet-Mureau. Paris: Plassan.

Landar, Herbert J. 1967. Ten'a classifcatory verbs. *International Journal of American Linguistics* 33(4): 263–268. JSTOR 1263653.

Lasersohn, Peter. 1990. *A semantics for groups and events*. (Outstanding dissertations in linguistics). New York: Garland Publishing. ISBN 0-8153-0153-7.

Lazard, Gilbert. 1989. Transitivity and markedness: The antipassive in accusative languages. In *Markedness in synchrony and diachrony*, Olga Mišeska Tomić (ed.). (Trends in linguistics: Studies and monographs 39). Berlin: Mouton de Gruyter. ISBN 0-89925-504-3.

Le Poidevin, Robin. 2015. The experience and perception of time. In *The Stanford Encyclopedia of Philosophy*, Edward N. Zalta (ed.). Summer 2015. Stanford, CA: CSLI Publications.

Leer, Jeff. 1965. *Old Southern Tlingit*. Unpublished field notes. Alaska Native Language Archive TLT962L1965.

— 1969. *Miscellaneous transcriptions, 1969–1974; includes narratives by Andrew Wanamaker (1967, 5 texts, 24 pp.), Frank Johnson (1972), and Jessie Natkong (1973)*. Unpublished manuscript. Alaska Native Language Archive TL962L1969.

— 1972. *Miscellaneous grammatical materials, 1972–1973*. Unpublished manuscript. Alaska Native Language Archive TL962L1972b.

— 1973a. *Tlingit stem collection*. Unpublished manuscript. Alaska Native Language Archive TL962L1973g.

— 1973b. *Tongass Tlingit field notes*. Unpublished field notes. Alaska Native Language Archive TLT962L1973b.

— 1973c. *Tongass Tlingit vocabulary from Frank and Emma Williams*. Unpublished manuscript. Alaska Native Language Archive TL962L1973f.

— 1974a. *Stem variation in Tongass Tlingit*. Unpublished manuscript. Alaska Native Language Archive TLT962L1974c.

— 1974b. *Tongass verb stem variation*. Unpublished manuscript. Alaska Native Language Archive TLT962L1974b.

— 1974c. *Verb stem variations in the Tongass dialect of Tlingit*. Unpublished manuscript. Alaska Native Language Archive TLT962L1974d.

— 1975a. *Miscellaneous Tlingit materials, 1975*. Unpublished field notes, 38 pp. Alaska Native Language Archive TL962L1975g.

— 1975b. *Notebook of Haida, Tongass Tlingit, Yakutat Tlingit, and Alutiiq*. Unpublished field notes. Alaska Native Language Archive TLT962L1975f.

— 1975c. *Tlingit field notes from Sitka, Ketchikan, Klawock, and Kake*. Unpublished field notes. Alaska Native Language Archive TL962L1975h.

— 1975d. *Tlingit verb complex charts and notes*. Unpublished manuscript. Alaska Native Language Archive TL962L1975d.

— 1975e. *Tongass rehearing of verb dictionary*. Unpublished field notes. Alaska Native Language Archive TLT962L1975e.

— 1976a. *Tlingit verb catalog*. Unpublished manuscript. Alaska Native Language Archive TL962L1975n.

— 1976b. *Tlingit verb stem variation and theme classes, conjugation types*. Unpublished manuscript.

— 1977. *Three texts from Swanton 1909*. Unpublished manuscript. Alaska Native Language Archive TL962L1977a.

— 1978a. *Sh-classifiers*. Unpublished manuscript. Alaska Native Language Archive TL962L1978a.

— 1978b. *Studies in verb stem types, tense-mode, aspect, conjugations*. Unpublished manuscript.

Leer, Jeff. June 1978c. *Tlingit stem list*. Unpublished manuscript. Alaska Native Language Archive TL962L1975m.

— 1978d. *Tongass lexicon notes*. Unpublished field notes. Alaska Native Language Archive TLT962L1978d.

— 1979a. *Proto-Athabaskan verb stem variation, part one: phonology*. (Alaska Native Language Center Research Papers 1). Fairbanks, AK: Alaska Native Language Center.

— 1979b. *Report on the phonology of Interior Tlingit*. Unpublished manuscript. Alaska Native Language Archive TL962L1979f.

— 1979c. *Tlingit verb stem variation*. Unpublished manuscript, 32 pp.

— 1985. *Tlingit tribe, clan, and house group names*. Unpublished manuscript, 26 pp. Alaska Native Language Archive TL962L1985.

— 1989. Directional systems in Athapaskan and Na-Dene. In *Athapaskan linguistics: Current perspectives on a language family*, Eung-Do Cook & Keren Rice (eds.), ch. 15, pp. 575–622. (Trends in linguistics: State-of-the-art reports vol. 15). Berlin: Mouton de Gruyter. ISBN 0-89925-282-6.

— 1990a. *Elizabeth Nyman texts*. Unpublished manuscripts. Alaska Native Language Archive TL962L1990.

— 1990b. *The Tlingit anaphoric system and the typology of voice systems*. Unpublished manuscript. Alaska Native Language Archive TL962L1990b.

— 1990c. Tlingit: A portmanteau language family? In *Linguistic change and reconstruction methodology*, Philip Baldi (ed.), pp. 73–98. (Trends in linguistics: Studies and monographs vol. 45). Berlin: Mouton de Gruyter. ISBN 0-89925-546-9. Alaska Native Language Archive TL962L1990a.

— 1991. *The schetic categories of the Tlingit verb*. Chicago: University of Chicago, PhD dissertation. Alaska Native Language Archive TL962L1991.

— 1992. *Tlingit history and general information*. Unpublished manuscripts. Alaska Native Language Archive TL962L1991b.

— 1993. *The Tlingit anaphoric system and its roots in Na-Dene*. Unpublished manuscript. Alaska Native Language Archive CA965L1993b.

— 1996a. *Comparative Athabaskan lexicon*. Unpublished manuscript. Alaska Native Language Archive CA965L1996a.

— 1996b. The historical evolution of the stem syllable in Gwich'in (Kutchin/Loucheux) Athabaskan. In *Athabaskan language studies: Essays in honor of Robert W. Young*, Eloise Jelinek et al. (eds.), pp. 193–234. Albuquerque: University of New Mexico Press. ISBN 0-8263-1705-7.

— 1999. Tonogenesis in Athabaskan. In *Cross-linguistic Studies of tonal phenomena: Tonogenesis, typology, and related topics*, Shigeki Kaji (ed.), pp. 37–66. Tokyo: Institute for the Study of Languages, Cultures of Asia, & Africa, Tokyo University of Foreign Studies. ISBN 4-87297-749-1. Alaska Native Language Archive CA965L1999b.

