Focus in Ktunaxa

Word order and prosody

by

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Abstract

This thesis is about the linguistic expression of focus in Ktunaxa. It describes forms for expressing focus using word order and prosody, and describes the function of several focus-sensitive operators in the language. The methodologies used to examine these topics are respectively i) an experiment in which Ktunaxa speakers answer questions about pictures, and ii) classical fieldwork with a fluent Ktunaxa speaker.

These methodologies enable different types of research into focus. The experimental data speaks to the *form* of focus in Ktunaxa; assuming that answers to questions require the expression of focus, unscripted answers provide insight into *how* Ktunaxa speakers highlight information in an utterance (i.e. focus-mark the relevant constituents). Meanwhile, the classical fieldwork speaks to the *functioning* of a set of focus-sensitive operators in Ktunaxa; these operators are known to be sensitive to context, but their precise semantics have not been described before.

Several theories underlie this project: first, the tradition of Chomskyan generative linguistics provides a framework for describing linguistic structures and relationships; second, the theory of Alternative Semantics (Rooth, 1992, i.a.) formalizes focus as a way of invoking one particular member of a set of alternatives; and thirdly, the autosegmental metrical theory of intonational phonology (Ladd, 2008, i.a.), maps prosodic components (pitch accents, lengthening, and stress) onto phonological components (syllables and words).

The key findings are as follows:

1. Ktunaxa answers have a default word order of Subject-Verb-Object, contrary to patterns emerging in texts;

2. Word order changes relative to the type of question asked: foci are slightly more likely to be sentence-initial;

3. Ktunaxa employs prosody to mark focus in answers: foci are louder and higher in pitch;

4. Some focus-sensitive operators also trigger prosodic cues in their associates.

Further work is needed to fully describe Ktunaxa prosody, and to confirm whether these patterns hold under other experimental conditions, for different types of focus, and for constituents other than nominals. Nevertheless, this study contributes to the documentation of Ktunaxa, and more generally expands the knowledge of how focus is expressed cross-linguistically, particularly in the languages of the Pacific Northwest.

Preface

This dissertation is an original intellectual product of the author, E. K. McClay. The linguistic fieldwork reported in Chapters 2-5 was covered by UBC Ethics Certificate number H1502161.

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Glossary

Glossing is based on work by Morgan (1991) and Mast (1988).

1.SBJ   First person subject (proclitic), *hu, hun.*

1.PL.SBJ First person plural subject (suffix), *-nała.*

2.SBJ   Second person subject (proclitic), *hin.*

2.INDP   Second person independent pronoun, *ninku.*

1.OBJ   First person object (suffix), *-ap.*

2.OBJ   Second person object (suffix), *-nis.*

1.POSS   First person possessive, *ka.*

2.POSS   Second person possessive (suffix), *-ṅis.*

3.POSS   Third person possessive (suffix), *-ʔis.*

ACC   Accusative case, used only in Hungarian example.

ADV   Adverbializer (suffix), *-ił.*

COMP   Complementizer, *k, ki-.*

DEF   Definite, used only in Gùrùntùm example.

DEM   Demonstrative, *niʔ, niʔi, ʔin, naʔ.*

DIM   Diminutive (suffix), *-nana.*

EVID	Indirect evidential, *pał.*
FOC	Focus, used only in Gùrùntùm examples.
FUT	Future, *¢.*
HAB	Habitual, *ʔat.*
IND	Indicative (suffix), *-ni, -i.*
INDF.SBJ	Indefinite subject, (suffix), *-yam.*
INV	Inverse (suffix), *-ap.*
ITER	Iterative (preverb), *ła·t, ła·tił.*
MOD	Modal, *xał.*
NEG	Negation, *qa, ka.*
OBV	Obviative (suffix), *-s, -is.*
PASS	Passive (suffix), *-ił.*
PL	Plural (suffix), *-niṅtik.*
PROG	Progressive (preverb), *sił, skikił, sakił.*
PST	Past tense, *ma, m-.*
RECP	Reciprocal (suffix), *-nam.*
REL	Relativizer, used only in Gùrùntùm examples.
SBJ.FOC	Subject focus, *isn, isnił.*
SG	Singular, used only in Gùrùntùm example.
TEMP	Temporal marker (particle), *taxa, taxas.*
TR	Transitive (suffix), *-t.*
WH	Wh-question particle or prefix, *ka, ka·, a·-.*

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First and foremost, I would like to thank Violet Birdstone for the immense patience and generosity that she exhibits in sharing her language with me—she has been an incredible consultant, collaborator, and support throughout my Master's degree. My gratitude also goes out to the Ktunaxa knowledge holders who I met with and learned from while conducting this research. Listed alphabetically, they are: Dorothy Alpine, Herman Alpine, Laura Birdstone, Juanita Eugene, Elizabeth Ignatius, Alfred Joseph, Mary Maseelah, Sophie Pierre, and Katherine Shotanana. Every one of them was generous with their time and their invaluable knowledge of Ktunaxa, and this project could never have happened without them—hu sukiłq̓ukni.

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Chapter 1

Introduction and background

1.1 Introduction

This thesis explores the expression of focus in Ktunaxa. The majority of the thesis is devoted to describing how prosody and word order are used to indicate focus in answering questions (that is, the *form* of focus within the context of an experiment). An additional section investigates the *functioning* of several focus-sensitive operators, examining the sorts of constituents they may associate with, and giving a limited summary of their syntactic scope.

The project grew out of fieldwork sessions with Violet Birdstone and other Ktunaxa speakers, during which I began to develop an interest in how to ask and answer questions in Ktunaxa in ways that sound natural and conversational. The topic is important from both a linguistic perspective and from the perspective of someone wishing to learn more about making fluent conversation in Ktunaxa. Linguistically, much of the research about focus has been conducted on languages with millions of speakers (particularly English, German, Hungarian, Italian, Catalan, and Spanish); the field is beginning to include insights from a more diverse array of languages, and has much to gain from learning how broadly its theories may be applied. From a language-learner's perspective, knowing how to answer questions in a natural-sounding way is crucial; while the experimental results may seem somewhat abstract, the generalizations are all things that can be employed

in learning, and are summed up accessibly in Appendix C.

The central question driving this thesis is *how do prosody and word order interact with focus in Ktunaxa, specifically within the context of answering questions*? To address this question, I conducted an experiment designed to elicit the relevant data, an approach that is becoming increasingly popular in recent years as more and more field linguists add experimental facets to their investigations of understudied languages (e.g. Caldecott, 2009; Calhoun, 2015; Hamilton, 2014; Koch, 2008; Littell, 2016; Zerbian, 2006).

In creating the stimuli for this particular experiment, a secondary question became relevant: *what is the function of certain focus-sensitive particles*? Answers to this question came from original linguistic fieldwork with my primary consultant, Violet Birdstone. We sought to describe the distribution of several focus-sensitive particles, reporting on where they may and may not appear, what they may and may not associate with, and what implications and presuppositions (if any) they carry. Results of this preliminary investigation are given in Chapter 5.

1.2   Organization

The remainder of this chapter provides background for the relevant topics of this thesis, namely the Ktunaxa language, the term 'focus', and the study of prosody. After that, Chapter 2 details the methodology of the experiment conducted, Chapter 3 reports on the results obtained, and Chapter 4 discusses these findings. In Chapter 5, I briefly describe several focus-sensitive operators in Ktunaxa, which contributes to documentation of the language as there is no current work that explores them in any depth. (It does not aim to give a comprehensive investigation of these operators, but rather is meant to share the insights that I have gained in conducting the experiment that constitutes the main part of this research.) Finally, Chapter 6 concludes the main body of the thesis, summarizing the work undertaken and the major contributions offered by it.

There are also three appendices to this work: Appendix A provides the complete set of experimental stimuli used in the experiment, Appendix B

shares selected insights from consenting participants' language background forms, and Appendix C provides a plain English version of the findings of this thesis.

1.3   Background: Ktunaxa

Ktunaxa (also known as 'Ksanka,' 'Kootenay,' 'Kutenai,' and similar) is accepted to be a linguistic isolate, not related to any other languages (Dryer, 1991, p. 184), though it shares some grammatical features with its Algonquian neighbours to the east (Dryer, 1992) and some phonological features with its Salish and other Pacific Northwest neighbours to the west (Morgan, 1991). Ktunaxa is the language of the Ktunaxa people, a group whose traditional territory is located in the Rocky Mountains and the Prairies, spanning approximately 70,000 square kilometres of southeastern British Columbia, southwestern Alberta, western Montana, and parts of Washington and Idaho (First People's Heritage Language and Culture Council, 2016). According to several surveys (from 2009, 2014, and 2015), of the 1067 Ktunaxa people in Canada, approximately 29 of them are native, fluent speakers of the Ktunaxa language; an additional 110 identified themselves as 'understanding/speaking somewhat', and a further 238 categorize themselves as 'learning speakers' (First People's Heritage Language and Culture Council, 2016). These numbers are small enough for the language to be considered moribund by Ethnologue (M. Paul Lewis, 2016); they present a strong case for researching the language now, and making the resulting findings and resources available to speakers and learners.

In Canada, there are four Ktunaxa bands that together form the Ktunaxa Nation: my main consultant and the five speakers who participated in the thesis experiment were all from the largest of these bands, the ʔaq̓am First Nation located near Cranbrook, BC. The other Canadian bands are the ʔakisq̓nuk First Nation, the ʔakink̓umłasnuqłiʔit (Tobacco Plains Indian Band), and Yaqan Nukiy (Lower Kootenay Band).

1.3.1 Linguistic treatments of Ktunaxa

There is a small body of linguistic research focusing on Ktunaxa. The oldest extant work is an 1894 grammar written in Latin by Jesuit missionary Philippo Canestrelli, which was published in its incomplete form with notes by Franz Boas thirty years later (Canestrelli, 1926). Boas described it as "not represent[ing] adequately the characteristics of Kutenai," saying also that "[i]t shares with older grammars the feature that it is modelled on Latin grammar instead of being an analytical development of Kutenai itself." (Boas, 1926, p. 1).

Boas himself conducted some fieldwork on the language, collecting texts (Boas, 1918) and writing brief linguistic descriptions of the language (Boas, 1919, 1926). The next academic who published works about the Ktunaxa language was Paul L. Garvin; he conducted fieldwork in British Columbia and northern Idaho, and published many short articles (Garvin, 1947a, 1948a, 1948b, 1948c, 1951) detailing the findings from his doctoral research (Garvin, 1947b). At least one of these inspired another scholar to further research the data Garvin had presented, writing a phonological analysis of Ktunaxa syllable structure (Haugen, 1956). Garvin also published two collections of Ktunaxa conversations and stories (Garvin, 1953, 1954).

Into the 1950's and 60's, there was a period of time when little linguistic fieldwork was carried out on the language; I believe this was a consequence of the residential schooling system. At this point in time, residential schools had been operating in Ktunaxa territory for several generations (the Canadian government had established the region's main residential school, St. Eugene Mission, in 1910). The schools' abusive policies of punishing students for speaking their language made the prospect of speaking Indigenous languages to others unappealing at best. The St. Eugene Mission only ended operations in 1970, after decades of mistreatment that ensured that fewer and fewer Ktunaxa people were speaking their ancestral language.[1]

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[1] For first-hand testimonials and descriptions of life at the mission, please consult *Survivors of the red brick school* (Kla-How-Ya Communications Firm & Baptiste, 2001), a film made by several survivors before the mission was renovated to create the (Native-owned) St. Eugene Golf Resort & Casino.

In more recent years, several other linguists began working on the language, using either independent fieldwork or analysis of existing texts. In the former category, Lawrence Morgan conducted fieldwork with Elizabeth Gravelle and others during the 1970-80's for his doctoral dissertation, the revised, unpublished version of which is referred to here (Morgan, 1991). More scholars have explored the language through textual analysis. Susan J. Mast wrote her Master's thesis exploring certain aspects of Ktunaxa morphology from Boas (1918) (Mast, 1988). More recently still, Matthew S. Dryer has analysed various discursive and morphosyntactic properties of Ktunaxa using a collection of texts (Dryer, 1991, 1992, 1999, 2006), and Philip W. Davis has examined semantic voice and roles in Ktunaxa, also based on texts (Davis, 2016).[2]

Finally, in my own immediate context, there is a small cohort of researchers at the University of British Columbia who have been learning about Ktunaxa from 2010 onwards. This cohort sprang from two Linguistic Field Methods courses, in 2010 and 2015, which Dr.s Martina Wiltschko and Strang Burton co-taught with Ktunaxa speaker and ʔaq̓am community member Violet Birdstone, and has resulted in a small but growing number of published linguistic works on Ktunaxa (e.g. Guntly, 2014; Laturnus, 2011; McClay & Birdstone, 2015).

1.3.2 Phonetics and phonology of Ktunaxa

The facts of Ktunaxa phonology that are most relevant to this thesis have to do with the nature of stress and pitch-bearing units (vowels and other sonorants). Based on findings from previous work, I assume that there are word "contours" with final or penultimate stress (Garvin, 1948c, p. 37). The definition of a 'contour' is comparable to that of a phonological word; the present analysis does not explore the intonational phonology of Ktunaxa to the point of describing different levels of phonological phrasing in the

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[2]In this last work, Davis (2016, p. 1313) provides a call to research that neatly summarizes the central project of this thesis: "None of those who have collected primary data on Kutenai has—as far as I can determine—discussed FOCUS as such. None has described how a *wh*-question is to be answered, and *wh*-questions themselves are mentioned only in passing."

language, so this assumption is left as it stands. Two correlates of word- (or phrase-) level stress in Ktunaxa are pitch and intensity, which are higher in stressed syllables than unstressed ones (Morgan, 1991, p. 77).

Ktunaxa vowels have contrastive length, though impressionistically vowel length does not carry a large functional load in the language: there are few minimal pairs. Morgan states that the majority of long vowels are allophonic, and "[t]he deeper one goes in Kutenai phonology the fewer instances there are of long vowels, until in the most abstract representations there are almost no remaining examples" (Morgan, 1991, p. 22). Nonetheless, there are some instances of words which contrast only in the length of their vowels, such as (1) from Morgan (1991, p. 30), and thus it bears mentioning.

(1) a. ʔa·ɬi 'scraper (made of antler).'

     b. ʔaɬi 'to be big around, thick in diameter.'

Additionally, in the interests of having examples be pronounceable to those who have never heard Ktunaxa before, Table 1.1 shows certain aspects of the Ktunaxa community orthography used in this thesis, matching characters to their International Phonetic Alphabet (IPA) equivalents. For single segments, <¢> represents the voiceless alveolar affricate /t͡s/, <ɬ> represents the voiceless lateral fricative /ɬ/, and <q> is the voiceless uvular stop /q/. Glottalized resonants and glides are indicated with an apostrophe, as in <ṁ, ṅ, ẏ, ẇ>; of these, <ṅ> has an extremely variable pronunciation, and is sometimes not audible at all. Ejectives are also indicated with an apostrophe (as in <q̇, ¢̇>, etc.), and long vowels are followed by a dot (as in <a·, i·>, etc.).

Note also that the vowel correspondences are not a simple mapping from IPA to the orthography. The orthography utilizes four vowel symbols: <a, i, u, o>, but according to the literature, there are phonemically three vowels (high front /i/, high back /u/, low central /a/). Phonetic realizations of these vowels can vary in tenseness/laxness and centralization (Morgan, 1991, pp. 16-18). Mast (1988) analyses *Kutenai Tales* (Boas, 1918) and provides the vowel correspondences in Table 1.2.

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Table 1.1: Ktunaxa orthography guide

Character	IPA equivalent
<¢>	/t͡s/
<ł>	/ɬ/
<a·, i·>, etc.	/aː, iː/, etc.
<q̇, ¢̓>, etc.	/q', t͡s'/, etc.

Table 1.2: Ktunaxa phoneme/allophone correspondences from Mast 1988

Phonemes	Allophones
/i/	[i, ɪ, e, eː, ʋ, e͡i]
/u/	[u, ʋ, o, oː, uː, o͡u]
/a/	[a, aː]

The phonological rules and processes governing the pronunciation of different allophones in Ktunaxa have not been laid out; that task is left to future work.

1.3.3 Syntax and morphology of Ktunaxa

This thesis does not require a deep knowledge of the morphology of Ktunaxa; for further reading on the details of the language's morphological system, readers are directed to Mast (1988), Morgan (1991), and Dryer (1991), as well as forthcoming work from Anne Bertrand.

The syntax of the language is also understudied. With the exception of Garvin (1947b) and Morgan (1991), the majority of work in this area has been conducted upon texts rather than through fieldwork; corpus linguistics clearly contributes greatly to our knowledge of language, but the absence of speaker judgments about sentential minimal pairs limits the amount of syntactic research that can be conducted.

In terms of word order, Dryer (1991) states that Ktunaxa "allows some freedom of order [... but] is verb-initial in the sense that nominals normally follow the verb and the most common order in direct clauses is VOS." (Dryer,

1991, pg. 186). Nonetheless, a variety of word orders are attested, the most frequent of which are given in examples adapted from Morgan (1991, p.397–400) in (2) below.

(2) a. Verb-Object-Subject:

ʔat	ɫa·tiɫ	mitxni	tuq̓¢amnas	niʔ	ni¢tahaɫnananiṅtik[...]
ʔat	ɫa·t-iɫ	mitx-ni	tuq̓¢amna-s	niʔ	ni¢tahaɫ-nana-niṅtik
HAB	ITER-ADV	shoot-IND	small.game-OBV	DEM	boy-DIM-PL

'The boys would shoot the small game...'

b. Verb-Subject-Object:

Qakiɫni	niʔ	tiɫnamu	xaʔɬ¢inʔis[...]
qakiɫ-ni	niʔ	tiɫnamu	xaʔɬ¢in-ʔis
say-IND	DEM	old.woman	dog-3.POSS

'The old woman said to her dog...'

c. Subject-Verb-Object:[3]

Taxas	niʔ	tiɫnamu	¢xakiɫ	su·kini	ʔa·kitɫaʔisis[...]
taxas	niʔ	tiɫnamu	¢xak-iɫ	su·-ki-ni	ʔa·kitɫa-ʔis-is
then	DEM	old.woman	begin-ADV	good-by.hand-IND	house-3.POSS-OBV

'Then the old woman began fixing up the lodge...'

From these data, we can conclude that word order alone does not show which argument is the subject and which the object. Also, though examples with the various word orders in (2) are attested, arguments are often elided when they are inferrable from context. Speakers therefore rely on morphological cues to indicate what relationship the nouns have to the predicates in a given sentence.

The two main features that disambiguate sentences are the *proximate/obviative* contrast, and the *direct/inverse* system (Dryer, 1991). As in Algonquian languages (Hockett, 1966, et seq.), there is an obviation system

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[3]The original sentence also included benefactive object *ɫkamukistakis* '(for) the two children' excluded in this example, which followed the direct object *ʔa·kitɫaʔisis*.

which differentiates between 'proximate' third person arguments and 'obviative' ones, where the latter are generally interpreted as less central to the discourse in some way. Some cross-linguistic patterns show that humans are more likely to be proximate than non-humans, and animate entities are also more likely to be proximate than inanimate ones (Aissen, 1997, p. 714). In Ktunaxa, obviation appears as a suffix *-s* on the "less central" noun, and any determiners or demonstratives associated with the noun also have this obviative *-s* suffix.

For verbs with two third-person arguments (such as 'see' in 'The girl saw the boy'), the Ktunaxa direct/inverse system then shows which nominal is the subject of the verb, and which is the object. 'Direct' verbs have proximate subjects and obviative objects, while 'inverse' verbs (with a suffix *-ap(s)*) have obviative subjects and proximate objects. In this thesis, all the verbs examined are in the direct voice unless otherwise noted.

While the twin subjects of obviation and inverse in Ktunaxa have received some analytical linguistic attention (Dryer, 1992; Dryer, 1994, i.a.), very little research has investigated other aspects of Ktunaxa sentential syntax. McClay and Birdstone (2015) examine *wh*-movement in Ktunaxa content questions, but other than that, no works to date have been put forward that explore the consequences of Ktunaxa's flexible word order, nor the structures behind it; very little is known about constituency in the language in general.

The final piece of morphosyntax that will be useful for readers to have a grasp of is the complementizer *k*, which may also surface as *ki*. This morpheme is used for embedding clauses, as in (3a)-(3c), forming questions, as in (3d) and (3e), and forming nominalisations, as in (3f).

(3) a. Hu   ʔitsknałaʔni   qała **k**   ¢akuna.
        hu   ʔitsk-nała-ni   qała k   ¢akuna
        1.SBJ seek-1.PL.SBJ-IND who COMP short

    'We are looking for someone who is short.'

b. Qaki?ni Ȼan **k** ?umaȼ Małis.

qaki?-ni Ȼan k ?umaȼ Małi-s

say-IND John COMP laugh Mary-OBV

John said that Mary laughed.

c. Ni?i haqałpałni?nam **k** yawkał ?itqauxaqa ?aqłsmaknik

ni?i haqałpałni?nam k yawkał ?itqau-xaqa ?aqłsmaknik

DEM story COMP on.how gather-together people

sił su?kni.

sił su?k-ni

PROG good-IND

'The story of how the people gathered together is good.'

d. **Kin** ȼ haqałpałni?

k-hin ȼ haqałpałni

COMP-2.SBJ FUT storytell

'Are you going to tell a story?'

e. Qapsin **kin** ȼ haqałpałni?tit?

qapsin k-hin ȼ haqałpałni-ti-t

what COMP-2.SBJ FUT storytell-?-TR

'What story are you going to be telling?'

f. **ki?ik**

ki-?ik

COMP-eat

'food'

In the first trio above, (3a)-(3c), the complementizer serves to embed three types of subordinate clause: a restrictive relative clause, a complement of a verb of speaking, and a sentential complement to a noun, respectively. Note that in (3a), *qała* 'who/someone' is an indeterminate pronoun serving as the object of *?itsknała?ni*; it is the head of the relative clause, not (as the

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English translation might make it seem) the complementizer introducing it. The next two examples show a yes/no question (3d) and a *wh*-question (3e), both of which use the *k* complementizer. The final example above, (3f), is an example of a common nominalization formed from a non-finite verb and a *k* prefix. In each of these cases, all verbs embedded under the *k* lack indicative morphology.

Cleft structures also make use of this complementizer, as seen in (4) and (5), and can be employed to express focus in Ktunaxa.

(4) Qała **ki**ʔin   **k**in   wukqa?
     qała ki-ʔin   k-hin   wukqa
     who COMP-be COMP-2.SBJ find

     '[Who]$_F$ is it you found?'

(5) ʔini   niʔi titqaɬ **k**wukqnap.
     ʔin-i   niʔi titqaɬ k-wukq-n-ap
     be-IND   DEM   man   COMP-find-1.OBJ

     'It was [the man]$_F$ who found me.'

In (4), we see a clefted question, where the pivot is a *wh*-word *qała* 'who'; (5) is a declarative sentence in the form of a cleft, the pivot of which is the nominal *niʔi titqaɬ* 'the man.' The two are joined by the copula, *ʔini* '(it) is.' Cleft sentences will be discussed in Chapters 3, 4, and 5.

1.4   Background: Prosody

This section covers the linguistic variable of *prosody*, giving some examples of prosodic variation in English, the measurable physical phenomena that together make up prosodic variables, as well as how these phenomena are formalized in phonological terms, and how these phonological variables may relate to conversational and semantic contexts. It is split into two subsections: defining prosody (§1.4.1), and intonational phonology (§1.4.2).

1.4.1 Defining prosody

Descriptions of an utterance's prosody specify information about particular subconstituents' *loudness*, their *pitch*, and their *duration*, as well as the location and duration of any *pauses*. Prosody may be thought of as the parts of speaking that don't normally get transcribed in IPA; in written English, prosodic cues often appear as punctuation (such as the 'interrobang' in 6a) or special typefaces (such as the italics in 6b).

(6)   a.   The Oilers made the playoffs?! (vs. The Oilers made the playoffs.)

      b.   I can't believe the *Oilers* made the playoffs this year.
         (cf. I can't believe the Oilers made the playoffs *this* year.)

In (6a) above, the final punctuation indicates to the reader that the sentence should end in an extreme rise in pitch, and possibly in intensity.[4] The italicization in (6b) indicates that the word *Oilers* should be read with certain prosodic characteristics: namely, it should have a high pitch accent (higher-pitched compared to its neighbours), be slightly louder than its neighbours, and have a comparatively long duration. Accents like this one are generally indicated in the literature by using small caps, as in (7) below. This convention of writing accented words in small caps will be followed in this work.

(7)   I can't believe the OILERS made the playoffs this year.

The measures this thesis reports on are intensity (measured in decibels), duration (measured in seconds), and pitch (measured in hertz as fundamental frequency, the rate of vibration of the vocal folds during a voiced sound, as well as in semitones, log-transformed to be more representative of hearers' auditory spaces). All of these measures are relative to a standard within

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[4]The reader is also likely to place a high pitch accent on the word *Oilers* or the word *playoffs*, or both, despite this emphasis not being indicated in the written form. This pitch accent may be accompanied by a pause after the word bearing it, contrasting with (6b) in which there is no distinct pause following the pitch accented word *Oilers*. The variation between when pitch accents are marked in text is one way in which orthographic cues give incomplete information—they also do not systematically mark whether the pitch accent is high or low, and whether phrase-level pitch should rise or fall.

each unique speaker. Each speaker has their own comfortable pitch range, their own rate of speech, and so forth. For that reason, the investigation of prosody often normalizes measures within speakers; the process of normalization is what allows researchers to describe an individual measurement (e.g. 'the maximum pitch of the word *Malyan* in this recording was 130Hz') with respect for the context of that particular speaker (e.g. 'this speaker's normal speaking range is from 80–135Hz; therefore this word was quite high for them').

1.4.2 Intonational phonology

The study of prosody and how it interacts with meaning falls under the scope of *intonational phonology*. Intonational phonologists have taken the phonetic variables mentioned in the previous section, and made observations about how they pattern in a given language so that these variables may be described in terms of unified units that "attach" to linguistic material (e.g. pitch accents that attach to syllables, or boundary tones that attach to phrases). Most current work in prosody follows the tradition of Autosegmental Metrical Theory (Goldsmith, 1976), and formalizes this as a process that maps pitch accents and contours to particular phonological anchors (i.e. stressed syllables). Silverman et al. (1992) defines a system of Tones and Break Indices (ToBI) that provides a series of prosodic features and how they may be annotated in English. These prosodic features are given in Table 1.3, all definitions and examples within which are courtesy of the Standard American English ToBI presented through the Massachusetts Institute of Technology's OpenCourseWares (Veilleux, Shattuck-Hufnagel, & Brugos, 2006).

There are some linguistic features that are linked to the presence or absence of these ToBI "ingredients" in English. For instance, phonological content that has been mentioned before is likely to be deaccented under certain conditions (that is, pronounced with reduced pitch accents), but material that is new to the conversation will receive pitch accents in some more-or-less conventional way (Chafe, 1976; Gussenhoven, 1984, i.a.). For

Table 1.3: ToBI labels

Label	Description
H*	high pitch accent
L*	low pitch accent
H-	high phrase tone
L-	low phrase tone
H%	high [final] boundary tone
L%	low [final] boundary tone
0	break index for erased word boundary
1	break index for typical inter-word disjuncture within a phrase
2	break index for mismatched inter-word disjuncture within a phrase
3	break index for end of an intermediate phrase
4	break index for end of an intonational phrase

instance, the underlined text in (8a) below is likely to be deaccented in that particular context, while the same material spoken in (8b) would normally contain at least one accent (such as the one indicated by small caps).

