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A grammar of space in Kʷaƛʷala

1 Introduction

My dissertation focuses on the relationship between language, culture, and geography among speakers of Kʷaƛʷala (Wakashan family). The culture of Kʷaƛʷala speakers is deeply embedded in the rivers, mountains, islands, and inlets of coastal British Columbia, which have provided sustenance and shelter to Kʷakʷəkəẃakʷ people for thousands of years. In turn, the structure of the language reflects the importance of landscape: directional systems are riverine, and grammatical suffixes refer to the woods, the river, the sea and the means by which they are traveled. My primary objective is to document and analyze the rich linguistic resources available in Kʷaƛʷala's grammar for describing location, direction, and motion in this landscape. The research draws on archival materials and new data in order to understand the language as it is now and how it has changed. The resulting dissertation will contribute to current theories of spatial cognition with insight from a language with an especially complex approach to describing space, while illuminating the role of language in forming cultural knowledge about the physical environment. Because Kʷaƛʷala has less than 150 first-language speakers remaining, a core goal of this work is to contribute new knowledge about the grammar to current efforts to revitalize and maintain the language.

The experience of having a body located in physical space, bound by gravity, is shared among all human beings, and yet languages approach this experience in diverse ways. Such concrete categories are the building blocks of metaphorical extension: from physical space to mental space, from actual motion to fictive motion, from space to time. The grammar of space and motion thus provides both a window into linguistic and cultural diversity, and a glimpse of universal tendencies within language, indicative of shared cognitive constraints. For these reasons, the cross-linguistic study of spatial grammar has been the focus of intense interest in recent decades; pioneering work includes Slobin (2000), Talmy (2000), Svorou (1993), Levinson (2003), and Levinson and Wilkins (2006), *inter alia*.

Kʷaƛʷala presents a particularly rich site for the exploration of these themes. The polysynthetic structure of the language allows a single word to express the equivalent of a full clause in isolating languages. Like many neighboring languages, Kʷaƛʷala possesses an extensive repertoire of 400 'lexical suffixes' with more detailed meanings than would normally be found in a grammatical particle. Of these, 76 suffixes concern space and motion, and another 49 suffixes indicating body parts are used as locatives. Some convey cross-linguistically common senses such as *–(g)usta* ‘up’, *-aχa* ‘down’, *-(x)sa* 'through', *-q* 'among', and *-xsd* 'behind'. Others reflect specificities of the

Kʷakʷəkəƛʷakʷ landscape and the culture within it: *-ənċis* 'down to beach', *-°(x)ta*[1] 'out to sea', *-yag* 'into woods', *-°xs* 'into, with, by canoe', *-°amala* 'along bank of river'. Kʷaƛʷala place names are detailed descriptions: Boas lists 53 island names based on the stem *ṁəkʷ-* 'round thing in place', such as *ṁəχʷbáʔa* 'rocky round thing at end of point' (*-ba* 'end of long thing, *-!a* rock), (Boas 1934: 50).

Following the schema modeled by the research group on spatial grammar at the Max Planck Institute for Psycholinguistics, the domain of spatial description is separated into three related subdomains, each explored in the dissertation: **topological relations**, a static event for which the relationship between figure and ground is coincident (expressed in English with prepositions such as 'in', 'at', 'on'); '**angular**' relations, a static event for which figure and ground are separated and their relationship is described by coordinates within a Frame of Reference (expressed in English with prepositional phrases such as 'in front of'…, 'behind', 'to the left of'…, 'north (of)…); and **motion events,** involving kinetic relations between figure and ground (expressed in English verbal constructions such as 'to walk along a wall', 'to run past the house', 'to jump over a fence'. While these three domains are distributed among prepositions and verbs in English, other languages express motion, location, and direction with great functional diversity.

The description of motion events in Kʷaƛʷala provides an interesting introduction to the intricacy of the language and its potential contributions to linguistic typology, reviewed in section 6 of this paper. A small set of three suffixes can be used to add motion to a predicate, even with a stative root, varying in the degree to which the origin or endpoint is emphasized: *-[g]əɬ* 'MOTION.ATELIC', *-[g]aʔɬ* 'MOTION.TELIC', *-wəɬ* 'MOTION.AWAY.FROM'. By adding one of these suffixes to the root *hən-* 'hollow upright vessel', speakers can create the predicate *həngəliɬa* 'to shift vessel along floor' (*-[g]əɬ* 'MOTION.ATELIC', *-iɬ* 'ON/AT/IN FLOOR/HOUSE') (Boas 1921: 265). Though first summarized by Franz Boas in 1911, the above suffixes and their combinatorial constraints are still poorly understood. Describing their structure, function and use in connected discourse is a core goal of the project.

Within syntax, the argument structure of motion constructions is also surprising. In many languages, verbs of motion are intransitive, with destination encoded as an oblique. In the English phrase "I paddled to the shore", the destination is expressed in a prepositional phrase. In contrast, *qas-* 'walk', *siχʷ-* 'paddle', *dᶻəlχʷ-* 'run', and other verbs of motion in Kʷaƛʷala often encode the destination as the primary object of the verb. The interface between argument structure and event structure, where syntax and semantics meet, is a thread of inquiry linking many areas of this research.

While deixis is obviously an important component of spatial description, it requires more attention than possible within the scope of this thesis. Kʷaƛʷala grammar is known for an obligatory system of deictic demonstrative enclitics, small omnipresent morphemes which indicate a six-way contrast

[1] The degree symbol preceding certain morphemes indicates a boundary effect triggered by these morphemes. This is explained in detail in Table 1 in section 2.2.

marking degrees of proximity and visibility for every third-person referent, whether pronominal or lexical. Deictic reference is so automatic, so unconscious, and so embedded in speech that speakers have trouble noticing which forms they have used and why. For these reasons, the topic of deixis in Kʷaƛʷala is vast, and worthy of its own dedicated inquiry. I set it aside for now.[2] I expect that future analysis of deictic reference in Kʷaƛʷala will benefit from the groundwork laid here concerning concrete spatial reference.

The language's treatment of location, motion, and direction will be set in the context of current cross-linguistic work on questions of spatial grammar. I anticipate that Kʷaƛʷala will confirm some expectations and challenge others in enlightening ways.

2 Background: Cultural, Social, Historical and Ecological Context

Kʷaƛʷala (Wakashan, KWK), formerly identified as Kwakiutl[3], is the language of the Kʷakʷəkəw̓akʷ nation located on Northern Vancouver Island and the neighboring mainland of British Columbia. It is severely endangered, with 148 native speakers over the age of 65 reported in the 2010 Report on the Status of BC First Nations Languages (http://www.fpcc.ca/files/PDF/2010-report-on-the-status-of-bc-first-nations-languages.pdf). [4] It is spoken in the green area circled in red, labeled Kwakwaka'wakw at the bottom of the map displayed in Figure 1.

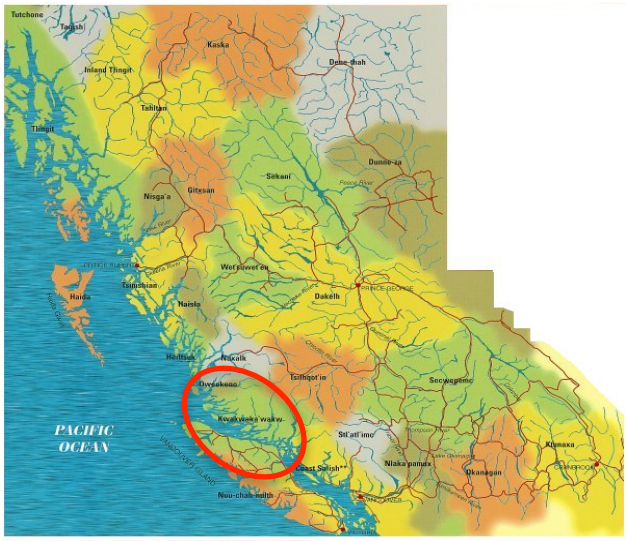


Figure 1:Map of First Nations Peoples of British Columbia (http://www.bced.gov.bc.ca/abed/map.htm)

[2] Similarly, the MPI project on spatial cognition was accompanied by a parallel, but separate, research program attending to deixis.

[3] 'Kwakiutl' is an anglicized orthographic representation of the name *Kʷaguƚ*, which applies only to the band at Fort Rupert (*Caχis)* where Franz Boas and George Hunt did much of their documentation. There are 16 bands in the Kʷakʷəkəw̓akʷ nations and 5 dialects, each with their own name. Some bands prefer the alternate language name *baƛʷəmƛala*. While I use *baƛʷəmƛala* to refer to the language when working in contexts where that is the preference, in my written work I use Kʷaƛʷala to refer to all dialects.

[4] The First Peoples Cultural Council actually classifies Kʷaƛʷala as 'nearly extinct.'

Efforts to teach, learn, and encourage the continued survival of the language are widespread in many communities.

Kʷakʷəkəẇakʷ villages are scattered along the rivers and coasts of northeastern Vancouver Island and the west coast of mainland British Columbia, although most traditional settlements were forcibly relocated under federal pressure. Traditional Kʷakʷəkəẇakʷ territories extend from Campbell River north to Rivers Inlet, and from the mountainous spine of Vancouver Island eastward to the continental Coast Range surrounding small mainland settlements. Several languages share borders and histories with Kʷakʷəkəẇakʷ communities: the Northern Wakashan languages Oowekyala, Heiltsuk (a.k.a. Bella Bella) and Haisla, the Athabaskan language Ts'ilqotin (a.k.a. Chilcotin) and Salish Nuxalk (a.k.a. Bella Coola) border Kʷaǩʷala to the North and East. Nuuchahnulth, a Southern Wakashan language, borders Kʷaǩʷala on the west coast of Vancouver Island. The Salishan languages Comox, Sechelt and Halkomelem (a.k.a həlq̓əmiṅəm/həṅq̓əminəm/həlq̓əmeləm) border Kʷakʷəkəẇakʷ communities to the South and East.

2.1 The relationship between landscape and culture

The landscape in which Kʷaǩʷala evolved is spectacularly beautiful, featuring bright emerald islands set in turquoise waters, waterfalls dropping down steep fjords, and swift rivers coursing from snow-capped mountains. The oceans are full of orca whales, sea otters, seals, salmon, herring, and halibut. Salmon, candlefish and trout runs fill the rivers in spring and summer. Bears, deer, and bald eagles are frequent visitors. In a sad parallel to the endangerment of Kʷaǩʷala, this exquisite ecology is now endangered by the threat of industrial modes of production. The impact of climate change is noticeable in changes in migration patterns, vegetation, and weather. These changes are keenly felt by locals and add urgency to the desire to document and understand the knowledge of the landscape embedded in the language.