— 2000. The negative/irrealis category in Athabaskan-Eyak-Tlingit. In *The Athabaskan languages: Perspectives on a Native American language family*, Theodore B. Fernald & Paul R. Platero (eds.), ch. 7, pp. 101–138. (Oxford studies in anthropological linguistics 24). Oxford: Oxford University Press. ISBN 0-19-511947-9.

— 2001. Shift of tonal markedness in Northern Tlingit and Southern Athabaskan. In *Cross-linguistic studies of tonal phenomena: tonogenesis, Japanese accentology, and other topics*, Shigeki Kaji (ed.),

pp. 61–86. Tokyo: Institute for the Study of Languages, Culture of Asia, & Africa, Tokyo University of Foreign Studies. ISBN 4-87297-794-7.

— 2005a. *Comparative Athabaskan abbreviations, orthography, and conventions*. Manuscript.

— 2005b. How stress shapes the stem-suffix complex in Athabaskan. In *Athabaskan prosody*, Sharon Hargus & Keren Rice (eds.), pp. 277–318. (Current issues in linguistic theory vol. 269). Amsterdam: John Benjamins. ISBN 90-272-4783-8.

— 2006. Na-Dene. In *Encyclopedia of language & linguistics*, Keith Brown & Anne H. Anderson (eds.), pp. 428–430. 2nd edn. Amsterdam: Elsevier. ISBN 0-08-044299-4. DOI 10.1016/B0-08-044854-2/02272-0. Alaska Native Language Archive CA965L2006.

— 2007. *Topics in Tlingit verb system and orthographies*. Based on the Tlingit Literacy Session, September 11–13 2006. Whitehorse, YT: Yukon Native Language Centre. ISBN 1-55242-247-X.

— 2008. *Recent advances in AET comparison*. Unpublished manuscript. Alaska Native Language Archive CA965L2008b.

— 2010. The palatal series in Athabascan–Eyak–Tlingit, with an overview of the basic sound correspondences. In *The Dene-Yeniseian connection*, James Kari & Ben A. Potter (eds.), pp. 168–193. (Anthropological papers of the University of Alaska, new series vol. 5.1–2). Fairbanks, AK: University of Alaska Press. Alaska Native Language Archive CA965L2008a.

Leer, Jeff, Doug Hitch, & John Ritter. 2001. *Interior Tlingit noun dictionary: The dialects spoken by Tlingit elders of Carcross and Teslin, Yukon, and Atlin, British Columbia*. Whitehorse, YT: Yukon Native Language Centre. ISBN 1-55242-227-5. Alaska Native Language Archive TL962L2001.

Legate, Julie. 2014. *Voice and v: Lessons from Acehnese*. (Linguistic Inquiry monographs 69). Cambridge, MA: MIT Press. ISBN 978-0-262-02814-1.

Levine, Robert D. 1979. Haida and Na-Dene: A new look at the evidence. *International Journal of American Linguistics* 45(2): 157–170. JSTOR 1264780.

Li, Fang-Kuei. 1930a. A study of Sarcee verb-stems. *International Journal of American Linguistics* 6(1): 3–27. JSTOR 1263332.

— 1930b. *Mattole: An Athabaskan language*. (University of Chicago publications in anthropology, linguistic series). Chicago: University of Chicago Press. HDL 2027/mdp.39015030695996.

Littlefield, Roby et al. 2003. *Aak'wtaatseen "Shanyaak'utlaax̱" told by Deikeenaak'w, Sitka, 1904*. Unpublished manuscript.

Maddieson, Ian, Caroline L. Smith, & Nicola Bessell. 2001. Aspects of the phonetics of Tlingit. *Anthropological Linguistics* 43(2): 135–176. JSTOR 30028779.

Maienborn, Claudia. 2011. Event semantics. In *Semantics: An international handbook of natural language meaning*, Claudia Maienborn, Klaus von Heusinger, & Paul H. Portner (eds.), ch. 34. (Handbooks of linguistics and communication science vol. 33.1). Berlin: Walter de Gruyter. ISBN 978-3-11-018470-9.

Mair, Christian. 2012. Progressive and continuous aspect. In *The Oxford handbook of tense and aspect*, Robert I. Binnick (ed.), ch. 28, pp. 803–827. (Oxford handbooks). Oxford: Oxford University Press. ISBN 978-0-19-538197-9.

Malaspina, Alessandro. 1885a. *Tlingit vocabulary*. Unpublished notes collected in 1791. Alaska Native Language Archive TL791M1885a.

— 1885b. *Yakutat wordlist*. Unpublished notes collected in 1791. Alaska Native Language Archive TL791M1885.

Mani, Inderjeet, James Pustejovsky, & Robert Gaizauskas. 2005. Introduction to part I (Tense, aspect, and event structure). In *The language of time: A reader*, Inderjeet Mani, James Pustejovsky, & Robert Gaizauskas (eds.), pp. 3–19. (Oxford linguistics). Oxford: Oxford University Press. ISBN 0-19-926851-7.

Manova, Stela & Mark Aronoff. 2010. Modeling affix order. *Morphology* 20(1): 109–131. DOI 10.1007/s11525-010-9153-6.

Manzini, M. Rita. 1992. The projection principle(s): A reexamination. In *Thematic structure: Its role in grammar*, Iggy M. Roca (ed.), pp. 271–291. (Linguistic models 16). Berlin: Foris Publications. ISBN 3-11-013406-3.

Matthews, Peter H. 2014. *The concise Oxford dictionary of linguistics*. 3rd edn. Oxford: Oxford University Press. ISBN 978-0-19-967512-8.

Matthewson, Lisa. 2004. On the methodology of semantic fieldwork. *International Journal of American Linguistics* 70(4): 369–415. DOI 10.1086/429207.

— 2006. Temporal semantics in a superficially tenseless language. *Linguistics & Philosophy* 29(6): 673–713. DOI s10988-006-9010-6.

McClellan, Catharine. 1975a. *My old people say, Part 1: An ethnographic survey of Southern Yukon Territory*. (Mercury Series, Canadian Ethnology Service 6.1). Ottawa: Canadian Museum of Civilization. ISBN 0-660-17845-1. DOI 10.2307/j.ctv16zxj.

— 1975b. *My old people say, Part 2: An ethnographic survey of Southern Yukon Territory*. (Mercury Series, Canadian Ethnology Service 6.2). Ottawa: Canadian Museum of Civilization. ISBN 0-660-17846-X. DOI 10.2307/j.ctv172kp.

McDonough, Joyce. 1989. Argument structure and the Athapaskan "classifier" prefix. In *WCCFL 8: The Proceedings of the Eighth West Coast Conference on Formal Linguistics*, Jane Fee & Kathryn Hunt (eds.), pp. 220–245. Stanford, CA: CSLI Publications.