(8) a. A: I think the Oilers are a GREAT TEAM.
        B: Yeah, and thank GOODNESS they're a great team, because the league is getting tougher and tougher.

    b. A: Gosh, the Oilers are really tearing it up this year.
        B: Yeah, and thank goodness they're a great TEAM, because their management is abysmal.

Intonational phonologists aim to describe the conditions under which pitch accents of different types occur, predicting the difference between (8a) and (8b). Note that this particular distinction is not truth-conditional–the two sentences contribute the same semantic content regardless of prosody. However, there are some prosodic contours that may influence the semantic interpretation of sentences, and intonational phonologists also explore the particular semantic contributions and consequences of these different types

of prosody. For instance, the example in (9) below, adapted from Constant (2012, p. 419), demonstrates that the scope of quantifiers may change relative to the type of prosody in the sentence.

(9) a.   H*   L- L%
       ALL my friends didn't come to my party.
                    (...and I was sad that nobody came.)
       All ($\forall$) scopes over *not* ($\neg$).

    b.   L*+H   L- H%
       ALL my friends didn't come to my party.
                    (...but the ones who did had a great time.)
       Not ($\neg$) scopes over *all* ($\forall$).

With the high pitch accent on *all* and the falling boundary tone in (9a), the sentence is interpreted with the quantifiers having surface scope; it could be paraphrased as "for all of my friends, it is true that they didn't come to my party." However, with the L*+H pitch accent on *all* and the rising boundary tone in (9b), the sentence is interpreted with the reverse scope, and may be paraphrased as "it is not true that all of my friends came to my party."

The contrast between (9a) and (9b) is an example of a truth-conditional contrast derived by prosody. The question of whether Ktunaxa has prosodic contours that bear truth-conditional content remains an open one; this thesis focuses on non-truth-conditional prosodic distinctions in Ktunaxa, comparable to the English in (8).

1.5 Background: Focus

This section is devoted to the linguistic phenomenon of *focus*, giving a basic introduction to the concepts of focus and contextualising the work on Ktunaxa presented here for readers who have little familiarity with the phenomena involved. It is split into several subsections: defining focus (§1.5.1), types of focus (§1.5.2), and expressing focus (§1.5.3).

1.5.1 Defining focus

The notion of focus is a way for linguists to formalize information being 'highlighted' in a conversation; it is often described in contrast to *background* information, which (because it is common knowledge, or non-controversial, or not-at-issue) is not marked as being worth special attention. Focus is a semantic phenomenon, specifically belonging to the information structure branch of semantics, which addresses how the flow of information is packaged in discourse.[5]

There are a number of different models used to analyse focus (e.g., Beaver & Clark, 2008; Kratzer, 1991; Krifka, 1992, 2006; Rooth, 1992; Schwarzschild, 1999; Stechow, 1981); this thesis assumes the model proposed in Littell (2016), which follows in the lines of Rooth (1992)'s Alternative Semantics, with reference as well to Kratzer (1991). That said, this work doesn't involve tremendous depth in terms of semantic theory and could have adopted one of the other theories of focus, as long as the following two features were captured by the theory. First is the notion of congruence, which states that answers must 'match' the question in some way (to be defined in more detail below). Second, the optimal model must include some ability to predict/describe a difference between *wh*-focus and corrective focus (to be defined in more detail again below).

The model of Alternative Semantics considers focus as a way to signal the *existence of alternatives* to the proposition a speaker has uttered (Rooth, 1985, i.a.). For instance, when a speaker utters the sentence in (10a) with an accent on the word *Mary*, the speaker raises the possibility that others may have brought the pie, but dismisses those alternative pie-bringers. This set of alternative pie-bringers in this particular example is illustrated in (10b).

(10) a. MARY brought the pie.

     b. {Martin, Pat, Jamie, Francis, Mary, …}

---

[5]The goals of researchers studying information structure include things like "what parts of a sentence are more interesting/important to conversational participants than other parts?"; "in a given language, how do interlocutors direct each other's attention to those interesting/important parts?"; "how do speakers know what it is that they're talking about?"; and "how do they change what it is they're talking about?"

By saying (10a), the speaker implies that of the whole list in (10b), the only one who brought the pie is Mary. Mary could also have brought things in addition to the pie, but the speaker doesn't weigh in on those possibilities. However, if the speaker says "Mary brought the PIE," the material in focus becomes *pie*, and now the alternate entities raised by the speaker are not pie-bringers, but rather things-brought-by-Mary. These lists of alternate entities are known as 'alternative sets' or 'sets of alternatives,' and they may be invoked by specific intonations (as in the example above), focus-sensitive particles (like 'only,' which singles out one associate among the alternative set and excludes all others), and focus-sensitive structures (like cleft sentences, which function a lot like 'only').

1.5.2   Types of focus

There are many ways to elicit focus constructions: Koch (2008) and Littell (2016) provide several methodologies for eliciting focus in linguistic fieldwork, including scripted dialogues, a 'spot the differences' game, storyboarding (see Burton & Matthewson, 2015), and the 'classic' contextual elicitation used in linguistic fieldwork. The key aspect in eliciting focus constructions is to provide an explicit, contextually-given set of alternatives (often with some contrast to be drawn between them), and then to elicit a proposition which is only true of one of those alternatives.

There are three types of focus relevant to the experiment conducted. These types of focus are 'sentence focus,' 'wh-focus,' and 'corrective/contrastive focus.' The two latter types of focus may sometimes be grouped together as 'narrow focus,' meaning that the target for focus is a smaller constituent (for instance, a determiner phrase or a prepositional phrase) than a clause; sentence focus may also be referred to as 'broad focus,' since the target for focus is intuitively large. However, this division is not necessarily reliable, as there are *wh*-questions such as *why* questions that evoke broad, clause-sized responses. For the purposes of the present project, the only terms used are 'corrective focus', 'wh-focus', and 'broad focus'—the former two are each used for focus at the DP level, and the latter for focus

at the clause level, responding to the question 'What are they (each) doing?'.

(11) Narrow focus vs. broad focus

  a. Response with narrow focus on the subject.
      Q: Who brought the cake?/Did Martin bring the cake?
      A:

```
                        TP
              ┌──────────┴──────────┐
          [DP]_F                    TP
            △              ┌────────┴────────┐
          MARY             T                VP
                           │          ┌──────┴──────┐
                         PAST         V            DP
                                      │             △
                                   brought      the cake
```
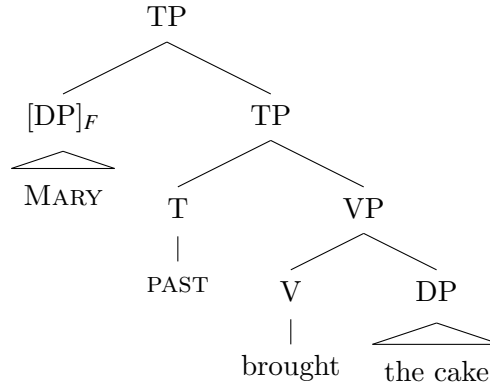
  b. Response with broad focus on the whole sentence.
      Q: What happened with the party last night?
      A:

```
                        [TP]_F
              ┌──────────┴──────────┐
           DP                       TP
            △              ┌────────┴────────┐
          Mary             T                VP
                           │          ┌──────┴──────┐
                         PAST         V            DP
                                      │             △
                                   brought      the CAKE
```
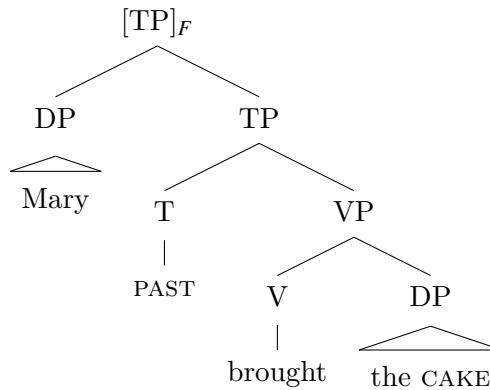
In (11a), the context questions target specifically the subject DP constituent; the response given will have focus (and a pitch accent) on only that particular noun. The effect of this focus may be paraphrased as "Among all possible alternative cake-bringers, [Mary]$_F$ is the person who brought the cake." Meanwhile, in (11b) the context question targets the entire event of "whatever happened with the party last night." Accordingly, the response has focus at the sentence-level, and normal English stress rules place

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a pitch accent on the final word (see e.g. E. O. Selkirk, 1995). The effect of this particular focus may be paraphrased as "Among all possible alternative party-related happenings, the thing that happened last night was that Mary brought the cake."

The following sections expand on and exemplify the three relevant types of focus: sentence focus, *wh*-focus, and corrective focus. Please note also that the element in focus will be enclosed by square brackets followed by a subscript *F*, following conventions established in the literature.

Sentence focus

As was alluded to earlier, sentence focus presents a set of alternatives that may vary along subjects, verbs, and objects all together. The example (12) below gives one example of a question-answer pair employing sentential focus.

(12)   Q: What happens in the book you're reading?
       A: [Two siblings travel through time and space to rescue their father.]$_F$

A question as general as "What's happening?" doesn't presuppose anything of its context, other than that there are events that are unfolding. To answer it, a cooperative interlocutor generally needs to provide a full sentence.

However, not every language has an unmarked question that targets a focus this broad. Interestingly, Ktunaxa seems to require a more specific (narrower) focus. My primary consultant informed me that there is no easy way to ask 'What's going on/happening?' in Ktunaxa; when she consulted her personal network of other Ktunaxa speakers, they had a similar intuition.

For this reason, the present work uses as a sentence-focus question *Ka·s k skikiɬ a·qannikit na ǩituq̓ɬiɬqnamnam?* 'What are they doing in this picture?'. The locus of focus is minimally the whole verb phrase, but may be interpreted as something larger, too, as the two volunteers in the photograph are doing different activities. Possible answers range from fragment answers such as 'They're waiting.' to very informative conjoined sentences such as 'Mary's

holding a pot of flowers, while Peter's putting his jacket on in the doorway; they're getting ready to go out.'

Wh-focus

Wh-focus is the type of focus that conditions replies to *wh*-questions such as 'who,' 'what,' 'where,' or 'when' questions. In the context of this experiment, all *wh*-questions were 'who' or 'what' ones, targeting subject or object DPs, respectively.

Thus far, I have discussed focus as crucially involving contrast. However, the contrast in a question such as 'Who brought the pie?' may not be immediately apparent, since there is no overt semantic object being contrasted against. This definitional puzzle is solved by using Hamblin semantics, in which questions themselves are represented as sets of answers (Hamblin, 1973). Consequently, the set of alternatives that allows focus to be expressed is introduced by the question itself. This property of questions being identical to sets of answers means that (13a) below is semantically equivalent to (13b), which continues until the list of contextually-salient possible pie-bringers is exhausted.

(13) a. Who brought this pie?

  b. {Martin brought this pie; Pat brought this pie; …}

That is to say, any time a person asks "Who brought this pie?", they raise the possibility of any one member of a set of different people bringing pie. To answer it, the interlocutor must single out the sentence in the (13b) set that they know to be true. This response, like the examples given in (14), will 'highlight' one pie-bringer, contrasting that person with the others raised in the discourse.

(14) a. (using a full sentence:) [Martin]$_F$ brought this pie.

  b. (using VP ellipsis:) [Martin]$_F$ did.

  c. (giving a fragment answer:) [Martin]$_F$.

This is how I assume all *wh*-focus works: the contrast is drawn between the focused element and the implicit alternatives raised by the question. The following subsection discusses how *wh*-focus can be differentiated from corrective focus (another condition in the experiment).

Corrective focus

Corrective focus is the final type of focus relevant to this experiment. In corrective focus, the speaker rejects a proposition p that is present in the discourse, and substitutes an alternative proposition q instead. Often (though not necessarily) p and q have some phonological material in common. If I mistakenly say 'Mary brought the pie,' you might correct me and say, 'No, MARTIN brought the pie,' or 'No, Mary brought the CAKE.' In this case, part of the proposition is information already overtly present in the cotext; only the words *Martin* and *cake* (respectively) receive corrective focus.

So far, this description could also apply to *wh*-focus; is there a reason to consider the two separately, or should they both be combined under the label of 'narrow' focus? I assume that there is enough of a distinction between the *wh*-focus and corrective focus that they merit separate definition and investigation. Where the difference lies is in whether the focus alternative is an open semantic variable (such as a *wh*-word) or a word with a regular semantic value (such as a noun like *Mary* or *pie*)—for corrective focus, the alternative is the latter, while for *wh*-focus, the alternatives come from the former. Romance languages distinguish systematically between presentational and contrastive focus in what I identify here as broad and corrective focus conditions (Ordóñez, 1999). The acceptability of fragment answers such as those in (15) give us some reason to believe the difference between corrective focus and other types may be relevant in English as well.[6]

(15) a. A: Who brought the pie?
          B: Martin.

      b. A: Did Mary bring the pie?
          B: (#) (No,) Martin.

---

[6]Thanks to Michael Rochemont for bringing this example to my attention.

The fragment answer in (15a) is completely natural, not needing any particular intonational acrobatics or conversational accommodation. *Martin* is the only member of the set of alternatives evoked by the question for whom it is true that he brought the pie. However, the same fragment answer given in (15b) requires at least some accommodation, and is at worst inappropriate. The word *Martin* is still a focused element and is (intended to be) contrasted against another potential pie-bringer, but this focus may not be expressed the same way as it would if it were in reply to a *wh*-question.

1.5.3 Expressing focus

If we think of focus as a type of spotlight drawing the listener's attention to a part of an utterance that contrasts with alternatives, we can discuss several different linguistic mechanisms as differences in the metaphorical lightbulb producing the light. Languages can express focus in a number of ways. Zimmermann and Onea (2011) identify three categories that focus-marking strategies can be grouped into: morphological (using particles reserved for focus), syntactic (using syntactic structures reserved for focus), and prosodic (using cues such as pitch, duration, and intensity).[7] This subsection provides some examples of each, in a variety of languages.

Morphological focus-marking

Some languages have special morphemes or particles dedicated to indicating focus. One such language is Gùrùntùm (West Chadic); in answers to *wh*-questions, the focused constituent is preceded by a marker, *á* (Hartmann & Zimmerman, 2009). The following examples in (16) and (17), quoted from Hartmann and Zimmerman (2009, pp. 5-6), demonstrate the distribution of this focus-marker in both questions and answers.

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[7]The question remains open of whether specific prosodic signals are reserved purely for focus the way that specific morphological particles are, though the English sharp, sudden rise in pitch (L+H* in ToBI annotation) has been proposed as being reserved for contrastive focus (E. Selkirk, 2002).

(16) a. Q: **Á** kwá bà wúm kwálíngálá-ì?
    FOC who PROG chew colanut-DEF

'[Who]$_F$ is chewing the colanut?'

   b. A: **Á** fúrmáyò bà wúm kwálíngálá.
    FOC fulani PROG chew colanut

'[The fulani]$_F$ is chewing colanut.'

(17) a. Q: **Á** kãã mài tí bà wúmì?
    FOC what REL 3SG PROG chew

'[What]$_F$ is he chewing?'

   b. A: Tí bà wúm-**á** kwálíngálá.
    3SG PROG chew-FOC colanut

'He is chewing [colanut]$_F$.'

In each of these examples, we see the focus-marker *á* immediately preceding the constituent in focus in that particular sentence. It is used to focus both *wh*-words as in (16a) and (17a), as well as answers to *wh*-questions as in (16b) and (17b).

Somewhat like Gùrùntùm, Ktunaxa employs morphological focus-marking. The preverbal morpheme *ʔisniɫ*, as exemplified in (18a) below, indicates subject focus (and only subject focus) in both questions and answers.

(18) a. Qała k **ʔisniɫ** ʔik kakpuḱs?
    qała k ʔisn-iɫ ʔik kakpuḱ-s
    who COMP SBJ.FOC-ADV eat pear-OBV

'[Who]$_F$ is eating a pear?'
Also translated as 'Who is it that's eating a pear?'

   b. Malyan **ʔisniɫ** ʔikni kakpuḱs. (DA)
    Malyan ʔisn-iɫ ʔik-ni kakpuḱ-s
    Malyan SBJ.FOC-ADV eat-IND pear-OBV

'[Maryan]$_F$ is eating a pear.'

Both utterances in (18a) are grammatical without *ʔisnił*, and their interpretations in those cases lack focus on the subject. Chapter 5 discusses the distribution and functionning of *ʔisnił* in more detail.

Syntactic focus-marking

Next, we turn to focus-marking in the syntax. Certain languages (such as Hungarian) have been proposed to have a syntactic position reserved for indicating exhaustive focus (Horvath, 1986; Kiss, 1998, i.a.). In the Hungarian case, there is a position immediately before the verb that may host a focused element; no additional syntactic structure is needed to indicate focus in Hungarian. An example from Balogh (2006, p.18) in (19) below shows an example of the difference between a 'neutral' Hungarian sentence and one in which the object is exhaustively focused.

(19) a. Anna fel-hítva   Emilt.
          Anna VERBAL.MODIFIER-called Emil.ACC

          'Anna called Emil.' (neutral sentence)

      b. Anna Emilt   hítva   fel.
          Anna Emil.ACC called VERBAL.MODIFIER

          'It is [Emil]$_F$ whom Anna called.'

In (19a), the pre-verbal position is occupied by a verbal modifier *fel*, while in (19b) this same position is now occupied by the focus, and the verbal modifier has been moved to a sentence-final position.

Another instance of expressing focus through syntax is the cleft construction. English, like most languages, makes use of cleft structures in order to mark focus. For instance, (20) shows an English cleft sentence. The pivot 'her coat' is the element in focus.

(20) It was [her COAT]$_F$ that Christina forgot.

English clefts invoke both existence (in this case, that Christina's coat exists) and exhaustivity (the only thing Christina forgot was her coat; she

didn't forget her hat) (Kiss, 1998, i.a.). Ktunaxa also uses cleft constructions to express focus; Chapters 3, 4, and 5 discuss Ktunaxa clefts in more detail.

The final structural reflection of focus I introduce here is focus preposing. This is the term used to describe phenomena such as in (21a), in which a contrastive focus appears sentence-initially, when in a non-focused context it would be infelicitous there.

(21)   *Context*: A and B find a pie in the shared department kitchen; A tucks into it without offering any to B.

    a.   A: You won't want any of this, you think all baked goods are gross.
        B: [PIE]$_F$, I like! I do think cake is a waste of flour, though.

    b.   A: Gosh this pie is good.
        B: # PIE, I like!

In (21a), there are salient alternatives to *pie*, namely *all baked goods* and *cake*, and the presence of these alternatives allows speaker B to prepose the word *pie*. However, in (21b), there are no such alternatives, and the utterance with *pie* preposed is awkward or infelicitous. Focus preposing also seems to be a method that Ktunaxa may use to indicate focus, a fact which will be discussed in more detail in Chapter 4.

Prosodic focus-marking

For English speakers, one of the most obvious correlates of focus is prosody. Take (22) and (23) as an example. The former is an instance of (explicitly) contrastive focus; to express to the listener that "X and not Y", the speaker is likely to say X more loudly, in a higher pitch than expected, more slowly, and with a pause after it. The latter, (23) is an indication of how a particular VP ellipsis maybe be resolved; again, the focused element (in small caps) is likely to have the hallmarks of prosodic focus-marking mentioned earlier (be louder, higher in pitch, with greater duration).

(22)   I asked for CHICKEN, not salmon.

(23) a. Brunhilda visits ALEXANDER more often than JESSICA.

b. BRUNHILDA visits Alexander more often than JESSICA.

Prosodic cues can indicate to a listener that an alternative is upcoming (as in 22), or help a listener resolve a potentially-ambiguous sentence by showing which constituents are being contrasted with each other (as in 23).

The focus-related prosodic function that this thesis relies on the most is the principle of *question-answer congruence*. (Halliday, 1967, et seq) Question-answer congruence is the formal term for a descriptive generalization demonstrated in (24). When a speaker answers a question with a complete sentence (in English, as in many other languages), they put a pitch accent (or some other form of prosodic prominence) on the constituent that was represented in the question as a variable.

(24) A: Who lent you their book?

a. CHRISTINA lent me her book.

b. # Christina lent me her BOOK.

c. # Christina lent ME her book.

In (24) above, the question asks *who*. The well-formed (a) answer places prosodic prominence on *Christina*, the new information in the response that resolves the question. The ill-formed (b) and (c) answers place prosodic prominence on information the question-asker already knew (and had just stated), thereby violating the principle of question-answer congruence and leading to some communicative awkwardness.

The experiment detailed in the following chapters assumes that a response to a question will always place focus on the variable introduced by questions (subjects for *who* questions, and objects for *what* questions). I examine the answers' subjects and objects, seeing if the type of question asked influences the pitch, intensity, and duration of the word, as well as its location in the sentence.

Chapter 2

Experimental methodology

This chapter discusses the experiment upon which the majority of this thesis is built, giving details about the participants, the stimuli, the task, the data, and the procedure that was followed.

2.1 Participants

Five native speakers of Ktunaxa at varying levels of current proficiency participated in this study. They ranged from 62 to 73 years of age, with an average age of 67.8. Four of the speakers still speak frequently ('a few times a week') and feel comfortable in the language, and the fifth is taking language classes to rekindle her knowledge of the language she had been raised speaking, but was less confident in her present fluency and language skills. Among the participants were two sisters, DA and LB, who use the language in their everyday work as a teacher and a transcriber, respectively. All participants were recruited through a community contact (the Language and Culture Coordinator for ʔaq̓am).

Participants were compensated for their time with an honorarium, and recording sessions took approximately one hour, including some discussion both before and after the main task.

2.2 Stimuli

The methodology in this thesis is modelled after the work of Sasha Calhoun. Calhoun (2015) describes an experiment in which pairs of participants see cartoons of characters performing certain activities. The participants have short dialogues about the picture prompts, asking and answering simple questions that have been semi-scripted by the researcher. That is to say, the researcher would prompt one participant, "ask who's doing this" or "ask what the boy is eating," but did not ask the question in the target language itself. The analysis was conducted upon the responses to the questions.

The main task of the present work is also a question-answering one. In brief, the stimuli for the present experiment always consisted of two pieces: a photograph of two people each performing everyday activities, and a Ktunaxa question about the picture. All stimuli (photographs and questions) are available in Appendix A.

Figure 2.1: A man drinking coffee and a woman eating a pear.

Compared to the experiment in Calhoun (2015), the stimuli are adjusted in two ways: first, the visual stimulus was not a cartoon of a single person but rather a photograph of two people, such as in Fig. 2.1. (All six photographs were taken of volunteers and used with permission.) Second, the question was pre-recorded in Ktunaxa by my Ktunaxa-speaking collabora-

tor, Violet Birdstone; this allowed participants to undertake the experiment alone, instead of requiring pairs to participate. It also minimized the amount of English present in the experimental setting, thereby reducing the possibility of cross-linguistic syntactic priming (Desmet & Declercq, 2006; Feng, Chen, Feng, & Feng, 2014; Hartsuiker, Pickering, & Veltkamp, 2004).

The questions asked of each picture stimulus fall into five categories: sentential focus, subject *wh*-focus, object *wh*-focus, subject corrective focus, and object corrective focus, as defined in Chapter 1. These questions are exemplified in Table 2.1, which gives the complete paradigm of stimulus questions for Fig. 2.1.

Focus	Ktunaxa question	English translation
Sentence	Ka·s k skikił a·qannikit na k̓ituq̓łiłqnamnam?	'What are they doing in this picture?'
Subject Wh	Qała k skikił ʔi·kuł ka·pis?	'Who is drinking coffee?'
	Qała k skikił ʔik k̓akpuk̓s?	'Who's eating a pear?'
Object Wh	Qapsins k skikił ʔi·kuł Piyał?	'What is Peter drinking?'
	Qapsins k skikił ʔik Malyan?	'What is Marianne eating?'
Subject Corrective	K skikił ʔi·kuł ka·pis Malyan?	'Is Marianne drinking coffee?'
	K skikił ʔik k̓akpuk̓s Piyał?	'Is Peter eating a pear?'
Object Corrective	K skikił ʔi·kuł a·kuq̓łiłipuks Piyał?	'Is Peter drinking beer?'
	K skikił ʔik kanuhusnanas Malyan?	'Is Marianne eating an apple?'

Table 2.1: Question prompts for all conditions of one item.

As shown in the table above, four question categories were asked of both people in the photograph. This resulted in a total of nine questions per photograph (nine questions $*$ six photographs = 54 questions in total).

2.3   Task

The participants' task was straightforward: they were asked to answer each question (in reference to each image) in as complete a sentence as was possible and appropriate. One-word fragment answers (such as 'Malyan' or 'Coffee,' short sentences that would be confusing out of context) were noted and separated from analysis.

2.4 Data

The data resulting from this experiment were WAV files of each participants' answers to these different types of questions. With 54 answers per participant and 5 participants, a total of 270 responses were recorded; some of these files were excluded for reasons detailed in chapter 3.

2.5 Procedure

Recording sessions took place in participants' workplaces, in the Elders' lounge in the Ktunaxa Kinbasket Child and Family Services building, or in the Ktunaxa Language Nest in ʔaq̓amnik̓ Education Centre. All rooms selected had the least amount of background noise and the fewest opportunities for interruption possible. Each session took approximately one hour, divided roughly into three sections: pre-experiment introductions, experiment, and post-experiment debriefing. During the introductory phase, we discussed consent, as well as what should be done with the recorded data (where it should be stored, whether it could have a second life as a teaching tool), before participants proceeded with the study.

Over the course of the experiment, stimuli were presented over a Macbook Pro (Retina, 13-inch, mid 2014) as a Microsoft Powerpoint slideshow, and all audio was played over the computer's internal speakers. It was decided to use the computer's speakers rather than headphones, despite the fact that headphones deliver stimuli with better sound quality. The advantages of speakers were logistical: if participants had questions about the audio, they could ask me knowing that I had heard it as well. All sound was recorded over a Marantz Professional PMD660 recorder, using a Countryman omnidirectional lavalier microphone (model number MEMWP4F05B). Responses were recorded as one long WAV file, from which individual responses were later extracted, transcribed, and analysed.

In the experiment, the first set of slides was the same for all participants: an introduction to the task in English, and introductions to the two 'characters' they'd be seeing. These introductions consisted of a photograph of each person and recorded Ktunaxa sentences stating 'The woman is called

Malyan. The man is called Piyał.' The introduction was played twice to ensure speakers were comfortable with identities of the characters. From that point onwards, the stimuli were shown in a randomized order unique to each participant, with certain caveats. In some cases, as with the coffee in Fig. 2.1, it is difficult to tell what exactly the object is intended to be. It is ambiguous between coffee, tea, cider, or any other hot beverage. For these cases, after stimuli were randomized, two of the stimuli slides were re-ordered a final time: the subject *wh*-question condition (e.g. 'Who is drinking coffee?') for such ambiguous objects always clarifies what the intended object is, so it was traded for whichever question was randomly placed to be the first for that photograph. This trade ensured that participants learned early in the experiment what the intended object was, and when they came to object-oriented questions they were able to answer easily.

Upon completing the main experiment, participants had the option of piloting another study with a similar structure. Three participants chose to do the second experiment, a 'Spot the Differences' task. In this experiment, participants saw two pictures that differed by one element, and answered a recorded Ktunaxa question *Qapsin kin wu·kat kiʔin a·k̓łanaqa na kiʔas kituq̓łiłq-namnam?* 'What do you see that's different between these two pictures?'. As the question did not provide any lexical material specific to the individual photographs, and many of the vocabulary items were difficult to remember out-of-the-blue, the results of that pilot experiment are not discussed here, but will be used to improve the design of a future 'Spot the Differences' experiment in Ktunaxa (not reported on in this thesis).