The fine-grained semantic specificity available to speakers of Kʷaǩʷala reflects the primacy of landscape and a relationship with natural resources in Kʷakʷəkəẇakʷ culture. Alongside busy modern lives working as teachers, artists, scholars, bank employees, tribal officers, tour guides, and other professions, most Kʷakʷəkəẇakʷ people maintain a vigorous involvement in the seasonal cycles of gathering natural materials for food and ceremony: fishing for salmon, gathering seaweed, picking berries, stripping cedar bark, gathering medicinal plants. Processing these materials for storage is a time-sensitive and essential priority: smoking, drying, canning and barbecuing fish; drying seaweed; making jam. The transmission of such cultural knowledge has remained strong. In Kingcome Inlet, the

village where Beverly Lagis (my primary consultant) lives, the making of oolichan grease[5] is a particularly important intergenerational skill. The oolichan run signals the start of spring, and the village gathers together for the approximately week-long process of making grease. Traditional ecological practices are intertwined with the practice of culture. Jars of *x̌iṅa* (oolichan grease), thimbleberry jam, and other preserves are a treasured gift received by attendees at potlatches and other ceremonial feasts.

Transmission of the Kʷakʷala language was deeply impacted by the same brutal federal policies which impacted so many indigenous peoples in the Americas and Australia. A reluctance to speak Kʷakʷala, and an ambivalence about the language, continues to affect many residential school survivors, even those for whom Kʷakʷala was their first language. Policies of forced relocation and obligatory attendance at residential schools combined speakers of different dialects and different languages into merged communities, resulting in the dilution of Kʷakʷala dialect diversity. Several projects are underway to document remaining diversity, including Rebekka Siemens' work on Guc̓a (Siemens, forthcoming), my work with Elizabeth Cadwallader to compare the Gʷaʔsəla, n̓akʷala and Kʷakʷala dialects (Cadwallader and Rosenblum 2013), and Patricia Shaw's work with multiple communities (Shaw 2010). The map below illustrates the five Kʷakʷala dialects currently recognized.

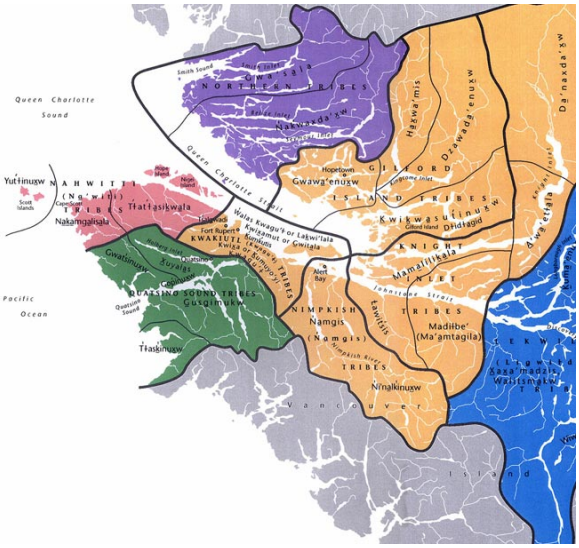


Figure 2: 5 dialects of Kʷakʷala (2003) (http://www.umista.org/masks_story/en/ht/introMap.html)

[5] Historically, the most highly valued consumable product traded throughout the Pacific Northwest was oolichan (aka eulachon, smelt or candlefish) grease, oil produced from boiling and fermenting these small fish. Oolichan oil, or 'grease,' has a light non-fishy flavor, somewhat like olive oil. A network of trade routes connecting the Pacific to the interior was known as the 'grease trail'. Production of grease is geographically restricted to the places where the fish run. Residents of Kingcome Inlet trade their oolichan grease for salmon and other resources. It is extremely expensive; a quart was offered for $100 recently on a North Island Facebook swap site. It is a treasured resource, eaten, used as medicine, and given as a featured gift at the finest potlatches.

Kʷakʷəkəẇakʷ community members are committed to revitalization and reclamation of their language and culture, which they see as inextricably connected (Willie, p.c.). Marianne Nicolson, Mikael Willie, Ryan Nicolson, Deanna Nicolson, Dorothy (Pewi) Alfred, Elizabeth Cadwallader, Patricia Rosborough, Laura Cranmer, Carrie Mortimer, Marion Hunt, Sara Child and many others are actively involved in the teaching and learning of the language. It is my hope that the topic of this dissertation, with its focus on the relationship between language and landscape, and its functional focus on the essential expression of motion, location and direction, will contribute to these efforts.

2.2. Language: grammar, typology

This section provides a brief typological overview of Kʷaƛʷala and describes some of its notable features. Kʷaƛʷala is a polysynthetic language with relatively fixed predicate-initial VSO[6] word order. The language has nominative-accusative alignment. It is exclusively suffixing aside from patterns of reduplication and stem expansion. There are three form classes: stems (including roots and derivations thereof), affixes, and exclamations (Boas 1947:280). Nouns and verbs do not exist as lexical classes determinable through phonotactic shapes or combinatorial patterns; rather, predicates and arguments are distinguished according to syntactic roles within a clause (cf. (Baker 2003; Croft 1991; Hopper and Thompson 1984; Jacobsen 1979; Kinkade 1983, *inter alia*). Any lexical root or derived stem, whether its semantic sense is 'noun-like' or 'verb-like', can be used as the core of a syntactic predicate or syntactic argument.

The language marks three core arguments morphologically: SUBJECT, PRIMARY OBJECT, and SECONDARY OBJECT (Rosenblum 2013). Grammatical relations are marked by elements which precede the element to which they refer but are attached enclitically to the preceding element. An example sentence with lexically-expressed arguments is provided below. The black arrows indicate the referential scope of the enclitic elements marked in red.

(1)

hɔ́nɬʔidida	bəgʷánəmaχa	ƛaẏisa	hɔ́nλəmi.
hɔ́n-ɬ-ʔid=i=da	bəgʷánəma=χa	ƛaẏi=sa	hɔ́nλəm-i
shoot-PST-MOM=SBJ=DEF	man=OBJ1	black.bear=OBJ2	gun-T.DEM
V	S	O_1	O_2

'The man shot the black bear with a gun.' (Shaw: 2008_07_21_003DS)

S: lexical argument *begʷanəm* 'man' marked with left-leaning enclitic *=i* attached to predicate
O_1: lexical argument *ƛaẏi* 'black bear' marked with left-leaning enclitic *=χ(a)*
O_2: lexical arguments *hɔ́nλəm* 'gun' marked with left-leaning enclitic *=s(a)*

[6] As I mention just below, it is not precisely accurate to speak of a lexical class of 'verbs' in Kʷaƛʷala, although verbs can be identified in syntactic context.

The sequence of pronominal arguments echoes the sequence of lexically-expressed arguments, illustrated by example (2).

(2) χʷəsʔidəqs
χʷəs-ʔid(ə)=Ø=q=s
strike-MOM=3.SBJ=3.OBJ1=3.OBJ2
He struck him with it. (B1947:281)
O_1: pronominal arguments marked with -q
O_2: pronominal arguments marked with –s

Oblique arguments are marked in prepositional phrases, as seen in example (3).

(3) OBL marked with preposition

PRED	SBJ	OBL	
ƙʷəʔíɬəlʔi	*Xatícən*	***laχis***	***gukʷ***
ƙʷəʔ-íɬ-əla=i	*Xatícən*	**la-χ=is**	**gukʷ**
sit-in.house-CONT=SBJ	Xatícən (NAME)	**PREP-DEM**	**=3.POSS house**

Xatícən was sitting in his house. (B1947:282, CII 2.1)

Three prepositions, *la-*, *gaχ-* and *gayuƛ-*, are used to mark oblique objects; they take a deictically-appropriate primary object demonstrative enclitic for the noun they modify, as is visible in (3), with primary object demonstrative *–χ-* and third person possessive *=is* preceding *gukʷ* 'house'. The prepositions are transparently derived from verbs: *la-* ('go') > 'PREP.TO' (deictic away from speaker), *gaχ-* ('come') >'PREP.TO' (deictic towards speaker), and *gayuƛ* – ('move.from.place') > 'PREP.FROM' (specifying starting point). Aside from their deictic content, Kʷaƙʷala prepositions are semantically abstract: as a preposition, *la-* can be interpreted as 'to', 'towards', 'in', 'on', 'at', and so on. There is, however, little ambiguity about the intended meaning in context; semantic specificity results from the predicate, its derivational suffixes and its lexically-determined argument structure.

Kʷaƙʷala has an extensive consonant inventory of 42 consonants, and a limited inventory of 3 full vowels, along with schwa. Schwa was likely predictably epenthetic in proto-Wakashan but is no longer so in the Kʷaƙʷala dialects with which I work. A good deal of morphophonological fusion occurs at morpheme boundaries. Patterns of consonant coalescence are well-described and predictable (Boas 1947:211-215). Suffixes are divided into three classes, hardening, softening, and neutral, according to their effect on the coda consonant of the preceding morpheme (Boas 1947:226–232) illustrates the boundary effects of hardening and softening suffixes.

Table 1: Hardening and softening effects in in Kʷaƙʷala

	Stops & Affricates	Fricatives	Resonants
C	p t c ƛ k kʷ q qʷ	s^1 s^2 ɬ x xʷ χ χʷ	m n l w y
C-!	ṗ ṫ ċ ƛ̓ ƙ ƙʷ q̓ q̓ʷ	ċ ẏ l̓ ṅ ẇ χ(ʔ) ẇ	ṁ ṅ l̓ ẇ ẏ

	Stops & Affricates	Fricatives	Resonants
C	p t c ƛ k kʷ q qʷ	s^1 s^2 ɬ x xʷ χ χʷ	m n l w y
C-°	b d d^z λ g gʷ G Gʷ	d^z y l n w χ(ʔ) w	ṁ ṅ l̓ ẇ ẏ

(Adapted from Shaw 2009)

Hardening suffixes are written here, as Boas wrote them, with an initial exclamation point: *-!ənχ* SEASON.OF; softening suffixes are written with an initial degree symbol: *-°as* PLACE.OF (adapted from Werle 2012). Suffixes also fall into seven classes distinguished by their effect on the form of the stem, including both reduplication effects and stem vowel changes (ablaut and lengthening), (Boas 1947:232–234). To allow readers to link the surface form to underlying morphemes, examples are presented with an additional line of morphological analysis above the gloss.

As is true for many indigenous languages, there are several orthographies in use. Two orthographies, U'mista and NAPA (North American Phonetic Alphabet), are used in the communities where I work. Different speakers and community members choose to use different orthographies; during sessions with speakers, I use whichever one is familiar to the consultant. In my written work I use NAPA. Examples provided from Boas and Hunt have been re-transcribed in NAPA, with citations to the original provided. Correspondence tables have been provided in the appendix. A more comprehensive grammatical overview will be provided in the introduction to the dissertation.