— 1996. Epenthesis in Navajo. In *Athabaskan language studies: Essays in honor of Robert W. Young*, Eloise Jelinek et al. (eds.), pp. 235–258. Albuquerque: University of New Mexico Press. ISBN 0-8263-1705-7.

— 2000a. Athabaskan redux: Against the position class as a morphological category. In *Morphological analysis in comparison*, Wolfgang U. Dressler et al. (eds.), pp. 155–178. (Current issues in linguistic theory vol. 201). Amsterdam: John Benjamins. ISBN 1-55619-979-1.

— 2000b. How to use Young and Morgan's "The Navajo Language". Working Papers in the Language Sciences 2. University of Rochester.

— 2000c. On a bipartite model of the Athabaskan verb. In *The Athabaskan languages: Perspectives on a Native American language family*, Theodore B. Fernald & Paul R. Platero (eds.), ch. 7, pp. 139–166. (Oxford studies in anthropological linguistics 24). Oxford: Oxford University Press. ISBN 0-19-511947-9.

McDonough, Joyce & Valerie Wood. 2008. The stop contrasts of Athabaskan languages. *Journal of Phonetics* 36(3): 427–449. DOI 10.1016/j.wocn.2007.11.001.

McFadden, Thomas & Sandhya Sundaresan. 2018. Reducing *pro* and PRO to a single source. *The Linguistic Review* 35(3): 463–518. DOI 10.1515/tlr-2018-0003.

Meek, Barbra A. & Leda Jules. 2001. Kaska classificatory verbs: A preliminary analysis. In *Proceedings of the 2001 Athabaskan Languages Conference*, Siri G. Tuttle & Gary Holton (eds.), pp. 54–74. (Alaska Native Language Center Working Papers 1). Fairbanks, AK: Alaska Native Language Center.

Mithun, Marianne. 1999. *The languages of Native North America*. (Cambridge language surveys). Cambridge: Cambridge University Press. ISBN 0-521-23228-7.

Montague, Richard. 1969. On the nature of certain philosophic entities. *The Monist* 53(2): 159–194. JSTOR 27902119.

Moore, Kevin E. 2006. Space-to-time mappings and temporal concepts. *Cognitive Linguistics* 17(2): 199–244. DOI 10.1515/COG.2006.005.

Moore, Patrick J. 2002. *Point of view in Kaska historical narratives*. Bloomington, Ind.: Indiana University, PhD dissertation.

Morice, Adrien G. 1907. The unity of speech among the Northern and Southern Déné. *American Anthropologist* 9(4): 720–737.

Murasugi, Kumiko. 2014. Noun incorporation, nonconfigurationality, and polysynthesis. In *The Routledge handbook of syntax*, Andrew Carnie, Yosuke Sato, & Daniel Siddiqi (eds.), ch. 14, pp. 283–303. (Routledge studies in linguistics). New York: Routledge. ISBN 978-0-415-53394-2.

Nadezhdin, Ivan. 1855. *Gospel of Matthew*. Unpublished manuscript. Alaska Native Language Archive TL855N1855a.

— 1873. *Tlingit religious and conversational texts*. Manuscript copy. Alaska Native Language Archive TL850An1873.

— 1896. *Сборникъ церковныхъ пѣснопѣній и молитвословій на колошенскомъ нарѣчій*. Unpublished manuscript. Alaska Native Language Archive TL855N1896.

Naish, Constance M. 1962. *A practical orthography for Tlingit*. Unpublished manuscript. Presented at the 13th Alaska Science Conference, June 1962. Alaska Native Language Archive TL959N1962b.

— 1966. *A syntactic study of Tlingit*. London: School of Oriental & African Languages, University of London, master's thesis. Alaska Native Language Archive TL959N1966.

Naish, Constance M. & Gillian L. Story. 1960. *Ut K̲'uheenih X̲'usheeyee Uyuh*. Publication information unknown. Alaska Native Language Archive TL959NS1960b.

— 1961. *Tlingit alphabet book*. Unpublished typescript. Alaska Native Language Archive TL959NS1961a.

— 1963a. *English-Tlingit dictionary: Nouns*. 1st edn. Fairbanks, AK: Summer Institute of Linguistics.

— 1963b. *The Brass Serpent and other stories*. Unpublished typescript. Alaska Native Language Archive TL959NS1963e.

— 1963c. *Tlingit hymns*. Unpublished typescript. Alaska Native Language Archive TL959NS1963d.

— 1963d. *Tlingit reading book 3*. Unpublished typescript. Alaska Native Language Archive TL959NS1963b.

— 1967. *Differences between Angoon and Yakutat dialects of Tlingit*. Unpublished manuscript. Alaska Native Language Archive TL959NS1967.

Naish, Constance M., Gillian L. Story, et al. 1976. *Tlingit noun dictionary*. Sitka, AK: Sheldon Jackson College. Alaska Native Language Archive TL972Dv1976.

Nater, Hank F. 1989. Some comments on the phonology of Tahltan. *International Journal of American Linguistics* 55(1): 25–42.

— 2018. Language contact in the northernmost regions of the Pacific Northwest: Tlingit elements in Tahltan. *Anthropological Linguistics* 60(1): 44–59. DOI 10.1353/anl.2018.0002.

Nordlinger, Rachel. 2010. Verbal morphology in Murrinh-Patha: Evidence for templates. *Morphology* 20(2): 321–341. DOI 10.1007/s11525-010-9184-z.

Nunes, Jairo. 2013. X′-structure and Minimalism. In *The Bloomsbury companion to syntax*, Silvia Luraghi & Claudia Parodi (eds.), ch. 6, pp. 76–87. London: Bloomsbury. ISBN 978-1-4411-9593-7.

Núñez, Rafael E., Benjamin A. Motz, & Ursina Teuscher. 2006. Time after time: The psychological reality of the ego- and time-reference-point distinction in metaphorical construals of time. *Metaphor and Symbol* 21(3): 133–146. DOI 10.1207/s15327868ms2103_1.

Núñez, Rafael E. & Eve E. Sweetser. 2006. With the future behind them: Convergent evidence from Aymara language and gesture in the crosslinguistic comparison of spatial construals of time. *Cognitive Science* 30: 401–450. DOI 10.1207/s15516709cog0000_62.

Nurse, Derek & Gérard Philippson (eds.). 2003. *The Bantu languages*. (Routledge language family descriptions 4). New York: Routledge. ISBN 978-0-700-71134-5.

Nyman, Elizabeth & Jeff Leer. 1993. *Gágiwduł.àt: Brought forth to reconfirm. The legacy of a Taku River Tlingit clan*. Fairbanks, AK: Alaska Native Language Center. ISBN 1-55500-048-7.

