Intonation and Focus in Nɬeʔkepmxcin (Thompson River Salish)

by

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Abstract

In this dissertation, I examine the marking of focus and givenness in Nɬeʔkepmxcin (Thompson River Salish). The focus is, roughly, the answer to a wh-question, and is highlighted by the primary sentential accent in stress languages like English. This has been formalized as the Stress-Focus Correspondence Principle. Given material is old information, and is deaccented in languages like English. Nɬeʔkepmxcin is a stress language, but marks focus structurally. However, I argue that the structure has a prosodic motivation: the clause is restructured such that the focus is leftmost in the intonational phrase. It follows that Salish focus structures lack the special semantics that motivates the use of English structural focus (clefts).

As a theoretical contribution, I show that the Stress-Focus Correspondence Principle does not account for focus marking in all stress languages, nor does the "destress-given" generalization account for the marking of given information. This is because focus surfaces leftmost, while the nuclear stress position is rightmost. Instead of "stress-focus", I propose that alignment with prosodic phrase edges is the universally common thread in focus marking. This mechanism enables listeners to rapidly recover the location of the focus, by identifying coarse-grained phonological categories (p-phrases and i-phrases). In Thompson River Salish, the focus is associated with the leftmost p-phrase in the matrix intonational phrase. The analysis unifies the marking of focus across languages by claiming that focus is always marked prosodically, by alignment to a prosodic category.

The study combines syntactic analysis of focus utterances with their phonetic realization and semantic characteristics. As such, this dissertation is a story about the interfaces.

This research is based on a corpus of conversational data as well as single sentence elicitations, all of which are original data collected during fieldwork. The second contribution of this dissertation is thus methodological: I have developed various fieldwork techniques for collecting both spontaneous and scripted conversational discourses. The empirical contribution that results is a collection of conversational discourses, to add to the single-speaker traditional texts already recorded for Nɬeʔkepmxcin.

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List of Symbols and Abbreviations

Abbreviations used in the glosses (based on Thompson and Thompson 1992, 1996, Kroeber 1997) are as follows:

'-' = affix or clitic
'=' = lexical suffix
APPL = applicative
AUG = augmentative reduplicant
AUT = autonomous,
CAUS = causative
CNSQ = consequential
COMP = complementizer
CONJ = conjunctive (i.e. subjunctive)
DEM = demonstrative
D, DET = determiner
DIM = diminutive
DRV = directive transitivizer
DVL = developmental
EMPH = emphatic
EVID = evidential
  ek^{w}u 'reportive, hearsay'
  nke 'conjectural, I guess, apparently'
  nuk^{w} 'perceptual, usually other than sight'
FUT = future
IM = immediate
IMP = imperative
INCH = inchoative
INSTR = instrumental
CLEFT = cleft predicate
IRL = irrealis,
LOC = locative

MDL = middle
NCM = non-control middle
NCT = non-control transitivizer
NEG = negation
NOM = nominalizer
O = object
OBL = oblique
PERF = perfective
PERS = persistent (emphatic particle)
PL = plural
POSS, PS = possessive
PROG, PRG = progressive
PRP = proportional
Q = y/n question marker
RED = reduplicant
REFL = reflexive
REL = relational
RFM = reaffirmative
RPT = repetitive
SG = singular
STAT = stative prefix
SUBJ.EXTR = subject extraction suffix
TRANS/TR = control transitivizer
TS = transitive subject

For reasons of space and clarity, I often do not provide full morphological breakdowns for nouns, adjectives, adverbs, and so on.

Data are presented in the orthography developed in Thompson and Thompson (1992, 1996), and Kroeber (1997). The phonemic key to the *orthography* is as follows; symbols not listed have the standard IPA interpretation:

c = [tʃ] or [č]
ç̣ = [ts]
ċ = [ts']
e = [e, æ, a, ɛ, ə]
ə̣ = [ʌ]
i = [i, ei, ai]
o = [o, ɔ]
s = [ʃ] or [š]
ṣ = [s]
u = [u, o, ɔ]
x̣ = [χ]
y = [y, i].

See Thompson and Thompson (1992) in particular for the phonetic realizations of phonemic vowels across contexts.

Nɬeʔkepmxcin [z] is more lateral than English [z], though there may be considerable regional or speaker variation.

Acknowledgements

This dissertation is the final stage in a long path of education and research that has seen many different people help me along the way. I wish to express my thanks to some of those people here; invariably I will miss others, whose aid and encouragement was no less appreciated.