3 Relevant Literature

This work benefits from a rich trove of resources in the domains of Kʷaƛʷala documentation, description and analysis in both academic and non-academic contexts: cross-linguistic studies of spatial grammar and cognition; descriptions of the geography and ecology of landscape and natural resources of British Columbia; and most importantly, the knowledge of Kʷakʷəkəẇakʷ people alongside these resources. Several useful bibliographies of works on Wakashan languages exist, including Adler 1961; Mithun 2001; Pilling 1894. Two comprehensive online bibliographies have been created as well, one by Emmon Bach for North Wakashan at http://people.umass.edu/~ebach/papers/nwakbbl.htm, and a pan-Wakashan list maintained by Adam Werle at the University of Washington http://depts.washington.edu/wll2/bibliography.html (last updated 2009). Although I am familiar with the broader literature on Wakashan languages, I focus here on documentation of Kʷaƛʷala.

3.1 Literature: Kʷaƛʷala grammar

The first documentation of Kʷaƛʷala is a 180-word list recorded in Nanaimo in 1857 by George Gibbs (Pilling 1894:26). Early grammars were published by Alfred James Hall in 1888 (Pilling 1894:29–30) and Franz Boas in 1893 (Pilling 1894:4–7).

Franz Boas' first trip to British Columbia began a lifelong enchantment with the languages and cultures of the Pacific Northwest and an enduring partnership with George Hunt, a Tlingit and Scottish resident of Fort Rupert raised as a Kʷaƛʷala speaker. Together, Hunt and Boas produced the prototypical 'Boasian trilogy': a dictionary of roots and stems (unpublished posthumous ms. available

from the APS archive), a grammar and glossary of suffixes (1947), and many editions of texts (1895; 1910; 1925; 1930; 1935 *inter alia*). Several explicitly acknowledged co-authorship with George Hunt (1902; 1905; 1921), although all were the product of joint work. Remarkably, most entries in both the dictionary and grammar are cross-referenced with the texts, allowing for analysis of lexical and grammatical function contextualized by discourse context. Despite the richness of this documentation, all of Boas and Hunt's work was pre-digital and, by necessity, restricted to monologic narrative. The broader goal of my research is to contribute a corpus of interactive speech to the documentary record of Kʷaḵʷala.

Following Boas' linguistic work, many scholars have contributed to the descriptive tradition for Kʷaḵʷala linguistics. A complete survey is beyond the scope of this paper but notable examples include work by Berman, writing primarily on discourse (1982, 1983, 1989, 1990, 1990, 1991, 1992, 1994, 1997); Grubb on phonology and the lexicon (1969; 1977); Wilson on phonology and dialect (1977; 1978; 1990; 1993); Levine on morphosyntax and the lexicon (1977; 1978; 1980a; 1980b; 1984); Anderson on clitics (1984, 2005); and Nicolson and Werle on determiners (2009). Levine 1977 is a transcribed and annotated text in Kʷaḵʷala published in the International Journal of American Linguistics. Patricia A. Shaw's published work focuses on phonology (1992 and 1999); in addition she has taught several influential courses (2008; 2010…add others) and is engaged in ongoing documentation (2007-present). Anne Marie Goodfellow contributed a sociolinguistic ethnography of modern Kʷaḵʷala (2005). Marianne Nicolson, a conceptual artist and Dᶻawadəʔinuχʷ tribal member, has completed an interdisciplinary Master's thesis in linguistics and anthropology entitled *Moving Forward While Looking Back: A Kwakwa̲ka̲wakw Concept of Time as Expressed in Language and Culture* (Nicolson 2009 unpublished ms.). Her doctoral dissertation on the linguistic and artistic expressions of space in the Kʷaḵʷala language and Kʷakʷəkəẃakʷ culture, *Ye̲xa Uḵwine', ye̲xa Gukw, dɬuwida A̲winaẃagwis "the Body, the House, and the Land": The Conceptualization of Space in Kwakwa̲ka̲'wakw Language and Culture*, focuses on metaphorical and symbolic analysis of the way spatial relations are situated and interpreted in her culture, and provides an important touchstone for my analysis of the grammar of space in Kʷaḵʷala (Nicolson, forthcoming).[7]

A set of instructional materials developed by Jay Powell, Vickie Jensen, Agnes Cranmer and Margaret Cook was published by the U'mista Cultural Society (1981). An online database of words, phrases, songs and stories can be found at . The same organization (First Voices) released an app for iPhones, iPads and Droid devices at the end of 2011 (https://itunes.apple.com/us/app/kwakwala/id490451367?mt=8). As part of my own work, I have

[7] Marianne Nicolson has generously provided advance copies of her doctoral thesis. From reading these documents I feel confident that our two investigations on the broad topic of 'space' in Kʷaḵʷala are complementary.

produced descriptions of the argument structure of the language and a description of the morphosyntax of passive constructions (Rosenblum 2011; 2013 and forthcoming).

3.2 Literature: Local work on geography

Boas was particularly interested in the relationship between Kʷakʷəkəẃakʷ culture and the landscape. He published a volume entitled *Geographical Names of the Kwakiutl Indians* in 1934, with 22 maps, including maps of fishing grounds, clam gardens, root gardens, and berry gardens, revealing the extent to which the 'wilderness' had always been carefully cultivated preceding European contact. Boas provides a discussion of the meanings and linguistic forms of the place names, and a list of references to place names in Kʷakʷəkəẃakʷ mythology. Boas notes that

> "the geographical terminology of the Kwakiutl is that of a sea-faring people to whom the forms of land and water and the dangers of the sea are all-important and who obtain their subsistence both from the sea and from the land. Instead of the points of the compass they orient themselves according to the direction of the coastline and rivers. Down river and down along the coast (in the sense of northward or westward); inland, away from sea or river; and seaward, away from land; are the principal directions which appear commonly in geographical terms" (Boas 1934: 9).

Following his introductory essay, Boas provides an alphabetical list of place names cross-referenced with their location on the maps, followed by the maps. Some useful morphological analysis is also provided in the lexicon of place names.

Robert Galois' *Kwakwaka'wakw Settlements, 1775-1920: A Geographical Analysis and Gazetteer* (1994), summarizes the recorded history of early Kʷakʷəkəẃakʷ settlement patterns and traditional territories, drawing together research from multiple unpublished archival sources in order to provide chronologies of different claims to particular places. This work is particularly relevant for the treaty process currently facing the 16 Kʷakʷəkəẃakʷ nations. Included are histories of each of Kʷakʷəkeẃakʷ nations according to their traditional territory. Narratives in Kʷaḵʷala, accompanied by English translations, are provided for each band; these narratives are predominantly travel narratives, rich in language describing location, direction, and motion.

Many Kʷakʷəkəẃakʷ nations currently employ trained cartographers who use Geographic Information Systems (GIS) to document their traditional territories. Midori Nicolson (Land and Resources Director, Musagamagw Dzawada'enuxw Tribal Council) and Dusty Dawson (GIS Technician, Musagamagw Dzawada'enuxw Tribal Council) have created an online interactive Dzawada'enuxw atlas through the Aboriginal Mapping Network. I have tagged some recordings with latitude and longitude coordinates using a handheld GPS tracker to enable integration with existing mapping projects. Dusty Dawson accompanied me and two speakers (Beverly Lagis and Ernest Scow) on Mikael Willie's boat as we travelled through the islands of the traditional Musgamagw-Dzawada'enuxw territory in the Broughton Archipelago. We met afterwards to cross-reference these

GPS-tagged waypoints with a paper map and the audio recordings. I also recorded video of a boat trip with Percy Lagis from Kingcome village down to the mouth of the river, where we checked his crab traps before returning to the village, and this journey was also GPS-tracked with waypoints marked. These coordinates will be entered into ArcGIS this fall. I hope to add these coordinates and the associated audio and digital files (once edited) to the Dzawada'enuxw online atlas.

3.3. Spatial Grammar: Cross-linguistic Work

Space is a fundamental cognitive category, one which has long drawn the interest of philosophers, mathematicians, geographers, and cartographers. Everyday language draws on metaphors of form (surface, size, weight), relative position (height, distance), containment, movement and path to describe abstract temporal, emotional and social realities. Cognitive linguists, seeking universally shared concrete domains that form the basis for metaphorical extension, have focused on the category of Space, and the linguistic coding of spatial reality, as a primary category of experience, and the literature on language and space thus vast. A full review of the literature from several disciplines is beyond the scope of this prospectus (and of the dissertation) but a very thorough description can be found in Chapter 1 of Levinson (2003:1-18). Early touchstones include Clark (1973), Bennett (1975), Herskovits (1987), Talmy (1983, 1985), Fillmore (1982); and Tversky (1981, 1991, 1996, 1998). A working bibliography on "Languages of Spatial Relations", compiled by three members of the Department of Geography at SUNY Buffalo along with Soteria Svorou, can be found at http://www.spatial.maine.edu/~max/NCGIA89-10.pdf (1990). A bibliography of research on linguistic expressions of Motion Events, by Yo Matsumoto and Dan Slobin, can be found online at http://www.lit.kobe-u.ac.jp/~yomatsum/motionbiblio1.pdf (2004).

Here I focus more narrowly on the work that has directly shaped my approach to the theme of Space, both in methodological and analytical terms. Much of this work emphasizes a typological perspective and a belief that language, culture and cognition are mutually-constitutive.

The work of Leonard Talmy has long focused on the language of spatial configuration and the expression of motion events. *Toward a Cognitive Semantics* (2000) frames schematic systems in language and cognition using space and motion as two case-studies. Talmy proposes primary terms such as Figure and Ground (borrowed from Gestalt psychology), Path, Point, Extent (Talmy 2000:184), as well as a set of 'geometric relations' described in diagrams and formulas (Talmy 2000:245-252). Volume II, *Toward a cognitive semantics: Typology and process in concept structuring,* proposes that languages divide broadly into two types, one expressing what he identifies as the core of the event in the verb, one expressing the core in a satellite to the verb. For motion events, Talmy considers the core event to be the expression of Path. Languages exhibit broad tendencies, locating Path either in the verb (so-called 'V-Frame languages') or in a satellite ('S-Frame languages'). This proposal and its

amendments have been extremely influential in typologies of both Space and Motion, and I will consider how Kʷaḵʷala grammar relates to Talmy's typology.

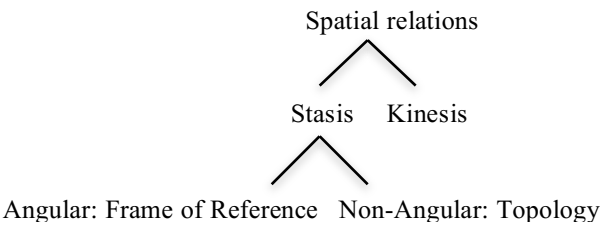
The 'Frog Story' narrative task, first presented as a cross-linguistic study of temporality in five languages (English, German, Spanish, Hebrew and Turkish) by Slobin and Berman (1994), has also become a common elicitation tool for investigating descriptions of space and motion in many languages (cf. Strömqvist and Verhoven 2004; Berez 2012). 'Frog Stories' from four Kʷaḵʷala speakers form part of the corpus to be analyzed for the dissertation. Additional work by Slobin on linguistic typologies of motion events includes Slobin 1996, 2004, 2005, 2006, and 2008.