Odden, David. 1986. On the role of the Obligatory Contour Principle in phonological theory. *Language* 62(2): 353–383. JSTOR 414677.

Office of Coast Survey. 2014. *Alaska: Dixon Entrance to Cape Spencer*. 36th edn. (United States Coast Pilot 8). Washington, DC: National Oceanic & Atmospheric Association. URL http://www.nauticalcharts.noaa.gov/nsd/coastpilot_w.php?book=8.

Øhrstrøm, Peter & Per F.V. Hasle. 1995. *Temporal logic: From ancient ideas to artificial intelligence*. (Studies in linguistics and philosophy 57). Dordrecht: Kluwer Academic Publishers. ISBN 0-7923-3586-4.

Olsen, Mari Broman. 1997. *A semantic and pragmatic model of lexical and grammatical aspect*. (Outstanding dissertations in linguistics). New York: Garland Publishing. ISBN 0-8153-2849-4.

Olson, Ronald LeRoy. 1967. *Social structure and social life of the Tlingit in Alaska*. (University of California Anthropological Records 26). Berkeley: University of California Press.

Parsons, Terence P. 1990. *Events in the semantics of English: A study in subatomic semantics*. (Current studies in linguistics 19). Cambridge, MA: MIT Press. ISBN 0-262-16120-6.

Patri, Sylvain. 2002. La méthode de Troubetskoy morphonologue. *Cahiers Ferdinand de Saussure* 55: 63–83. JSTOR 27758652.

Perlmutter, David. 1978. Impersonal passives and the unaccusative hypothesis. In *Proceedings of the fourth annual meeting of the Berkeley Linguistic Society*, Jeri J. Jaeger et al. (eds.), pp. 157–189. (Annual proceedings of the Berkeley Linguistics Society vol. 4). Berkeley: Berkeley Linguistics Society. DOI 10.3765/bls.v4i0.2198.

— 1982. Syntactic representation, syntactic levels, and the notion of subject. In *The nature of syntactic representation*, Pauline Jacobson & Geoffrey K. Pullum (eds.), pp. 283–340. (Synthese language library vol. 15). Dordrecht: D. Reidel. ISBN 978-90-277-1290-5. DOI 10.1007/978-94-009-7707-5.

Pike, Kenneth L. & Alton L. Becker. 1964. Progressive neutralization in dimensions of Navajo stem matrices. *International Journal of American Linguistics* 30(2): 144–154. JSTOR 1263482.

Plungian, Vladimir A. & Johan van der Auwera. 2006. Towards a typology of discontinuous past marking. *Sprachtypologie und Universalienforschung* 59(4): 317–349. DOI 10.1524/stuf.2006.59.4.317.

Polinsky, Maria. 2017. Antipassive. In *The Oxford handbook of ergativity*, Jessica Coon, Diane Massam, & Lisa deMena Travis (eds.), pp. 308–331. (Oxford handbooks in linguistics). Oxford: Oxford University Press. ISBN 978-0-19-873937-1. DOI 10.1093/oxfordhb/9780198739371.013.13.

Pollard, Carl J. & Ivan A. Sag. 1994. *Head-driven phrase structure grammar*. (Studies in contemporary linguistics). Stanford, CA: CSLI Publications. ISBN 0-226-67446-0.

Pollock, Jean-Yves. 1989. Verb movement, universal grammar, and the structure of IP. *Linguistic Inquiry* 20(3): 365–424. JSTOR 4178634.

Portner, Paul H. 2018. *Mood*. (Oxford surveys in semantics and pragmatics 5). Oxford: Oxford University Press. ISBN 978-0-19-954752-4.

Poser, William J. 2005. Noun classification in Carrier. *Anthropological Linguistics* 47(2): 143–168. JSTOR 25132325.

Powell, J. W. 1891. Indian linguistic families of America north of Mexico. In *Seventh annual report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution, 1885–'86*, J. W. Powell (ed.), pp. 1–142. (Smithsonian Institution Bureau of American Ethnology Bulletins 7). Description of "Athapascan family" pp. 51–56; description of "Koluschan family" pp. 85–87. Washington, DC: U.S. Government Printing Office. Google Books UHYI3UadPLMC.

Prior, Arthur N. 1966. Postulates for tense-logic. *American Philosophical Quarterly* 3(2): 153–161. JSTOR 20009202.

— 1967. *Past, present, and future*. Oxford: Clarendon Press.

Pustejovsky, James. 1995. *The generative lexicon*. Cambridge, MA: MIT Press. ISBN 0-262-16158-3.

Racy, Sumayya. 2008. A unification of Indo-European Aktionsart and Navajo verb theme categories. *Coyote Papers* 16: 83–99. HDL 10150/126388.

Radloff, Leopold F. 1861. *Tlingit linguistic materials*. Unpublished notes. Alaska Native Language Archive TL860R1861.

— 1873. *German-Tlingit vocabulary*. Unpublished manuscript, ca. 2350 entries, 8800 forms. Alaska Native Language Archive TL860R1873.

Reichenbach, Hans. 1947. *Elements of symbolic logic*. New York: Macmillan.

Rice, Keren. 1989. *A grammar of Slave*. (Mouton grammar library 5). Berlin: Mouton de Gruyter. ISBN 0-89925-140-4.

— 1993. The structure of the Slave (Northern Athabaskan) verb. In *Studies in lexical phonology*, Sharon L. Hargus & Ellen M. Kaisse (eds.), pp. 145–171. (Phonetics and phonology vol. 4). San Diego: Academic Press. ISBN 0-12-325070-6. DOI 10.1016/B978-0-12-325071-1.50011-X.

— 2000a. *Morpheme order and semantic scope*. (Cambridge studies in linguistics 90). Cambridge: Cambridge University Press. ISBN 0-521-58354-3.

— 2000b. Voice and valency in the Athapaskan family. In *Case studies in transitivity*, Robert M. W. Dixon & Alexandra Y. Aikhenvald (eds.), ch. 6, pp. 173–235. Cambridge: Cambridge University Press. ISBN 0-521-66039-4.

— 2005. Prominence and the verb stem in Slave (Hare). In *Athabaskan prosody*, Sharon Hargus & Keren Rice (eds.), pp. 369–392. (Current issues in linguistic theory vol. 269). Amsterdam: John Benjamins. ISBN 90-272-4783-8.

— 2011. Principles of affix ordering: An overview. *Word Structure* 4(2): 169–200. DOI 10.3366/word.2011.0009.

Rice, Keren & Sharon Hargus. 1989. Conjugation and mode in Athapaskan languages: Evidence for two positions. In *Athapaskan linguistics: Current perspectives on a language family*, Eung-Do Cook & Keren Rice (eds.), ch. 7, pp. 265–316. (Trends in linguistics: State-of-the-art reports vol. 15). Berlin: Mouton de Gruyter. ISBN 0-89925-282-6.