Without the commitment and hard work of Flora Ehrhardt and Patricia McKay, two fluent speakers of Nɬeʔkepmxcin, this project could not even have started. We have spent many hours together over the past number of years, and I thank them for their infinite patience and willingness to teach me about many aspects of their language and culture. Cunnwén̓ne meɬ xéʔe! I hope that our relationship is one which will continue for a long time – k^{w}uk^{w}scémx^{w}. Many thanks also go to my first Nɬeʔkepmxcin teacher, Mandy Na'zinek Jimmie; and to Patricia Shaw for organizing the FNLG courses.

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Thoma, Ryan Waldie and James Thompson shared many of their own ideas and research, and saw relevance to my own interests; Peter Jacobs and Marion Caldecott provided valuable insight into Salish phonetics, phonology, as well as research methodology. And I enjoyed conversations with many others not of my "generation."

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Finally, it takes two to tango, and without Monique I would not have been able to dance my way through this disseration project to its final completion. Merci, ma belle!

Dedication

for future learners and speakers of Nɬeʔkepmxcin

Chapter I: Overview and Background

1.1 Overview

Intonation, or the speech melody, phrasing, and pauses that overlay our utterances, plays a crucial role in the marking of information structure in many – perhaps all – languages. In this dissertation, I provide the first comprehensive study of intonation and focus in Nɬeʔkepmxcin (Thompson River Salish). A study of focus is an interface study, and the present account will take us through many of the areas of the language faculty: syntax, semantics, phonology and phonetics.

Although Nɬeʔkepmxcin is a stress language (Egesdal 1984, Thompson and Thompson 1992), acoustic phonetic evidence indicates that foci do not bear the primary sentential stress. Instead, utterances are restructured so that focused elements align with the left edge of the clause; nuclear stress (<u>underlined</u>), however, is at the right edge.

(1) Neutral focus example (all new information):

ʔéx	xeʔ	c̓ax̣-t-Ø-és	ɬ	n-sx̣áy̓wi	e	<u>swúxʷt</u>.
PROG	DEM	clean-TR-3O-3TS	DET	1SG.PS-husband	DET	snow

"My husband was cleaning up the <u>snow</u>."[1]

(2) Object focus example (nominal predicate construction):

A: Stéʔ	xʷúy̓	k	s-ɬaʔx̣áns-əp	tk	ṣʕáp.
what	FUT	COMP	NOM-eat-2PL.POSS	OBL.IRL	evening

"What are you people going to eat this evening?"

B: [píns̩]$_{FOC}$	nceʔ	xʷúy̓	e	n-s-<u>ɬaʔx̣áns</u>.
beans	1SG.EMPH	FUT	DET	1SG.POSS-NOM-eat.

"I'm gonna' eat [<u>beans</u>]$_{FOC}$."

(literally "[<u>Beans</u>]$_{FOC}$ is the (thing that) I'm gonna' eat.")

As a result, speakers of Nɬeʔkepmxcin violate the Stress-Focus Correspondence Principle which has been proposed as a model of focus marking in stress systems (Reinhart 1995; also Selkirk 1995, Vaissière 1995, Schwarzschild 1999, Szendröi 2003, Gussenhoven

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[1] See the List of Symbols for keys to the orthography, and to the abbreviations in the gloss; see Thompson and Thompson (1992, 1996) for further detail. For reasons of space and clarity, I often do not provide full morphological breakdowns for nouns, adjectives, adverbs, and so on.

2004 on the Effort Code, Féry and Samek-Lodovici 2006, Hartmann 2007). Nłeʔkepmxcin speakers also violate the generalization that old, or given, information is deaccented after the focal stress.

These two generalizations are described by the constraints below, from Féry and Samek-Lodovici (2006).

(3) STRESS-FOCUS: a focused phrase has the highest prosodic prominence in its focus domain. (Féry & Samek-Lodovici 2006: 135-6)

(4) DESTRESS-GIVEN: A given phrase is prosodically non-prominent. (Féry and Samek-Lodovici 2006: 135-6)

The idea that stress languages mark focus through the use of pitch accents is strongly expressed by Hartmann (2007):

> Intonation languages use pitch accents as the principle means of focusing.... A pitch accent triggers expansion of the pitch range. After the nuclear accent, the pitch range is considerably compressed.
> (Hartmann 2007: 225-226)

The data analyzed in this dissertation, however, are not accounted for by the generalizations in (3) and (4), as expressed by Hartmann.