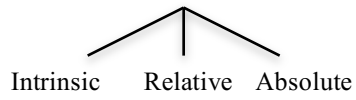
Svorou's *The Grammar of Space* (1993) is a study of spatial grammar in 26 genetically unrelated languages. Svorou focuses on closed class forms, or 'spatial grams', examining them from a diachronic perspective and following the GramCats model (Bybee, Perkins and Pagliuca 1994). Svorou finds that certain schema, such as the FRONT-BACK axis, and its inherent asymmetry, tend to be cross-linguistically common and can be posited as a basic cognitive distinction. It will be interesting to see whether Kʷaḵʷala conforms to the cross-linguistic tendencies identified by Svorou.

The group studying Spatial Cognition at the Max Planck Institute for Psycholinguistics, Nijmegen, has produced an influential body of work, both methodological and analytic. In his 2003 volume *Space in Language and Cognition*, Levinson argues that spatial cognition mirrors the grammatical construction of space in a given language, differing from culture to culture. Fourteen case studies are drawn together in the companion volume *Grammars of Space*, edited by Levinson and Wilkins. The sample represents relatively good geographic dispersal, several word order types (SVO, SOV, VOS, and free), both head-marking and dependent-marking types, and morphology ranging from isolating to mildly polysynthetic (Levinson and Wilkins 2006: 7). Kʷaḵʷala, as a highly polysynthetic VSO language, adds further typological diversity to this sample.

The MPI researchers drew on much of the same terminology used by Talmy: figure, ground, path, source, goal. Drawing on a Leibnizian view of space as relational, the researchers identify two domains of spatial concepts: stasis and kinesis. Stasis is further subdivided between topological description of spatial coincidence (relations of proximity, contact and containment) and the description of spatial separation, indicated through a coordinate system operating within one of three Frames of Reference. This is represented in Figure 3.

Figure 3: Schema of the spatial domain (adapted from Levinson and Wilkins 2006: 7)





The three Frames of Reference (FoR) identified as Intrinsic, Relative, and Absolute are described in Table 2.

Table 2: Frames of Reference, adapted from Levinson 2003

	Reference point	Coordinate-system
INTRINSIC	Object-centered	Ground: Inherent features of object
RELATIVE	Viewer-centered	Ground: Bodily coordinates of observer
ABSOLUTE	Fixed bearings independent of scene	Ground: Fixed coordinates. (Cardinal directions, topographic features such as rivers or mountains)

(Levinson 2003: 41-50)

The MPI group observed variation in dominant coordinate systems from language to language, and identified associated differences in how speakers negotiate, experience, and describe their experience in spatial terms. The linguistically-dominant coordinate system leads different forms to grammaticalize in different languages, reflecting cognitive and linguistic habits. Guugu Yimithirr (Australian, Pama-Nyungan) is the paradigmatic example of a language with an absolute Frame of Reference system; speakers rely on cardinal directions to locate figures and events in space (Haviland 1979, 1993; Levinson 1992); a subclass of nominal forms elaborates the four directions. At the same time, as Haviland himself pointed out, speakers stretch any type of coordinate system to include indexical, relative reference, even one that is prototypically 'absolute,' (Haviland 1998).

As indicated by Boas, Kʷaƛʷala relies on a directional system that is both riverine and coastal, with both roots and suffixes indicating upriver and downriver, as well as inland and out to sea. These orientations vary completely in relation to the cardinal directions in different communities, and there is also a long history of speakers living in many different communities over the course of their lifetime (through seasonal rotations, marriage, and work). One question to be answered is whether the riverine/coastal coordinate system has come to relate in any predictable way to the cardinal directions. A recent dissertation by Berez explored the use of directionals in Ahtna from a discourse-functional perspective (Athabaskan: Alaska) from synchronic and diachronic perspectives, finding evidence for semantic and grammatical shift due to contact.

The MPI research project also developed several invaluable tools for studying spatial language, as well as a methodology for exploring the relationship between cognitive and linguistic structures. The Topological Relations Picture Series developed by Bowerman and Pederson (Bowerman and Pederson 1992) draws out cross-linguistic differences in the grammatical encoding of coincident figure and

ground. A set of 'Space Games[8]' asks pairs of speakers to direct each other in manipulating photographs or objects in space to allow matching. The Man and Tree photo-matching series investigates frame-of-reference choice for static description; the Route Directions task investigates frame-of-reference in motion description. Data from several of these stimuli (The TRPS, the Man and Tree photos, the Toy Game, and frog stories) have been collected to allow comparative analysis of Kʷaḵʷala spatial grammar alongside other languages from the MPI sample. My research on Kʷaḵʷala describes the dominant frames of reference in Kʷaḵʷala grammar, while also examining whether this has changed for contemporary speakers.

4 Research Questions

The primary goal of this research is to document and analyze the linguistic resources, lexical and grammatical, with which Kʷaḵʷala speakers describe space. Spatial cognition encompasses concepts of location, direction, path, and motion (self-directed and caused); all are included here. What do learners and teachers of the language need to know in order to produce well-formed descriptions of their movement, location and direction in space? How do speakers make choices about where to locate information, in stem or suffix, in predicate or argument?

In his 1947 grammar, Boas provided a list of locative suffixes, along with a small set of suffixes adding motion to a stem. However, he did not provide a morphological template that would allow us to identify the combinatorial possibilities and constraints of these suffixes. Thus, a primary area of investigation involves the morphological and syntactic frames into which these pieces fit. How do stems and suffixes combine into constructions that describe and locate figures in space? What is possible, what is frequent, and what is likely? What seems to be ungrammatical? How is spatial language used metaphorically, and what do these metaphors reveal about Kʷakʷəkəẃakʷ culture? What are the dominant 'frames of reference' evident in the Kʷaḵʷala documented by Boas; are they intrinsic, relative, absolute, or a mixture of these? What are the dominant frames of reference found in contemporary documentation? Have they changed?

The interplay between language and culture is a compelling aspect of this research. In a place where the landscape and its resources continue to be crucial for the culture, what aspects of the local ecology and geography are evident in the grammar? In turn, what can we say about how the grammar shapes interactions with the landscape?

Because the research draws on both legacy materials and new documentation, the question of diachronic change will be a recurrent thread throughout the dissertation. At the same time, it is a sensitive topic given the history of the language, the intimacy between linguistic understanding and

[8] Calling these 'games' perhaps reflects researcher optimism that speakers may find these fun; in my experience, they find these tasks challenging, and although they enjoy them, they are more work than fun.

cultural understanding, and the emotion connected to the work of revitalizing the language. In exploring questions about language shift and change, I focus on the forces of grammaticalization, lexicalization, and semantic shift that are at work in all languages regardless of contact.

5 Method

This work emphasizes descriptive and qualitative, rather than quantitative, analysis of the data. Since 2009, I have been working to develop a corpus of contemporary speech, with an emphasis on interaction. These data include over 50 hours of spontaneous conversation, elicited interaction, and elicitation sessions prompted by various stimuli including the Rochester 'Toy Game', the frog story, and others. Between 2009 and 2012 data were recorded exclusively in audio (44.1 Hz, 16 bit) with interlocutors wearing lavalier microphones. Conversations are transcribed in ELAN with speakers present. Last summer I introduced video stimuli as elicitation prompts; this past summer I expanded my use of video to include documentation as well. Time-aligned transcripts in ELAN include morphological analysis and glossing. I have begun to establish a Toolbox database this year, and will export my data from ELAN to Toolbox.

Much of my work involves comparison between legacy documentation and modern texts. I have transcribed some of Boas and Hunt's documentation to make it accessible as searchable digital files. In some cases, the unpublished manuscripts provide detail unavailable from the published version; these are available on microfilm from the archives at the American Philosophical Society and Columbia University.

5.1 Site

The Kʷakʷəkəw̓akʷ nations, as mentioned above, are dispersed among several distinct landscapes: some people live inland, in the woods, some live on islands, some on rivers, some on salt water tidal flats. Each community has inherited rights to the resources associated with their traditional settlement, and different ecologies are tied to different dialects. Extensive areal contact and diffusion were influences long before the arrival of Europeans, but colonization imposed new trajectories of contact and change through forced relocation, resettlement and consolidation. Despite disruptions, dialect diversity is still significant, apparent in different lexical items for many terms (even basic ones such as 'salmon', which is *məɬík* in the n̓akʷala dialect spoken at Tsulquate and *ƙutəla* in the Kʷak̓ʷala dialect spoken in Kingcome) and different phonological and morphophonological profiles (Rosenblum and Cadwallader 2013; Siemens forthcoming).

Each of these facts adds synchronic and diachronic complexity to any attempt to create documentation of a language. For this reason, my research has a primary geographic focus, on Kingcome Inlet (aka *gʷaẏ̓i*), a small village (pop. ~87) 4 miles up the Kingcome River from the

Broughton Archipelago in the Inland Passage. Kingcome is special in many ways. It is one of very few communities in this area that has never been relocated. Archaeological evidence dates the Wasaɬis village site, at the head of the river, as 6000 years old, aligning with oral testimony by elders identifying ancient village sites (Willie p.c.; Stafford and Christensen 2004).

Kingcome is remote and can only be accessed by boat or plane to the government dock at the mouth of the inlet, followed by a boat trip up the river. A significant aspect of residents' attachment to the village is the maintenance of traditional ways and the sharing of this with other community members. Residents hunt for waterfowl, seals and mountain goats. They set crab traps and fish for halibut and several species of salmon. They dig clams, pick berries and make jam and fruit leather (like a 'fruit roll-up'). A group of young residents have recently re-registered their grandparents' traplines. Culturally modified trees reveal cedar bark stripping dating back several hundred years. Most importantly, residents benefit from their right to fish a river where oolichan run and make oolichan grease; off-res family members come home to spend the week fishing, digging fermentation pits, boiling grease, and bottling it for storage and trade with other communities.

The village site includes several topographical features which are prominent in Kʷaƛ̓ʷala grammar: an inlet, a river, woods. Most importantly, unlike the majority of the Kʷakʷəkəw̓akʷ peoples, the Dᶻawadəʔinuχʷ people have never been relocated; their continuous occupation of the village site reduces effects of complex contact resulting from colonial disruption (although this and other types of contact are, of course, taken into account). In addition, there are several published origin stories for Kingcome (Boas 1906:36; Boas 1934: 22; Galois 1994: 108-111). These narratives describe places in which people still reside, or which they still visit. This allows comparison between the language of legacy materials and that of new travel narratives about the same places. A useful byproduct of this research will be the digitization of such narratives, making them searchable for other purposes.