Finally, all participants completed a language background questionnaire. This questionnaire was eight questions long, covering some general demographic information (year of birth, year participant started speaking Ktunaxa, languages spoken by parents/guardians with each other and with the participant), as well as space for descriptions about participants' current use of Ktunaxa (how often the participant speaks it and with whom), and comments about the language and the recording session. The full text of the language background questionnaire is given in Appendix B, as well as anonymized versions of participants' responses.

Chapter 3

Results and analysis

The present chapter shares the results of the experiment outlined in Chapter 2, and provides an analysis of said results. The information is split into two primary categories: results concerning word order (§3.1) and results concerning prosody (§3.2). Two additional sections address the distribution of cleft responses (§3.3), and confounds in the design of the study (§3.4).

3.1   Word order

This section of the analysis explores whether word order can express focus in Ktunaxa on its own, without the use of additional syntactic mechanisms such as clefting. As noted in Chapter 1, prior work on Ktunaxa has established that Ktunaxa declarative clauses can accommodate a number of different word orders. All of the combinations of subject, verb, and object are attested, but not every situation is compatible with every word order.

3.1.1   Data to be interpreted

The data were recorded in this experiment as WAV files; these therefore required some processing before they were ready to be analysed for word order. The steps they underwent were as follows:

1. All responses were transcribed, and double-checked with Violet Birdstone when needed.

2. Broad focus responses were split into two clauses and coded as BF1 and BF2 (e.g. *Sakił akȼqni kanuhusnanas Malyan ȼ Piyał sakił hanmukni naqpuks.* 'Marianne is cutting an apple and Piyal is making soup.' was categorised as two clauses, the first of which was VOS and the second, SVO.) This step was in order to make word orders of responses recorded in the clause focus condition (which as a rule included two subjects, two verbs, and two objects) more comparable to those recorded in the other conditions (which generally only included one of each constituent).

3. I removed from analysis all of the following:

   - 4 instances where participants declined to answer;

   - 12 one-word fragments and 10 clefts;

   - 14 corrective focus answers that both began with *hiyi* 'yes' and confirmed the content of the question rather than correcting it;

   - 17 answers containing words and phrases in English (e.g. *Waha, skikił ȼuk̓łam-- ȼuk̓łaman-- ninku?is...* hm how do you say that? 'No, he's comb– combing– his... hm, how do you say that?').

   - 31 answers with false starts where the participant changed which word they intended to say (e.g. *Piyał qan-- s-- sakił kanaxam̓ni a·qatwumła·t?is.* 'Peter pu– is putting on his coat/clothes.'). This exclusion was motivated by the possibility that the speaker's choice of word order was affected by factors not controlled for in the experiment, such as how difficult a word was to recall.

4. Answers were coded for word order (e.g. SVO, OV, etc.); while other parts of speech (e.g. aspect markers such as *sakił*, the progressive marker, and response particles such as *waha* 'no') were labeled, the final analysis was conducted only on the S-, V-, and O-tagged words. Analysis of the entire data set will be left for future work.

A total of 270 responses were recorded (54 answers from 5 participants); upon splitting the broad focus responses, the number of tokens for analysis

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increased to a maximum of 300 possible clauses. Upon completion of the steps listed above, 224 sentences remained to be analysed; note that some utterances were excluded for multiple reasons, such as including both English words and false starts. There was a great deal of variation in word order within these 224 sentences; Table 3.1 gives several recorded responses to the same question object *wh*-question, *Qapsins k skikił ʔi·tiłłukȼu Malyan?* 'What is Marianne sewing?' (The first, a fragment, was omitted from analysis.)

Table 3.1: Variation among responses to object wh-question

Word order	Ktunaxa	English translation
O	A·qatwumłats.	A shirt.
OVS	A·qatwumłatʔis skikił itiłłukȼuʔni Malyan.	Marianne is sewing a shirt.
SVO	Malyan sakił itiłłukȼuʔni a·qatwumłats.	Marianne is sewing a shirt.
VOS	ʔi·tiłłukȼu a·qatwumłats Malyan.	Marianne is sewing a shirt.
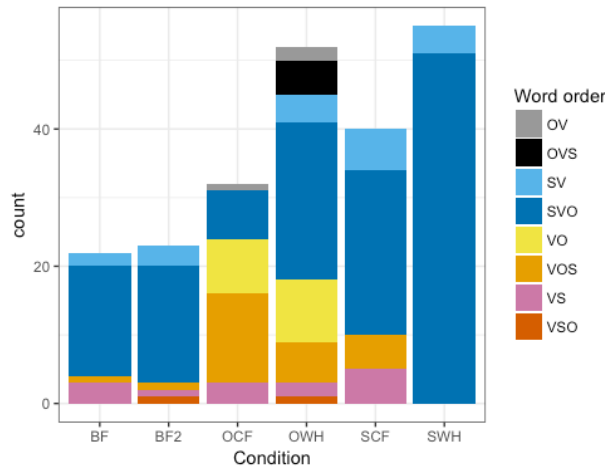
Figure 3.1: All attested word orders, by condition

While there was a great deal of variation in which word orders were possible, there was also an overwhelming tendency for sentences to be in one particular word order: SVO. As shown in Figure 3.1, SVO responses outstripped responses in all other word orders put together. This is surprising, considering previous descriptions of Ktunaxa as a VOS language with

occasional SVO alternants. This result, and its consequences for Ktunaxa syntax, is discussed in more depth in Chapter 4.

Additionally, this tendency to respond mostly with SVO sentences holds across participants. Figure 3.2 shows the word orders used by different participants, split by condition. Some participants exhibited more variety in their choice of word orders, but all used a majority of SVO responses in the experiment.
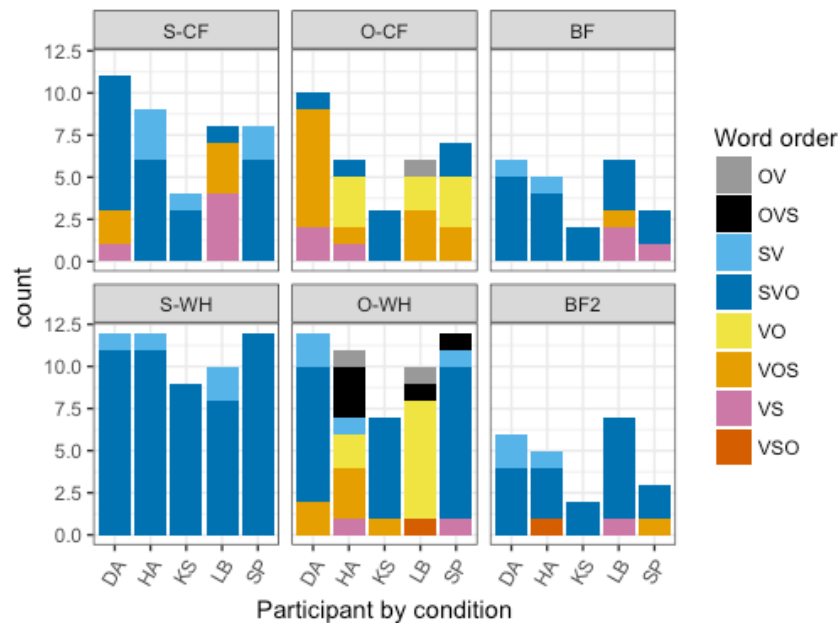
Figure 3.2: All attested word orders, by participant and condition

3.1.2 Lexical reflexives

One of the photograph items involved one volunteer combing his hair, and the other washing her hands. For these two activities, Ktunaxa has verbs that do not require overt objects; they are the lexical reflexives *ȼuk̓łamaʔmik* 'comb one's hair' and *ʔiktuquyiłik* 'wash oneself.' A large proportion of SV and VS responses came from responses to this photograph, the precise counts of which are shown in Figure 3.3. However, not all of them did—some SV and
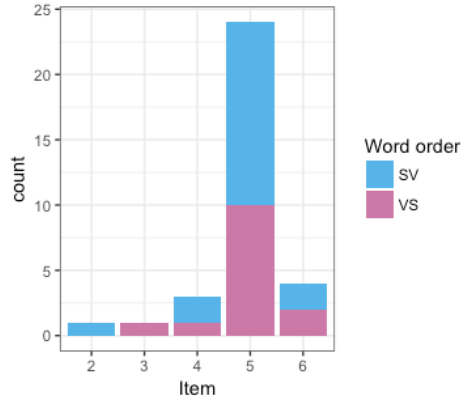
Figure 3.3: Subset of responses with SV or VS order; lexical reflexive photograph is item 5.

VS utterances simply had the object pro-dropped.

3.1.3 Word order analysis and results

There was extensive variation within this relatively small dataset—eight different word orders appeared, but seven of these occurred less than 25 times, and four of those occurred less than 10 times. Finding any measure of statistical significance on such comparatively small sets would be difficult, so the present analysis was not conducted on the word order of the whole sentence, but was instead limited to what the first word in the sentence is. Sentence-initial position is often given some privilege as a prominent focus position, so if word order does indeed reflect information structure, it is expected that this sentence-initial position would be important.

The following table (3.2) gives the raw numbers of the present data, specifically showing which word was first in participants' responses to different conditions. (O = object; S = subject; BF = broad focus; CF = corrective focus; WH = wh-focus).

A general pattern present in the data is that very few responses were object-initial (only 3.6%), and the majority of responses were subject-initial (70.0%), while verb-initial responses fell between those two values (26.3%). Considering Ktunaxa is often described as a verb-initial language (e.g. Mor-

Table 3.2: Word order results: What grammatical role did the first word of the response fill?

Condition	% Object-first (n)	% Subject-first (n)	% Verb-first (n)
BF (clause 1)	0% (0)	81.8% (18)	18.2% (4)
BF (clause 2)	0% (0)	87.0% (20)	13.0% (3)
OCF	3.13% (1)	21.9% (7)	75.0% (24)
SCF	0% (0)	75.0% (30)	25.0% (10)
OWH	13.5% (7)	51.9% (27)	34.6% (18)
SWH	0% (0)	100% (55)	0% (0)

gan, 1991), or at least one where "nouns generally follow the verb" (Dryer, 1992, p. 148), this result itself is somewhat unexpected.

At first glance, the raw data indicate that a participant's selection of a word order, or at least of the first word, is influenced by the question posed; for instance, it seems clear that a response to a subject wh-question is going to be S-initial (100% of the time), but a response giving corrective focus to the object argument is much more likely to be V-initial (75.0% of the time).

To test the significance of the differences between these categories, I performed Chi-squared tests and Fisher's exact tests on contingency tables comparing the conditions as listed in Table 3.3. The Chi-squared test is commonly used in comparing categorical response variables manipulated by categorical independent variables; Fisher's exact test addresses the same sorts of data that a Chi-squared test can, but is particularly good for small sample sizes—it yields a value even when one column is all 0's, unlike Chi-squared.[1]

Looking first at wh-questions, results indicate that Ktunaxa speakers

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[1]A note on how to interpret the *p*-value of a factor: *p*-values measure the likelihood of getting your present distribution of data if the factor in question has no relationship to the dependent variable. High values indicate that there is entirely possible no relationship exists between your dependent and independent variables ('the odds are good that you obtained this result by chance') while low values indicate the opposite ('the odds are slim that you obtained this result by chance'). By convention, low *p*-values are indicated with varying symbols such that $p < 0.001$ is indicated with three asterisks, $p < 0.01$ two asterisks, $p < 0.05$ one asterisk, and $p \geq 0.1$ is abbreviated 'ns' for 'not significant'. For comparisons between BF, SWH, and SCF, only Fisher's exact test yields a result.

Table 3.3: Comparisons made between word order

Condition 1	vs. Condition 2	Chi-squared p	Fisher's p
SWH	OWH	$3.218e-08$ (***)	$2.871e-10$ (***)
SWH	BF	NA	0.005405 (**)
OWH	BF	0.03619 (*)	0.03441 (*)
SCF	OCF	$3.67e-05$ (***)	$1.253e-05$ (***)
SCF	BF	NA	0.7524 (ns)
OCF	BF	$7.78e-05$ (***)	$1.947e-05$ (***)
SCF	SWH	NA	$8.389e-05$ (***)
OCF	OWH	0.001428 (**)	0.001396 (**)

answer subject wh-questions with a different distribution of sentence-initial arguments than they use for object wh-questions, and that they answer both of those differently to broad focus questions. The specifics of those differences are that when participants replied to a subject wh-question, they always replied with a subject-initial response; in replying to an object wh-question, speakers had a mix of subject- and verb-initial responses, as well as a handful of object-initial responses; broad focus replies were mostly subject-initial, with 17.3% of responses being verb-initial.

Turning to corrective focus, responses correcting who the subject was were significantly different from those correcting the object, and responses correcting the object were significantly different from broad focus responses. Subject corrective focus responses were 75.0% subject-initial, and 25.0% verb-initial, while object corrective focus responses patterned strongly in the opposite direction: 75.0% were verb-initial, and only 21.9% were subject-initial. *What* participants were correcting was therefore a factor in their choice of what word to place in sentence-initial position. *Whether participants were correcting something at all* was only significant in the object corrective focus condition; the results for subject corrective focus vs. broad focus indicated that the patterns in the two kinds of responses were not easily distinguished from each other. Both kinds of questions yielded answers that were mostly subject-initial, with a minority of verb-initial answers, and 0 object-initial answers.

Finally, I explored whether the expression of corrective focus and wh-focus differ significantly from each other, even when the material in focus is the same. In both corrective focus conditions, participants recorded a greater proportion of verb-initial answers than they had in either of the wh-question conditions (SWH 0% verb-initial vs. SCF 25.0% verb-initial, and OWH 34.6% verb-initial vs. OCF 75.0% verb-initial).

Verb-initial results

All conditions aside from the broad focus one prompted for focus on nominal arguments, rather than predicates. Assuming—as I am—that positions early in the sentence reflect the presence of focus, the question of how to characterise verb-initial replies to noun-focus questions becomes relevant.

Table 3.4: Word order results: Verb initiality

Condition	%VOS (n)	% VO (n)	% VSO (n)	% VS (n)
BF (clause 1)	25.0% (1)	0% (0)	0% (0)	75.0% (3)
BF (clause 2)	33.3% (1)	0% (0)	33.3%(1)	33.3% (1)
OCF	54.2% (13)	33.3% (8)	0% (0)	12.5% (3)
SCF	50.0% (5)	0% (0)	0% (0)	50.0% (5)
OWH	31.8% (6)	47.3% (9)	5.2%(1)	10.5% (2)
SWH	0% (0)	0% (0)	0% (0)	0% (0)
total	26	17	2	14

There were only two recorded VSO responses, one recorded (by HA) as a clause of a BF response, and one (by LB) as a OWH response. Both utterances had a significant pause between the subject and the object, to the point where the object may be classified as an afterthought, something like a fragment added as a separate syntactic structure rather than integrated into the main utterance.

The remainder of verb-initial structures were VOS responses (26), VO responses (17), and VS responses (14). The VS responses were cases of lexical reflexives, in which the verb itself 'contained' the object; they were more common in subject-focus cases than object-focus ones, but they occurred in both. Verb-initial object-focus answers were overwhelmingly VO or VOS.

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This last generalization is taken as evidence for a sort of focus projection whereby when objects are in focus, the entire VP has some status as a focus phrase, all of which is fronted rather than extracting the object to front on its own.

3.2 Prosody

3.2.1 Data to be interpreted

As in section 3.1.1 discussing word order, the data required some processing before prosodic analysis could be conducted. The full procedure that went into preparing the WAV files for analysis was as follows:

1. The transcriptions from the word order analysis were saved as plain text files, and converted from Ktunaxa orthography to ASCII (American Standard Code for Information Interchange) characters.

2. The Prosodylab Aligner (Gorman, Howell, & Wagner, 2011) force-aligned the data, giving boundaries for each sound segment (phone) and each word in the transcription; however, there were a number of imperfections in its output.

3. I hand-corrected all "bad" boundaries for phones and words (e.g. audio silences that were aligned with text transcription for words, two-segment sequences such as 'KP' that had been aligned with audio for a single segment.).

4. During the hand-correction process, I excluded the following:

   - 4 instances where participants declined to answer;
   - 12 one-word fragment answers and 10 cleft answers;
   - 14 corrective focus answers that both began with *hiyi* 'yes' and confirmed the content of the question rather than correcting it;
   - 17 answers containing words and phrases in English;

- 12 answers with false starts on target words (e.g. *Piyał łat ʔat... oh, ʔat kiłkin qu·qunał k¢anax--- ¢xanamʔis.* 'Peter was... oh, was using the tefel— telephone.'), as false starts may affect the final pronunciation of the word.

5. The creators of the Prosodylab Aligner also implemented a set of Praat scripts to put the output of the aligner to use; these scripts are hosted on Github,[2] The script `extractAcoustics.praat` automatically used Praat to gather data for every word. The data gathered included: duration of word in seconds; number of phones in each word; mean, maximum, and minimum pitch of each word in Hz; and mean and maximum intensity of each word in dB.

6. Within speakers, I normalized data for duration, mean/max intensity (using z-scores), and mean/max/min pitch (using semitones).[3] At this point, six words were excluded for pitch calculation errors–all of them were outliers with mean pitch values of more than 11 semitones, meaning they were nearly one octave (12 semitones) higher than the participant's normal speaking range.

7. All values for subjects and objects were extracted for statistical analysis using R (R Development Core Team, n.d.).

The final dataset consisted of the subjects and objects of 221 sentences. The subjects and objects from the clausal focus question ('what are they doing in this picture?') were used as reference levels, to which the subjects and objects of responses in the corrective focus (CF in figures) and wh-focus (WH in figures) conditions were compared.

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[2]The repository is `https://github.com/prosodylab/prosodylab.praatscripts` (as of August 2016).

[3]Excel formula used to derive the z-scores was `=STANDARDIZE(X, AVERAGE(PARTICIPANT'S RANGE), ST.DEV.S(PARTICIPANT'S RANGE))`. The log transform in R used to map Hz values onto semitones was `function(`f`){round(12 * log2(`f`/(PARTICIPANT'S LOWEST VALUE)), 8)}`

3.2.2 Pitch

All pitches were normalized to semitone values; this is so that the analysis is conducted on units that relate more closely to the human perceptual system, which is organized in such a way that differences between higher pitches are less noticeable than differences between lower pitches (Johnson, 1997). Conducting the analysis in semitones acknowledges this reality of our linguistic system in a way that an analysis purely in hertz would fail to do. Additionally, the main measure examined was that of mean f0; it was selected because Breen, Fedorenko, Wagner, and Gibson (2010) found it to be one of the four most robust prosodic indicators of focus in English, and (unlike maximum f0, which was prosodic indicator identified by Breen et al. (2010)) a single pitch calculation error would not be enough to significantly affect it, making it a more reliable measure.
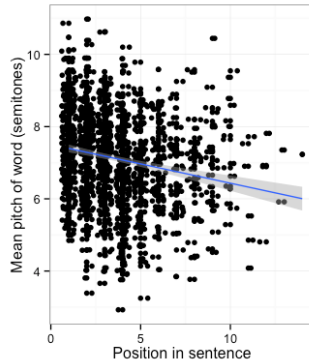
Figure 3.4: Declination effect shown in semitones across all data

In the data recorded, Ktunaxa displays pitch declination within sentences— this is demonstrated by Figure 3.4, which shows that the mean pitch of a word is lower the later it is in a sentence. This is not a surprising finding, as declination is simply a physical property of speech; as the amount of air held by the lungs decreases over the course of the utterance, the speed at which the vocal folds vibrate will decrease as well(Johnson, 1997).

What Figure 3.5 demonstrates is that foci were higher in pitch in both wh-focus and corrective focus conditions than the same lexical items would
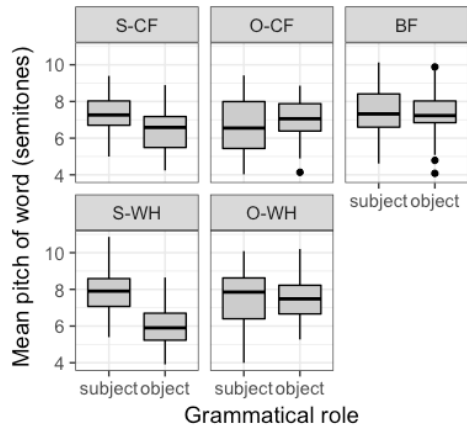
Figure 3.5: Pitch of objects and subjects, by condition.

have been in sentences where they were not in focus. However, this could just be an effect of declination: foci were more likely to be near the beginning of the utterance, where pitch is naturally higher.
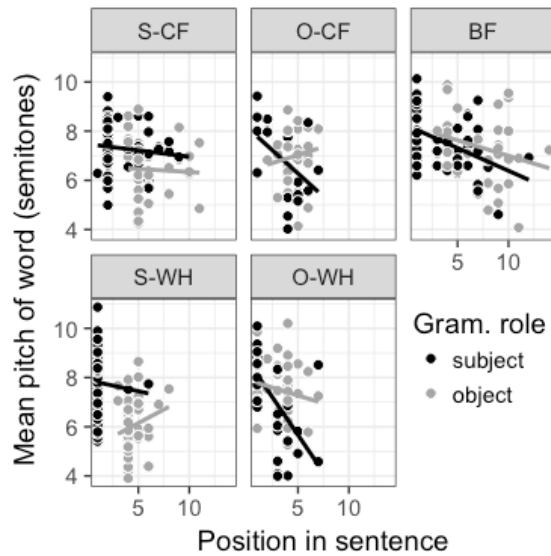
Figure 3.6: Pitch of objects and subjects in different positions, by condition.

A more informative figure is Figure 3.6. This figure shows the relative

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pitches of subjects and objects at different points in the sentence recorded in response to either broad focus, corrective focus, or *wh*-questions. Though the data are slightly messy to examine, a definite trend exists that in object-focus questions, objects are generally higher-pitched than subjects, while in subject-focus questions, subjects are higher than objects.

To test whether the effect of foci being louder than non-foci holds at a more-than-impressionistic level, I performed a linear regression to see which variables contribute significantly to differences in the normalized value of the mean pitch. The fixed effects in this model were: position in the sentence, length of word in phones, focus type (broad focus, wh-focus, corrective), and dummy variables standing in for each participant. The model also included an interaction between grammatical category (subject or object) and the focus target of question (clause, subject, object): this is the most important measure for testing the hypothesis that targets of focus are significantly different in pitch than non-focused items. The results of a first model, with broad focus objects as the reference level, are given in Table 3.5.

Table 3.5: Results of first mean f0 linear model

Factor(s)	Coefficient	Std. Error	t value	p-value
(Intercept)	9.11031	0.32964	27.637	$< 2e-16$ (***)
gram. role = S	-0.62665	0.24792	-2.528	0.01187 (*)
focus type = CF	-1.63254	0.20204	-8.080	$7.59e-15$ (***)
focus type = WH	-1.59454	0.20984	-7.599	$2.11e-13$ (***)
length of word	-0.02690	0.02105	-1.278	0.20190 (ns)
position in sentence	-0.19356	0.02537	-7.629	$1.72e-13$ (***)
focus target = O	0.84607	0.15190	5.570	$4.66e-08$ (***)
focus target = S	NA	NA	NA	NA
participant HA	-1.48949	0.14934	-9.974	$< 2e-16$ (***)
part. DA	0.34245	0.14189	2.413	0.01625 (*)
part. LB	0.40488	0.14786	2.738	0.00645 (**)
part. KS	0.54952	0.17534	3.134	0.00185 (**)
gram. role = S : focus target = O	0.14013	0.27554	0.509	0.61132 (ns)
gram. role = S : focus target = S	1.34396	0.25408	5.290	2.02e-07 (***)

With broad focus and object as reference levels, many factors achieved significance. The most crucial result for our question is that of the inter-

action between a word's being a subject and its being the target of focus, which was found to be significant; specifically, it was found that when the subject is in focus, it has a higher mean pitch. Additional factors that were significant included the fact that words recorded in CF and WH conditions were generally lower pitched than in BF one, that words earlier in sentence were higher pitched, and that subjects had a higher mean pitch than objects. The non-significant results indicate that length of word did not affect pitch, and that subjects in object-focus questions were not significantly higher or lower in mean pitch than words recorded in broad focus condition.

The scatter plot in Figure 3.6 seems to indicate that the mean pitches of objects in CF and WH conditions may differ from each other, such that objects in *wh*-focus are higher than those in corrective focus. To compare between corrective focus and wh-focus conditions, I ran an additional linear model with all the same factors, but different reference levels: this second model had as its reference levels corrective-focus objects (in the object focus condition). The results from this model were nearly identical to those of the first model, and established that while CF and WH focus conditions differ from the broad focus condition, mean pitches of arguments do not differ between CF and WH focus conditions (counter to the impression that may be understood from Fig. 3.6).

In summary, foci are higher in pitch than non-foci; these results indicate that pitch is used to prosodically mark focus in Ktunaxa.

3.2.3   Intensity

Due to the fact that all audio was recorded using lavalier microphones, the data for intensity is somewhat fallible. Participants' mouths were not guaranteed to be the same distance from the microphone at all times, and accordingly there may be differences in intensity recorded here that are not due to participants' production, but rather their posture. With that caveat, I still examine the data, since the nature of the task (look at the computer screen, answer the question) led to participants sitting quite still through the experiment; for more certain conclusions, however, future research should

be conducted with a head-mounted microphone.

For the purposes of this study, I am measuring loudness in terms of intensity in dB, and also normalizing by using z-scores (to find what 'loud for this person' is). In this section, I also focus on maximum intensity (rather than mean intensity) for two reasons. First, subjects were shorter than objects in nearly every sentence; assuming that words have a single syllable with primary stress and thus greatest intensity, maxima are more comparable than means, because the unstressed syllables will decrease the mean intensity disproportionately for objects in my data set. Second, results from Breen et al. (2010) indicate that in English at least, maximum intensity is a better predictor of whether hearers perceive a word as being accented than mean intensity is.
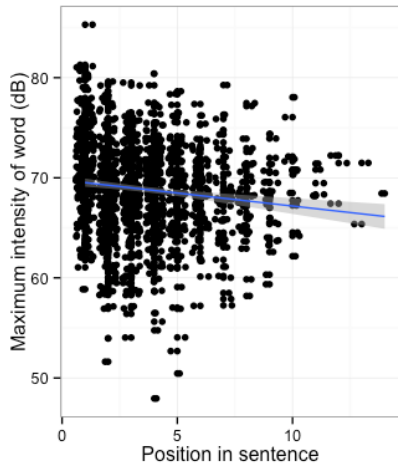
Figure 3.7: Maximum intensity (dB) by linear order.
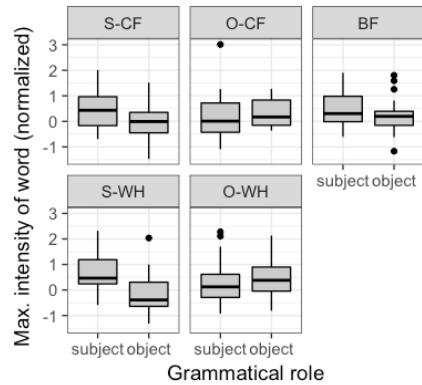
Figure 3.8: Maximum intensity of arguments by condition.