Rice, Keren & Leslie Saxon. 2005. Comparative Athapaskan syntax: Arguments and projections. In *The Oxford handbook of comparative syntax*, Guglielmo Cinque & Richard S. Kayne (eds.), ch. 16, pp. 698–774. Oxford: Oxford University Press. ISBN 978-0-19-513650-0.

Rice, Sally, Gary Libben, & Bruce Derwing. 2002. Morphological representation in an endangered, polysynthetic language. *Brain and Language* 81(1–3): 473–486. DOI 10.1006/brln.2001.2540.

Rothstein, Susan. 1991. Heads, projections, and category determination. In *Views on phrase structure*, Katherine Leffel & Denis Bouchard (eds.), pp. 97–112. (Studies in natural language and linguistic theory vol. 25). Dordrecht: Kluwer Academic Publishers. ISBN 0-7923-1295-3. DOI 10.1007/978-94-011-3196-4.

— 2004. *Structuring events: A study in the semantics of lexical aspect*. (Explorations in semantics 2). Malden, MA: Blackwell. ISBN 1–4051–0667–0.

— 2016. Aspect. In *The Cambridge handbook of formal semantics*, Maria Aloni & Paul J.E. Dekker (eds.), ch. 12, pp. 342–368. (Cambridge handbooks in language and linguistics). Cambridge: Cambridge University Press. ISBN 978-1-107-02839-5. DOI 10.1017/CBO9781139236157.

Rushforth, Scott. 1991. Uses of Bearlake and Mescalero (Athapaskan) classificatory verbs. *International Journal of American Linguistics* 57(2): 251–266.

Saito, Mamoru & Naoki Fukui. 1998. Order in phrase structure and movement. *Linguistic Inquiry* 29(3): 439–474. DOI 10.1162/002438998553815.

Sandoval, Merton & Eloise Jelinek. 1989. The *bi*-construction and pronominal arguments in Apachean. In *Athapaskan linguistics: Current perspectives on a language family*, Eung-Do Cook & Keren Rice (eds.), ch. 9, pp. 335–378. (Trends in linguistics: State-of-the-art reports vol. 15). Berlin: Mouton de Gruyter. ISBN 0-89925-282-6.

Sapir, Edward. 1914. *Notes on Chasta Costa phonology and morphology*. (University Museum anthropological publications 11.2). Philadelphia: University of Pennsylvania.

— 1915. The Na-Dene languages: A preliminary report. *American Anthropologist* 17(3): 534–558. JSTOR 660504.

— 1923. A type of Athabaskan relative. *International Journal of American Linguistics* 2(3/4): 136–142. JSTOR 1263275.

Saxon, Leslie & Mary Siemens (eds.). 1996. *Tłı̨chǫ Yatiì Enı̨ htł'è: A Dogrib dictionary*. Rae-Edzo, NWT: Dogrib Divisional Board of Education. ISBN 1-896790-00-3.

Schütze, Carson T. 2016. *The empirical base of linguistics: Grammaticality judgements and linguistic methodology*. (Classics in linguistics 2). Berlin: Language Science Press. ISBN 978-3-946234-03-6. DOI 10.17169/langsci.b89.100.

Scott, Amanda. 1989. The vertical dimension and time in Mandarin. *Australian Journal of Linguistics* 9(2): 295–314. DOI 10.1080/07268608908599424.

Segerberg, Krister. 2011. A modal logic of metaphor. *Studia Logica* 99: 337–347. DOI 10.1007/s11225-011-9355-x.

Shotridge, Florence. 1913. The life of a Chilkat Indian girl. *The Museum Journal* 4(3): 101–103.

Shotridge, Louis. 1912. *Shotridge notes*. Unpublished lexicography materials. Alaska Native Language Archive TL914Sh1912.

— 1914. *Tlingit language notes*. Unpublished notes. Alaska Native Language Archive TL914Sh1914.

— 1915. *Notebook of Tlingit language notes, songs, & articles for Museum Journal, including work with Boas.* University of Pennsylvania Museum Archives, Louis Shotridge Collection. Container 1, folder 14.

— 1917a. *Correspondence* [*1911–1918*]. University of Pennsylvania Museum Archives, Louis Shotridge Collection. Container 1, folder 3.
— 1917b. My northland revisited. *The Museum Journal* 8(2): 105–115.
— 1919a. A visit to the Tsimshian Indians. *The Museum Journal* 10(1): 49.
— 1919b. War helmets and clan hats of the Tlingit Indians. *The Museum Journal* 10(1): 43–48.
— 1920. Ghost of Courageous Adventurer. *The Museum Journal* 11(1): 11–26.
— 1921. Tlingit woman's root basket. *The Museum Journal* 12(3): 162–178.
— 1928. The emblems of the Tlingit culture. *The Museum Journal* 19(4): 350–377.
— 1929a. The bride of Tongass: A study of the Tlingit marriage ceremony. *The Museum Journal* 20(2): 131–156.
— 1929b. The Kaguantan shark helmet. *The Museum Journal* 20(4): 339–343.
Shotridge, Louis & Florence Shotridge. 1913. Chilkat houses. *The Museum Journal* 4(3): 81–99.
Sidney, Angela & Jeff Leer. 1980. *Place-names of the Tagish region, southern Yukon*. Whitehorse, YT: Yukon Native Languages Project.
Silverstein, Michael. 1972. Chinook Jargon: Language contact and the problem of multi-level generative systems, I. *Language* 48(2): 378–406. JSTOR 412141.
Simpson, Jane & M. Withgott. 1986. Pronominal clitic clusters and templates. In *The syntax of pronominal clitics*, Hagit Borer (ed.), pp. 149–174. (Syntax and semantics vol. 19). Orlando, FL: Academic Press. ISBN 0-12-613519-3.
Smith, Carlota S. 1986. A speaker-based approach to aspect. *Linguistics & Philosophy* 9(1): 97–115. DOI 10.1007/BF00627437.
— 1996. Aspectual categories in Navajo. *International Journal of American Linguistics* 62(3): 227–263. JSTOR 1265998.
— 1997. *The parameter of aspect*. 2nd edn. (Studies in linguistics and philosophy 43). Dordrecht: Kluwer Academic Publishers. ISBN 0-7923-4657-2. DOI 10.1007/978-94-011-5606-6.
— 2005. Event structure and morphosyntax in Navajo. In *The syntax of aspect*, Nomi Erteschik-Shir & Tova Rapoport (eds.), ch. 9, pp. 190–211. (Oxford studies in theoretical linguistics 10). Oxford: Oxford University Press. ISBN 0-19-928043-6.
— 2006. The pragmatics and semantics of temporal mapping. In *Proceedings of the 2004 Texas Linguistics Society Conference*, Pascal Denis et al. (eds.), pp. 92–106. Somerville, MA: Cascadilla.
Smith, Carlota S., Ellavina Tsosie Perkins, & Theodore B. Fernald. 2007. Time in Navajo: Direct and indirect interpretation. *International Journal of American Linguistics* 73(1): 40–71. DOI 10.1086/518334.
Speas, Margaret. 1990. *Phrase structure in natural language*. (Studies in natural language and linguistic theory 21). Dordrecht: Kluwer Academic Publishers. ISBN 978-0-7923-0866-9. DOI 10.1007/978-94-009-2045-3.
Speas, Peggy. 1991. Functional heads and the Mirror Principle. *Lingua* 84(2–3): 181–214. DOI 10.1016/0024-3841(91)90070-L.
Spencer, Andrew. 1991. *Morphological theory: An introduction to word structure in generative grammar*. (Blackwell textbooks in linguistics 2). Oxford: Blackwell. ISBN 0-631-16143-0.
— 2004. Review of "Problems of polysynthesis" by Evans and Sasse. *Linguistic Typology* 8(3): 394–401. DOI 10.1515/lity.2004.8.3.394.
Spreng, Bettina. 2012. *Viewpoint aspect in Inuktitut: The syntax and semantics of antipassives*. Toronto: University of Toronto, PhD dissertation.