5.2 New documentation

Since 2008 I have been working to create a small corpus of new documentation focused on interactive speech. The sections below describe relevant methodology.

5.2.1 Equipment I record audio on a Zoom H4N; each text has several hours of associated transcription and translation sessions, also recorded. External lavalier microphones (Audiotechnica Pro70 cardiod condensers) are used for recording conversational dyads, along with the built-in stereo microphone on the Zoom H4N. This summer I introduced video documentation, using a Canon XA10. I record parallel audio in contexts where the product is intended to be archival. Video is used in a multi-phase documentation process described below. Multi-tier, time-aligned transcriptions are created in ELAN (http://tla.mpi.nl/tools/tla-tools/elan/).

5.2.2 Elicitation stimuli Video is used to create stimuli as well as to document speech. I record journeys related to the documentation of spatial grammar: going away from the village and returning to the village, going upriver and downriver (on land and on water), going to and from the shore, going into and out of the woods. This past summer, I filmed three journeys: (1) one on the Kingcome river, traveling from the village down to the mouth of the river and back to the village; (2) one traveling by boat around the islands of the Broughton Archipelago within the MúsGəmagʷ-Dᶻáwadəʔenuχʷ territory; and (3) one walking away from and back to a house along a road leading into the woods, in order to pick thimbleberries for jam. The video-recordings become stimuli for subsequent recordings made with speakers, in which they describe the actions depicted in the video. I will return with edited videos to finish collecting speakers' descriptions of the video stimuli. Elicitation sessions are held with both single speakers and pairs, allowing monologic and dialogic speech to be recorded and compared.

Targeted elicitation complements the analysis of spontaneous discourse. I have collected five versions of *Frog, Where are you*? (Mayer 1969, aka the 'frog story') in order to Kʷaƛʷala expressions of motion, location and direction with extensive published work on diverse languages (Berman and Slobin 1994; Strömqvist and Verhoeven 2004). Two recordings were made of Joyce McDonough and Jordan Lachler's Toy Game task, requiring two participants who cannot see each other to achieve the same arrangement of a set of small objects placed on a ground. Although it is designed to collect natural conversation and prosody, the content of the interaction necessarily feature spatial language and cognition (McDonough 2010).

5.2.3 Data management The post-processing of interactive spontaneous speech requires a significant time commitment. Data are transferred immediately following recording sessions and 'chunked' in ELAN. In cases of sensitive material, an edited version is translated in ELAN. Both recordings are prepared for archiving, with the raw original stored with restricted access. Speakers return to provide free translation and carefully 're-speak' their parts of the recorded conversation. These sessions are also recorded. Detailed annotation in ELAN, including phonemic transcription and morphological analysis, is carried out collaboratively with community-based researchers during the post-field season. Metadata regarding the project, sessions, personnel, equipment, and funding are maintained in a spreadsheet. The materials will be archived in a community-based archive as well as in an international archive with graded access.

6 Preliminary findings

The documentation created by Boas and Hunt provides an introduction to the grammatical and lexical elements relevant to a study of space in Kʷaƛʷala, while also revealing clear directions for

contemporary documentation and research. Drawing on these materials, section 6.1 summarizes the relevant linguistic resources available to describe spatial events. Section 6.2 then focuses on one area of interest for further study: a small set of three suffixes used in combination with locative suffixes to add motion to a predicate stem, mentioned briefly by Boas in his grammar (Boas 1947: 349-350). I identify a contrast among them in terms of boundedness of motion. One form *–[g]əɬ* MOTION.ATELIC is used for atelic motion for which the endpoint is not within event focus. Another form *–[g]aʔɬ* MOTION.TELIC is used for motion for which the endpoint is explicitly part of the motion event. A final form *–wəɬ* MOTION.AWAY is used for motion away from, out of, or off of a starting point. Examples are provided to illustrate the contrasting functions of these suffixes, their combinatorial patterns, and to indicate areas for further research. The possibility that these might be called 'associated motion' morphemes ((David Wilkins 1991) is considered and argued against. Where possible, examples are considered in narrative context, although further analysis of relevant discourse factors remains. I have included some early findings from research in July and August of 2013.

6.1 Linguistic resources

The linguistic resources for describing location, motion, and direction in Kʷaƛʷala are extensive in both lexical and grammatical domains. I adopt Talmy's terminology of a MOTION EVENT, but not his inclusive definition of such events as referring to either a "situation containing movement *or the maintenance of a stationary location* alike" (Talmy 1985). Adopting the Nijmegen schema, MOTION events, for which PATH is salient, are distinguished from STATIONARY events, for which LOCATION is salient (see below for definitions of 'path' and 'location'). FIGURE refers to the object, element or being "moving or located with respect to another object" (the GROUND, which may be or include a REFERENCE OBJECT) (TALMY 1985).

A FIGURE may be a person, a ball, a pencil, or anything else that is the focus of the predicate. PATH refers to the "course followed by the figure object with respect to the ground" in a motion event (Talmy 1985: 60), while LOCATION refers to the site occupied by a figure with respect to the ground, and MANNER refers to the figure's MOVEMENT, POSITION or POSTURE in either type of event, motion or stationary. Talmy observed a cross-linguistic tendency for "[the] Ground notion to be expressed by a noun-root…and the Directional notions by closed-class elements such as noun affixes or adpositions" (Talmy 2000). As we will see, Kʷaƛʷala presents an alternative pattern of distribution, in which both Ground and Directional concepts are expressed with closed-class grammatical elements.

A database of roots and suffixes is in progress. Spatial semantics are not confined to one grammatical system (i.e. prepositions) but are distributed across multiple linguistic structures: lexicon, morphology, syntax. Kʷaƛʷala exhibits a high degree of semantic heterogeneity in both lexical and grammatical classes. Because 'verb' and 'noun' are not lexical categories in Kʷaƛʷala grammar, but

are defined by their syntactic context, any stem (a root or derived stem) can form the nucleus of predicate *or* an argument. Nominal or adverbial semantics can thus be expressed within a syntactic predicate as easily as within a syntactic argument. Section 6.1.1 lists examples of roots with spatial semantics, gives examples illustrating their use, and considers their lexical semantics and argument structure. Section 6.1.2 addresses spatial meaning expressed in lexical suffixes, and 6.1.3. addresses questions of lexicalization and productivity.

6.1.1 Spatial relations in the lexicon: roots Some examples, giving a sense of the range of meaning of roots in Kʷaƛ̓ʷala, are provided here.

Table 3: Roots relating to spatial description

la-	go (direction away from speaker)
gaχ-	come (direction towards speaker)
gay(uƛ)-	come/emerge out/away/from a place
bəw-	leave (someone, something)
Gʷas-	direction towards reference object
qʷəs-	direction away from reference object
qas-	walk
dɬəlχʷ-	run
siχʷ-	paddle
siɬ-	slither, wind (snake), zig-zag
ʔaps-	(to) one side
ẇaxs-	(towards) both sides
ṅəχʷ-	near
ʔix-	to approach (goal)
ʔaƛ-	inland, into woods
ƛ̓as-	away from land, towards sea or water
ṅala-	upriver, south, east, day, daylight, world
gʷa-(ṅakʷ)-	downriver, north, west,

(Boas 1948)

The event structure associated with these roots is varied and heterogeneous. Many roots, such as *ʔaps-* 'to one side', *ẇaxs-* '(towards) both sides', *ṅəχʷ-* 'near', *ʔaƛ-* 'inland', *ṅala-* 'upriver, south, east, day, daylight, world' can be used to describe either motion events, stationary events, or static objects.

La- 'go' and *gaχ-* 'come' (toward speaker), and *gayuƛ-* 'come out of/away from somewhere' describe the self-directed motion of a figure through space. *Gaχ-* 'come' expresses a deictic direction toward the location of the speaker. In a related, grammaticalized form, it is obligatorily used in a prepositional phrase marking the speaker as a PRIMARY OBJECT or OBLIQUE referent. These three stems are extremely frequent and have grammaticalized in multiple directions[9], and their prominence

[9] A detailed review of the grammaticalization of these forms is beyond the scope of this prospectus, but a brief summary is provided here: (1) *la-*, *gaχ-*, and *gayuƛ-* have become prepositions marking OBLIQUE arguments, with *gaχ-* obligatory for use with oblique first person referents; (2) *gaχən* and related forms, occurring clause-finally in prepositional phrases, fill a gap in the pronominal paradigm for first person PRIMARY OBJECT reference

in the grammar is notable. Although they are among the most general and basic lexemes in the language, they can also become highly specific with the addition of locative suffixes. Some examples are provided below.

(4) Basic motion stems

la- **'go'**

lád^{ɬ}aƛən	'I will go (indeed).' (Boas III 146.7)
lá-d^{ʴ}a-ƛ-ən	
go-EMPH-FUT-1.S	
lágalis	'to arrive at beach' (Boas and Hunt: R179.4)
la-gaʔɬ-°is	
go-MOT.TEL-BEACH	
lác̓agal̓iɬ	'to go into house'
la-c̓əw-gaʔɬ-°iɬ	
go-IN-MOT.TEL-LOC.HOUSE	

gaχ- **'come'**

gaχƛa	*gə́ngənanəmi*	'The children will come' (Boas X 17.8)
gaχ-ƛ-(id)a	gə́ngənanəm=i	
come-FUT=1.sub	children	
gáχʔalis		'to come to beach'
gaχ-(g)aʔɬ-is		
come-MOT.TEL-BEACH		
gásgəχʔa		'to hear, to come into ear'
gas-gaχ-!a		
RED-come-EAR		

Cross-linguistically, verbs of motion may or may not include a concept of path or direction[10]. In Kʷaƛʷala, the argument structure of motion verbs indicate that their lexical semantics include PATH. In Kʷaƛʷala, PATH seems to be included in the lexical semantics of motion verbs, such as *la-* 'go', *gaχ-* 'come towards speaker.' Kʷaƛʷala motion stems can mark DESTINATION as a PRIMARY OBJECT (although it is not always). CO-ACTORS are always marked as SECONDARY OBJECTS.[11] This can be seen in examples (5), with *qas-* 'walk' and (6), with *gaχ-* 'come'.

(in contrast with first person subject and secondary object reference, which are, like all of the other person markers, enclitics); (3) *la-* 'go' and *gaχ-* 'come' have become connective discourse markers, sometimes called 'auxiliaries' by Boas, which are a frequent feature of narrative discourse. Their use in discourse is well-described in Berman 1982.