In this context, we turn to the results of the experiment. Figure 3.7 demonstrates that utterances decrease in loudness as they go on, but with a relatively shallow line of declination. Figure 3.8 shows arguments' maximum intensities as recorded in all the different focus type and focus target conditions. In the broad focus condition, subjects and objects have a roughly equivalent maximum intensity, but in the subject focus conditions, subjects tend to have higher intensity maxima than objects. The generalization in

the object-focus conditions is less clear, but there remains a tendency for objects to have slightly louder maxima than subjects. Considering that objects are also often later in the sentence than subjects, and that words decrease in maximum intensity as sentences go on, Figure 3.9 shows the same information as Figure 3.8, but includes sentence position.
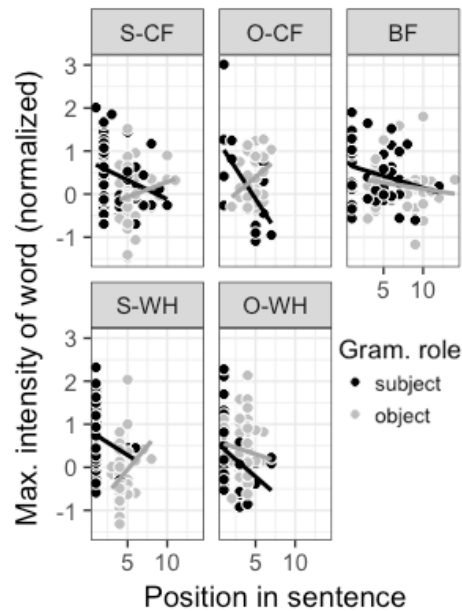
Figure 3.9: Maximum intensity of arguments by position & condition.

The inclusion of this additional variable gives a more detailed look into the question of whether focused words are louder than non-focused ones, but it seems that the maximum intensity of objects are indeed comparatively louder than those of subjects in the object-focus conditions. (The generalizations observed for broad focus and subject focus conditions may also be observed here–arguments are of comparable maximum intensity in the broad focus condition, and have differing maxima in subject focus conditions.)

To determine whether this observed pattern holds on a more robust statistical level, I ran a linear model on the maximum intensity data. The questions this model is employed to answer are as follows: Are subject inten-

sity maxima louder in subject-focus questions than in they are object-focus ones? Is the opposite true for objects, that they are quieter in subject-focus questions and louder in object-focus ones? Factors included were much the same as those used in the model for pitch in §3.2.2, namely: fixed effects for position in the sentence, length of word in phones, focus type (broad focus, wh-focus, corrective), and dummy variables standing in for each participant; an interaction between grammatical role (subject or object) and the focus target of question (clause, subject, object). The model reported here used the broad focus condition objects as a reference level; an additional model (run with broad focus subjects as reference levels) is reported on in Table 3.7 to confirm the patterns of significance observed in Table 3.6.

Table 3.6: Results of first maximum intensity linear model

Factor(s)	Coefficient	Std. Error	t value	p-value
(Intercept)	70.727497	1.086683	65.086	$< 2e-16$ (***)
gram. role = S	0.307250	0.815602	0.377	0.706585
focus type = CF	-1.898457	0.664680	-2.856	0.004510 (**)
focus type = WH	-1.979630	0.689902	-2.869	0.004330 (**)
length of word	0.003272	0.069291	0.047	0.962358
position in sentence	-0.273186	0.083704	-3.264	0.001194 (**)
focus target = O	1.683249	0.501347	3.357	0.000862 (***)
focus target = S	NA	NA	NA	NA
participant HA	5.038599	0.490901	10.264	$< 2e-16$ (***)
part. DA	1.951508	0.468107	4.169	$3.75e-05$ (***)
part. LB	-0.959374	0.486084	-1.974	0.049105 (*)
part. KS	-4.989486	0.576363	-8.657	$< 2e-16$ (***)
gram. role = S : focus target = O	-1.313083	0.907518	-1.447	0.148708
gram. role = S : focus target = S	1.938935	0.835201	2.322	0.020759 (*)

The results of this model are as shown in Table 3.6. Position in the sentence, and focus target = O were both significant, as may be expected from the earlier figures. Participant variables were also significant for all participants, indicating that identity of the speaker contributed to predicting the intensity of the words uttered. Focus type was significant; that is, the intensity of objects in the broad focus condition was different from the

intensity of objects in both corrective focus and wh-focus conditions.[4] Word length was not significant, and neither was grammatical role = subject. And crucially, the central interaction of grammatical role and focus target was found to be significant, such that subjects in subject-focus conditions were louder than objects in broad-focus conditions, but subjects in object-focus conditions were not.

To gain a more complete picture of the patterns in the data, an additional linear model was run, using broad focus subjects as reference levels; it contained all the same factors as the first linear model, and its results are outlined in Table 3.7. Factors which were significant in one model but not the other are indicated in bold typeface; all results for participants were identical in the two models, and are thus only reported in Table 3.6.

Table 3.7: Results of second maximum intensity linear model

Factor(s)	Coefficient	Std. Error	t value	p-value
(Intercept)	71.034746	0.743167	95.584	$< 2e-16$ (***)
gram. role = O	-0.307250	0.815602	-0.377	0.706585
focus type = CF	0.040478	0.587454	0.069	0.94510
focus type = WH	-0.040695	0.613416	-0.066	0.94714
length of word	0.003272	0.069291	0.047	0.96236
position in sentence	-0.273186	0.083704	-3.264	0.00119 (**)
focus target = O	-1.568768	0.510225	-3.075	0.00225 (**)
focus target = S	NA	NA	NA	NA
gram. role = O : focus target = O	1.313083	0.907518	1.447	0.14871
gram. role = O : focus target = S	-1.938935	0.835201	-2.322	0.02076 (*)

One notable contrast in this second model are that subjects in object focus conditions are significantly different in maximum intensity from subjects in broad focus conditions (the model summary's coefficient indicates that they are lower intensity). This was not found to be a significant interaction in the first model. The second notable contrast is that focus type (CF and WH compared to BF) was no longer a significant factor, indicating

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[4]One additional model was run, that I do not report on in depth here. This one used corrective focus objects (rather than broad focus ones) as the reference level, and established that arguments recorded in CF and WH conditions did not differ significantly from each other in intensity.

that focus type alone does not impact the maximum intensity of subjects. Finally, the interaction between grammatical role = object and focus target = O was also no longer significant, indicating that subjects in broad focus conditions do not have a statistically different maximum intensity from objects in object-focus conditions.

These results will be discussed in greater depth in Chapter 4; as a preliminary conclusion, I propose that they indicate that intensity is indeed employed to mark focus in Ktunaxa.

3.2.4 Duration

The final phonetic measure reported on from this experiment is duration, which was measured in seconds. Figure 3.10 shows the average duration of subjects and objects of different items; objects were generally longer than subjects, a fact which is observable from the orthographic representations of the words, as well as from their phonetic measurements. That is to say, subjects were only ever *Malyan* or *Piyał*, while objects included comparatively lengthy words such as *k̓ituq̓łiłqał̓is* 'his book' and *kanuhusnanas* 'apple.' For further details of this disparity, please refer to the stimuli in Appendix A.
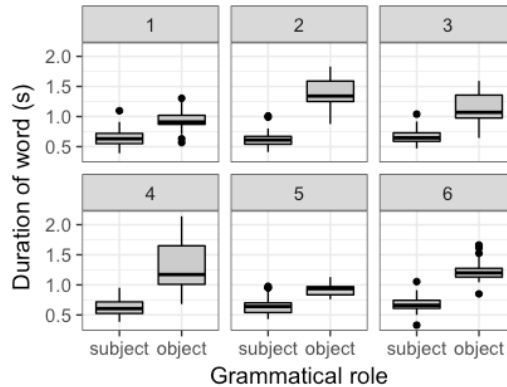
Figure 3.10: Average duration of arguments in different photograph items (s).

Figure 3.11 demonstrates that other than this tendency for objects to be longer than subjects, no patterns emerged in the different conditions;

being in or out of focus did not change the relative durations of the words in question.
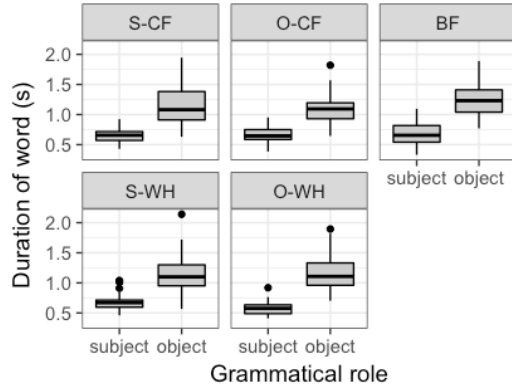
Figure 3.11: Average duration of arguments by condition (s).

In order to determine whether there was a pattern in the results not visible by examining mean durations in plots, I ran several linear models much like the ones described earlier, with the aim of determining whether being in focus changes the duration of arguments in Ktunaxa, or not. The dependent variable was duration in seconds. The factors of the first model were fixed effects for position in the sentence, length of word in phones, focus type (broad focus, wh-focus, corrective), and participant, as well as an interaction between grammatical role and the focus target of the question. Reference levels were broad focus objects. Results of this first linear model are given in Table 3.8.

As was observable from the box plots earlier, there was a significant difference in duration between subjects and objects; the length of the word in phones was also highly significant, as may be expected. There were two other additional variables with *p*-values ranging between 0.05-0.1: these variables were position of the word in the sentence, and focus type = CF. All other factors were not significant in determining the duration of target words, including the key interaction between grammatical role and focus target; in subject-focus questions, subjects were crucially no different in relative length than words were in broad-focus conditions. An additional

Table 3.8: Results of first duration linear model

Factor(s)	Coefficient	Std. Error	t value	p-value
(Intercept)	0.334722	0.044621	7.501	$4.10e-13$ (***)
gram. role = S	-0.193703	0.033490	-5.784	$1.47e-08$ (***)
focus type = CF	-0.046088	0.027293	-1.689	0.092067
focus type = WH	-0.031949	0.028329	-1.128	0.260078
length of word	0.075426	0.002845	26.510	$< 2e-16$ (***)
position in sentence	0.006812	0.003437	1.982	0.048171 (*)
focus target = O	0.027462	0.020586	1.334	0.182964
focus target = S	NA	NA	NA	NA
participant HA	0.076434	0.020157	3.792	0.000173 (***)
part. DA	0.086418	0.019221	4.496	$9.08e-06$ (***)
part. LB	0.169996	0.019960	8.517	$3.34e-16$ (***)
part. KS	0.027340	0.023667	1.155	0.248693
gram. role = S : focus target = O	-0.017263	0.037264	-0.463	0.643432
gram. role = S : focus target = S	0.035304	0.034295	1.029	0.303903

linear model was run with broad focus subjects as reference levels, and this result was replicated for the same interaction in object-focus questions, such that the interaction between "grammatical role = object and focus target = O" was not significant, with a *p*-value of 0.6.

Table 3.9: Results of second duration linear model

Factor(s)	Coefficient	Std. Error	t value	p-value
(Intercept)	0.295212	0.049647	5.946	$6.01e-09$ (***)
gram. role = subject	-0.151470	0.029892	-5.067	$6.19e-07$ (***)
focus type = CF	-0.020629	0.026336	-0.783	0.433911
focus type = WH	0.011134	0.027106	0.411	0.681467
length of word	0.075242	0.002835	26.541	$< 2e-16$ (***)
position in sentence	0.006737	0.003451	1.952	0.051582
focus target = O	-0.059344	0.026638	-2.228	0.026453 (*)
HA1	0.075535	0.020081	3.761	0.000194 (***)
DA1	0.083855	0.019169	4.375	$1.56e-05$ (***)
LB1	0.168925	0.019897	8.490	$4.14e-16$ (***)
KS1	0.024893	0.023595	1.055	0.292052
gram role = O : foc type = BF : foc target = clause	0.043300	0.037904	1.142	0.253991
gram role = O : foc type = CF : foc target = O	0.085144	0.053744	1.584	0.113934
gram role = S : foc type = CF : foc target = O	0.092038	0.042154	2.183	0.029590 (*)
gram role = O : foc type = WH : foc target = O	0.099005	0.037999	2.605	0.009520 (**)
gram role = O : foc type = CF : foc target = S	0.017554	0.037304	0.471	0.638204

Finally, to address the possibility that duration is affected in different ways by different types of question, I ran a final linear model identical to the last, but this time with a three-way interaction between grammatical role, focus type, and focus target (with broad focus objects as the reference level). The results of that model are shown in Table 3.9.

According to this second model, two of these three-way interactions were significant. The first significant interaction was between grammatical role = object, focus type = WH, and focus target = O; its positive coefficient indicated that objects in *wh*-focus are longer than objects in broad focus. This result was obscured in the first model by grouping together objects in different kinds of focus, as it seems that objects in corrective focus do not have this same lengthening effect. The second significant interaction concerned (background) subjects in object corrective-focus conditions, which are also pronounced with greater relative duration than objects in broad focus. This result may have come about because of the confound in the subject corrective-focus condition, which is expanded upon in greater detail in §3.4.

It appears from these results that the duration of arguments is not as intrinsically linked to focus as pitch and intensity, though some relationship may exist.

3.3   Clefts

Section 3.1 discusses one syntactic reflex of focus in Ktunaxa, word order; in addition to manipulating the word order in their replies, three speakers also used cleft structures to indicate focus. Cleft constructions were comparatively rare; only ten of the 229 responses analysed for word order were clefts. As shown in Figure 3.12, nine of those ten clefts were produced in corrective focus conditions, three for object-focus and six for subject-focus. An example of one of these cleft answers is given in (25) below, which was produced in response to *K siɫ ʔiktuqu ʔaˑkiˑʔis Piyaɫ?* 'Is Piyal washing his hands?'

(25) Waha, paɬ ʔini   Malyan ʔat   ʔiktuqu ʔa·ki·ʔis.   (KS)
     waha paɬ ʔin-i   Malyan ʔat   ʔiktuqu ʔa·ki·-ʔis
     no   EVID be-IND   Malyan HAB   wash   hand-3.POSS

'No, it's Marianne (who is) washing her hands.'

Cleft structures such as those given in (26) are distinguishable from plain declarative sentences by the presence of a copular verb *ṅini* or *ṅinsi*;[5] I assume the subject of this copular verb is a dummy subject, the null third-person pronoun.[6] Additionally, these cleft sentences include a second verb, lacking indicative morphology as is common in Ktunaxa subordinate clauses (Morgan, 1991, p. 444). In (26a), this

Figure 3.12: Cleft answers

subordinated clause is introduced with a complementizer *k*, but in (26b), the *k* is not observable; the verb *ʔiktuqu* is not inflected as it would have to be in a main clause, so from this I conclude that it is indeed in a subordinate clause, but that the complementizer seems to have been elided in fast speech.

(26) a. Waha, ṅini   Malyan k   skikiɬ ʔak¢qa kanuhusnanas.(SP)
        waha ṅin-i   Malyan k   skikiɬ ʔak¢qa kanuhus-nana-s
        no   be-IND Malyan COMP PROG   cut   red-DIM-OBV

'No, it's Marianne who's cutting the apple.'

---

[5]The orthography used includes the character *ṅ*, which when word-initial is often not audibly pronounced; a phonetic transcription of the copular verb would rather run /ʔɨni/.

[6]Determining whether this assumption is actually true requires more investigation.

b. | Qaʔpsqa·kapsi | ṅinsi | ʔa¢us | skikił | ʔiktuqu. (HA) |
|---|---|---|---|---|
| qaʔpsqa·kaps-i | ṅin-s-i | ʔa¢u-s | skikił | ʔiktuqu |
| looks.like-IND | be-OBV-IND | dish-OBV | PROG | wash |

'It looks like it's a dish that he's washing.' (or 'It looks like he's washing a dish.')

Both of the clefts in (26) were produced as responses to questions in the reported-on experiment. The former, (26a), was a response to a subject corrective-focus question ('Is Peter cutting an apple?'), while (26b) answered an object wh-question ('What is Peter washing?').

In total, three of five participants recorded cleft answers: the two who did not happened to be sisters, so it is possible that proportion of cleft usage is a dialectal feature that varies from one family to the next. Figure 3.13 shows the distribution of cleft answers for different focus targets by participant. Notably, two participants used clefts in both subject- and object-focus conditions, while the third only clefted
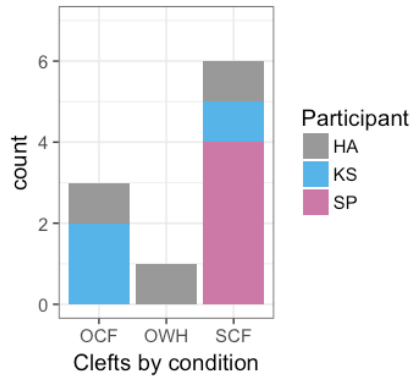
Figure 3.13: Cleft answers by speaker

subjects. However, the size of the cleft data set is too small to determine whether this is a coincidence, or demonstrates some genuine by-speaker variation in the use of cleft answers in Ktunaxa.

3.4 Confounds

While every effort was made to minimize experimental ambiguity and confounds, one confound does exist in the subject corrective-focus condition. For instance, one question that participants hear translates to 'Is Peter eating a pear?'. This question has two potential appropriate corrections: first, participants might hear it as a prompt requiring VP corrective focus ('No,

Peter isn't eating a pear, he's drinking coffee.'), or second, they may reply with the subject corrective focus ('No, Peter isn't eating a pear, Marianne is.'). However, participants mostly interpreted the question as requiring subject corrective focus, with only 7 out of 60 replies to the SCF condition being VP corrective focus. In an additional 13 cases, participants recorded two answers to the question, one correcting the subject, and the other the verb phrase; only the former answer was included in the analysis. This proportion may be due to participants' accumulated practice with the task at hand, which focused on people and things rather than actions. When participants made note of this potential ambiguity, I discussed it with them, agreeing that the question was ambiguous, and saying that the version where they correct the asker about the person (not the action) was the one intended.

Additionally, while objects varied across the six items, the subject was only ever one of two different names (*Malyan* or *Piyał*). This limitation is itself a confound, since it creates a lack of variety in the stress patterns and durations of the subjects, and means there could be some doubt as to whether the results are generalizable to longer subjects, or subjects that are common nouns. Resolving this confound will be left for future work.

3.5   Summary of results

This chapter has presented the results of the experiment described in Chapter 2. With respect to word order, participants recorded eight different word orders (OV, OVS, SV, SVO, VO, VOS, VS, VSO), the majority of these being SVO. Very few responses were object-initial, and all object-initial responses were recorded in object-focus conditions. Overall, subject-focus questions were responded to with subject-initial answers; object-focus questions were more varied in response types, but more verb-initial answers (beginning with VO strings) were recorded in response to object-focus questions than in broad or subject-focus conditions. Prosodically, foci were generally higher in mean pitch and louder in maximum intensity than non-foci. Word duration did not vary precisely relative to where focus fell in the response, but object DPs in *wh*-focus were longer than object DPs in broad focus.

Chapter 4

Discussion

4.1 Word order and focus in Ktunaxa

The present analysis of word order categorizes participants' responses as linear strings to be examined holistically, rather than hierarchical structures to be examined with respect to the underlying syntax. This is a limitation that may be addressed in future work attending to the syntactic constituencies and dependencies in Ktunaxa grammar.

In writing this analysis, I assume three characteristics of word order in Ktunaxa. First, that SVO is the default word order in the language. Second, that word order may be primed by context and in choosing between possible grammatical structures, speakers are influenced by the word orders they have heard and uttered earlier (e.g. Hartsuiker, 1999). This may be thought of as a type of question-answer congruence asserting pressure towards making the answer "match" the question. Third, I assume that the sentence-initial position is a prominent one, likely to be used to express focus on a constituent (as in focus-fronting). All of the data to be discussed here may be accounted for by these three principles.

That said, I now turn to examining the data set established in the results section, discussing tendencies emerging from the data, first with respect to the broad-focus conditions (§4.1.1), then subject-focus (§4.1.2), then object-focus ones (§4.1.3), and finally responding to the literature (§4.1.4). In the

following sections, §4.2 and §4.3, I address the results concerning prosody and cleft answers, respectively.

4.1.1 Broad focus word order

Example (27) shows the broad focus question to which participants were replying; because of the pro-dropped third person plural pronoun and the intransitive verb ('doing'), it is hard to say what word order might be primed by this question, since there is no established relationship between subject, object, and verb in the question. As for the material in focus, it is the predicate—however, due to the fact that each photograph was of two different volunteers doing two different activities, the subjects of these predicates also needed to be specified. For that reason, the results are interpreted as giving full clause-level focus.

(27) | Ka·s | k | skikił | a·qannikit | naʔ | ǩ̓ituq̓łiłqnamnam? |
| ka·-s | k | skik-ił | a·-qannikit | naʔ | ǩ̓ituq̓łiłqnamnam |
| WH-OBV | COMP | PROG-ADV | WH-do | DEM | picture |

'What are they doing in this picture?'

Since the question in (27) does not make any part of the answer 'given' in information structural terms[1] and the focus is the full clause, the responses to this question give the best insight into the unmarked/default word order of the language. With that in mind, the counts of word orders in response to the broad focus question are as follows: SVO > SV > VS > VOS > VSO. The VS and SV responses were mostly recorded as descriptions of the "lexical reflexive" item 5 photograph, where participants often opted to use reflexive verbs (i.e. *¢ukłamaʔmik* 'comb one's hair' and *ʔiktuquyiłik* 'wash oneself') rather than transitive verbs with overt objects. Object-initial word orders were never attested, nor were VO sentences. Figure 4.1 shows this result.

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[1]That is, the question contains none of the words that participants are likely to say in their response.
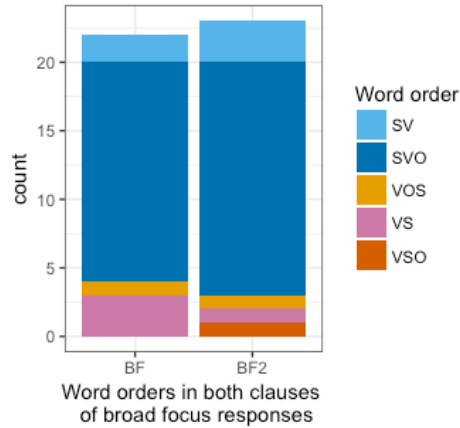
Figure 4.1: Counts of all attested word orders in broad focus responses. BF represents the first clause of the response, BF2 the second.

From these responses, I conclude that SVO is the default word order of the language, but that Ktunaxa also has an optional VOS alternation for neutral sentences (ones in which all material is new to the discourse context, and none of the minimal phrase-level constituents such as DPs or PPs are focused).[2] This generalization may serve as a starting point for syntactic investigation of discourse in Ktunaxa, with at least two testable hypotheses emerging from it. The first hypothesis is to assume that SVO word order is base-generated, with the subject merging on the left, outside the VP; in the case of the VOS alternant, the VO string (the VP constituent) may raise up above it by phrasal movement. The second hypothesis is to assume that the underlying word order is VOS, with the subject base-generated on the right, but usually raising up to a position on the left to yield SVO word order. These two options are illustrated in (28a) and (28b) respectively.

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[2]An alternative theory, that VOS is in this context being used to express predicate focus, will not be discussed in this thesis.

(28) a.

```
                    S
                  /   \
               VP      S
              / \     / \
           V Obj  Subj   VP
                        /  \
                   <Subj>    VP
                             /\
                          <V Obj>
```

b.

```
              S
            /   \
         Subj    VP
                /  \
              VP    <Subj>
             /  \
            V    Obj
```
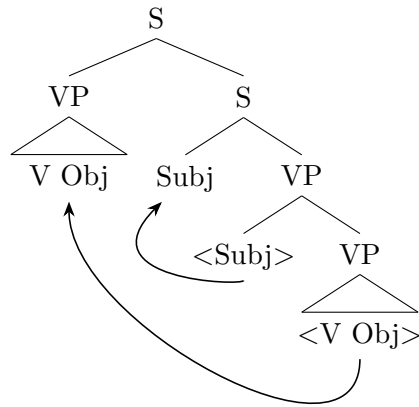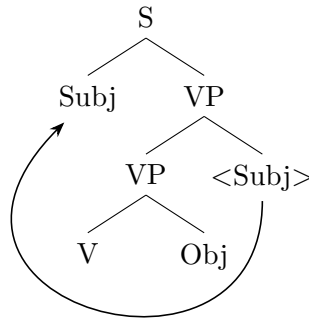
Identifying which (if either) of these structures accurately models Ktunaxa syntax is left to future work.

4.1.2   Subject focus word order

Subject focus responses were generally SVO; as can be seen in Figure 4.2, this was particularly pronounced in the case of the subject *wh*-question responses, which were uniformly SVO unless there was no overt object, in which case they were SV. There was more variation in subject corrective focus responses—SVO and SV responses were still the overwhelming majority, but there were a handful of VOS and VS responses as well.
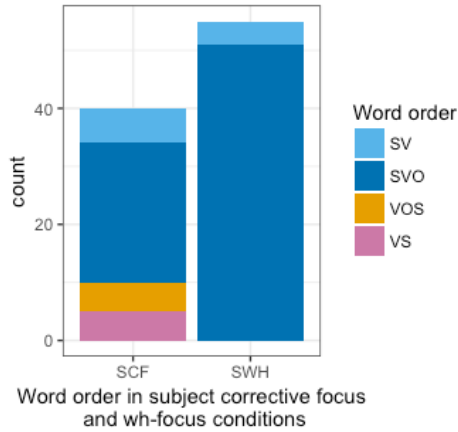
Figure 4.2: Counts of all attested word orders in subject focus responses.

Subject *wh*-focus

Subject *wh*-questions always used SV(O) word orders, the default proposed in §4.1.1. Perhaps the subjects are in the same position in both broad and subject-focus conditions, or perhaps there is a distinct sentence-initial focus position to which subjects moved in the latter condition. Another way to look at this could be that the consistency in *qała* ('who') questions is an effect of syntactic priming: as shown with the question in (29), the word order for all subject *wh*-questions was also SVO.

(29)   Qała k   Ɂisnił   Ɂitiłłuk¢u Ɂa·qatwumłats?

        qała k   Ɂisn-ił   Ɂitiłłuk¢u Ɂa·qatwumłat-s

        who COMP SBJ.FOC-ADV sew   shirt-OBV

        'Who is sewing a shirt?'

Participants' adherence to question-answer congruence may have extended to the order of the constituents in the question, motivating their use of SV(O) responses to SVO questions.

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Subject corrective focus

Subject corrective focus responses offer some evidence for there being a sentence-initial focus position, and for the effects of syntactic priming on question responses. The corrective focus questions (both the ones that prompted a correction about the subject, and those that prompted correction of the object) were always VOS word order yes-no questions—(30) exemplifies one such question.

(30) K   sakił   ʔitiłłuk¢u ʔa·qatwumłats Piyał?

      k   sak-ił   ʔitiłłuk¢u ʔa·qatwumłat-s Piyał

      COMP PROG-ADV sew   shirt-OBV   Piyal

      'Is Piyal sewing a shirt?'

If the only factor influencing word order were "place foci in a prominent, sentence-initial position," all responses to questions such as (30) would have been S-initial, potentially in the default SVO word order. Likewise, if question-answer congruence were the strongest factor influencing word order, all responses to corrective focus questions would have been VOS. Given the result in Figure 4.2, it seems that the truth lies somewhere between these two extremes: the presence of VOS responses to a VOS subject-focus question implies that syntactic priming has some influence over word order, but their low numbers show that it is not the primary driver conditioning the word order of the response.