Stanley, Richard J. 1969. *The phonology of the Navajo verb*. Cambridge, MA: Massachusetts Institute of Technology, PhD dissertation. HDL 1721.1/7582.

Steinhart, Eric C. 2001. *The logic of metaphor: Analogous parts of possible worlds*. (Synthese library 299). Dordrecht: Kluwer Academic Publishers. ISBN 0-7923-7004-X. DOI 10.1007/978-94-015-9654-1.

Steward, Julian H. 1960. *John Reed Swanton, 1873–1958: A biographical memoir*. (Biographical memoirs 34). Washington, DC: National Academy of Sciences. URL http://www.nasonline.org/publications/biographical-memoirs/memoir-pdfs/swanton-john.pdf.

Story, Gillian L. 1966. *A morphological study of Tlingit*. London: School of Oriental & African Languages, University of London, master's thesis. Alaska Native Language Archive TL959S1966.

— 1972. *A sample grammar of Tlingit*. (Second year collected notes 2). London: Summer Institute of Linguistics (GB). Alaska Native Language Archive TL959S1972.

— 1995. An analyzed Tlingit procedural text. In *Language and culture in native North America: Studies in honor of Heinz-Jürgen Pinnow*, Michael Dürr, Egon Renner, & Wolfgang Oleschinski (eds.), pp. 312–331. (Studies in Native American linguistics 2). Munich: LINCOM Europa. ISBN 3-89586-004-2. Alaska Native Language Archive TL959S1995.

— 2014. *Naish-Story: Where, who, and what, 1959–70*. Unpublished manuscript.

Story, Gillian L. & Constance M. Naish. 1973. *Tlingit verb dictionary*. Fairbanks, AK: Alaska Native Language Center. ISBN 0-933769-25-3.

Stump, Gregory T. 1992. On the theoretical status of position class restrictions on inflectional affixes. *Yearbook of Morphology* 1991: 211–241. DOI 10.1007/978-94-011-2516-1_13.

— 1993. Position classes and morphological theory. *Yearbook of Morphology* 1992: 129–180. DOI 10.1007/978-94-017-3710-4_6.

— 1997. Template morphology and inflectional morphology. *Yearbook of Morphology* 1996: 217–241. DOI 10.1007/978-94-017-3718-0_12.

— 2015. Inflection classes. In *The Oxford handbook of inflection*, Matthew Baerman (ed.), ch. 6, pp. 113–140. (Oxford handbooks in linguistics). Oxford: Oxford University Press. ISBN 978-0-19-959142-8.

Suria, Tomás de. 1791. *Journal of Tomás de Suria*. Diary written in 1791 at Port Mulgrave (Yakutat Bay). Alaska Native Language Archive TL791S1936.

Suzuki, Daisetz Teitaro. 1932. *The Laṅkāvatāra sūtra: A Mahāyāna text*. (Eastern Buddhist library). London: George Routledge & sons. Internet Archive MN40086ucmf_0.

Swanton, John R. 1908. *Social condition, beliefs, and linguistic relationship of the Tlingit Indians*. Washington, DC: U.S. Government Printing Office. Alaska Native Language Archive TL901S1908.

— 1909. *Tlingit myths and texts*. (Bulletins of the Smithsonian Institution Bureau of American Ethnology 39). Washington, DC: U.S. Government Printing Office. Alaska Native Language Archive TL901S1909.

— 1911. Tlingit. In *Handbook of American Indian languages*, Franz Boas (ed.), pp. 159–204. (Smithsonian Institution Bureau of American Ethnology Bulletins 40). Washington, DC: U.S. Government Printing Office. Alaska Native Language Archive TL901S1911.

Tenenbaum, Joan M. 1978. *Morphology and semantics of the Tanaina verb*. New York: Columbia University, PhD dissertation.

Thompson, Chad. 1993. The areal prefix hʉ- in Koyukon Athapaskan. *International Journal of American Linguistics* 59(3): 315–333. JSTOR 1265526.

— 1996. The Na-Dene middle voice: An impersonal source of the D-element. *International Journal of American Linguistics* 62(4): 351–378. JSTOR 1265706.

Thornton, Thomas F. (ed.). 2012. *Haa léelk'w has aaní saax'ú: Our grandparents' names on the land*. Seattle: University of Washington Press. ISBN 978-0-295-98858-0.

Timberlake, Alan. 2007. Aspect, tense, mood. In *Grammatical categories and the lexicon*, Timothy Shopen (ed.), ch. 5, pp. 280–333. (Language typology and syntactic description vol. 3). Cambridge: Cambridge University Press. ISBN 978-0-521-58158-5.

Toews, Carmela Irene Penner. 2015. *Topics in Siamou tense and aspect*. Vancouver: University of British Columbia, PhD dissertation. HDL 2429/52844.

Tonhauser, Judith. 2015. Cross-linguistic temporal reference. *Annual Review of Linguistics* 1: 129–154. DOI 10.1146/annurev-linguist-030514-124923.

Traugott, Elizabeth C. 1975. Spatial expressions of tense and temporal sequencing: A contribution to the study of semantic fields. *Semiotica* 15(3): 207–230. DOI 10.1515/semi.1975.15.3.207.