[10] For example, in Nunggubuyu, the motion verb *yuwa* can mean motion toward or away from the speaker, or across a field of vision, depending on cooccuring demonstratives (Heath 1980 quoted in Diessel 2012)

[11] Rosenblum 2013 shows that the distribution of passive forms corresponds with syntactic argument roles, which are in turn linked to lexical semantics of different classes of predicates. Stems of TRANSFER, such as *c̓əw-* 'give', mark the RECIPIENT as primary object with *=χa* and the THEME (i.e. the object transferred) as secondary object with *=sa.*

(5) MOTION: DESTINATION marked as PRIMARY OBJECT

Wə,	láʔlaʔi	**qástuwiχa**	**ṅaqʷaɬa**
Wə,	láʔlaʔi	qás-(xʔi)d-o**=(i)χ**a	**ṅaqʷaɬ**=a
DISC	DISC	walk-MOM-AWAY**=OBJ1**	**light=**T.DEM

Well, then it is said, he walked away toward the light. (B1906, III11.4)

(6) MOTION: CO-ACTOR marked as SECONDARY OBJECT

gaχsa	ḳásа	λəẇá	ḳáḳəko .
gaχ=sa	ḳásа	λəẇá	ḳáḳəko
Come=OBJ2	sea.otter	AND	RED-slave

They came with sea otters and slaves. (CII 102.25)

Passive constructions provide further evidence. The PRIMARY OBJECT passive form *–suʔ* always promotes the DESTINATION (or a person being pursued) to subject position, while the SECONDARY OBJECT passive forms *–ayu*, *-əm* and *-ano* promote CO-ACTORS. Compare the PRIMARY OBJECT passivization of *qas-* 'walk' in example (7) with SECONDARY OBJECT passivization in (8).

(7) Passive: *qas-* 'walk' passivized with PRIMARY OBJECT PASSIVE-*suʔ*

Laʔəmɬawis	qásʔidsaẇa
La-ʔəm-ɬa-wis	qás-(χ)ʔid**-suʔ-Ø-**a
AUX-OI-QUOT-AND.SO	walk-INCH**-PASS-3.SBJ-**T.DEM

Then it is said they went after him.
(Then, it is said, he was pursued by them. - DR; Boas 1895, M727.17)

(8) Passive: *qas-* 'walk' passivized with SECONDARY OBJECT PASSIVE *-ayu*

Lálaʔi	qásʔidayusa	wíwaʔokʷ
Lálaʔi	qas-(x)ʔid**-ayu=sa**	**wíwaʔokʷ**
Then	walk-MOM**-PASS=OBJ2 wolf**	

Then he was walked by the wolf. (B1895: M 666.21)

In sum, the inclusion of DESTINATION as a primary object of motion verbs supports the claim that the lexical semantics of *la-* 'go' include directionality. The grammaticalization of *gaχ-* as a preposition obligatory for first person object and oblique marking suggests that deictic reference is part of the semantic core of the root.

In contrast, the pair *Gʷas-* 'direction towards reference object' and *qʷəs-* 'direction away from reference object' isolate the directional relationship between a figure and a non-deictic reference object. Some examples below give a sense of the many derivations of these stems.

(9) *Gʷas-* derivations

Gʷasxəla	'to approach' (*-xəla* TO.MOVE)
Gʷasəʔa	'this side of rock' *(-!a* ROCK)
Gʷasəʔatoxʷʔid	'to turn ear this way' (*-ato* EAR; *-xʔid* INCH)
	(Boas 1947: 228)

(10) *qʷis-* derivations

qʷísgila	'to go far away, to go to far side'
qʷísigiʔ	'long after'
qʷísagəʔə	'to arrive at a distant point (*-gəʔə* ARRIVE)
	(Boas 1947: 228)

Boas translates *Gʷas-* and *qʷis-* with strongly deictic semantics: in the grammar, *gʷas-* is glossed as 'direction towards here' (Boas 1947: 228); in the dictionary as 'to be close to you, near by, to approach, to turn to, to turn this way, to come this way' (Boas 1948: 326). *qʷis-* is translated as 'direction towards there' (Boas 1947: 228), and as 'far in space or time'. (Boas 1948: 343). But while *Gʷas-* and *qʷis-* are clearly a contrasting semantic pair, Boas' translations are not matched; the proposed translation for *Gʷas-* is deictic with reference to the speaker's location, while the proposed translation for *qʷis-* is ambiguous about what the referential object is.

The examples below show that, unlike *gaχ-* the reference object for *Gʷas-* and *qʷis-* is *not* deictically determined.

(11) *Gʷas-* 'toward reference object'

ṅáχʷaʔəmlaʔi	Gʷágustəɬida		ṗoẏi	laχ	ƛúʔbana.
ṅáχʷa-ʔəm-laʔi	Gʷá-gu-ust-(g)əɬ=i=da		ṗoẏi	laχ	ƛúʔban=a
all-OI-QUOT	toward.RO-HEAD-UPRIVER-MOT.ATEL=SBJ		halibut	PREP	cormorant=T.DEM

All the halibut had their heads (turned) toward Cormorant. (III:293.18)

(12) *qʷis-* 'away from reference object'

Wa, láχaʔa	ʔəχidχa	múqʷəla
wa láχaʔa	ʔəχid=χa	múqʷəla
now AUX.DISC	take=OBJ1	stomach

And she takes the stomachs

qa gaχis	*gaʔís*	
qa ga=χis	gay-ís	
SBD AUX=3.SBJ>3.OBJ2	move.sthing.from place-BEACH	

and puts them down on the beach,

laχa	***k̓is***	***qʷisaɬa***	***laχa***	***t̓íqʷapaẏi***[12]
la=χa	**k̓is**	**qʷisaɬa**	**la=χa**	**t̓íqʷapaẏi**
PREP=DEM	**NEG**	**away.deic**	PREP-DEM	stones.in.fire

not far from the stones in the fire.

In (11), the reference object is *ƛúbana*, the cormorant, and in (12), the reference object is *t̓íqʷapaẏi* 'the stones in the fire'. These examples exemplify the difference between *gaχ-* 'come (toward speaker)', for which the reference object is invariably the speaker, and *Gʷas-* and *qʷis-*, for which the reference object is another object mentioned in the discourse. The question of how these forms function in connected discourse will be an area of focus in the thesis.

[12] As is true of all of Kʷak̓ʷala stems, *Gʷas-* and *qʷis-* serve equally well as the nucleus for an argument in a syntactic noun phrase as they do for a predicate. While *Gʷas-* is the predicate in example (9), *qʷis-* in a noun phrase in the prepositional phrase at the end of example (10).

Many other forms also allow for the location of a figure in relation to a REFERENCE OBJECT: *ʔəps-* '(to) one side', *ẇaxs-* '(towards) both sides', *ṅəχʷ-* 'near', *ʔix-* 'to approach (goal)'. Kʷakʷala grammar frequently locates this reference object within the predicate, using a lexical suffix.

(13) Reference object expressed with locative suffixes

ʔəpsánigʷiɬ 'one side wall of house' (*-ᵒniqʷ(a)* CORNER, SIDE.OF.HOUSE, *-ᵒiɬ* HOUSE)
gʷásanigʷiɬ 'near side of house'

Several GEOCENTRIC forms are used to make a topological feature of the landscape the nucleus of the predicate: *ʔaƛ-* 'inland', *ṅála-* 'upriver, south, east, day, daylight, world', *gʷa(ṅakʷ)-* 'downriver, north, west', *ƛ̓as-* 'seaside, towards middle of house'. Some examples of derived forms of these stems are provided in (14).

(14) Derivations of geocentric forms

ʔáλabiʔ	'inland point' (*-ᵒbiʔ* END.LONG.OBJ)
ʔáλabala	'to walk inland' (*-ᵒbala* ON.THE.WAY, GOING.ALONG)
ƛ̓ásbala	'to move out at sea, wind blows seaward'
ṅáladᶻiʔ	'upriver side of a point' (*-dᶻi* FLAT.THING)

An extensive subclass of roots, such as *qas-* 'walk', *dᶻəlχʷ-,* 'run', *siχʷ-* 'paddle', and *siɬ-* 'slither, wind (snake), zig-zag', describes the MANNER of motion with which a figure moves. 'Manner' roots can be further subcategorized between independent motion (slither, creep, hop), locomotion dependent on external vehicles (paddle, ride), or posture (crouch, kneel). These forms and how they relate to Talmy's typology of motion events are explored in Chapter 2 of the dissertation.

6.1.2 Spatial relations described by grammatical suffixes Kʷakʷala employs a large class of ~400 suffixes, often called 'lexical suffixes' because of their semantic specificity. Some examples of these suffixes are provided in Table 4, accompanied by examples of their use in context.

Table 4: The semantic range of lexical Suffixes

-mut	'refuse', 'remains of'	gúgaχʷmut (gukʷ- 'house')	'ruins of a house'
-ac̓i	'receptacle'	náGac̓i (náq- to drink)	'drinking vessel'
-íχsd	'to desire'	náq̓iχsd	'to desire to drink'
- alisəm	'to die of inner troubles'	q̓ʷáyalisəm (qʷás- to wail, to cry)	'to die of crying'
-buɬa	'to pretend'	q̓ʷásabuɬa	'to pretend to cry'
-uʔsu	'to cause accidentally'	ɬəl̓úʔsu (ɬəl̓- to be dead)	'to cause a death accidentally'

(Boas 1947: 237-246)

128 suffixes express LOCATION, DIRECTION, MOTION, MANNER, or a combination of two or more. A sample is presented below, subcategorized by whether they refer to path or location and what type of reference object they use to indicate location (the earth, an external reference object, the body). Some suffixes are ambiguous with respect to category: *-c̓əw* can mean 'INSIDE' (location), or 'INTO' (path). A typographic note: many of these forms are difficult to compress into a brief descriptor without losing necessary information. Where I have settled on an appropriate gloss for a suffix, I provide it in small caps. Otherwise, rough free translations are provided in lower case.

Table 5: Some lexical Suffixes relating to Space and Motion

GROUND: PATH

-[g]usta	UP
-aχa	DOWN
-beta	DOWN.INTO
-[x]sta	DOWN.TO.GROUND
-[x]səqʷa	OVER
-°abo	UNDER
-c̓əw	IN
-wä	OUT (out of, off, away.from)
-[x]sa	THROUGH
-[g]u	BETWEEN
-aqa	PAST (in space)

GROUND, REFERENCE OBJECT: LOCATION, PATH

-uy̓u	MIDDLE
-°no	SIDE.ROUND (side of round object)
-°nos	SIDE.LONG (side of long object)
-°iɬ	IN.HOUSE (in house, on floor, in enclosed space)
-°is	IN.OPEN (usually on the beach, in the world, at the bottom of the water, on the bottom inside the body)
-!s	ON.GROUND.OUTSIDE.HOUSE
-ayak	WATER.SURFACE (on surface of water)
-!a	ROCK (locative relationship implied)
-°xs	CANOE (locative relationship implied)
-c̓əw	IN (into, inside, inwards)
-°χiʔ, -°χay̓ala, -°χay̓od	WATER.MOVING (moving on water, at sea)
-χəla	ABOVE.GROUND

GROUND, BODY: LOCATION

-°χχa	HEAD
-[g]əm	FACE
-[g]iw, -əyu	FOREHEAD
-°ato	EAR
-°iɬba	NOSE
-°əχsta	MOUTH (also opening of a bag, vessel)

GROUND, EARTH: PATH + LOCATION

-usdis	UP.FROM.BEACH
-ənc̓is	DOWN.TO.BEACH
-[g]əga	INSIDE.HOLLOW.OBJECT
-°ənsa	UNDER.WATER (in.throat)
-atus	DOWN.RIVER
-ʔusta	UP.RIVER
-yag	INTO.WOODS

Another group of suffixes add verbal or temporal meaning to the predicate. Many of these include motion semantics. Some examples are presented in Table 6.