I therefore propose a reanalysis of the model of focus marking in languages like English. In the remainder of this section, I give some more details about this proposal. Rather than "stressing" focused information, we place focused items at the edges of speech phrases (Truckenbrodt 1999 on Chichewa, Gussenhoven 2004 on Basque). For example, in Thompson Salish, focused items are at the left edge of the sentence (in the first phonological phrase), while nuclear stress is rightmost. In English, focused items are at the right edge; since this happens to be where stress is assigned in English phrases, there is an apparent "stress-focus" correspondence. Thus, the universal interface between a syntactic focus and its phonological realization is *edge*-oriented, not stress-oriented.

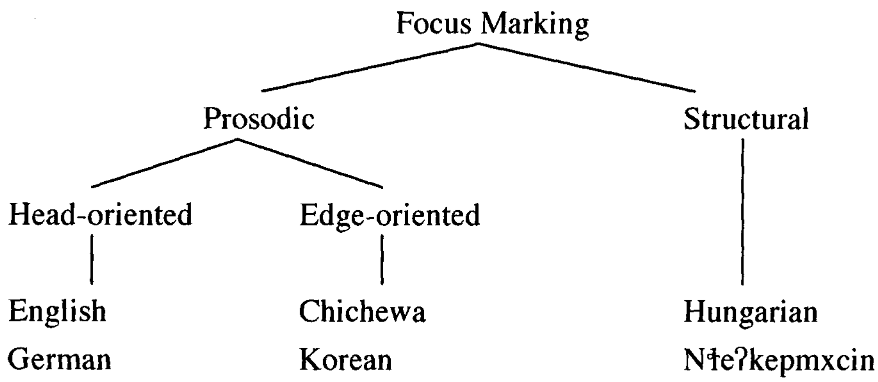
A second result is that an apparent structural focus strategy like the clefts employed in Salish focus (Kroeber 1997, 1999) is in fact prosodically motivated (Szendröi 2003 on Hungarian structural focus). To support this claim, I follow Kroeber (1997, 1999) in showing that clefts in Nłeʔkepmxcin are not generated by movement; thus there is no syntactic motivation for structural focus. Moreover, Thompson Salish clefts lack the special semantic interpretations associated with English clefts (Davis et al. 2004 on St'át'imcets and Straits

Salish; Percus 1997 and Hedberg 2000 on English clefts); this fact rules out a semantic motivation for focus structures. Instead, Nɬeʔkepmxcin clefts best satisfy the discourse prosodic requirement that focus be aligned with the left edge of the clause.

The findings allow the reduction of what have previously been considered two parameters in the marking of focus to a single linguistic universal: focus is marked prosodically, through alignment to phrase edges.

Regarding the first parameter, languages have been observed to mark focus prosodically (English, German), or structurally (eg. Bródy 1995 on Hungarian, Kroeber 1997 on Nɬeʔkepmxcin). Prosodically, languages like English employ prosodic heads (pitch accents) to mark the focus, while languages like Chichewa or Korean employ phrasal boundaries (phrase edges).

(5) Focus marking cross-linguistically: Two parameters [to be revised]



Following Szendröi (2003) on Hungarian, I propose that cases of structural focus are in fact prosodically motivated. This eliminates one parameter for focus marking.

The second parameter concerns which prosodic units are relevant for the marking of focus: prosodic phrase edges, or prosodic heads. Languages like Chichewa (Truckenbrodt 1999), Korean (Jun 2003: 239-241, ft. 17; also Selkirk 1996, cited in Beck 1999), or Basque (Gussenhoven 2004 on contrastive focus) insert a phrase boundary before or after a focused XP, thus aligning focus with prosodic phrase edges. Languages like English, which obey the "stress-focus" correspondence (Reinhart 1995, and many others), align focus with prosodic heads. I reformulate STRESS-FOCUS within the framework of Generalized Alignment theory (McCarthy and Prince 1993; Truckenbrodt 1999) to capture this variation under a single system: focus is predicted to align with different prosodic categories, edges or heads.

However, since prosodic units have only a single head, at either the left or right edge, I propose that this second parameter of focus marking can also be reduced to a single relevant unit: focus seeks out prosodic phrase edges, not heads. Like the "stress-focus" accounts, this is a stronger hypothesis than Generalized Alignment to either heads or edges, so I pursue it to see to what extent it can account for a classic "stress-focus" system, English.

In languages like English, prosodic heads happen to line up with the same edge as foci (rightmost). Since constraints regulating the default marking of stress (prosodic heads) have been independently proposed (Truckenbrodt 1999; Féry and Samek-Lodovici 2006), there is no need to double this information in constraints referring to focus marking. Thus, the "stress-focus" correspondence is epiphenomenal.