However, participants did not respond to subject corrective focus questions in a uniform way. While every participant recorded at least one SVO response to these questions, Figure 4.3 shows that all verb-initial responses were recorded by two participants, LB having recorded 7, and DA the remaining 3. From this result, I conclude that the factors motivating choice of word order are subject to dialectal variation (or, since all participants were from the same community, micro-dialectal variation).

These VOS subject-focus responses are somewhat remarkable in that the focussed constituent comes so late in the clause. Since Ktunaxa uses prosody as well as word order to express focus, it is precisely these cases where one
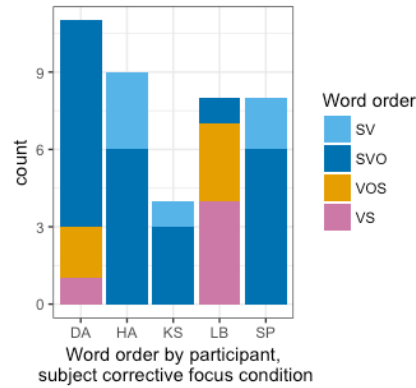
Figure 4.3: Word order by participant, subject corrective focus condition.

might expect to hear prosodic marking of the focus. Figure 4.4 shows a pitch and intensity trace of one such response, namely *Waha, ʔisniɬ kanaxaṁni ɬika·pu·ʔis Piyaɬ* 'No, Piyal is putting on his coat' recorded in the context of the question *K sakiɬ kanaxaṁ ɬika·pu·s Malyan?* 'Is Marianne putting on a coat?'. While the pitch accent on *Piyaɬ* is not extreme, there is an observably large spike in intensity for that word, and the prominence is perceptible to the listener.
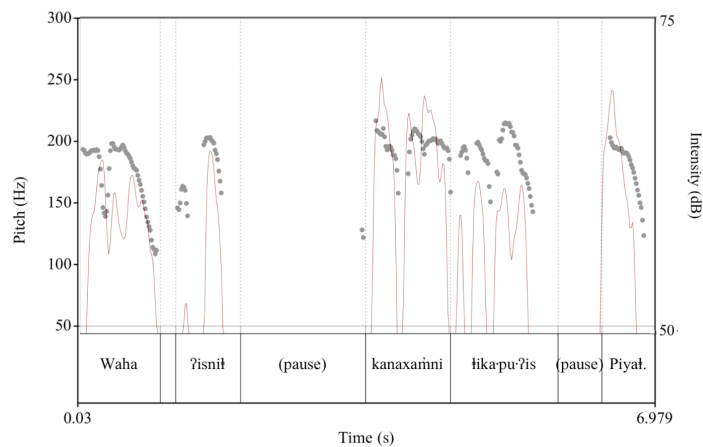
Figure 4.4: VOS response to subject corrective focus question; pitch in grey speckles, intensity in maroon line.

4.1.3   Object focus word order

The object focus conditions (both for corrective focus and *wh*-focus) were the most variable of all with respect to word order. For that reason, investigation of the two object focus conditions is split further, into one section discussing object *wh*-focus and another discussing object corrective focus.

Object *wh*-focus

In descending order of frequency, responses to object *wh*-questions come in the following word orders: SVO > VO > OVS = VOS > SV > VS > VSO = OV. The majority of SV and VS responses were recorded to describe photograph item 5, where participants often used lexical reflexive verbs rather than overt objects ('self-wash' rather than 'wash hands'). Figure 4.5 illustrates these tendencies more clearly.
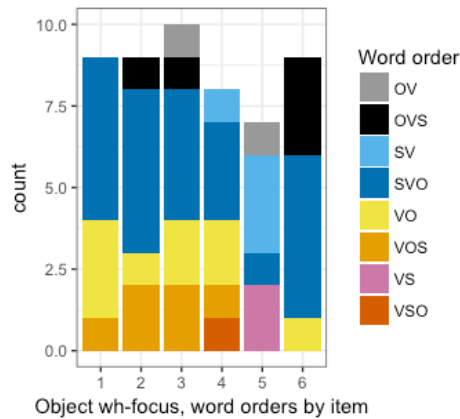
Figure 4.5: Counts of all attested word orders in object *wh*-focus responses, by photograph item.

    Examining the object *wh*-focus responses, we find more evidence for SVO being the default word order. As seen in (31), the order of constituents in the stimuli *qapsin* 'what' questions is OVS; by responding with SVO word orders, participants are neither putting the focused constituent in a prominent position early in the sentence, nor are they matching the order of constituents in the question prompt.

(31) Qapsins   k   sił   kiłkin Malyan?
      qapsin-s k   s-ił   kiłkin Malyan
      what-OBV COMP PROG-ADV use   Malyan

'What is Marianne using?'

The two most common word orders, SVO and VO, can be accounted for simply by saying they instantiate the default word order, with VO featuring pro-drop of the subject (which is given by the context and likely to be pro-dropped regardless).

The next case to be discussed are the five OVS and two OV responses, which follow exactly the word order of the question—these may be considered an effect of question-answer congruence or syntactic priming, which seems to have motivated focus-fronting. In discussing subject *wh*-focus responses earlier, the possibility was raised that there is a distinct sentence-initial position for focus in Ktunaxa. The fact that object-initial responses were recorded only in object-focus questions is evidence for the existence of such a position.

More difficult to account for than the OVS responses are the five VOS ones recorded in the object *wh*-focus condition. VOS is neither the proposed default word order, nor the OVS result we'd expect from syntactic priming in object *wh*-questions. Three of these responses had notable pauses between constituents, implying that the VOS string was actually split into different phrases: in one case this pause grouped the words as [VO][S], and in the other two cases there were pauses between all constituents. They might be described as disfluent sentences, where arguments were added as afterthoughts, or where the lexical material was difficult to remember. To confirm whether they were truly disfluent, however, future work should examine utterances not previously categorized as disfluent, and determine whether these three VOS responses differ significantly from them.

The two remaining responses were fluently pronounced, though, and merit explanation. I propose that rather than moving only the object up to a prominent (initial) position in the sentence, these responses were instances where the whole VP moved, as in (28a). For these VOS responses, the VP

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as a whole may be in focus, and raise to T/Spec-TP. In these cases, the VP may be working as a Focus Phrase as described in Drubig (1994) and Krifka (2006).

The two two-constituent word orders were VS and SV responses. All but one of these were recorded in the lexical reflexive 'washing and combing' item—the text of the remaining SV response is given in (32), which was recorded as an answer to the question in (31), 'What is Marianne using?'.

(32) Malyans   ɬat   kikiɬ   ǩuqunaɬȼxanni. (SP)

      Malyans   ɬat   kik-iɬ   ǩuqunaɬ-ȼxan-ni

      Malyan-OBV ITER   PROG-ADV   short-talk-IND

      'Marianne is talking on the telephone.'

In all of the VS/SV cases, a *wh*-question targetting a DP was replied to with a verb that encompasses both the action and the object. I take this fact as evidence that focus alternatives evoked in *wh*-questions are not simply the set of possible answers to the question that use the same given material, but rather the set of all possible answers to the question. That is to say, the question "What is Peter washing?" does not simply evoke "dish" "hands" "clothes" and other DP alternatives, but also complex events like "Peter is washing himself."

The last outstanding case is that of the VSO sentence. Its appearance in response to an object *wh*-question is surprising for several reasons: first, VSO is not the default word order; second, the verb and object are non-adjacent, a rarity in this data set; third, the object focus is not in a prominent sentence-initial position. Upon closer examination, this only VSO sentence was possibly an example of disfluency.

As visible in Figure 4.6, there was a long pause preceding the object, as if the participant had to think about what the word was. At four syllables, the object is not a long word by Ktunaxa standards, and does not seem to be a likely candidate for heavy DP shift; it also seems to be in a separate intonational phrase than the rest of the sentence. As Ktunaxa has no overt third person pronouns, the utterance could be analysed as a VS sentence

66
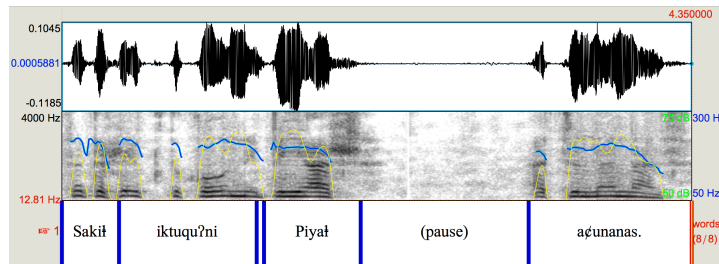
Figure 4.6: VSO response to object *wh*-question; waveform in black, pitch in blue, intensity in yellow. The text reads *Sakił iktuquʔni Piyał (pause) a¢unanas.*, 'Piyal is washing... a mug.'

with an O fragment added afterwards ('Piyal is washing it. A mug.') rather than one VSO sentence. To verify whether this is truly a disfluency, future analysis should examine other instances of pauses that were not initially classified as disfluencies, and explore whether they differ prosodically from the sentence in Figure 4.6.

Object corrective focus

Fewer word orders are attested for object corrective focus than for object *wh*-focus. In descending order of frequency, the corrective focus condition included responses which were VOS > VO > SVO (> VS, lexical reflexives only) > OV (see Figure 4.7). This was the only condition in which SVO was not the most frequently-recorded word order.

The two most common orders, VOS and VO, follow the word order of the question posed–one such question is exemplified in (33). As such, they can be categorized as the syntactically-primed word order, the latter featuring pro-drop of the subject.

(33) K   sakił   hawi¢kin   wat̓kums   Malyan?
      k   sak-ił   hawi¢kin   wat̓kum-s Malyan
      COMP   PROG-ADV   hold   ball-OBV   Malyan

'Is Malyan holding a ball?'
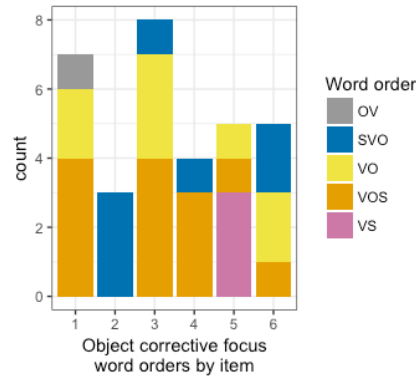
Figure 4.7: Counts of all attested word orders in objects corrective focus
responses, by photograph item.

There is a contrast between object and subject corrective focus conditions
in how susceptible the two response types were to syntactic priming—the
questions for both were verb-initial, but only five subject-focus responses
were also verb-initial, and 24 object-focus ones were. One possible expla-
nation for this discrepancy is that the default SVO word order (used seven
times in the OCF condition, and 22 times in SCF) also puts the subject in
a prominent, sentence-initial position. Speakers responding to the subject
corrective focus question then have two 'motivating' factors to use SVO (its
status as default, and the prominence of subjects when it is used), but when
responding to the object corrective focus condition the latter of those fac-
tors no longer dovetails with the communicative goal of 'make the object
prominent.'

After VOS, VO, and SVO word orders, the next most frequent word
order was VS. As with object *wh*-focus, these cases were all ones where the
predicate was changed from a transitive verb with an overt object in the
question to an intransitive lexical reflexive in the response.

Finally, there was a single case of a response with OV word order, shared
in (34) below.

(34) a. K   sakiɬ   ʔik kanuhusnanas   Malyan?

        k   sak-iɬ   ʔik kanuhus-nana-s Malyan

        COMP PROG-ADV eat red-DIM-OBV   Malyan

        'Is Malyan eating an apple?'

    b. Waha, kakpuk̓s   sakiɬ   ʔikni.   (LB)

        waha kakpuk̓-s   sak-iɬ   ʔik-ni

        no   pear-OBV PROG-ADV eat-IND

        'No, she's eating a pear.'

There were no disfluencies or pauses in the recording of this response; it is a natural (though uncommon) Ktunaxa word order for the given context. The object seems to be in a prominent syntactic focus position, with pro-drop of the subject leaving the verb as the sole remaining overt constituent.

4.1.4 Summary and response to previous literature

I can account for most of the data with two assumptions: first, that Ktunaxa has a default SVO word order, and second, that question-answer congruence or syntactic priming exerts pressure on answers to match the word order of their questions. There remains a small residual set of responses like (34b) that may require positing a dedicated focus position on the left periphery. Another finding of this experiment is that even in response to *wh*-questions targeting a DP, it is possible in Ktunaxa to convey focus on a verb's internal argument by using a lexical reflexive predicate with no overt object DP.

However, as was stated in Chapter 1, analysis of the texts (some recorded at the turn of the 20th century by Boas, and other recorded in the 1980's by Morgan) indicated that the predominant word order in Ktunaxa is VOS. That stands in contrast to the data found in this experiment, which is mostly SVO. To reconcile these different findings, we may understand this distinction as an effect of the task at hand. In dialogue consisting of questions and answers, it seems that the default word order is SVO; however, in texts it is possible that there is persistent predicate focus. That is, with the subject of different sentences likely being the story's protagonist, and potentially

remaining constant, the VP may be moved to a more prominent position in texts since it is potentially contrasting with previous actions taken by the subject. Alternatively, the subject (as given/continuing topical material) may be pro-dropped or remain in a base-generated position on the right of the clause.

Another possible reason for the difference may be the influence of English— it is the dominant language in the area, and uses SVO word order. To determine which of these two possibilities is closer to the truth, future work may involve collaboration with the same speakers who participated in the present study, recording and analysing new texts for word order and determining whether word order in texts differs from that in question-answer dialogues.

4.2   Prosody and focus in Ktunaxa

According to the results reported in Chapter 3, there is at least one and possibly two prosodic reflexes of focus in Ktunaxa. The first reflex is mean pitch: in plain declarative statements, focussed DPs have a higher mean pitch than the same DPs in broad focus questions, as well as a higher mean pitch than non-focused (background) DPs in questions targeting a different focus. Intensity seems to reflect focus, too, such that focused DPs have a higher maximum intensity than backgrounded DPs. However, follow-up research needs to be conducted with a better experimental set-up (specifically: head-mounted microphones) to definitively confirm this finding. Duration was not found to reflect focus; there does not seem to be a process of word lengthening for foci.

In terms of intonational phonology, these phonetic measures of mean pitch and maximum duration may be translated into one of several options. The first option is that there is a high *pitch accent* on foci in Ktunaxa; the second option is that there is a high *edge tone* associated with foci. The phonetic measures given here do not give any principled way of distinguishing between those two options; in order to do that, I must examine the location of these pitch and duration maxima within the focused words, and relate their distribution to the prosodic contour of the sentence as a whole.

Future work will engage with this topic in more depth, but my preliminary conclusion is that Ktunaxa is using a pitch accent rather than an edge tone. This conclusion is based upon the facts that i) Ktunaxa has a stress system, and the high pitches impressionistically associate with the stressed syllable; ii) upon listening to the data, high pitches on foci do not generally seem to trigger edge phenomena such as pauses or pitch resets. However, further research is needed to definitively conclude that Ktunaxa employs high pitch accents to mark focus, rather than some other sort of high tone phenomena.

Another factor that merits consideration is the specific information structural notions in results from experiments of this particular design. Putting aside the broad focus questions, all of the DP foci were *new* material not heard in the question, as well as being focused; to contrast, all of the background DPs were also *given* material, which participants would have heard in the question. The analysis has assumed that the focus/background distinction is the key one at work, but it is also possible that the differences in how DPs have been pronounced are due to the distinction between new and given material, instead. If the latter were the case, then the results could be framed as 'given DPs are deaccented and new ones are not' rather than the framing that I pose ('focused DPs have a high pitch accent, and backgrounded ones do not'). The broad focus responses are crucial for differentiating between these analyses: all of the words recorded in the broad focus responses are new, and the focus falls at the level of the clause rather than at the DP level. From this, the fact that (new) broad focus DPs were generally lower-pitched and quieter than (new) focused DPs allows me to claim that the prosodic qualities of the focused DPs are due to their status as 'focused' rather than their status as 'new.' However, follow-up work will be needed to explore how Ktunaxa treats given material; the distribution of elided/pro-dropped constituents in responses to questions may shed some light on this topic.

4.3 Clefts

Clefts were relatively rare in the data set, with only 10 instances of clefts in the 224 utterances analysed for word order. Of these 10 cleft constructions, 9 were produced in corrective focus conditions (there were 72 non-cleft responses in corrective focus conditions). This pattern suggests that cleft constructions may have an implication of exhaustivity in Ktunaxa, as they do in English. They might be used to reinforce the participant's negative response to the context yes/no question, expressing something along the lines of "the proposition you asked about is false, and in fact only the proposition I utter here is true." Though the experimental data cannot provide negative evidence needed to conclude that clefts convey an exhaustive reading, the following chapter explores this topic in more detail, using elicited data from fieldwork sessions with one Ktunaxa consultant.

Chapter 5

Focus-sensitive operators

Focus-sensitive operators are words or morphological markers whose interpretation depends on where focus falls—that is, where alternatives are evoked in the sentence. For instance, in (35) the word *only* is a focus-sensitive operator; the first part of the (35a) and (35b) sentences are identical, but the possible continuations (which explicitly present alternatives) change depending on what word receives focus.

(35) a. CONTEXT: At a party, Violet is reporting back to a group of her friends after scouting out the dessert table. She says:
   I only saw the CAKE...
   ✓ I didn't see any fruit.
   # I didn't eat it.

   b. CONTEXT: At the same party little while later, the guest of honour's cake has gone missing! Violet (the last person to have been alone with the cake) defends herself. She says:
   I only SAW the cake...
   ✓ I didn't eat it.
   # I didn't see any fruit.

In (35a), the focus-sensitive operator *only* associates with the prosodically accented *cake*, conveying the meaning "The only thing I (Violet) saw was cake; For all relevant alternatives to cake, I did not see them." For this

reason, the first continuation (*I didn't see any fruit*) is acceptable, and the second proposed continuation (*I didn't eat it*) is infelicitous. However, in (35b), *only* associates with the prosodically prominent *saw*. Now the meaning Violet conveys is "The only thing I (Violet) did was see the cake; for all relevant alternatives to seeing the cake, I did not perform those actions." Because of this interpretation, the two continuations considered in (35a) have flipped in terms of acceptability—*I didn't eat it* is appropriate, and *I didn't see any fruit* is infelicitous.

Focus-sensitive operators (like *only*) in Ktunaxa are under-studied; previous grammars of Ktunaxa do not describe them, and no independent work has delved into them. This chapter is not intended to be a comprehensive summary of focus-sensitivity in Ktunaxa, but rather an introductory snapshot and starting point for future research.

5.1   Fieldwork methodology

Unlike the data discussed to this point, the Ktunaxa data in this chapter is not the product of psycholinguistic experimental fieldwork, but was rather created in the context of 'classical' fieldwork. By this, I mean that I met regularly with a consultant who is fluent in Ktunaxa, the esteemed Violet Birdstone, and discussed language examples with her—in turn, she also occasionally discussed these same examples with her sisters. This section describes the general outline of our elicitation sessions, and also describes the storyboard methodology used as a starting point for some of the language examples.

Our elicitation sessions generally consist of a few stages. Initially, I conduct some background research of my own: I search for examples of the phenomena of interest in Ktunaxa texts (e.g. Boas, 1918; *Ksanka A·kłukaqwum, Kootenai Dictionary*, 1999) and academic writing about Ktunaxa (e.g. Dryer, 1991; Mast, 1988; Morgan, 1991). If none can be found, I try to construct examples from what I know of the language (e.g. trying to predict how a specific question would be asked). If no context is provided for the sentence from the source material, I also create a situation in which the utterance

would be an appropriate one (as far as I can judge, at least).

Then, the next time I meet with Violet, I present the context and the utterance in question to her both aloud and written, since she is fluent in both spoken and written modalities of the language. The oral presentation is so that she has the opportunity to judge how it 'sounds,' while the written one serves as a 'static' reference. As a non-speaker of the language I often make mistakes with how I pronounce Ktunaxa aloud, and Violet (as an experienced consultant) will adjust her perception of what I said to forgive a missing ejective, misplaced word-level stress, halting phrasing, and so forth. The 'static' written text is crucially important here: it shows the utterance as I intend to pronounce it, and un/grammaticality or in/felicity is judged from that baseline rather than the (sometimes) more forgiving ears of my consultant.

Once a context and an utterance have been presented, Violet and I discuss whether the utterance is well-formed Ktunaxa ('Does this make sense as a sentence? Is this something a Ktunaxa speaker could say, or is it jumbled/meaningless/too English?'), and also whether the utterance is felicitous in the given context ('Is this something I could tell somebody in that situation, or would it confuse them? Is it appropriate for me to phrase it this way?'). We then use that first context-sentence pair as a starting point for discussion of other context-sentence pairs, adjusting the first one minimally in order to tell what changes result in un/grammaticality or in/felicity.

Not every elicitation session fits this exact description. There are also times when I arrive with only a context in mind, but no 'target' Ktunaxa sentence, or times where I have no context but am interested in completing a paradigm (e.g. figuring out how to conjugate a verb in many different tenses), as well as times where Violet will share some of the language that she has come across in her daily life, and we build on that spontaneous phrase. Nonetheless, the general structure of 'context, utterance, judgment, adjustment' broadly describes our elicitation sessions.

5.1.1 Storyboard methodology

A special case of elicitation is the creation and use of storyboards. Burton and Matthewson (2015) develop a methodology whereby the work of creating contexts and minimal pairs is bolstered by elicitation materials consisting of short comics ('storyboards') with no or minimal overt linguistic material (no text, no words). The elicitation team first reviews the storyboard in a contact language like English, ensuring that the story being conveyed is clear; then, the consultant tells the story again, but this time speaks the target language (e.g. Ktunaxa). The resulting recording of the story is then an example of relatively fluent, naturalistic speech, compared to the short context/utterance pairs of 'classical' fieldwork. For examples of storyboards, please see `http://www.totemfieldstoryboards.org/`. Storyboards can be very helpful in conducting an initial investigation into a topic, since in story-telling, consultants often use a rich variety of forms and grammatical constructions from which the linguist-consultant team can build their future work.

5.2 Focus-sensitive operators in Ktunaxa

And now to the core of this chapter: what are some facts about focus-sensitive operators in Ktunaxa? The following subsections each present a particular focus-sensitive operator and briefly describe some properties of that operator (e.g. what kind of focus it indicates, what it associates with, and where in the clause it occurs). Section 5.2.1 describes the subject-focus operator *ʔisniɬ*, §5.2.2 describes the exclusive operator *¢in*, §5.2.3 describes several Ktunaxa equivalents of English 'even,' §5.2.5 describes the additive operator *ʔa·ki*, and §5.2.6 adds some information about cleft constructions.

5.2.1 Subject focus

While writing and recording the stimuli for the experiment detailed earlier in this work, Violet and I discussed the Ktunaxa preverb *ʔisniɬ*, a complex morpheme consisting of *isn-* and *-iɬ*, the adverbializer identified by Morgan (1991). Taken together, *isn-iɬ* is a focus-sensitive operator used to indicate

subject focus, and was commonly present in the experimental stimuli (as in (36a) below) as well as participants' responses (an example of which is given in (36b) below).

(36) a. Qała k   ʔisnił   ʔik kakpuḱs?

          qała k   ʔisn-ił   ʔik kakpuḱ-s

          who COMP SBJ.FOC-ADV eat pear-OBV

          'Who is eating a pear?' or 'Who is it that's eating a pear?'

      b. Malyan ʔisnił   ʔikni   kakpuḱs. (both DA and SP)

          Malyan ʔisn-ił   ʔik-ni   kakpuḱ-s

          Malyan SBJ.FOC-ADV eat-IND pear-OBV

          '[Maryan]$_F$ is eating a pear.' or 'It's Maryan who's eating a pear.'

According to Violet, (36b) is well-formed without *ʔisnił*; it translates to 'Maryan ate a pear,' and would be a suitable answer to a general 'what happened?'-type question. However, in the context of the experiment (where participants are given an image of two different, distinct people as their context) the question (36a) is more awkward without *ʔisnił*. It is still grammatical, but as a wh-question asking to identify one of two people as the subject of the answer, its most natural form includes a subject-focus marker.

In addition to focusing the subject of the transitive verbs used throughout the experiment (such as *ʔik* 'eat'), this focus marker may also 'pick out' the subject of intransitive verbs. In (37) below, *ʔisnił* associates with the subject of an intransitive verb, *hawasxuʔmik* 'sing'.

(37) CONTEXT: On vacation with my family, my room is right by the bathroom. I get woken up a few times by indistinct (and varyingly on-key) singing through the night. The next morning, I demand (and my brother-in-law answers):

      a. Qała k   ʔisnił   hawasxuʔmik wałkwayits?

          qała k   ʔisn-ił   hawasxuʔmik wałkwayit-s

          who COMP SBJ.FOC-ADV sing   last.night-OBV

          'Who was the one singing last night?'

b. Maṅis   ¢   ¢uṅis   ʔisniɫ   hawasxuʔmik

    ma-ṅis   ¢   ¢u-ṅis   ʔisn-iɫ   hawasxuʔmik

    mother-2.POSS and big.sister-2.POSS SBJ.FOC-ADV sing

      waɫkwayits.

      waɫkwayit-s

      last.night-OBV

    'Your mother and big sister were the ones singing last night.'

Finally, *ʔisniɫ* may also be used to focus an entire clausal subject (a CP). The brief dialogue in (38) demonstrates this.

(38)   CONTEXT: Some men were hunting very unsafely, but still might have succeeded in bagging a bear on their trip. The day after, two people are gossiping about the incident.

    a. K   ʔiɫwa nupqus   titqaṫniṅtik qaqapsi.

       k   ʔiɫwa nupqu-s   titqaṫ-niṅtik qaqap-s-i

       COMP kill   bear-OBV man-PL   happen-OBV-IND

      'It happened that the men bagged a bear.'

    b. [K   qa   mitxnam   titqaṫniṅtik]$_F$ **ʔisniɫ**   qaqapsi,

       k   qa   mitx-nam   titqaṫ-niṅtik ʔisn-iɫ   qaqap-s-i

       COMP NEG shoot-RECP man-PL   SBJ.FOC-ADV happen-OBV-IND

        miksan qa   iɫwaʔni nupqus.

        miksan qa   iɫwa-ni   nupqu-s

        but   NEG kill-IND bear-OBV

      'That the men didn't shoot each other is true, but they didn't bag a bear.'

In (38), the first speaker's utterance includes the clausal subject *k ʔiɫwa nupqus titqaṫniṅtik* 'that the men bagged a bear.' The second speaker corrects the first, contrasting the original subject with the focused alternative *k qa mitxnam titqaṫniṅtik* 'that the men didn't shoot each other.' In the correction (38b), the CP subject associates with the subject focus marker *ʔisniɫ*.

Subject focus, not agent focus

While the examples given in (36) and (37) give evidence that *ʔisnił* can bring the subject into focus, they could also serve as evidence that *ʔisnił* marks focus on the agent of the verb (the actor who initiates the event). That is, in the predicates *ʔik* 'eat' and *hawasxuʔmik* 'sing', the subject of the verb is also the verb's agent. In (38), this is not the case, and the subject of the verb is also its theme; the following examples serve to confirm that it is the focus associate's status as grammatical subject that matters, rather than its status as an agent.

First, *ʔisnił* may also associate with the subject of unaccusative predicates, in which the subject does not play an agentive role. Example (39) below demonstrates this generalization.