Travis, Lisa deMena. 1991. Derived objects, inner aspect, and the structure of VP. In *Proceedings of the North Eastern Linguistics Society* (*NELS*) *22*, K. Broderick (ed.), pp. 1–11. Amherst, MA: University of Massachusetts, GLSA.

— 2010. *Inner aspect: The articulation of VP*. (Studies in natural language and linguistic theory 80). Dordrecht: Springer. ISBN 978-90-481-8549-8. DOI 10.1007/978-90-481-8550-4.

— 2011. Phases and Navajo verbal morphology. In *Interfaces in linguistics: New research perspectives*, Raffaella Folli & Christiane Ulbrich (eds.), ch. 11, pp. 187–204. (Oxford studies in theoretical linguistics 31). Oxford: Oxford University Press. ISBN 978-0-19-956723-2.

Turner, Nancy J. 2003. The ethnobotany of edible seaweed (*Porphyra abbottae* and related species; Rhodophyta: Bangiales) and its use by First Nations on the Pacific Coast of Canada. *Canadian Journal of Biology* 81(4): 283–293. DOI 10.1139/B03-029.

Tuttle, Siri G. 1994. *The peg prefix, the foot, and the word minimum: Evidence from Salcha Athabaskan*. Unpublished typescript. Alaska Native Language Archive CA990T1994.

Tuttle, Siri G. & Sharon Hargus. 2004. Explaining variability in affix order: The Athabaskan areal and third person prefixes. In *Working papers in Athabaskan languages*, Gary Holton & Siri G. Tuttle (eds.), pp. 70–98. (Alaska Native Language Center Working Papers vol. 4). Fairbanks, AK: Alaska Native Language Center.

Tuttle, Siri G. & Gary Holton (eds.). 2001. *Proceedings of the 2001 Athabaskan Languages Conference*. (Alaska Native Language Center Working Papers 1). Fairbanks, AK: Alaska Native Language Center.

Tye, Michael. 2016. Qualia. In *The Stanford Encyclopedia of Philosophy*, Edward N. Zalta (ed.). Winter 2016. Stanford, CA: CSLI Publications. URL http://plato.stanford.edu/archives/win2015/entries/qualia/.

Vajda, Edward T. 2001. Toward a typology of position class: Comparing Navajo and Ket verb morphology. In *Proceedings from the fourth Workshop on American Indigenous Languages, July 6–8, 2001*, Jeanie Castillo (ed.), pp. 99–111. (Santa Barbara papers in linguistics vol. 11). Santa Barbara, CA: University of California, Santa Barbara.

— 2010. A Siberian link with Na-Dene languages. In *The Dene-Yeniseian connection*, James Kari & Ben A. Potter (eds.), pp. 33–99. (Anthropological papers of the University of Alaska, new series vol. 5.1–2). Fairbanks, AK: University of Alaska Press.

Van Gelderen, Elly. 2008. Cycles of negation in Athabaskan. In *Working papers in Athabaskan languages 2007*, Siri G. Tuttle (ed.), pp. 49–64. (Alaska Native Language Center Working Papers 7). Fairbanks, AK: Alaska Native Language Center.

Van Genabith, Josef. 2001. Metaphors, logic, and type theory. *Metaphor and Symbol* 16(1/2): 43–57. DOI 10.1080/10926488.2001.9678885.

Vaux, Bert. 1998. The laryngeal specifications of fricatives. *Linguistic Inquiry* 29(3): 497–511. DOI 10.1162/002438998553833. JSTOR 4179030.

Velten, Henry. 1939. Two southern Tlingit tales. *International Journal of American Linguistics* 10(2/3): 65–74. JSTOR 1263225.

— 1944. Three Tlingit stories. *International Journal of American Linguistics* 10(4): 168–180. JSTOR 1262786.

Vendler, Zeno. 1957. Verbs and times. *The Philosophical Review* 665(2): 143–160. DOI 10.2307/2182371. JSTOR 2182371.

Veniaminov, Ivan. 1840. *Записки объ островахъ уналашкинскаго отдѣла* (*Notes about the Unalaskan Islands department*). 1st edn. Part 3 titled *Записки объ Атхинскихъ Алеутахъ и Колошахъ* (*Notes on Atka Aleuts and Tlingits*). Tlingit ethnographic notes pp. 26–27; language survey pp. 138–145; Tlingit grammatical notes pp. 145–152; Tlingit texts pp. 152–154. Author name spelled Иванъ Веніаминовъ in contemporary orthography. Санктпетербургъ (St. Petersburg): Россійско-Американская Компанія (Russian-American Company). Alaska Native Language Archive TL840V1840.

— 1846. *Замѣчанія о колошенскомъ и кадьякскомъ языкахъ и отчасти о прочихъ россійско-американскихъ съ присовокупленіемъ россійско-колошенскаго словаря содержащаго болѣе 1000 словъ, изъ коихъ на нѣкоторыя сдѣланы поясненія* (*Observations about the Tlingit & Kodiak* (*Alutiiq*) *languages and partly on other Russian Americans, with enclosed Russian-Tlingit dictionary containing over 1000 words, of which some are exemplified*). Author name spelled Иванъ Веніаминовъ in contemporary orthography. Санктпетербургъ (St. Petersburg): Императорскій академій наукъ (Imperial Academy of Science). Alaska State Library – Historical Collections 10858.

Veniaminov, Ivan & Sergei I. Kostromitinov. 1901. *Указаніе пути въ ц̆арствіе небесное* (*Indication of the pathway into the kingdom of Heaven*). Unpublished manuscript. Alaska Native Language Archive TL876K1901.

Viereck, Leslie A. & Elbert L. Little. 1974. *Guide to Alaska trees*. (Agriculture handbook 472). Washington, DC: U.S. Department of Agriculture, Forest Service.

Ward, Kaeli S. 2012. *A micro-typology of pluractionality*. Los Angeles: University of California Los Angeles, master's thesis.

Waterman, Thomas T. 1922. *Tlingit geographical names for extreme Southeast Alaska, with historical and other notes*. Unpublished manuscript (National Anthropological Archives, Bureau of American Ethnology mss. 2938 & 2915). Alaska Native Language Archive TL922W1299.

Weber, Natalie. 2012. *Labial spreading in Tlingit*. Unpublished manuscript. HDL 2429/44075.

Whitehead, Alfred North. 1929. *Science and the modern world*. (Lowell Institute lectures). Cambridge: Cambridge University Press.

Whorf, Benjamin L. 1932. *The structure of the Athabascan languages*. Unpublished manuscript. Alaska Native Language Archive CA932W1932b.

Wilhelm, Andrea. 2006. Count and mass nouns in Dëne Sųłiné. In *Proceedings of the 25th West Coast Conference on Formal Linguistics*, Donald Baumer, David Montero, & Michael Scanlon (eds.), pp. 435–443. Somerville, MA: Cascadilla. ISBN 1-57473-415-6.