(6) Focus marking cross-linguistically [new proposal]

Focus Marking | Additional Parameters

Prosodic, Edge-oriented

	Focus Alignment		DESTRESS-	NUCLEAR
	p-phrase	i-phrase	GIVEN	STRESS
English	--	Right	√	Right
German	--	Right	√	Right
Hungarian[3]	--	Left	√	Left
Romance	--	Right	X	Right
Nɬeʔkepmxcin	--	Left	X	Right
Chichewa	Right	---	X [?][2]	Right [?]
Korean[4]	Left	--	√	[?]

Parameters independent of focus marking account for cross-linguistic differences:

(i) alignment of the focus and/or nuclear stress to left versus right phrasal edges
(ii) "destress-given"

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[2] The analysis of Chichewa proposed in Truckenbrodt (1999) and Downing (2003) suggests that given material is not differentiated by reduction of accent; a recent study by Downing et al. (2007) suggests that focused p-phrases containing high tones are also marked by higher pitch. This opens the possibility that DESTRESS-GIVEN is operative.

[3] Generalizations for Hungarian are taken from Szendröi (2003: 44).

[4] Generalizations for Korean are taken from Jun (2003: 239-241).

In regards to point (i), English and German are both languages with righmost nuclear stress. Focus and nuclear stress both align to the right edge of the intonational-phrase (i-phrase). In Chichewa, focus aligns with the edge of a p-phrase, but not an i-phrase (Kanerva 1990, Truckenbrodt 1999, Downing 2003 on Chichewa), while in Korean, focus also aligns with a p-phrase (and sometimes also an i-phrase – Jun 2003). In Hungarian, focus aligns with the left edge of i-phrases, the same location as nuclear stress (Szendröi 2003). And in Nɬeʔkepmxcin, focus is left-aligned in the i-phrase, while nuclear stress is right-aligned.

Regarding point (ii), in languages like English, the constraint DESTRESS-GIVEN is operative, independent of the system of focus marking. As a result, given material (old information) is not parsed into phonological phrases at the interface of syntax and phonology (Selkirk and Kratzer 2007); this prevents given material from bearing phrasal accent. I will argue that we can use this insight to claim an apparent "stress-focus" alignment in languages like English. The stress-focus correspondence is thus just the result of focus being the only material eligible for a phrasal head, since given material is not parsed into p-phrases.

An example is presented to illustrate. In (7), the entire sentence *Sam ate a squash* is the focus since it answers the wh-question of (7A); focus is indicated by subscript 'FOC.' The focus also receives the nuclear stress (shown by underlining), which falls in the default rightmost position (eg. Chomsky and Halle 1968, Cinque 1993, Selkirk 1995, on nuclear stress in English). There are two phonological phrases, and the focus and the main stress are both right aligned. Word-level stress is shown by acute accent (´).

(7) A: What happened?

(		X)	i-phrase
(X)	(	X)	p-phrase
B: [Sám	áte a	squásh]$_{FOC}$.	

In (8), however, the focus is the subject *Sam*, since this is the answer to the wh-question in (8A). The primary sentential stress is once again on the focus. In addition, *ate your dinner* is old, given information in (8B) (shown with a subscript 'G'). Hence, *ate your dinner* is not parsed into a p-phrase at the interface of syntax and phonology. *Sam* is thus the only eligible head for phrasal stress at this point in the derivation. Selkirk and Kratzer (2007) suggest that given material is recursively parsed into a p-phrase by the phonological component, but since each p-phrase can bear only one head, *Sam* will bear the only p-phrase accent – this accent serves as head of both p-phrases. Both focus and phrasal stress are once again right-aligned, since there are no other potential p-phrase heads further to the right within the i-phrase; and the larger p-phrase containing the focus is right-aligned in the i-phrase. I'll be assuming this two-step model of the syntax-phonology interface in this dissertation (see section 1.5.1 for more discussion).[5]

(8) A: Who ate my dinner?

(X	)	i-phrase: STEP 2
((X)	)	p-ph recursively parsed by phonology: STEP 2
(X)		p-phrase at interface: STEP 1

B: [Sám]$_{FOC}$ [áte your dínner]$_{G}$.