(39) CONTEXT: I wake up to a number of sad (but vague) Facebook statuses about the death of someone influential. Concerned, I ask who died, and my friend answers.

   a. Qała k ʔisnił ʔip wałkwayits?
      qała k ʔisn-ił ʔip wałkwayit-s
      who COMP SBJ.FOC-ADV die last.night-OBV

      'Who was it that died last night?'

   b. Dawit Bowie ʔisnił ʔipni.
      Dawit Bowie ʔisn-ił ʔip-ni
      David Bowie SBJ.FOC-ADV die-IND

      'It was David Bowie who died.'

The subject of a verb like 'to die' is non-agentive, but in (39), the preverb *ʔisnił* is felicitously used to indicate focus on *Dawit Bowie*.

Additionally, there is generally assumed to be a restriction on agency such that only animate entities capable of making decisions may be classified as 'agents.' The data in (40) below indicates that *ʔisnił* may also associate with inanimate, non-agentive subjects.

(40) CONTEXT: Guilty daughters trying to shift blame when asked how a lamp broke.

(Niʔi) waṫkum ʔisniɬ   umiȼxuʔni aq̇aɬmukwaʔits.

niʔi   waṫkum ʔisn-iɬ   umiȼxuʔ-ni aq̇aɬmukwaʔit-s

DEM   ball   SBJ.FOC-ADV break-IND lamp-OBV

'It was the ball that broke the lamp.'

Taken together, these examples demonstrate that *ʔisniɬ* brings the subject into focus both in situations where there is a clear agent (such as in a singing event or an eating event), as well as situations where the subject is non-agentive (such as in a dying event or an event in which a ball breaks a lamp).[1] It is for this reason that I gloss *ʔisn-iɬ* as SBJ.FOC-ADV rather than AGENT.FOC-ADV.

Adjacency to the verb

The focus marker *ʔisniɬ* must appear before the verb; other preverbal particles ending in *-iɬ* may intervene between it and the verb, as demonstrated in (41) below. (Note that in both cases, either ordering of *ʔisniɬ* and the other *-iɬ* aspect marker is acceptable; however, in some of these one is more natural than the other.)

(41) CONTEXT: talking to a friend I set up on a blind date, I may say either of these as I point out the prospective fellow.

a. Piyaɬ ʔisniɬ   sakiɬ   ʔi·kuɬni ka·pis.

Piyaɬ ʔisn-iɬ   sak-iɬ   ʔi·kuɬ-ni ka·pi-s

Peter SBJ.FOC-ADV PROG-ADV drink-IND coffee-OBV

'Peter is the one drinking coffee (right now, as we speak).'

---

[1]Another situation with a non-agentive subject the case of the clausal subjects from (38) in the previous section; 'that the men didn't shoot each other' is not an entity capable of initiating an event, but may still associate with *ʔisniɬ*.

b. | Piyał | ʔisnił | łatił | ʔi·kułni | ka·pis. |
| Piyał | ʔisn-ił | łat-ił | ʔi·kuł-ni | ka·pi-s |
| Peter | SBJ.FOC-ADV | ITER-ADV | drink-IND | coffee-OBV |

'Peter is the one drinking coffee (continuously).'

However, pronouns/proclitics, full nominals, and non-*ił* tense and aspect markers may not intervene between *ʔisnił* and the predicate. This generalization is reflected in (42a), (42b), (42c) (42d), respectively.

(42) a. | * ʔisnił | hun | akaminyaxani | A·n. |
| ʔisn-ił | hun | akaminyaxa-ni | A·n |
| SBJ.FOC-ADV | 1.SBJ | hug-IND | Anne |

(intended:) 'I'm the one who hugged Anne.'

b. | * ʔisnił | Piyał | sakił | ʔi·kułni | ka·pis. |
| ʔisn-ił | Piyał | sak-ił | ʔi·kuł-ni | ka·pi-s |
| SBJ.FOC-ADV | Peter | PROG-ADV | drink-IND | coffee-OBV |

(intended:) 'Peter is the one drinking coffee (right now, as we speak).'

c. CONTEXT: guilty daughter shifting blame about a broken lamp.

* ʔisnił	ma	ułani	ka	¢u.
ʔisn-ił	ma	uła-ni	ka	¢u
SBJ.FOC-ADV	PST	commit-IND	1.POSS	older.sister

(intended): 'It was my (big) sister who did it.'

d. CONTEXT: Someone keeps leaving their cup on the table and somebody is annoyed that it's there, so they ask "Who's the one who's always drinking coffee?

? Piyał	ʔisnił	ʔat	ʔi·kułni	ka·pis.
Piyał	ʔisn-ił	ʔat	ʔi·kuł-ni	ka·pi-s
Peter	SBJ.FOC-ADV	HAB	drink-IND	coffee

(intended): 'Peter is the one who drinks coffee.'

If a speaker wishes to express any of the ungrammatical examples above, they must reverse the order of the two preverbal elements. Corrected versions of (42) above are given in (43) below.

(43)   a.   Hun   ʔisniɬ   akaminyaxani   A·n.
            hun   ʔisn-iɬ   akaminyaxa-ni A·n
            1.SBJ SBJ.FOC-ADV   hug-IND   Anne

            'I'm the one who hugged Anne.'

       b.   Piyaɬ   ʔisniɬ   sakiɬ   ʔi·kuɬni   ka·pis.
            Piyaɬ   ʔisn-iɬ   sak-iɬ   ʔi·kuɬ-ni   ka·pi-s
            Peter   SBJ.FOC-ADV   PROG-ADV   drink-IND   coffee-OBV

            'Peter is the one drinking coffee (right now, as we speak).'

       c.   Ma   ʔisniɬ   uɬani   ka   ¢u.
            ma   ʔisn-iɬ   uɬa-ni   ka   ¢u
            PST   SBJ.FOC-ADV   commit-IND   1.POSS older.sister

            'It was my (big) sister who did it.'

       d.   Piyaɬ   ʔat   ʔisniɬ   ʔi·kuɬni   ka·pis.
            Piyaɬ   ʔat   ʔisn-iɬ   ʔi·kuɬ-ni   ka·pi-s
            Peter   HAB   SBJ.FOC-ADV   drink-IND   coffee

            'Peter is the one who (always) drinks coffee.'

These examples together demonstrate that *ʔisniɬ* must be adjacent to the verb, or only separated from it by other *-iɬ* preverbs.

Relationship to associate

So far, most examples given of *ʔisniɬ* have been in a Subject-[ʔisniɬ]-Verb(-Object) sentence, with the subject immediately preceding the focus-marker. This particular linear order is not required in *ʔisniɬ* sentences; the focus-marker may also be non-adjacent to its associate. For instance, (44) is a grammatical Verb-Subject variant of the earlier Subject-Verb example (37).

(44) CONTEXT: On vacation with my family, my room is right by the
bathroom. I get woken up a few times by indistinct (and varyingly
on-key) singing through the night. The next morning, my brother-in-
law tells me:

ʔisniɬ	hawasxuʔmik	maṅis	¢	¢uṅis
ʔisn-iɬ	hawasxuʔmik	ma-ṅis	¢	¢u-ṅis
SBJ.FOC-ADV	sing	mother-2.POSS	and	big.sister-2.POSS

waɬkwayits.
waɬkwayit-s
yesterday-OBV

'Your mother and big sister were the ones singing last night.'

The syntactic relationship between *ʔisniɬ* and the subject remains unde-
fined for the time being. Linearly, *ʔisniɬ* may precede the subject or follow it,
but I assume that they must be in the same clause, and that as long as either
of the subject or *ʔisniɬ* C-commands the other, the result is the desired focus
association. However, without a detailed examination of constituency and
dependencies in Ktunaxa, the underlying syntactic structures are uncertain.

Non-exhaustive

Many of the English translations that my consultant and I constructed for
ʔisniɬ sentences employed clefts to indicate focus. In addition to indicating
focus on the clefted constituent, English clefts imply exhaustivity (Kiss,
1998; Szabolcsi, 1981, i.a.); that is to say, when a speaker says (45a), their
utterance implies (45b).

(45)   a.   It was Anne who supplied the dessert for the party.

       b.   'Of all the potential dessert-suppliers for this party, Anne sup-
            plied the dessert, and she was the only one who did so.'

Since Vi often translates *ʔisniɬ* sentences as clefts, it became an open
question whether this focus-marker (like English clefts) also implies exhaus-
tivity. If it were to express exhaustivity, the addition of an another entity of

whom the proposition was true would lead to some sort of contradiction. For instance, if (45a) were followed by 'And Alexandra supplied them, too', the average English speaker would be surprised or confused. The data in (46) mirrors the English example, but does not result in surprise or confusion; this indicates that unlike English clefts, *ʔisnił* is not a marker of exhaustive focus.

(46)   CONTEXT: Elise bought a bag of candy to give to the 313 class she's TAing for. She leaves it at the department and it goes missing. She accuses Marianne who says:

   a.   A·n   ʔisnił   ʔikni   ninkuṅis   kaq̇łił
        A·n   ʔisn-ił   ʔik-ni   ninku-ṅis   kaq̇ł-ił
        Anne   SBJ.FOC-ADV   eat-IND   you-2.POSS   colour-ADV

           kquq¢ił   ʔikiłs...
           k-quq¢-ił   ʔik-ił-s
           COMP-sugar-ADV   eat-ADV-OBV

        '[Anne]$_F$ ate your candy...'

   b.   ¢   Alexandra   (ʔa·ki ʔikni).
        ¢   Alexandra   ʔa·ki ʔik-ni
        and   Alexandra   also   eat-IND

        (continued) '... and Alexandra (also ate it).'

In (46) above, my consultant's comment was that the addition of the (b) phrase in no way contradicted or conflicted with the (a) phrase. I conclude from this that *ʔisnił* does not imply exhaustivity; if it did, then the (a) sentence would have implied that the complete list of individuals who ate my candy consisted of {Anne}, and the (b) continuation would have been at best surprising, and at worst invalid.

Inverse clauses

Up to this point, the element associating with *ʔisnił* has always been the subject. However, all the examples thus far have used the direct version

of the verb (where the subject is the do-er), with nary an inverse (where the object is the do-er). Discussing inverse predicates in elicitation sessions can be complex, as they tend to require specific discourse situations (Dryer, 1991). Inverse-marked predicates have the potential to shed some light on the nature of *ʔisnił* as a focus marker, as they are used in passive-like sentences where the 'normal' subject becomes the object, and the 'normal' object becomes the subject.[2]

In light of this fact, Violet and I conducted some preliminary investigation into whether *ʔisnił* targets the subject of inverse verbs as well as direct ones. Given the data in (47b) below, it seems likely that *ʔisnił* is not simply a subject-focus marker in inverse cases.

(47) CONTEXT: At a daycare with a 'hug when you apologize' policy, two employees discuss two girls.

    a.

ʔisnił	ʔakaminyaxaʔni	Sapins	A·n.
ʔisn-ił	ʔakaminyaxaʔ-ni	Sapin-s	A·n
SBJ.FOC-ADV	hug-IND	Sabina-OBV	Anne

'It was Anne (subject, agent) who hugged Sabina (object, theme).'
Not possible: 'It was Sabina who hugged Anne.'

    b.

ʔisnił	ʔakaminyaxapsi	Sapins	A·n.
ʔisn-ił	ʔakaminyax-**ap-s**-i	Sapin-s	A·n
SBJ.FOC-ADV	hug-**inv-obv**-IND	Sabina-OBV	Anne

'Sabina (subject, theme) was hugged by ANNE (object, agent).' or
'It was Anne who hugged Sabina.'
Not possible: 'It was Sabina who hugged Anne.'

In both cases, the sentence is interpreted as having *A·n* as the focus. In the first, she is both the subject and the agent; however, in the second, *Sapins* is the subject of the verb (which has inverse and obviative morphology), but *A·n* is still the agent.

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[2]Recall from Section 1.3.3 that in the inverse voice, the subject of the verb is the theme of the verb, while in the direct voice, the verb's subject is also its agent.

More detailed exploration of the inverse in Ktunaxa is required to determine the precise syntactic positions of the arguments of inverse verbs. If we rely on the data in (47a) and (47b) and adhere to the definition of *ʔisniɬ* as a subject-focus marker, then we will be forced to adopt different terminology to describe the Ktunaxa direct/inverse system. That is, previous work (Aissen, 1997; Dryer, 1992; Hockett, 1966, eg.) has described that in inverse verbs, the ('lower-ranked') obviative argument is the subject, and the ('more prominent') proximate argument is the subject. But assuming *ʔisniɬ* truly does associate with the subject, the subject of the inverse (47b) example is the proximate argument *A·n* rather than the obviative argument *Sapins*. The Ktunaxa inverse therefore differs from previous descriptions of the structure of such verbs, and merits further investigation.

5.2.2 Exclusivity (only)

One of the most thoroughly-researched focus operators cross-linguistically is the exclusive operator *only*. The meaning that it contributes to a sentence is that i) the proposition holds as given, and ii) the proposition is not true of any of the alternatives. The English example at the start of this chapter, partially repeated here in (48), can serve to demonstrate this meaning.

(48) CONTEXT: *At a party, Violet is reporting back to a group of her friends after scouting out the dessert table. She says:*
I only saw the CAKE.

Coming from Violet, the declaration 'I saw the cake' asserts that the proposition 'Violet saw the cake' is true, while the presence of 'only,' and its association with 'cake' asserts that all other propositions of the type 'Violet saw [an alternative to the cake, such as the fruit or the cookies]' are false.

To convey the same sort of meaning in Ktunaxa, the word *ȼin* is used, as in (49) below.

(49) Context A: talking to a friend I set up on a blind date, pointing out the prospective fellow. We are standing outside the cafe, and peering

in through the window to see that only one person is drinking coffee–
the rest all have smoothies or food.

Context B: similar to Context A, except that there are multiple
coffee-drinkers, including Peter.

Ȼin	Piyał	(sakił)	i·kułni	ka·pis.
ȼin	Piyał	sak-ił	i·kuł-ni	ka·pi-s
only	Peter	PROG-ADV	drink-IND	coffee-OBV

'Only Peter is drinking coffee.' (or: 'Peter is the only one drinking
coffee.'

The sentence *Ȼin Piyał (sakił) i·kułni ka·pis* asserts that Peter is drinking
coffee, and all other alternatives of the type '[someone else] is drinking coffee'
are false. It is therefore felicitous to say (49) in Context A above, but
disallowed in Context B.

Associates

It is not always the case that words of different grammatical roles and cate-
gories may associate with the same focus operator. For instance, *ʔisnił* may
associate with the subject but not the predicate, and in Kwakwala, a Pacific
Northwest language, there are a variety of words translatable as 'only,' and
whose selection depends on whether the associate is contained inside the VP
or is outside of it (Littell, 2016, pp. 256-282). However, Ktunaxa employs
the same exclusive marker to discount alternative sets of full DP subjects as
it employs for verbs, full DP objects, pronominal subjects, object agreement
morphemes, and adjectival modifiers.

The Ktunaxa language dictionary lists *ȼin* as being equivalent to 'only,
just' (*Ksanka A·kłukaqwum, Kootenai Dictionary*, 1999, p.46), and provides the
following examples.

(50)   a.   Ȼin hu qałwi·ni.
            'I just thought of it.'[3]

_____

[3]Note that the English translation of (50a) is ambiguous between two situations. In
the first, the speaker had thought of 'it' but not acted upon it ('I only thought of it, I

b. A: Kin ʔitkaku̓ʔniɬ ʔiniȼka?

'Do you set your trap for gophers?':

B: Waha, ȼin ʔat hu mitxni ʔiniȼka.

'No, I just shoot gophers.'

In the cases of (50a) and (50b), the *ȼin* associates with the verb. That is to say, the alternative sets being excluded from consideration are populated by verbs in both cases. This happens explicitly in (50b), where *mitxni* 'shoot' is contrasted with *ʔitkaku̓ʔniɬ* 'set trap for.'

It is therefore established that *ȼin* may associate with subjects and verbs; it may also indicate focus on other nominals (objects), as well as pronominal subjects, object agreement suffixes, and adjectival modifiers. These generalizations are demonstrated respectively in (51), (52), (53), and (54) below.

(51) CONTEXT: preparing for colloquium, I'm surprised that there are two pots of coffee and tea on the table because I thought it was my job. I ask my supervisor (and then she replies)…

a.

K	ʔitu·kin	Maɬi	ka·pis	ȼ	a·quɬaqpiks?
k	ʔitu·kin	Maɬi	ka·pi-s	ȼ	a·quɬaqpik-s
COMP	prepare.liquid	Mary	coffee-OBV	and	tea-OBV

'Did Mary make coffee and tea?'

b.

Waha,	ȼin	ʔitukinni	ka·pis.	(Ȼan	siɬ
waha	ȼin	ʔitukin-ni	ka·pi-s	Ȼan	siɬ
no	only	prepare.liquid-IND	coffee-OBV	John	PROG

ʔitukinni	a·quɬaqpiks.)
ʔitukin-ni	a·quɬaqpik-s
prepare.liquid-IND	tea-OBV

'No, she only made COFFEE. (John's making tea.)'

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didn't actually do it.'), and in the second situation the speaker is describing a sudden flash of inspiration ('Why didn't you say something earlier?' 'I just thought of it now!'). Only the former one of those two readings is focus-sensitive in the meaning explored by this chapter, and according to my consultant that is indeed the more accurate translation of *Ȼin hu qaɬwi·ni*. It would be infelicitous to say *Ȼin hu qaɬwi·ni* to express the recency, 'suddenness,' or 'surprisingness' of a thought.

(52) CONTEXT: I have a favourite cup in our communal department kitchen, and it is hideous. No one else uses it or likes it. Telling my sister about this cup, I say…

Ȼin hu ȼɫakiɫni naʔ ʔaȼunana.

ȼin hu ȼɫakiɫ-ni naʔ ʔaȼu-nana

only 1.SBJ like-IND DEM dish-DIM

'Only I like this cup.'

(53) CONTEXT: Alexandra asks why Elise ignored Marianne when she ran into Alexandra and Marianne earlier.

Ȼin hun ʔupxnisni, hu qa ʔupxni Malyan.

ȼin hun ʔupx-nis-ni hu qa ʔupx-ni Malyan

only 1.SBJ see-2.OBJ-IND 1.SBJ NEG see-IND Marianne

'I only saw YOU, I didn't see Marianne.'

(54) CONTEXT: shopping for housewares with my friend, who's trying to convince me to buy blue cups to match my decor, I refuse and hold up the red cup that I prefer, saying…

Ȼin naʔ kanuhus ʔaȼunana hu ȼɫakiɫni.

ȼin naʔ kanuhus ʔaȼu-nana hu ȼɫakiɫ-ni

only DEM red dish-DIM 1.SBJ like-IND

'I only like this RED cup.' (… not this blue one)

In light of these data, I conclude that unlike some languages of the Pacific Northwest Sprachbund, Ktunaxa employs the same exclusive marker to discount alternative sets of verbs as it employs for subjects, objects, and adjectival modifiers.

Position in sentence

In every example thus far, *ȼin* has been clause-initial. This section explores whether there are other options for the position of the word in the sentence.

First, in relation to subject pronominal clitics, *¢in* may not intervene between the subject pronoun and the verb. The examples in (55) and (56) below demonstrate this.

(55) CONTEXT: I see Vi waiting in her van out front, and ask if she's waiting for Martina and Strang. She replies...

a. Ȼin Strang hu sawi¢payati. (Małtins ¢ xaʔł¢inʔis
   ¢in Strang hu sawi¢payat-i Małtin-s ¢ xaʔł¢in-ʔis
   only Strang 1.SBJ await-IND Martina-OBV and dog-3.POSS

   ¢xał ¢inamłupqaʔni ʔa·kitłaʔis.)
   ¢-xał ¢inamłupqa-ni ʔa·kitła-ʔis
   FUT-MOD run-IND home-3.POSS

   'I'm only waiting for Strang.' (Martina will run home with their dog.)

b. ? Hu ¢in sawi¢payati Strang.
   hu ¢in sawi¢payat-i Strang
   1.SBJ only await-IND Strang

   (intended:) 'I'm only waiting for Strang.'

(56) CONTEXT: I have a favourite cup in our communal department kitchen, and it is hideous. No one else uses it or likes it. Telling my sister about this cup, I say...

a. Ȼin hu ¢łakiłni naʔ ʔa¢unana.
   ¢in hu ¢łłakił-ni naʔ ʔa¢u-nana
   only 1.SBJ like-IND DEM dish-DIM

   'Only I like this cup.'

b. ? Hu ¢in ¢łakiłni naʔ ʔa¢unana.
   hu ¢in ¢łakił-ni naʔ ʔa¢u-nana
   1.SBJ only like-IND DEM dish-DIM

   (intended:) 'Only I like this cup.'

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The grammatical examples (56a) and (55a) both begin with *¢in*, which precedes and (I assume) takes scope over the focus. Attempts to relocate *¢in* to a position immediately preceding the verb itself fail regardless of whether it still scopes over its associate, as it does in (55b), or whether it remains adjacent to its associate, as in (56b). From this, we may conclude that *¢in* may not interpose between the subject pronoun and the verb (this position seems only to be occupiable by *-ił* words and tense or aspectual markers).[4]

The first generalization is thus that *¢in* may not be part of the verbal complex (the linguistic content that contains the subject pronouns, tense and aspect markers, *-ił* preverbs, and the verb itself).

The second generalization observable in the data is that *¢in* may not follow its associate—it must precede it. Example (56b) above violates this generalization, but its ungrammaticality might stem from *¢in*'s intervening in the verbal complex in a position it may not occupy, rather than stemming from the fact that *¢in* follows its associate. The contrast between the examples in (58a-58b) and their grammatically acceptable equivalents in (55a) and (58c) more clearly demonstrates that *¢in* must precede its associate.

(58) CONTEXT: I see Violet waiting in her van out front, and ask if she's waiting for Martina and Strang (*Kin sawi¢kpayat Strang ¢ Małtins?*). She replies…

    a.   * Strang   ¢in   hu   sawi¢payati.

           Strang   ¢in   hu   sawi¢payat-i

           Strang   only   1.SBJ   await-IND

    (intended:)'I'm only waiting for Strang.'

---

[4] There is a Ktunaxa morpheme that conveys a similar meaning to *¢in*, but which occupies this immediately pre-verbal position: *unił*, exemplified below.

(57)   Hun   unił   ¢łakiłni   naʔ   ʔa¢unana.
        hun   un-ił   ¢łakił-ni   naʔ   ʔa¢u-nana
        1.SBJ   only-ADV   like-IND   DEM   dish-DIM

    'I alone/Only I like this cup.'

It is polymorphemic, ending in the *-ił* adverbial suffix described in Morgan (1991, p. 238), but the semantics of the *un-* morpheme are left to future work.

b. * Waha, hu   sawi¢kpayati Strang   ¢in.

     waha hu   sawi¢kpiyat-i Strang   ¢in

     no   1.SBJ await-IND   Strang only

(intended:) 'No, I'm only waiting for Strang.'

c. Waha, ¢in   hu   sawi¢kpayati Strang.

   waha ¢in   hu   sawi¢kpayat-i Strang

   no   only 1.SBJ await-IND   Strang

'No, I'm only waiting for Strang.'

In (58a), the focus-sensitive operator follows its associate sentence-initially, and in (58b) it follows its associate sentence-finally. Neither of these permutations is grammatically acceptable; instead, my consultant recommended (58c) in which the focus-sensitive operator precedes the verb, and its associate *Strang* follows the verb. From this, I conclude that *¢in* must precede (and scope over) its associate.

The third generalization I put forward specifies that while preceding its associate might be a necessary condition for *¢in* to be grammatical, it is not a sufficient one. The data in (59) below demonstrate that it may not intervene between a demonstrative and a noun.

(59)   CONTEXT: Marianne tries to buy me a nicer-looking replacement for my favourite ugly cup, but it doesn't take. I reject the mug, clutching my ugly favourite to myself and saying…

a. ¢in   na?   ?a¢unana   hu   ¢łakiłni.

   ¢in   na?   ?a¢u-nana   hu   ¢łakił-ni

   only DEM dish-DIM   1.SBJ like-IND

'I only like this cup.' (and no others)

b. * Na?   ¢in   ?a¢unana   hu   ¢łakiłni.

    na?   ¢in   ?a¢u-nana   hu   ¢łakił-ni

    DEM only dish-DIM   1.SBJ like-IND

(intended:)'I only like this cup.'

In (59a), *¢in* precedes and associates with the DP *naʔʔa¢unana* 'this cup'; in its ungrammatical counterpart (59b), it intervenes between the demonstrative *naʔ* 'this' and the noun *ʔa¢unana* 'cup'. These sentences show that while *¢in* may associate with bare nouns (see 51) and pronominal clitics (see 52), when associating with a full DP constituent it must precede the whole DP and not only the NP.[5]

The fourth fact about *¢in*'s distribution has to do with locality: now that it has been established that it must precede/scope over its associate, the question is raised of whether its associate must be the closest constituent over which it scopes. If it must associate with the closest possible associate, there would be no sentences in which its association would be ambiguous; this is not the case, as demonstrated by the examples in (60) below.

(60) a. CONTEXT A: Peter is a spoiled man who only eats indoors and refuses to go on picnics.

Ȼin ʔat ʔikni Piyał ʔa·qłas.

¢in ʔat ʔik-ni Piyał ʔa·qła-s

only HAB eat-IND Peter indoors-OBV

'Peter only eats INDOORS.'

b. CONTEXT B: Peter is a member of a naturalist group who insist on living their lives completely in the open air. He is the only one who will break with their ways and venture indoors to cook, eat, do the shopping, and so forth.

Ȼin ʔat ʔikni Piyał ʔa·qłas.

'Only PETER eats indoors.'

c. CONTEXT C: Peter is a member of a naturalist group who insist on living their lives completely in the open air. He cheats a little, and eats indoors (though he does everything else outside).

Ȼin ʔat ʔikni Piyał ʔa·qłas.

'Peter only EATS indoors.'

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[5] This generalization is less about *¢in* in particular, and more about the existence of a DP in the language.

In (60a), the excluded alternatives are alternatives to the locative adjunct (Peter will eat nowhere other than indoors); in (60b), the same sentence this time excludes alternatives to the subject (nobody other than Peter will eat indoors); and finally, in (60c) the context leads the excluded alternatives to contrast with the verb (Peter will eat indoors, but will not do anything else inside). In these cases, it is apparent that *¢in* may associate with a constituent that it is not adjacent to, as long as it precedes/scopes over this constituent.

The fifth and final generalization I address in this section is the question of whether *¢in* must be sentence-initial, or whether it can follow a verb. In discussions with my consultant, this question was the source of more controversy than the others, and I cannot offer a conclusive answer at this time. Some examples, like those in (61a) were judged to be unacceptable when we first discussed them, while others that had nearly identical structures (62) were perfectly fine. Then, when we revisited (61a) in a later session, my consultant rated them as acceptable.

(61) a. CONTEXT: I see Erin waiting in her van out front, and ask if she's waiting for Martina and Strang. She replies …

*/✓	Hu	sawi¢kpayati	¢in	Strang.
	hu	sawi¢kpayat-i	¢in	Strang
	1.SBJ	await-IND	only	Strang

(intended:) 'I'm only waiting for Strang.'

   b. CONTEXT: preparing for colloquium, I'm surprised that there are two pots of coffee and tea on the table because I thought it was my job. I ask my supervisor if Mary made both, and then she replies…

*/✓	Waha,	ʔitu·kinni	¢in	kapis.
	waha	ʔitu·kin-ni	¢in	kapi-s
	no	prepare.liquid-IND	only	coffee-OBV

(intended:) 'No, she only made coffee.' (… John made tea.)