Table 6: 'VERBAL' suffixes

-[gə]y̓ala	to go to look for ….
-anuma	to come to ….
-°tây̓i, -təẁi	to do …. while
-mâla	to walk

-!ud	to bring
-!aq(əla)	to carry along
-aqa	to pass one
-aqanud	to pass behind side
-agud	to pass further
-mâla, -mo	to move in company
-gaʔa	to reach
-sdənaq	to work while….

The combinatorial properties of these suffixes are not well understood. Describing a basic morphological template for the predicate in Kʷaǩʷala is a necessary preliminary step to identifying subclasses. Many of them can and do co-occur, while others cannot. A section of the dissertation will identify syntagmatic and paradigmatic relationships between morphemes.

The next section addresses the degree of productivity these forms have in the context of polysynthetic word formation.

6.1.3 Lexicalization These suffixes allows single words to be packed with information. While they are productive, suffixes also fuse with stems in lexicalized combinations. Kʷaǩʷala, like many polysynthetic languages, seems to allow a gradient productivity for many of these forms. Speakers might readily produce new combinations with certain suffixes, such as *-bala* 'on the way, while going along' (see also *–ba* 'at end of a long horizontal object') (Boas 1947: 338), such as *λáλaχʷbala* 'to stand a little while and go on' (*λa-* 'stand'); *ṅaṅobala* 'to aim while going along' (*ṅəw-* 'aim); *háʔəmsbala* 'to pick berries while going along' (*háms-* 'to pick berries), and so on. Or one might add the suffix *–asdi* 'dried meat of' (Boas 1947: 319) to anything semantically appropriate: *ʛəχʷasdi* 'dried deer meat'; *páχasdi* 'dried fins'*; dᶻəχʷasdi* 'dried meat of silver salmon'; *bákʷasdi* 'dried human flesh'.

On the other hand, the semantics of many forms are not transparently derived from the meanings of the individual morphemes, indicating lexicalization. From *λá-* 'to stand', we get *λawayu* (+ *-ayu* INST.NOM) 'salmon weir'; *λaṗiq* (+ *-ṗiq* 'stick, tree) 'mast', and *λásλaẇala* 'to say that you are willing' (reduplication, suffix unknown).

Boas' dictionary entry for the root *la-* 'go' spans 5 pages, and includes 97 entries which are derived from the addition of one or more suffixes. A few are provided in example (15).

(15) Derivations of *la-* 'go'

lə́nsa	'to sink'	*la-* + *-əns*	'under.water, into.throat'
lə́nċa	'to go down to beach'	*la-* + *-enċ*	'down.to.beach'
lába	'to finish'	*la-* + *-ba*	'end of long horizontal object'
lábeta	'to penetrate'	*la-* + *-beta*	'down.into, into.hole'

(Boas 1947: 395)

Many of these combinations are semantically transparent, although in combination, the meaning has likely lexicalized, as for *lába* 'to finish' and *lábeta* 'to penetrate.' One area of inquiry will be the examination of these forms in the context of Boas and Hunt's texts, as well as in the context of modern discourse.

As we have already seen in some examples, multiple suffixes can stack onto a stem. Some of these combinations are difficult to parse and likely dependent on cultural context no longer accessible. In other cases, the meanings of suffixes were not documented. Some examples of semantically opaque stems are provided in (16).

(16) Derivations of *la-* 'go' with unpredictable meanings

láy̓ap̓a	'to take each other's name, change places'	(+ *-ayu* PASS +*-ap̓* 'each other')
lágusta	'to go up, to go on and sing'	(+ *-[g]usta* 'up')
lɔ́mk̓əgaɬ	'to promise X as marriage present'	(+ *-[k]əgal* 'to begin to make noise')

How many of these forms do we still find in contemporary Kʷak̓ʷala, and how many remain productive? Many of these combinations of roots and suffixes have fused into longer stems with a high degree of automaticity in speech production. At the same time, preliminary findings from work with fluent first-language speakers of Kʷak̓ʷala suggest that many of these roots and suffixes are accessible in on-line production, even for speakers who live most of their daily lives in English. Beverly Lagis is quite able to substitute different locative suffixes for each other on a root *t̓ip-* 'step', producing Kʷak̓ʷala forms meaning 'put your feet on the floor', '… on the beach', '… on a rock', '… on the ground', '… on a canoe or any boat', 'use your feet like an agitator (i.e. in washing clothing', 'step into a hole in the ground', '…on the heel of someone's shoe', '…in the stern of the boat', 'walk on water', '…along the branch', '…off the edge (by accident)', '…in water', '…into the house', '…(climb) up the ladder', 'lift your feet'. She easily identifies the meanings of many derived predicates (taken from Boas and Hunt's documentation), even forms that are completely unfamiliar. Some suffixes do seem to be less accessible to speakers of modern Kʷak̓ʷala, for example the telic motion suffix *–[g]aʔɬ* described in section 6.2 may have converged with the atelic motion suffix *–[g]əɬ*.

It is not only the combination of stem and suffix that lexicalize; suffixes also fuse with each other. The suffix *–ac̓i* 'RECEPTACLE' (i.e. box, dish, house, canoe) is a combination of two suffixes: *-°as* 'PLACE.OF' and *-ɬi* NOMINALIZER. It is found in *ham̓əʔac̓i* 'food dish' (*həm̓-* 'eat'); *nágac̓i* 'drinking vessel' (*naq-* 'drink'); *gáy̓ac̓i* 'receptacle into which to put something' (*gəy-* 'be somewhere'); *bac̓i* 'womb' (*bəχʷ-* to be pregnant'); *n̓ágʷac̓i* 'window' *(n̓áqʷəla* 'moonlight'); *ẃáχac̓i* 'pipe' (*ẃaχ-* 'smoke'); *dənd̡ac̓i* 'dance hall' (from English *dance*).

The suffix, *-wä ~-o*, meaning 'negative, off, away from, out of' is almost always followed by other suffixes and has fused with very many of them; a derived form, *-ẇəɬ*, combining *–wä* and *--° [g]əɬ* MOTION.ATELIC, combines with additional locative suffixes, as in (17).

(17) *-wä* fused with other suffixes

-wa	+ *-əls* OUTSIDE	>	*-wəls*	OUT.OF.HOUSE
-wa	+ *-° [g]əɬ* MOTION.ATEL	>	*-ẇəɬ*	MOTION.OUT, MOTION.AWAY
-wəɬ	+ *-ċəw* IN	>	*-ẇəlċo*	OUT.OF
-wəɬ	+ *-ʔsta* INTO.WATER (or air)	>	*-ẇəsta*	OUT.WATER
-wəɬ	+ *-dᶻo* ON.FLAT.OBJECT	>	*-ẇəldᶻo*	OFF.FLAT.OBJ
-wəɬ	+ *-!qa* AMONG.PL.OBJ	>	*-ẇəqa*	OUT.FROM.PL.OBJ
-wəɬ	+ *-[g]usta* UP + *-°is* ON.BEACH	>	*-ẇəsdis*	UP.FROM.BEACH

In some cases, the original suffix no longer exists, as with the fused form *–ẇəɬta* 'out of canoe'; the locative suffix for 'in.canoe' is now *-°χs*. As one can see, Kʷaḵʷala suffixes allow rich description of spatial relationships between figure and ground. This research will strive to illuminate structure and systems underlying these suffixes, enabling better teaching, learning, and analysis of the language.

6.2 Motion suffixes

As referred to earlier, a small class of three suffixes add motion to the event structure of a predicate. This section describes their function and distribution. Evidence is taken from Boas and compared with recently gathered data. The function of these suffixes varies in response to the lexical semantics of the root they combine with, as shown below.

Table 7: Motion suffixes

Form	Meaning	Gloss
-[g]əɬ	motion. any.direction	MOT.ATEL
-[g]aʔɬ	motion.toward.goal, telic.motion	MOT.TEL
-wəɬ	motion.away/off/out.of	MOT.AWAY

(B1947: 349-350)

These forms vary according to whether they focus on a goal or endpoint (*-[g]aʔɬ*), a source or beginning point (*-wəɬ*), or the motion itself without reference points *(-[g]əɬ*). As mentioned above, *-wəɬ* is derived from the combination of *-wa* 'out of, away from, off' with *–[g]əɬ* .

These motion suffixes frequently co-occur with locative suffixes, although they can co-occur with non-locative suffixes as well. Some of the more frequent suffixes with which they combine are provided in Table 8.

Table 8: Locative suffixes frequently co-occuring with motion suffixes

-°iɬ	IN.HOUSE (also on floor)
-°is	IN.OPEN (on the beach, in the world, on the bottom of the water, on the bottom inside the body)
-!s	ON.GROUND.OUTSIDE.HOUSE
-!a	ROCK
-°xs	CANOE

-!qa	AMONG.PLURAL
-ċəw	IN (also inside, inwards)
-!χλa	FOLLOWING (hind end, stern of canoe, afterwards)
-°χiʔ, -°χaẏala, -°χaẏod	MOVING.WATER (at sea)
-(χ)əla	ABOVE.GROUND

When they co-occur, the locative suffixes follow the motion morphemes. Semantically, they express the reference point or ground with respect to a figure's motion. The relationship between figure and ground derives from the lexical semantics of the root to which they attach. With motion roots such as *la-* 'go' or *t̓ip-* 'step', these motion morphemes add a sense of PATH and the locative morphemes contribute the sense of GOAL (with *–[g]aʔɬ*) or SOURCE (with *–[g]əɬ*); see (18).

(18) **With motion stems: add PATH**

a. *t̓ípəlil* 'to lift foot from floor'
t̓ip-**(g)əɬ**-°iɬ
step-**MOTION.ATEL**-LOC.FLOOR

b. *t̓ípaɬ̓iɬ* 'to put foot on the floor', 'to step on the floor'
t̓ip-**(g)aʔɬ**-°iɬ
step-**MOTION.TEL**-LOC.FLOOR

As we can see in (18a) and (18b), when applied to a root like *t̓ip-*'step', the contrast between the telic motion of *–[g]aʔɬ* and the atelic motion of *–[g]əɬ* is systematically interpreted as a contrast between PUTTING and TAKING. When one puts something somewhere, the goal – the floor, a shelf, a container -- is in focus (TELIC *–[g]aʔɬ*). In contrast, while taking, removing or lifting something, neither the source nor the goal is in focus (ATELIC *–[g]əɬ*).