— 2008. Bare nouns and number in Dëne Sųłiné. *Natural Language Semantics* 16(1): 39–68. DOI 10.1007/s11050-007-9024-9.

Williams, Edwin. 2002. *Representation theory*. (Current studies in linguistics). Cambridge, MA: MIT Press. ISBN 0-262-23225-1.

Williams, Frank, Emma Williams, & Jeff Leer. 1978. *Tongass Texts*. Fairbanks, AK: Alaska Native Language Center. Alaska Native Language Archive TL978WWL1978.

Willie, Mary Ann & Eloise Jelinek. 2000. Navajo as a discourse configurational language. In *The Athabaskan languages: Perspectives on a Native American language family*, Theodore B. Fernald & Paul R. Platero (eds.), ch. 11, pp. 252–287. (Oxford studies in anthropological linguistics 24). Oxford: Oxford University Press. ISBN 0-19-511947-9.

Willie, MaryAnn. 2000. Individual and stage level predication and the Navajo classificatory verbs. In *Papers in honor of Ken Hale*, Andrew Carnie, Eloise Jelinek, & MaryAnn Willie (eds.), ch. 5, pp. 39–50. (Working papers on endangered and less familiar languages vol. 1). Cambridge, MA: MIT.

Wiltschko, Martina. 2009. √Root incorporation: Evidence from lexical suffixes in Halkomelem Salish. *Lingua* 119(2): 199–223. DOI 10.1016/j.lingua.2007.10.012.

Witherspoon, Gary J. 1971. Navajo categories of objects at rest. *American Anthropologist* 73(1): 110–127. JSTOR 671816.

Wojdak, Rachel. 2008. *The linearization of affixes: Evidence from Nuu-chah-nulth*. (Studies in natural language and linguistic theory 73). Dordrecht: Springer. ISBN 978-1-4020-6549-1.

Yip, Moira. 1988. The Obligatory Contour Principle and phonological rules: A loss of identity. *Linguistic Inquiry* 19(1): 65–100. JSTOR 4178575.

Young, Robert W. 2000. *The Navajo verb system: An overview*. Albuquerque: University of New Mexico Press. ISBN 0-8263-2172-0.

Young, Robert W. & William Morgan. 1943. *The Navaho language: The elements of Navaho grammar with a dictionary in two parts containing basic vocabularies of Navaho and English*. Phoenix, AZ: United States Indian Service.

— 1972. *The Navaho language: The elements of Navaho grammar with a dictionary in two parts containing basic vocabularies of Navaho and English*. 2nd edn. Salt Lake City, UT: Deseret Book Company.

— 1980. *The Navajo language: A grammar and colloquial dictionary*. 1st edn. Albuquerque: University of New Mexico Press. ISBN 0-8263-0536-9.

— 1987. *The Navajo language: A grammar and colloquial dictionary*. Revised. Albuquerque: University of New Mexico Press. ISBN 0-8263-1014-1.

Young, Robert W., William Morgan, & Sally Midgette. 1992. *Analytical lexicon of Navajo*. Albuquerque: University of New Mexico Press. ISBN 0-8263-1356-6.

Yu, Ning. 1998. *The contemporary theory of metaphor: A perspective from Chinese*. (Human cognitive processing 1). Amsterdam: John Benjamins. ISBN 1-55619-201-0.

Zanuttini, Raffaella. 2001. Sentential negation. In *The handbook of contemporary syntactic theory*, Mark R. Baltin & Chris Collins (eds.), ch. 16, pp. 511–535. (Blackwell handbooks in linguistics 9). Malden, MA: Blackwell. ISBN 0-631-20507-1. DOI 10.1002/9780470756416.

Zemach, Eddy. 2001. A modal theory of metaphor. *Theoria* 67(1): 60–74. DOI 10.1111/j.1755-2567.2001.tb00196.x.

Zenk, Henry B. (ed.). 2012. *Chinook Wawa: Kakwa nsayka ulman-tilixam łaska munk-kəmtəks nsayka / Chinook Jargon: As our elders teach us to speak it*. Authored by Chinuk Wawa Dictionary Project, Confederated Tribes of the Grand Ronde Community of Oregon. Seattle: University of Washington Press. ISBN 978-0-295-99186-3.

Zúñiga, Fernando. 2019. Polysynthesis: A review. *Language & Linguistics Compass* 13(e12326): 1–21. DOI 10.1111/lnc3.12326.

Zwarts, Joost. 2005. Prepositional aspect and the algebra of paths. *Linguistics & Philosophy* 28(6): 739–779. DOI 10.1007/s10988-005-2466-y.

Colophon

This public version of this dissertation is slightly different from the 'final' version deposited with UBC. The final version has different formatting and layout to meet UBC's official requirements and also lacks a few elements such as this colophon. A few minor typos and problematic page breaks have also been corrected in this version. Pagination is consequently different between the two versions and readers are encouraged to cite this version.

This dissertation was written in LaTeX 2_ε and a small amount of LaTeX 3, using XeLaTeX 3.14159265-2.6-0.999991 (TeX Live 2019), Memoir class 3.7j, Fontspec 2.7d, BibLaTeX 3.13a with LSAlike 0.8j and Biber 2.12, Hyperref 7.00c with HyperXMP 4.1, TikZ/PGF 3.1.4b, ExPex 5.1b, BibDesk 1.7.2 (5037), and TeXShop 4.44 on macOS 10.14 'Mojave'. The chapter layout is Memoir's 'wilsondob' style. The page layout is adapted from Memoir's 'plain' style; the UBC dissertation style specifies one-sided formatting so there is no recto/verso distinction and hence chapters and parts may start on even or odd numbered pages. The table of contents and list of {tables, figures} layout is based on Memoir's default style with manual adjustments to fit UBC style requirements.

The primary typeface is Brill 2.06 (build 051) by John Hudson with Tiro Typeworks (http://www.tiro.com), designed for Koninklijke Brill NV (http://www.brill.com) and made freely available for non-commercial use. Sans-serif text is set in Calibri 5.72 and monospace text in Consolas 5.33, both by Luc(as) de Groot for Microsoft Corporation. Many mathematical symbols are set in Asana Math 000.954 by Apostolos Syropoulos, Young Ryu, and Claudio Beccari which is based on Palatino by Hermann Zapf. Certain symbols are set in Lucida Grande 10.0d1e2 by Kris Holmes and Charles Bigelow or in Apple Symbols 10.0d1e2 by Apple Computer, Inc. No sheep were stolen in the typesetting of this document.

Source code for this dissertation is available on request from the author.

This PDF was typeset by the author on 23 February 2020 at 14:38 PST (−0800).