(62) a. CONTEXT: You're looking to buy new dishes, and you take a friend with you to help you decide. The store is displaying a set of red dishes quite prominently, but the problem with that set is that you only like the cup (and not the plate or bowl, etc.). As you examine them, you remark to your friend…

Hu   ȼłakiłni ȼin   kanuhus ʔaȼunana.

hu   ȼłakił-ni ȼin   kanuhus ʔaȼu-nana

1.SBJ like-IND only red   dish-DIM

'I only like the red cups.' (… not the dishes)

b. CONTEXT: I have a favourite cup. Marianne got a prettier new cup for me, but the old one is still my favourite. I tell her…

Hu   ȼłakiłni ȼin   naʔ ʔaȼunana.

hu   ȼłakił-ni ȼin   naʔ ʔaȼu-nana

1.SBJ like-IND only DEM dish-DIM

'This is my only favourite cup.' (… your new one isn't welcome here.)

A pattern emerged in the contexts rather than the sentences themselves: the initially-unacceptable examples were all in response to questions, while the acceptable ones were comments volunteered as part of a conversation, not in response to a direct question. When we reviewed each example, we varied the contexts as well as the sentences, ensuring that Vi evaluated both (61a) and (62) as remarks with no prompting questions, and as answers to overt questions. They were all judged to be acceptable in all situations.[6] My

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[6] The only sentence that was restricted with respect to whether it responded to a question or not was (63), which was only suitable when answering a question, and not as a volunteered remark as the interlocutors stood by a display of cups.

(63) CONTEXT: Shopping for new mugs for the department, we see a display of various coloured cups, mostly terrible colours. My friend asks me *Qapsin kin ȼłakił?* 'what/which do you like?'

Ȼin   hu   ȼłakiłni kanuhus aȼunana.

Ȼin   hu   ȼłakił-ni kanuhus aȼu-nana

only 1.SBJ like-IND red   dish-DIM

'I only like the red cups.' (not the blue ones)

conclusion for the time being is that *¢in* may indeed follow the verb, but that there are some as-yet-undefined restrictions on whether such a construction is contextually appropriate or not.

Prosody

Since *¢in* does not need to be adjacent to its associate, it is possible for there to be ambiguity about the constituent it is associating with. For instance, in (64) below, either Context A or Context B could be appropriate. In Context A, *¢in* associates with *ʔa¢unana* 'cup(s),' excluding the set of alternatives to cups (such as plates and bowls); In Context B, *¢in* associates with *kanuhus* 'red,' excluding the set of alternative colours (such as blue, orange, and black).

(64)   Context A: You're looking to buy new dishes, and you take a friend with you to help you decide. The store is displaying a set of red dishes quite prominently, but the problem with that set is that you only like the cups, but not the plates or bowls, etc. As you examine them, you remark to your friend…

Context B: Shopping for new household goods, you notice a couple beautiful red cups standing amidst a field of cups of other colours. The other-coloured cups seem forgettable and drab, but the red cups really strike you as lovely, so you tell your friend…

Ȼin   ʔin   kanuhus ʔa¢unana hu   ¢łakiłni.

¢in   ʔin   kanuhus ʔa¢unana hu   ¢łakił-ni

only   DEM   red   dish-DIM 1.SBJ like-IND

'I only like these red cups.' (…not the red bowls; OR …not the blue ones)

Unlike English, Ktunaxa does not seem to employ a pitch accent to indicate what associates with *¢in*, but rather relies on pragmatic context to disambiguate sentences such as (64). Figures 5.1 and 5.2 demonstrate the

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One possibility for this preference is that it is an ambiguous utterance; the utterance-initial *¢in* may associate with any number of constituents in the sentence, and without an overt question giving context the sentence may become confusing.

absence of differential pitch accents for the same sentence in the two different contexts.
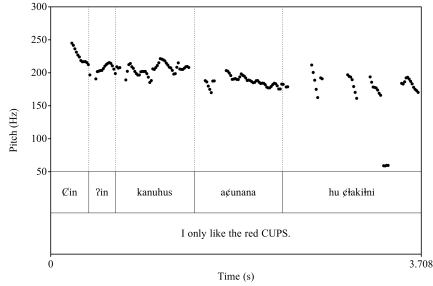

Figure 5.1: Pitch track of (64) in Context A
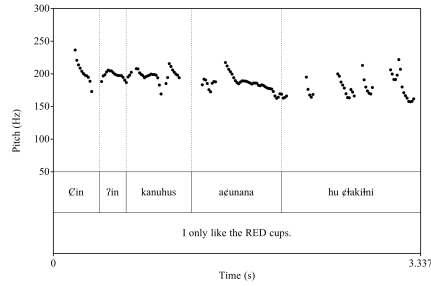
Figure 5.2: Pitch track of (64) in Context B

The only apparent pitch excursion is in Figure 5.2, but upon listening to the recording, the change in pitch is not impressionistically large (the size of the excursion in the figure is also partially due to a Praat calculation error transitioning from *¢* to *u*). Futhermore, the word upon which the accent falls (*a¢unana* 'cup') is not the focus associate in that context; from the results reported on in Chapter 3, I would predict that a meaningful pitch accent would fall on the focus, rather than after it. However, this case is not the ideal one for testing the prediction, as it may be argued that the whole DP *ʔin kanuhus ʔa¢unana* 'these red cups' may be interpreted as a Focus Phrase in both A and B contexts. The results are thus inconclusive as to whether associates of *¢in* may be identified by pitch accents.

The question of whether prosody may be used to indicate which constituent is the focus associate in *¢in* sentences would benefit from investigation with a more rigorous experimental model, and from examining sentences which distinguish between Focus Phrases, such as (60), but my interim conclusion is that it is not used in this way.

Conjunction 'only'

English *only* has a less-studied use: in addition to functioning as a focus-sensitive operator within a clause, it may also join two clauses together as

a conjunction like *but*, *except*, or *although*. The role it fills in situations like (65a) may be described as the 'conjunctive *only*.'

(65) a. I'm sorry we all flaked on your party last night. I swear I was going to come, **only I got sick like everybody else** so I decided to stay in.

  b. # Only I got sick, like everybody else.

Note that the interpretation of *only* in (65a) does not exclude alternatives to *I*—in fact, the sentence overtly includes these alternatives in the proposition. There is no contradiction inherent to (65a) the way there is with (65b), in which *only* does associate with *I*. I attribute that difference between those two sentences to a difference in whether *only* is a focus operator (as in 65b) or a conjunction (as in 65a).

Ktunaxa *¢in* seems to be able to fill the same two roles as English *only*. In the following dialogue, the question (66) may be replied to by either of the sentences in (67a) or (67b); note that though there is no obvious focus associate in both responses, they contain the focus-sensitive operator *¢in*.

(66) CONTEXT: Seeing your friend for the first time in a little while, you ask how she is and she replies.

  Ka? kin   ?a·kałxu?ni?
  ka? k-hin   ?a·kałxu?ni
  WH COMP-2.SBJ feel

  'How are you feeling?'

(67) a. Hu   sukiłxuni?ni,   ¢in ka   ?a·kłam pa·mik   ?isi?ni.
      hu   sukiłxuni-ni   ¢in ka   ?a·kłam pa·mik   ?isi-ni
      1.SBJ good.health-IND only 1.POSS head   little.bit hurt-IND

      'I'm good, but I have a headache.'

b. Hu   sukiɫxuniʔni,   ¢in hu ʔuyi̓ttiɫni.

    hu   sukiɫxuniʔni   ¢in hu ʔuyi̓tt-iɫ-ni

    1.SBJ good.health-IND only 1.SBJ fire-PASS-IND

    'I'm feeling well, but I just got fired.'

In the first response (67a), one might make the case that *¢in* has the effect of limiting the severity of the headache (it is only a little one, not a big one), but the sentence is equally acceptable without *pa·mik*. Also, the second response (67b) lacks a clear candidate for focus association other than, perhaps, the subject *hu* 'I'. If *¢in* were indeed associating with the subject, though, I would predict that it would be pragmatically odd if the subject were to change to include the whole set of alternatives (somewhat like 65b above). However, the example (68) would also be a suitable response to (66).

(68)   Hu   sukiɫxuniʔni,   ¢in hu ʔuyi̓ttiɫnałaʔni.

    hu   sukiɫxuni-ni   ¢in hu ʔuyi̓tt-iɫ-nała-ni

    1.SBJ good.health-IND only 1.SBJ fire-PASS-1.PL.SBJ-IND

    'I'm feeling well, but we all got fired.'
    Comment: If the business went bankrupt, this could happen.

In (68) the subject includes all employees of the company, and therefore there is no alternative set easily accessible in the context. I therefore conclude that *¢in* serves dual functionality as both a focus-sensitive operator expressing exclusivity, and as a sentential conjunction expressing a concessive meaning with no exclusive implication.

5.2.3 Scalar additives (even)

English *even* is an additive (or inclusive) focus-marker, with an implication that the associate is low on a 'likeliness' scale. For a examples of its use, see (69) below.

(69) a. Even DAVID BOWIE had bad days.

  b. We even made it to VICTORIA.

The interpretation of (69a) may be paraphrased as 'David Bowie had bad days; others also have had bad days, but David Bowie seems unlikely to be among them,' and (69b) may be paraphrased as 'We made it to Victoria, which is further than we seemed likely to have been able to travel.' Somewhat like another focus-sensitive operator discussed here, *only*, *even* invokes alternatives; however, rather than excluding these alternatives from the final interpretation of the proposition, it includes them.[7]

This section provides some description of Ktunaxa's scalar additive operators that function like English *even*. There remain many open questions, and this description is incomplete. The discussion is organized by which operator is being discussed, and gives several examples of use of each of *¢inam-¢*, *mika*, and *miksan*.

Scalar operator 1: **¢inam-¢**

The first scalar additive operator to be described here is *¢inam-¢*. Its morphological origins are likely complex: with an ejective first segment, *ċinam* means 'to go,' and *¢* on its own is the conjunction 'and.' Assuming that *¢inam* and *ċinam* are related, one might deconstruct this operator to "x goes too' or similar, building up the composite meaning from its parts.

This operator may associate with DPs (or at least subject DPs and pronouns), and potentially with whole events, as well. The example (70) below, adapted from *Ksanka A·kɫukaqwum, Kootenai Dictionary* (1999, p. 143), shows one example of this focus-sensitive operator.

(70) a. A: ʔat kin ʔi'tkin wa¢kna?
      'Do you make jerky?'

  b. B: Waha, ʔat hu ńaquɫɫi·miɫni suyapi wa¢knaʔis.
      'No, I buy suyapi (white man's) jerky.'

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[7]Informally, consider the following: if we 'even' made it to Victoria, there is a (more nearby) alternative to Victoria such that it seems more likely we made it to that place; we also made it to that place.

c. A: Hin sił łita·kati?ni, **¢inam-¢** Su·sap ?at ṅitkini wa¢knas.

'You're useless, even Joseph makes jerky.'

Comment: *¢inam-¢* implies that *Su·sap* is a bad cook, and that whoever you're talking to should be a better cook than him. It's rude or teasing to say this sentence.

When uttered aloud, the associate of *¢inam-¢* carries a pitch accent; Figure (5.3 shows an excerpt from a pitch track of (70), with *Su·sap* having a markedly high pitch compared to the rest of the utterance.
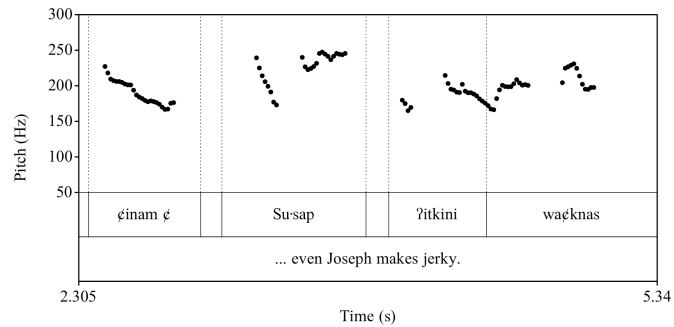
Figure 5.3: Pitch track of (70), with pitch excursion on Su · sap

Recall from §5.2.2 that *¢in* 'only' does not seem to require its associate carry any particular intonational contour or accent; the pitch accent in Figure 5.3 indicates that the (tentative) lack of pitch accent for associates of *¢in* 'only' is not a general attribute of Ktunaxa focus-sensitive operators. Some seem to require prosodic marking of their associates, while others do not.

Continuing in discussion of *¢inam-¢* more specifically, in addition to associating with subject DPs such as *Su·sap*, it may also associate with full events, as in (71).

(71) Ka   nasuʔkinała   sa·niɬxuniʔni,   ¢   paq̓miʔni   ya·qakiɬ

ka   nasuʔkin-nała   sa·niɬxuniʔ-ni   ¢   paq̓mi-ni   ya·qak-iɬ

1.POSS chief-1.PL.SBJ bad.health-IND and broke-IND place-ADV

ʔa·quɬiyam,   ¢inam-¢ hu   ʔuyitiɬnałani.

ʔa·quɬi-yam   ¢inam.¢ hu   ʔuyit-iɬ-nała-ni

buy-INDF.SBJ even   1.SBJ fire-PASS-1.PL.SBJ-IND

'Our boss got sick, and then the store had no money, and then we even all got fired.'

In (71), the speaker describes a string of bad luck: the boss got sick, the store went bankrupt, and then all the employees got fired. The use of *¢inam-¢* implies that the final outcome (the firing of all the employees) was considered unlikely or extreme, which certainly it is. This so far fits with the analysis that I have proposed, that *¢inam-¢* is a scalar additive operator like English *even*.

However, sentence (72) indicates that there is something lacking in this analysis. When *¢inam-¢* associates with a subordinate clause, it can shed the additive scalar implicature, and gain a concessive reading somewhat like the conjunction form of *¢in*.

(72) CONTEXT: Somebody bumps into a friend they haven't seen for a while, and asks how they are. The friend replies:

Hu   sukiɬxuniʔni,   ¢inam-¢ ku   ʔuyitiɬnała.

hu   sukiɬxuni-ni   ¢inam.¢ k-hu   ʔuyit-iɬ-nała

1.SBJ good.health-IND even   COMP-1.SBJ fire-PASS-1.PL.SBJ

'I'm feeling well, (even) though we were all fired.'

The utterances in (71) and (72) differ in two ways. The first is their form, with (71) having a matrix clause declarative verb 'we were fired' and (72) having a subordinate clause 'that we were fired.' The second is their context/effect: the associate of *¢inam-¢* in (71) adds to the set of 'unfortunate things,' while the associate in (72) has a contrast between the two contributions of the utterance. (The speaker in that latter case is feeling positive,

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but they have suffered a negative.) These two factors are linked somehow, as evinced by my consultant's comments on (73).

(73) # Hu   sukiɫxuniʔni,   ¢inam-¢ hu   ʔuyitiɫnałaʔni.
         hu   sukiɫxuni-ni   ¢inam.¢ hu   ʔuyit-iɫ-nała-ni
         1.SBJ good.health-IND even   1.SBJ fire-PASS-1.PL.SBJ-IND

Intended: 'I'm feeling well, even though we were all fired.'
Comment: if you were going to say the second half, it would have to be like 'this bad thing happened, and then that happened, and then even we were all fired too!' You can't say it in this context.

Associating *¢inam-¢* with an event using a matrix declarative verb, but in a contrastive context as in (73) does not yield a felicitous sentence of Ktunaxa. The connection between the clause type of the associate (matrix vs. subordinate) and the interpretation (scalar additive vs. contrastive), is left for future work, but *¢inam-¢* promises to be an interesting operator for the exploration of focus in Ktunaxa.

Scalar operator 2: miksan

The second scalar additive operator I address is *miksan*. The primary function of this word given in the dictionary is as a conjunction akin to English *but*, as in (74) adapted from *Ksanka A·kɫukaqwum, Kootenai Dictionary* (1999, p.149).

(74) Mu   ¢xaɫ ¢̇inaxi, **miksan** ma¢ naʔ taxa.
         m-hu   ¢xaɫ ¢̇inax-i miksan ma¢ naʔ taxa
         PST-1.SBJ FUT go-IND but   NEG DEM TEMP

'I was going to go, but not now.'

In addition to this function, *miksan* may be used to indicate additive scalar focus for predicates, as in (75). Unlike *¢inam-¢* it does not extend to expressing additive scalar focus for subject DPs. This restriction is demonstrated by the awkwardness of (76), which has the same form as (75b) but is not suitable in a different context.

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(75) CONTEXT: Elise (who is bad at choosing gifts) is getting ready to go home for Christmas. She calls her mother and says *Hu ¢makił qałwini ku¢ ʔupxnis* 'I'm really looking forward to seeing you.' ...

a.
Mu	¢makini	ku¢		knuxu	WestJet	¢	hun
ma-hu	¢maki-ni	k-hu-¢		knuxu	WestJet	¢	hun
PST-1.SBJ	firm-IND	COMP-1.SBJ-FUT		fly	WestJet	and	1.SBJ

ʔitkini	ku¢		qa	ʔitkin	qapsin	ʔiťwun	miyits.
ʔitki-ni	k-hu-¢		qa	ʔitkin	qapsin	ʔiťwun	miyit-s
make-IND	COMP-1.SBJ-FUT		NEG	make	what	ten	time-OBV

'I've booked my flight, I've arranged 10 days off work.'
(lit: I've locked in that I'm going to fly WestJet and I've made it that I'm not going to work for 10 days.)

b.
... miksan	hun	ʔaqułiłik	ʔa·qułiyam!
miksan	hun	ʔaqułiłik	ʔa·qułiyam
but	1.SBJ	buy	present[9]

'I even [bought PRESENTS]$_F$!'

(76) CONTEXT: The holiday spirit has taken over the world, and everyone (even infamous miser Elise) is buying presents....

a.
Scrooge	ʔaqułiłik	ʔa·qułiyams,	ʔat	qa	yunanhat	niłkus
Scrooge	ʔaqułiłik	ʔa·qułiyam-s	ʔat	qa	yuna-hat	niłku-s
Scrooge	buy	present-OBV	HAB	NEG	many-have	money-OBV

ʔaqułiłik	ʔa·qułiyams...
ʔaqułiłik	ʔa·qułiyam-s
buy	present-OBV

'Ebenezer Scrooge bought presents, people with little money bought presents...'

b. # Miksan Elise/hun ʔaquɬiɬik ʔaʔa·quɬiyam(s).

    miksan Elise/hun ʔaquɬiɬik ʔaʔa·quɬiyam-s

    but   Elise/1.SBJ buy   gift-OBV

(intended:) 'Even ELISE/I bought presents.'

Comment: A better translation in this case would be 'But I bought presents,' but that's still strange. This context indicates that you didn't usually like to buy presents, so it's a real effort that you did that. With *miksan* it's not in line with that. When you say *miksan* it's almost like some other people went shopping for *themselves* but you, when you were shopping, bought presents for others.

These specific responses and comments from my consultant indicate that *miksan* may function as a contrastive conjunction—see the preferred context for (76)—or as a scalar additive operator associating with predicates as in (75). Its interactions with different clause types and with other associates (e.g. object or locative DPs, or temporal clauses) remains unknown, and may be pursued in future research.

Scalar operator 3: mika

The third and final word identified here as a scalar additive operator is *mika*, a word which may also function as something like a deontic modal ('supposed to'). Examples adapted from *Ksanka A·kɬukaqwum, Kootenai Dictionary* (1999, p. 152) in (77) below show first the deontic use of *mika*, then the scalar additive one.

(77) a. Mika mu   ¢xaɬ   ʔitkini.

          mika m-hu   ¢-xaɬ   ʔitki-ni

          even PST-1.SBJ FUT-MOD make-IND

          'I was supposed to fix it.'

b. Mika ṅuniɫuxamnam   niɫi   ȼ   'at   ṅutmiɫi'itni.
mika ṅuniɫ-uxam-nam   niɫi   ȼ   'at   ṅutmiɫi'it-ni
even under-go?-RECP shade and HAB warm-IND

'Even when they went under the shade, it was warm.'

An important fact to note is that in each instance where the translation has a deontic reading ('should,' 'supposed to') the combined future-modal operator *ȼ-xaɫ* is present. I have not investigated the link between *ȼ-xaɫ* and *mika*, but I believe there is one; for the time being, I assume that the modal reading of these *mika* sentences originates not from the operator itself, but rather from *ȼ-xaɫ*. When we examine instances of *mika* alone, like (77b), we see that it can associate with location-related predicates ('they went under the shade'), and contribute an additive meaning with the implication that the associate is evaluated as an unlikely event in the context. For instance, in (77b), it seems unlikely that it would be warm in the shade, but this nevertheless turned out to be the case.

Examining its distribution further, the results are mixed concerning what types of constituents it may associate with. The example (78) shows an instance it associating with a predicate *ʔaquɫɫiɫik ʔa·quɫiyams* 'buy presents,' which is judged to be acceptable, while the (79) context in which it associates with a subject DP *Elise/hun* 'Elise/I' is rejected.

(78)   CONTEXT: Elise is a procrastinator telling her father she's surprisingly prepared for her visit home for Christmas. She's booked her tickets, arranged for time off work, and…

...mika Elise/hun ʔaquɫɫiɫik   ʔa·quɫiyam(s).
       mika   Elise/hun   ʔaquɫɫiɫik
       even   Elise/1.SBJ buy

'Elise/I even/also bought presents.'
Comment: This is also like 'in addition to'. Her buying presents isn't as surprising as with *miksan*.

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(79)   CONTEXT: The holiday spirit has taken over the world, and every-
       one (even infamous miser Elise) is buying presents. Scrooge bought
       presents, people with little money bought presents,…

       #... mika   Elise/hun   ʔaquɬiɬik   ʔaꞏquɬiyam(s).

       mika   Elise/hun   ʔaquɬiɬik   ʔaꞏquɬiyam-s

       though Elise/1.SBJ buy   present-OBV

       Intended: 'Even Elise/I bought presents.'

       Comment: A better translation is 'Even though I bought presents.'
       You could say it if you weren't allowed into a wedding even though
       you bought presents.

The comment in reply to (78) seems to indicate that the scalar contri-
bution (how unlikely the associate is) is weaker than that of *miksan* when
taking VP scope, but it retains the additive meaning ('also'). Meanwhile,
the comment for (79) implies that (somewhat like *miksan*), *mika* may not
associate with subject DPs. This restriction does not seem ban DPs univer-
sally, though, since examples like (80) permit the association of *mika* with
object DPs.

(80)   CONTEXT: Michael's been looking for his lunch in the fridge. Some-
       one informs me:

       a.   Misaɬ   wuqkni   kiʔiks...

            Misaɬ   wuqk-ni   ki-ʔik-s

            Misa   find-IND COMP-eat-OBV

            'Misa found (his) food.'

       b.   Mika   wuqkni   kquqȼiɬ   ʔikiɬs!

            mika   wuqk-ni   kquqȼiɬ   ʔiki-ɬs-

            mika   find-IND COMP-sugar-ADV   eat-PASS-OBV

            'He even found a chocolate bar.' (lit. 'He even found sweet food.')

In (80), the subject and verb remain constant between the two halves
of the statement, but the object changes; for this reason, I believe that the

additive operator *mika* associates with the object DP *kquq¢iⱡ ʔikiⱡs* 'chocolate bar.' I propose that there is a structural restriction such that *mika* may associate with things within the VP, but not above it.

In summary, there are at least three scalar additive operators in Ktunaxa: *¢inam-¢*, *miksan*, and *mika*. The second of those, *miksan*, may also function as a conjunction 'but', and the third, *mika*, has an as-yet undefined relationship with the deontic modal *¢xaⱡ*, with which it frequently cooccurs. The three operators may associate with a variety of syntactic constituents in different contexts: minimally, I conclude that *¢inam-¢* associates with VPs and subject DPs, *miksan* with VPs, and *mika* with VPs and object DPs.

5.2.4   Unresolved use of exclusive operator

In examining contexts that were appropriate for the scalar additive operators from §5.2.3, my consultant and I found a surprising instance of the exclusive operator *¢in*. In the VP focus context (81), the word served the function that is predicted to serve, namely excluding alternatives; the consultant said that it may not be used in the (additive) context there, because it meant something more like 'I only bought presents.' However, when the identical sentence is uttered in the subject DP focus context (82), the normally exclusive operator is compatible with an additive reading.

(81)   CONTEXT: Elise is a procrastinator telling her father she's surprisingly prepared for her visit home for Christmas. She tells him, "I've booked her tickets, arranged for time off work, and…"

#	Ȼin	hun	ʔaquⱡiⱡik	ʔa·quⱡiyam!
	¢in	hun	ʔaquⱡiⱡik	ʔa·quⱡiyam
	only	1.SBJ	buy	present

Intended: 'I even bought presents.'
Comment: I don't think it fits into this context. It's more like 'I'm the only one that bought presents,' or 'I only bought presents.'

(82)   CONTEXT: The holiday spirit has taken over the world, and everyone (even infamous miser Elise) is buying presents. Elise says, "Scrooge

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bought presents, people with little money bought presents, …"

Ȼin   hun   ʔaquⱡiⱡik ʔa·quⱡiyam.

ȼin   hun   ʔaquⱡiⱡik ʔa·quⱡiyam

only   1.SBJ buy   present

'And even I bought presents!

The contrast between (81) and (82) is not accounted for in the present work. Future work should explore what factors lead to the varying functions and interpretations of *ȼin* in different contexts—it seems to be a unique operator, as it might encompass both exclusive and additive interpretations.

5.2.5 Additive (too)

I present only one plainly additive focus-sensitive operator: *ʔa·ki* 'too, also.' This word is focus-sensitive in that it refers to alternatives, but similarly to *even* (and contrasting with *only*), its associate is *joining* a non-empty set of alternatives, rather than ruling them out. However, unlike *even*, it does not bear the implication of a 'likeliness scale' stating the associate is unlikely to be a member of that set. The short dialogue from *Ksanka A·kⱡukaqwum, Kootenai Dictionary* (1999, p. 19) presented in (83) instantiates a use of this particle.

(83)   A: Kin ˈuk̓i?
            'Did you come by yourself?' (lit. 'Are you alone?')
        B: Waha, Su·sa·p ˈa·ki waxi.
            'No, Joe came too.'

In this particular example, the set of people who came contains first only the 'B' speaker, and then that person informs their interlocutor that no, B is not the only member of that set, Joe is a member of the set of people who came as well. This establishes the word as an additive operator; the conversation in (84) below is what leads me to conclude that it lacks the scalar reading of the various 'even'-type operators from the previous section.

(84) CONTEXT: Pottery teacher talking to students, one of whom is insecure.

a. A: Hu   c̓łakini   q̓api ʔac̓unana.

   hu   c̓łaki-ni   q̓api ʔac̓u-nana

   1.SBJ like-IND   all   dish-DIM

   'I like all of these cups.'

b. B: ʔa·ki kin   c̓łakił ka   ac̓unana?

   ʔa·ki k-hin   c̓łakił ka   ac̓u-nana

   also COMP-2.SBJ   like   1.POSS   all

   'Do you like my cup, too?'

c. A: Hiyi, ʔa·ki hu   c̓łakiłni   ninkuṅis.

   hiyi ʔa·ki hu   c̓łakił-ni ninku-ṅis

   yes   also 1.SBJ   like-IND   2.INDP-2.POSS

   'Yes, I like yours, too.'

   Comment: The teacher isn't being mean here, she's being kind. To be mean, the teacher would say *c̓inam-c̓ hu c̓łakiłni ninkuṅis* 'I even like yours.'