(19) Order of suffixes

láċâgaʔliɬ 'to go into house, room'
la-ċəw-**gaʔɬ**-iɬ
go-IN-**MOT.TEL**-LOC.HOUSE

láċâgaʔliχaʔi *laχənc* *kʷíχsəmdəʔaċiχ*
la-ċəw-**gaʔɬ**-iɬ-χ=i *la-χ-ənc* *kʷíχ-s(g)əm-(xʔi)d-əʔa-ċ-iχ*
go-IN-**MOT.TEL**-LOC.HOUSE-SBJ? PREP-OBJ1-1.INCL.POSS strike-ROUND.SURFACE-MOM-ʔ-IN.TIME-POSS
'We will go into our time-beating (drumming) house'[13] (B1947:349; CX 162.10)

In (19) the locative suffix *–°iɬ* 'in.house' follows the motion morpheme, as we would expect. However, note the suffix *–ċəw* 'IN(TO)' *preceding*, rather than following, the motion morpheme *–[g]aʔɬ.* More work is needed to determine what governs morpheme ordering and whether there might be a functional contrast between the two positions. Perhaps *–ċəw* once signaled 'PATH' in pre-position and 'LOCATION' in post-position. This past summer I presented this and similar forms, with a locative

[13] The English translation for this quote is a bit obscure taken out of context; it comes from a description of the Winter Ceremonial, which includes drumming, dancing and singing in the Big House, which is referred to here as the 'time-beating house' because it is the place where they will be drumming on boxes and singing, keeping time so that others may dance (Boas 1930 v.II: 166-167).

preceding the motion suffix, to Beverly Lagis, and she found them uniformly ungrammatical. My analysis of legacy and modern texts may contribute further data to this question.

Somewhat surprisingly, the three motion suffixes described above can be used to create motion events from roots that do not necessarily include the sense of a figure's self-directed motion at all, whether they describe an action or a state. In (20) we see that the posture root *paq-*, used for flat things lying horizontally, can describe a person falling flat with the addition of the suffix *–[g]aʔɬ* .

(20) *paχʔaƛiʔ* 'to fall flat on water' (CII 340.28)
paq-(g)aʔɬ-ƛiʔ
lay.flat.thing.horiz-MOT.TEL-LOC.ON.WATER

Two examples constructed around the root *həm̓-* 'to eat' illustrate different ways the suffix can influence the event structure of the resulting predicate. In (21), a non-locative suffix, *-(ə)χstala,* glossed by Boas as 'talk about'[14], follows the atelic motion morpheme *–[g]əɬ*. Boas translates the word as 'to drop crumbs while eating'.

(21) *həmgəɬəχstala* 'drop crumbs while eating'
həm̓-°(g)əɬ-°(ə)χstala (perhaps because one is talking) (B1947:350)
eat/food-MOT.ATEL-TALK.ABOUT

To my surprise, although Mrs. Lagis considered the form to be 'old-fashioned', she nevertheless said "(I)t might mean that whatever you're eating is dropping out of your mouth." (DR unpublished field notes, 8/12/2013). However, she then said, "if you're eating something on the boat, car, train or whatever," which suggests that the motion morpheme may have to do with a figure (the syntactic subject) in motion rather than the food (a syntactic object) in motion. the lack-of-control interpretation (of food dropping to the floor by accident, rather than being thrown) may result from the use of ATELIC *–[g]əɬ* rather than TELIC *–[g]aʔɬ*. In contrast, in (22), in Boas/Hunt's translation, the subject (the famous *Həm̓aca* ceremonial figure) is not eating, but looking for food; this food is the object of the search described by the suffix *–(kɐ)y̓ala* 'to search for', to which the motion suffix attaches (Boas 1947: 349). The locative suffix *-°is* provides the location in which the search for food happens.

(22) *hə́msay̓alagəlis* 'go after food in the world' (M693.1)
həm̓sa[15]-y̓ala-gəɬ-°is
eat/food-LOOK.FOR-MOT.ATEL-LOC.WORLD

Speakers in Kingcome interpreted this root as *həmsa-* 'berry-picking'[16], and translate the phrase *hə́msay̓alagəlis* as 'picking berries on the land'. We made a short video about the process of picking berries and making jam, during which this form was repeatedly used.

[14] From the combination of two suffixes: *-°əχsta* 'mouth, outward opening' and *–la* 'to speak'
[15] An allomorph of this root is *həms-*.
[16] This is not found as an entry in Boas' dictionary, except in the form *ham̓əʔəχsəwen* 'I eat berries' (Boas 1948:86)

Finally, examples (23), (24) and (25) illustrate how motion suffixes combine with inherently *static* roots. The nucleus of the predicate does not need to describe an event or action in order for the resulting predicate to do so; the motion suffixes generate and contribute a motion event structure to the resulting predicate. In (23), the 'round things' of the root *m̓əkʷ-* are mountains being put down in the world in a creation story.

(23) *m̓əkʷəmgaɬ̓is* '(mountains) put down in the world' (CII 8.2)
m̓əkʷ-əm-gaʔɬ-°is
round.thing-PL.LOC-MOT.TEL-LOC.WORLD

Here again, 'put' semantics come from the telic motion suffix; the endpoint is specified with the locative suffix. Mrs. Lagis said "It sounds like you're putting rocks down on the beach".

Examples (24) and (25), both containing root *hən-* 'hollow upright vessel' illustrate the contrast between atelic *–[g]əɬ* and telic *–[g]aʔɬ.*

(24) *hə́ngəliɬa* 'to shift vessel on floor' (R265.22)
hə́n-gəɬ-°iɬ
hollow.vessel.upright-MOT.ATEL-LOC.HOUSE/FLOOR

(25) *hənə́mgaʔliɬ* 'to put (baskets) down (in house)' (R207.53)
hən-əm-gaʔɬ-iɬ
hollow.vessel.upright-PL.OBJ-MOT.TEL-LOC.HOUSE/FLOOR

Boas notes that the first example, *hə́ngəliɬa,* can mean both 'to shift vessel on floor' or 'to take vessel from floor' (Boas 1947: 349).[17] To explore whether human agency might be entailed by these motion morphemes, I asked Mrs. Lagis how she would describe the same vessel moving in an earthquake, rather than being moved by a person. She was reluctant to produce example sentences using *hə́ngəliɬəla.* Instead, she produced examples using non-agentive verbs such as *χə́mχaʔsuɬ̓oχ*, 'to knock against each other', and *yaẃiχəlagəliχ* 'moving around on the floor'. These motion suffixes may require or imply an agentive force.

It is striking that motion suffixes are sufficient to create an event predicate even from a static root. Would we consider these 'associated motion' suffixes, per Koch 1984 and Wilkins 1991? As described by Wilkins, an associated motion morpheme "relates main verb events to background motion events" (Wilkins 1991: 209). Typical associations denoted by these morphemes include meanings such as 'go and V', 'go V-ing along', 'come Ving along', 'V in passing', 'V going along with someone', 'V in following along after someone' and 'V in going to meet someone'. Such morphemes have been found in languages as geographically dispersed as Mparntwe Arrernte (Arandic, Pama-Nyungan: Australia), Kayterye (Arandic : Africa), Atusgewi (Palaihnihan: California), and Ese'eja (Takanan: Brazil).

[17] The translation in the original text is actually 'to put (the basket with stones in it) on the floor' (Boas and Hunt 1921: 265).

Kʷaƛʷala certainly has at least one suffix which might act as an associated motion morpheme: *-anuma* 'to come to V'. Others, if not strictly 'associated *motion*' morphemes, might be considered 'associated event' (or 'associated action') morphemes: *-təẃi* 'to do V while V' (requires two predicates), *-°sdənaq* 'to work while V', *-dᵋəkʷ* 'to do V before doing something else'. However, the above-described class of 'motion suffixes' do not serve this function. Rather than add a background motion event to a main event, these suffixes change the semantics of the main event. If the root inherently expresses the movement of a figure (*la-* 'go', *gaχ-* 'come' and so on), these suffixes add a sense of path. If the root expresses a stative concept, 'round.thing', 'upright.vessel', these suffixes add the semantics of a motion event to the root. While there may be other 'associated motion' morphemes, these suffixes should not be considered as such. The flexibility of root semantics in Kʷaƛʷala is clearly intertwined with the functional range of Kʷaƛʷala suffixes, and function thus seems variable in response to the lexical semantics of the root. This dissertation will catalog the distribution of these frequent suffixes in both legacy and new documentation in order to be able to say more about the constraints shaping their use.

7 Conclusion

Kʷaƛʷala is a language with exquisite resources for describing spatial relationships. An earlier dissertation has explored the way the language, and its spatial metaphors, reveal conceptual and symbolic systems underpinning every aspect of culture, in artwork, ceremony and daily life (Nicolson 2013). The present dissertation is more narrowly focused on the morphosyntax of spatial constructions: the morphemes that compose them, the syntax that orders them, the discourse context within which they occur, and the semantic constraints governing them. I am writing with two goals which I believe are complementary: (1) to contribute to the base of knowledge about how Kʷaƛʷala works so that it can be well-understood by teachers and learners, and (2) to add a spatial grammar of Kʷaƛʷala to our typological knowledge about cultural and linguistic relativity. By starting with the concrete elements of how to describe Leibnizian spatial relationships, whether topological or coordinated, whether static or kinetic, I hope to begin to build a useful toolkit upon which many future discoveries can rest, especially for speakers of the language today and in the future.

8 Outline of chapters

I. Introduction

- Background
- Typological overview
- Brief grammatical sketch
- Review of the literature
- Data
- Method

- Theoretical significance

II. Overview of linguistic resources for spatial description
- Lexical (Roots)
- Grammatical (Suffixes)
- Morphological subclasses
- Morphological Template
- Syntactic constructions

III. Topological relations
- Results from Topological Relations Picture Series
- Suffixes
- Prepositions
- Topological relations in discourse

IV. Motion
- Motion constructions
- The subclass of 'motion' suffixes
- Argument structure of motion constructions
- Motion in discourse: frog stories, old stories, new stories, and conversation

V. Frames of Reference
- Intrinsic
- Relative
- Absolute

VI. Metaphorical extension

VIII. Conclusion

9 Timeline to completion

October 2013	• Defend prospectus • I. Introduction
November 2013	• II. Overview of linguistic resources
December 2013	• II. Overview of linguistic resources
January 2014	• III. Topological Relations
February 2014	• IV. Motion
March 2014	• IV. Motion
April 2014	• V. Frames of Reference
May 2014	• VI. Metaphorical extension
June 2014	• VII. Conclusion
July 2014	• Revisions
August 2014	• Submit

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