If this word included the scalar implication of *even*, the teacher would be implying to the student that her cup is unlikely to be likeable. However, my consultant has the very strong impression that the teacher is simply reassuring her student in a polite way. Hence I conclude that *ʔa·ki* lacks any scalar implicature.

This particular focus-sensitive operator associates with subject DPs, as in (83), and object DPs, as in (84). The example (85) below demonstrates its ability to associate with VPs, as well.

(85) CONTEXT: Elise is a procrastinator telling her father she's surprisingly prepared for her visit home for Christmas. She tells her father, "I've booked my tickets, arranged for time off work, and…"

> ...ʔa·ki hun ʔaquɬiɬik ʔa·quɬiyam.
>
> ʔa·ki hun ʔaquɬiɬik ʔa·quɬiyam
>
> also 1.SBJ buy present

'I also bought presents.'

Comment: This is just 'in addition to'. It's not surprising in the same way as it would be with *miksan*.

From these data, I conclude that *ʔa·ki* is an additive operator that may minimally associate with argument DPs and VPs, and possibly with other constituents. Its precise syntactic distribution and semantic contributions remain to be determined.

5.2.6 Clefts

Clefts have been discussed elsewhere in this thesis; their structure is given (albeit briefly) in §1.3.3, and their distribution in response to the experiment is described in §3.3 and analysed in §4.3. This section thus focuses on two other aspects of clefts, namely how they are used to focus adjunct NP/DPs, and whether they are exhaustive (semantically).

Cleft for locative adjuncts

Cleft structures in Ktunaxa involve two key features: first, the element in focus is the subject of the matrix verb, the copula *ʔini/ṅini* 'is'; second, the relative clause specifying the cleft is a subordinate clause introduced by the complementizer *k*. Two examples of clefts are given in (86)—the first is a response from the experiment conducted for this thesis, and the second is from an elicitation session with my consultant.

(86) a. Waha, ṅini Malyan k skikiɬ ak¢qa kanuhusnanas.(SP)

waha ṅin-i Malyan k skik-iɬ ak¢qa kanuhus-nana-s

no be-IND Marianne COMP PROG-ADV cut red-DIM-OBV

'No, it's Marianne who's cutting an apple.'
(In response to *k sakiɬ ʔak¢uqa kanuhusnanas Piyaɬ?* 'Is Peter cutting an apple?')

b. CONTEXT: after a search-and-rescue mission, someone wants to thank their saviour. They introduce themselves, and say:

Hun	ʔini	kin	wukqa.
hun	ʔin-i	k-hin	wukqa
1.SBJ	be-IND	COMP-2.SBJ	find

'It is me that you found.'/'I'm the one you found.'

The subject of (86a) is *Malyan*, and the subject of (86b) is the first person pronoun *hun*. One fact to note in the case of the latter is that the verbal agreement that would normally be present on *wukqa* to mark the first person object (the suffix *-ap*) is absent. No overt signs of the moved subject are found at all within the subordinate clause.

The case is somewhat different for adjunct clefts, such as the locative one in (87b).

(87) a.

Ka·s	k	ʔa·qa·kił	ʔupxa	nupqus	Tanwał?
ka·-s	k	ʔa·-qa·k-ił	ʔupxa	nupqus	Tanwał
WH-OBV	COMP	WH-where-ADV	see	bear-OBV	Daniel

'Where did Daniel see a bear?'

b.

Qu·s	ʔa·kuqnuqs	ʔinsi	k	qa·kił	ʔupxa
qu·-s	ʔa·kuqnuq-s	ʔin-s-i	k	qa·k-ił	ʔupxa
there-OBV	lake-OBV	be-OBV-IND	COMP	where-ADV	see

nupqus	Tanwał.
nupqus	Tanwał
bear-OBV	Daniel

'By the lake is where Daniel saw a bear.'

c.

Qu·s	ʔa·kuqnuqs	ʔinsi	k	ʔupxa	nupqus	Tanwał.
qu·s	ʔa·kuqnuqs	ʔin-s-i	k	ʔupxa	nupqus	Tanwał
there-OBV	lake-OBV	be-OBV-IND	COMP	see	bear-OBV	Daniel

'By the lake is where Daniel saw a bear.' or 'It was by the lake that Daniel saw a bear.'

In the case of (87b), the core structure of the cleft (pivot + 'be' + relative clause) remains, but the locative pivot *qu·s ʔa·kuqnuqs* 'by the lake' is resumed by a locative adverb *qa·kił* 'there' in the subordinate clause. The resumptive locative adverb does not seem to be obligatory; in (87c), the same cleft may be pronounced without that adverb.

From these data, I conclude that adjunct DP clefts differ from argument DP clefts in that only the former has an overt pronoun that may resume it; it remains unknown to me whether other grammatical categories, such as verbs or adjectives, may be focused by cleft structures.

Non-exhaustive cleft

As noted in Chapter 1, English clefts are presupposed to be exhaustive; as such, examples like (88) below are often judged to be somewhat awkward or inappropriate.

(88)   # By the lake is where Daniel saw a bear, and in the red pine forest.

The fact that in the experimental results nine of ten of Ktunaxa cleft responses were uttered in corrective focus conditions could be taken as support for there being an exhaustive implicature in Ktunaxa clefts. In correcting one's interlocutor, a speaker conveys both that their interlocutor's utterance was wrong, and that their own utterance is correct. Using structures with exhaustive implications would be an efficient way to communicate this meaning, and in my discussion, I posed this as a possible explanation for the distribution of cleft responses.

However, examining clefts in elicitation sessions led to a different conclusion, namely that Ktunaxa clefts are not completely exhaustive. The Ktunaxa equivalent of the (awkward) English (88) is judged to be a totally acceptable and natural utterance, given in (89) below.

(89) Qu·s   ʔa·kuqnuqs ʔinsi   k   qa·kił   ʔupxa nupqus
      qu·-s   ʔa·kuqnuq-s ʔin-s-i   k   qa·k-ił   ʔupxa nupqu-s
      there-OBV lake-OBV   be-OBV-IND COMP where-ADV see   bear-OBV

      Tanwał, ȼ   ʔa·kinuskupuns.
      Tanwał ȼ   ʔa·kinuskupun-s
      Daniel and red.pine.forest-OBV

      'By the lake is where Daniel saw a bear, and in the red pine forest.'

If Ktunaxa clefts carried an implication of exhaustivity, (89) would have
an inherent contradiction. The first half of the conjunct, *qu·s ʔa·kuqnuqs ʔinsi
k qa·kił ʔupxa nupqus Tanwał* 'By the lake is where Daniel saw a bear,' would
imply that the lake is the only place Daniel saw a bear; the second half of
the conjunct, *ȼ ʔa·kinuskupuns* 'and in the red pine forest,' directly contradicts
that implication. However, since the sentence is completely felicitous, I
conclude that Ktunaxa clefts are not necessarily exhaustive, despite their
distribution within the results of the experiment.

5.3   Summary

This chapter is an overview of several focus-sensitive operators in Ktunaxa,
exploring their various functions. Table 5.1 provides a brief summary of the
findings, outlining grammatical restrictions on the location of each particle,
their associates, and any additional information described in chapter.

More research is needed to fully describe the syntactic and semantic
contributions of each of these operators, but this chapter identifies starting
points, gaps, and some potential research questions to pursue.

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Operator	Associates	Grammatical restrictions	Additional facts
ʔisnił	Subjects (DPs, CPs)	Immediately preceding V	Non-exhaustive
¢in	VPs, Vs, AdjPs, DPs	Left edge of associate DP; Precedes subject proclitic associating into VP	Exhaustive; No prosodic accent; Conjunction
¢inam-¢	VPs, subject DPs	Clause-initial	Associate bears prosodic accent; Concessive use
miksan	VPs	Clause-initial	Conjunction
mika	VPs, object DPs	Clause-initial	Deontic reading
ʔa·ki	VPs, argument DPs	Preceding associate or clause-final	Additive
clefts	DPs (arguments, adjuncts)	Possibility of resumptive adverb for adjuncts	Non-exhaustive

Table 5.1: Summary of focus-sensitive operators

Chapter 6

Conclusion

6.1 Summary

As framed in Chapter 1, the experimental question I aimed to address with this research is *how do prosody and word order interact with focus when answering questions in Ktunaxa?* Analysis of five speakers' responses to five different types of question (subject *wh-*, object *wh-*, yes/no with wrong subject, yes/no with wrong object, and broad focus 'what are they doing?') yielded some answers to this question. The overall response is that there are both prosodic and word order correlates of focus in Ktunaxa. The main prosodic expression of focus is pitch, with every participant showing a tendency to have a higher average pitch on words that are in focus; duration does not change relative to the focus status of the word, and further research is required to determine if intensity is used to express focus or not. The current results indicate that it does, with foci being louder than non-foci, but a follow-up experiment using a different microphone will be needed to conclude this definitively.

As for syntactic reflexes of focus, the results were more complex. The only questions that were consistently answered a single way were subject *wh-*questions, for which all responses were SVO (or SV using lexical reflexive verbs). Broad focus questions, object *wh-*questions, and subject corrective focus questions all received a large number of SVO responses, and a smaller

number of VOS responses; conversely, object corrective focus questions received a larger number of VOS responses than SVO ones. Object-initial responses were rare, but always occurred in object-focus conditions. From these tendencies, I concluded that word order in declarative Ktunaxa sentences is SVO by default, but somewhat sensitive to focus, since there seems to be some left-edge position that focussed objects may occupy, and responses to object- and subject-focus questions patterned differently than responses to broad focus questions.

Overall, the answers proposed here are partial ones, on the way to a more compete description of how to mark focus in Ktunaxa. In order to lay a foundation for exploring the rest of the focus-marking (and information structure) system in Ktunaxa, I also conducted preliminary research with my consultant and collaborator, Violet Birdstone, in which we examined six focus-sensitive operators in Ktunaxa. For these focus-sensitive operators, Chapter 5 gives a brief description of their possible associates, some syntactic restrictions on their distribution, and any additional observations that arose relevant to the semantics of those operators.

6.2   Future work

As I conclude this thesis, I believe it raised many more questions than it answered. In future, I would like to conduct both a follow-up experiment, as well as follow-up research exploring many aspects of focus in Ktunaxa that received only brief treatment here. The following lists itemise a selection of topics and 'to-do's for future work.

(90)   Future experiments:

- Utilise head-mounted microphones in order to gather more accurate data pertaining to intensity.

- Increase the number of tokens recorded by speakers (rather than respond to each question once, have them respond to each question multiple times).

- Vary the types of questions participants answer, potentially including *wh-* and corrective focus on verbs and other constituents than the simple argument DPs included in this study.

- Control for more information structural variables—the present study conflated 'new' material with focussed items, and 'given' material with 'background' (non-focus) material.

- Use more complex sentences than just SVO; include temporal adverbials and embedded clauses to get a more clear idea of the syntax.

(91)   Future research and analysis:

- Categorise the intonational phonology of Ktunaxa more precisely, informed by typological work on other languages.

- Describe prosody in free conversation/narratives, outside the very restrictive experimental structure used here.

- Conduct a more thorough survey of focus-sensitive operators, including whether/how they may associate across clause boundaries.

- Explore the relevance of Focus Phrase in Ktunaxa.

- Model the syntactic structure of Ktunaxa clauses in a way that satisfactorily accounts for both the variation in word order, as well as the preference for SVO and VOS sentences.

Regardless of how much is left to be done, it is my hope that the present research will serve as a foundation for a complete description of the forms and functions relevant to the expression of focus in Ktunaxa.

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Appendix A

Experimental stimuli

This appendix shares the full paradigm of experimental stimuli, so that others might create similar experiments to explore this topic. Please note that the photographs were taken by the author with full permission from both subjects to be used in this study and in a language-learning application, but further permission would be needed before using these particular images separate from the context of this project. Please note also that the Ktunaxa was scripted by Elise McClay and Violet Birdstone, and aims to represent the ʔaq̓am way of speaking, which can differ from other Ktunaxa dialects.

Table A.1: Spoken stimuli used in the experiment (part 1)

Photograph	Condition	Ktunaxa question	English translation
eat-drink.jpg	SWH1	Qała k ʔisnił ʔik kakpuk̓s?	Who's eating a pear?
	SWH2	Qała k ʔisnił ʔi·kuł ka·pis?	Who's drinking coffee?
	OWH1	Qapsins k sakił ʔik Malyan?	What's Malyan eating?
	OWH2	Qapsins k sakił ʔi·kuł Piyał?	What's Piyal drinking?
	SCF1	K sakił ʔik kakpuk̓s Piyał?	Is Piyal eating a pear?
	SCF2	K sakił ʔi·kuł ka·pis Malyan?	Is Malyan drinking coffee?
	OCF1	K sakił ʔik kanuhusnanas Malyan?	Is Malyan eating an apple?
	OCF2	K sakił ʔi·kuł ʔa·quq̓łiłupuks Piyał?	Is Piyal drinking beer?
	BF	Ka·s k skikił a·qannikit na k̓ituq̓łiłqnamnam?	What are they doing in this picture?
sew-read.jpg	SWH1	Qała k ʔisnił ʔitiłłuk¢u ʔa·qatwumłats?	Who is sewing a shirt?
	SWH2	Qała k ʔisnił ¢ikat k̓ituq̓łiłqał?is?	Who is reading a book?
	OWH1	Qapsins k skikił ʔi·tiłłuk¢u Malyan?	What is Malyan sewing?
	OWH2	Qapsins k skikił ¢i·kat Piyał?	What is Piyal reading?
	SCF1	K sakił ʔitiłłuk¢u ʔa·qatwumłats Piyał?	Is Piyal sewing a shirt?
	SCF2	K sakił ¢ikat k̓ituq̓łiłqałs Malyan?	Is Malyan reading her book?
	OCF1	K sakił ʔitiłłuk¢u kqanakpuk̓s Malyan?	Is Malyan sewing pants?
	OCF2	K sakił ¢ikat k¢aq̓łiłnanas k̓ituq̓łiłkałs Piyał?	Is Piyal reading the newspaper?
	BF	Ka·s k skikił a·qannikit na k̓ituq̓łiłqnamnam?	What are they doing in this picture?
cut-cook.jpg	SWH1	Qała k ʔisnił ʔak¢qa kanuhusnanas?	Who is cutting an apple?
	SWH2	Qała k ʔisnił hanmuku naqpuks?	Who is making soup?
	OWH1	Qapsins k sił ʔak¢uqa Malyan?	What is Malyan cutting?
	OWH2	Qapsins k sił hanmuku Piyał?	What is Piyal cooking?
	SCF1	K sakił ʔak¢uqa kanuhusnanas Piyał?	Is Piyal cutting an apple?
	SCF2	K sakił hanmuku naqpuks Malyan?	Is Malyan making soup?
	OCF1	K sakił ʔak¢uqa k̓uniłnakiniłs Malyan?	Is Malyan cutting bread?
	OCF2	K sakił ʔi·tkin k̓uniłnakiniłs Piyał?	Is Piyal making bread?
	BF	Ka·s k skikił a·qannikit na k̓ituq̓łiłqnamnam?	What are they doing in this picture?
talk-wash.jpg	SWH1	Qała k ʔisnił kiłkin q̓u·qunał ¢xanam?is?	Who is using a phone?
	SWH2	Qała k ʔisnił ʔiktuqu ʔa¢u?is?	Who is washing their dish?
	OWH1	Qapsins k sił kiłkin Malyan?	What is Malyan using?
	OWH2	Qapsins k sił ʔiktuqu Piyał?	What is Piyal washing?
	SCF1	K sakił kiłkin q̓u·qunał ¢xanam?is Piyał?	Is Piyal using a phone?
	SCF2	K sakił ʔiktuqu ʔa¢us Malyan?	Is Malyan washing dishes?
	OCF1	K sakił kiłkin k̓ituq̓łiłqamunamnams Malyan?	Is Malyan using a camera?
	OCF2	K sił ʔiktuqu kanmukumułs Piyał?	Is Piyal washing a pot?
	BF	Ka·s k skikił a·qannikit na k̓ituq̓łiłqnamnam?	What is happening in this picture?
wash-comb.jpg	SWH1	Qała k ʔisnił ʔiktuqu ʔa·ki·?is?	Who is washing their hands?
	SWH2	Qała k ʔisnił ¢uk̓łama?mik?	Who is combing their hair?
	OWH1	Qapsins k sakił ʔiktuqu Malyan?	What is Malyan washing?
	OWH2	Qapsins k sił ¢uk̓ła?ma Piyał?	What is Piyal brushing?
	SCF1	K sił ʔiktuqu ʔa·ki·?is Piyał?	Is Piyal washing his hands?
	SCF2	K sakił ¢uk̓łama?mik Malyan?	Is Malyan brushing her hair?
	OCF1	K sakił ʔiktuqu ʔa·q̓akni?is Malyan?	Is Malyan washing her face?
	OCF2	K sił ¢uk̓łama pus?is Piyał?	Is Piyal brushing his cat?
	BF	Ka·s k skikił a·qannikit na k̓ituq̓łiłqnamnam?	What are they doing in this picture?

Table A.2: Spoken stimuli used in the experiment (part 2)

Photograph	Condition	Ktunaxa question	English translation
	SWH1	Qała k sakił hawi¢kin ʔa·knuq̓yuk̓s?	Who is holding flowers?
	SWH2	Qała k sakił kanaxaṁ łika·pu·s?	Who is putting on a coat?
	OWH1	Qapsins k sakił hawi¢kin Malyan?	What is Malyan holding?
	OWH2	Qapsins k sakił kanaxaṁ Piyał?	What is Piyal putting on?
hold-don.jpg	SCF1	K sakił hawi¢kin ʔa·knuq̓yuk̓s Piyał?	Is Piyal holding flowers?
	SCF2	K sakił kanaxaṁ łika·pu·s Malyan?	Is Malyan putting on a coat?
	OCF1	K sakił hawi¢kin waƚ̓kums Malyan?	Is Malyan holding a ball?
	OCF2	K sakił kanaxaṁ ʔa·qatwumłats Piyał?	Is Piyal putting on a shirt?
	BF	Ka·s k skikił a·qannikit na k̓ituq̓łiłqnamnam?	What are they doing in this picture?

Table A.3: Photographic stimuli used in the experiment

Photograph	Desc. & Alias	Photograph	Desc. & Alias
	A man and a woman seated on a couch, the man drinking coffee and the woman eating a pear. `eat-drink.jpg`		A man and a woman in a kitchen, the man washing a mug and the woman talking on the phone. `talk-wash.jpg`
	A man and a woman standing in a house entrance, the man putting on a coat and the woman holding a pot of flowers. `hold-don.jpg`		A man and a woman standing in a kitchen, the man stirring a pot on the stove and the woman cutting an apple. `cut-cook.jpg`
	A man and a woman standing in a bathroom, the man combing his hair and the woman washing her hands. `wash-comb.jpg`		A man and a woman seated on a couch, the man reading a book and the woman sewing a plaid shirt. `sew-read.jpg`

Appendix B

Forms

B.1   Language background questionnaire

This appendix shares the original language background questionnaire completed by participants, as well as their responses to it. As noted in chapter 2, participants filled out this form after completing the experiment, and had the option of skipping questions if they wished to do so.

LANGUAGE BACKGROUND QUESTIONNAIRE

Thank you for participating in this project!

1.   What year were you born in?   _____

2.   What language or languages did your parents speak…

with each other? _____

with you? _____

3.   If you remember what age you were when you started learning Ktunaxa, what age was it? _____

4.   How often do you speak Ktunaxa in your daily life? (i.e. a few hours a week, a few hours a day, …)

_____

5.   Who do you usually speak Ktunaxa with? (family members, learners, friends…)

_____

6.   Would you like to share anything about your feelings towards the language?

_____

_____

7.   What do you think is important for learners to understand about the language?

_____

_____

8.   Did you have any comments about the session you just participated in? Are there areas that need improvement? Were there parts you enjoyed?

_____

_____

B.2 Language background questionnaire responses

The following are the full texts of the responses to the language background questionnaire, minus the respondents' names. Of particular interest is Table B.3, which shares speakers' thoughts about the language, and their thoughts for learners to keep in mind.

Table B.1: Responses to 'Birth year'; 'What age did you start learning Ktunaxa?'; 'What language(s) did your parents speak... with each other?'; '... with you?'.

Speaker	Birth year	What age did you start learning Ktunaxa?	What language(s) did your parents speak with each other?	What language(s) did your parents speak with you?
1	1954	2	Ktunaxa/English (grandparents primarily)	Ktunaxa/English (grandparents primarily)
2	1950	birth	Ktunaxa	Ktunaxa
3	1943	birth	Ktunaxa	Ktunaxa
4	1944	birth	Ktunaxa/English	Ktunaxa/English
5	1946	0-6	Ktunaxa	Ktunaxa

Table B.2: Responses to 'How often do you speak Ktunaxa?'; 'Who do you usually speak Ktunaxa with?'.

Speaker	How often do you speak Ktunaxa?	Who do you usually speak Ktunaxa with?
1	a few hours a day–even if it's a few words to describe to my family	family members, cousins, friends
2	very few hours/week	other speakers
3	all day (growing up), whenever I see speakers. At least a few times a week.	Laura and Dorothy and any other speakers.
4	an hour a week	learners, friends (relatives)
5	2 hours	sister, coworker

Table B.3: Responses to 'Would you like to share anything about your feelings towards the language?'; 'What do you think is important for learners to understand about the language?'.

Speaker	Would you like to share anything about your feelings towards the language?	What do you think is important for learners to understand about the language?
1	It is very important to me, especially correct pronunciation – speech, reading, writing, listening.	Listening and trying to pronunciate and speak
2	We must use it more so as not to lose it.	Every effort is good.
3	I'm passionate for my language; I love it; I'm a little sad it's so hard to come back.	If they are Ktunaxa, it is important that they learn about people from their past; what they did. Instil the pride that's built in when we learn from our elders. Family ties.
4	That Ktunaxa people would get serious about learning and speaking the language.	It is not an easy thing to learn.
5	I'm afraid that when my sisters and I are gone so will the language.	It needs to be spoken daily.

Appendix C

Guide to results

This appendix summarizes the study and its findings in plain English.

C.1 The goal

The target of this project is to figure out how to ask and answer questions in Ktunaxa; not just translating English sentences word-by-word into the language, but looking at how speakers naturally control the flow of information in their answers. The practical companion to that goal is to create a small set of Ktunaxa questions and answers that learners could listen to, and practice answering the questions themselves in order to become more comfortable making up sentences in the language.

C.2 The recordings

Working with Violet Birdstone in Vancouver, I wrote up and recorded a series of questions in Ktunaxa to go with six pictures that two of my friends agreed to pose for. The questions and pictures are available in full in Appendix A, but the list below can serve as a guide to them. The first four listed below count as **specific** questions, and the fifth one is a **general** question.

1. **who** questions (like 'who is drinking coffee?')

2. **what** questions (like 'what is the man drinking?')

3. yes/no questions with the **wrong subject** (like 'is the woman drinking coffee?' for a photograph where the man is drinking coffee)

4. yes/no questions with the **wrong object** (like 'is the man drinking beer?' for the same photograph as above.)

5. **broad** questions about the whole picture (like 'what are they doing in this photo?')

I'm interested especially in how you highlight the individual word or phrase that gives the precise answer to **specific** questions. So for questions 1 and 3, that answer word would be the person doing the action (like 'the man' or 'Peter'), and for questions 2 and 4, the answer word would be the thing having the action done to it (like 'coffee'). In English, speakers highlight those answer words by raising their pitch, saying them a little louder, and drawing out the word a little longer than they would say them in answer to a general question.

Then, I travelled to Ktunaxa territory in January and February of 2016 to do recordings with different speakers of Ktunaxa. The January trip was a practice run, and I am indebted to Dorothy Alpine, Laura Birdstone, Juanita Eugene, Elizabeth Ignatius, Alfred Joseph, and Mary Maseelah for recording with me then. The February trip was the one where I ran the official experiment for analysis. The people who did recording sessions with me would see a picture, hear Vi's voice asking a question, and then reply to the question; this process was repeated 54 times, so each person had a maximum of 54 recordings of answers to their name. Five language speakers agreed to meet with me for the second round of recordings, the ones I ended up analysing: in alphabetical order by last name, they are Dorothy Alpine, Herman Alpine, Laura Birdstone, Sophie Pierre, and Katherine Shotanana.

C.3 The research

I transcribed the recordings and then looked at four features of speakers' answers.

- First: what **order** were the words of the reply in? Ktunaxa is more flexible in word order than English, so it was possible that answers to different types of questions might have different word orders.

- Second: was the **pitch** of the answer different than the pitch of the rest of the sentence? Making your answer higher-pitched than the surrounding words is something that English does, but there's no guarantee that it's something Ktunaxa does, too.

- Third: was the answer word **louder** than the words around it? Some other languages use this strategy to mark what information is important in a sentence, but Ktunaxa might have been different.

- Fourth: was the answer word **longer/slower** than the words around it? Again, this is a common way to draw attention to an answer in a sentence, but I didn't know if it was a Ktunaxa way to draw attention.

C.4 The results

First: word order does change a little depending on the kind of question you're asked. "Subject + Verb + Object" (SVO) responses were suitable answers for any sort of question, and by far the most common ones recorded in this study. After those in frequency were the "Verb + Object + Subject" (VOS) responses. Answers starting with the object word ("Object + Verb + Subject," OVS, answers) were very rare, and were only ever used when answering **what** or **wrong object** questions.

Here are the overall patterns I found:

- Answering **who** questions, the Ktunaxa speakers I interviewed always gave SVO responses.

- Answering **wrong subject** questions, people usually used SVO, but Laura Birdstone and Dorothy Alpine also sometimes used VOS word order.

- Answering **what** questions, people used a big mix of SVO, VOS, and OVS answers. It looked like anything goes! This was the only case where we got a lot of OVS answers.

- Answering **wrong object** questions, people usually used VOS word order, but there were still some SVO ones as well.

- Answering **broad** questions, people usually used SVO; there were a couple VOS, too.

Second: pitch on the answer word was higher in answers to specific questions than it was when people were answering general questions.

Third: loudness seems to change the same way as pitch does, with the answer word being louder than the rest of the sentence in response to specific questions. I'm not completely sure, though—I'll need to do a follow-up experiment, since the microphone setup was flawed.

Fourth: duration of words doesn't seem to change depending on what type of question people are answering.

C.5 What this means for learning

How to learn Ktunaxa word orders: focus on SVO and VOS word orders. If you say them, you'll be understood in any situation! And when you hear a Ktunaxa sentence, you are likely to be hearing one of these options—as you can identify the verb (usually ending in *-i*, *-ni*, or sometimes *-mik*), you'll be able to pick out what the object is, since it's the word immediately following the verb.

How to minimize English accent: don't make words long when you're trying to highlight them. According to the speakers I talked to, Ktunaxa speakers do lengthen words for expressive effects, but not in everyday responses to questions like the ones they were answering for this study. In-

stead, feel free to use a little higher pitch and a little louder tone of voice to highlight answer words.

Also, my impression is that English speakers tend to drop the pitch of their voice at a faster rate than Ktunaxa speakers do. That is, when English speakers say a sentence that's 10 words long, their voices fall in pitch from pretty high at the start to very low at the end; Ktunaxa speakers saying a 10-word-long sentence would have less of a fall in pitch, and stay a little steadier throughout.

C.6   Additional information

Chapter 5 has a lot of examples of Ktunaxa sentences that mean different things in different contexts, and could be interesting if you're looking for more of the language in this thesis. Also, please feel free to contact me if you have questions about the research! My email address is `elise.mcclay@gmail.com`.