1.2 Organization of the dissertation

The dissertation is broadly organized into three sections, plus an appendix. The first portion (chapters 1-3) gives background information and introduces focus data from Nɬeʔkepmxcin. The second portion (chapters 4-6) provides phonetic analysis to support some of the observations made in chapters 2 and 3. The final two chapters discuss the theoretical implications in more detail.

In the remainder of this chapter, I summarize what is meant by focus and givenness. I also review the literature on intonation in Salish; as well as research on intonation and bilingualism, since the Nɬeʔkepmxcin consultants whom I worked with for this dissertation are also fluent in English. Chapter 2 gives some background on word order and syntactic structure in Nɬeʔkepmxcin; I show that matrix predicates are always leftmost in the Nɬeʔkepmxcin intonational-phrase. In chapter 3, I present a corpus study of focus type (wide focus or narrow focus) and its syntactic realization in conversational data in Thompson River Salish; we shall see that focus is always associated with the predicate, which is at the left edge of the Nɬeʔkepmxcin clause.

The middle portion of the dissertation turns to phonetic analysis. Chapter 4 is a study of phrasal stress in Nɬeʔkepmxcin, and I offer detailed observational, acoustic phonetic, and phonological support for the claim that nuclear stress is rightmost in neutral utterances. I continue with the acoustic phonetic analysis in Chapter 5, where I present the results of an analysis of narrow focus cases in Nɬeʔkepmxcin; the results indicate that focus is not marked with additional prosodic prominence, nor is given information deaccented. Finally, Chapter 6

[5] In principle, this process can happen in a parallel evaluation system, but I'll be presenting this as a serial model because it makes the point more clearly.

provides evidence for prosodic phrasing in Thompson River Salish, and I claim that predicate and arguments are parsed into individual phonological phrases (Beck 1999 on Lushootseed Salish, Barthmaier 2004 on Okanagan Salish; Hayes and Lahiri 1991 on similar parsing in Bengali, Schafer and Jun 2002 on Korean, Nespor and Sandler 1990 on Israeli Sign Language).

The last portion of the dissertation examines the motivation for the structural focus observed in Nɬeʔkepmxcin. Chapter 7 considers, and rejects, semantic motivations and syntactic movement accounts. In Chapter 8, I consider two alternative hypotheses: (i) focus marking is purely syntactic, by association with the predicate (Davis 2007), and (ii) focus marking is prosodic, by alignment with the left edge of the intonational phrase. Because any syntactic expression of focus is necessarily expressed in the phonology, at a minimum by linearization, the two hypotheses are not mutually exclusive. That is, the syntactic derivation is recoverable from a linear acoustic output, as well as a linear visual output (eg. Yehia et al. 2002, Santi et al. 2003, Callan et al. 2001, 2004a, 2004b). However, I give evidence which suggests that focus marking is optimized for rapid phonological identification of the focus (Selkirk 1995, Büring 2003, 2006, on "focus projection"; Kjelgaard and Speer 1999, Jun 2003, Fodor 1998 on prosodic parsing preceding syntactic parsing; Callan et al. 2004b on listeners internally simulating the speech act of speakers).

1.3 Background: What is focus?

Intonation is used to signal a variety of discourse notions. Of primary concern in this dissertation are the notions of focus and of givenness.

Various terms have been applied to distinguish focused and given information from other portions of the discourse. Terminology includes the distinctions between given/new information (Halliday 1967b, Chafe 1976, Prince 1981), topic/comment (Hockett 1958, van Kuppevelt 1994) or theme/rheme structures (Firbas 1966, Harlig and Harlig 1988, Rialland and Robert 2001), focus/background or focus/presupposition (Chomsky 1971, Jackendoff 1972, von Stechow 1990, Krifka 1992), and focus/ground (Vallduví 1990). In view of the overlapping use of terminology, it is worthwhile defining what I mean by focus and givenness in this dissertation. A recent volume by Féry et al. (2007) aims at securing more precise definitions of these aspects of information structure; I refer the reader to Krifka (2007) in particular for a more thorough discussion of focus, givenness, and other concepts in information structure.

1.3.1 The syntactic notion of focus

In this study, I make the standard assumption that focus is a syntactic category. The constituent that is the focus is identified by f(ocus)-marks, or a [FOCUS] feature (Jackendoff 1972, Selkirk 1984, 1995, Bródy 1995). Rooth (1992) introduces a focus operator in the syntactic representation. This syntactic focus feature mediates between the phonological expression of focus and its semantic interpretation. I will indicate the focused constituent with a subscript 'FOC.' For the sake of clarity, I will not mark subconstituents of the focus with additional f-marks, as Selkirk (1995) does; in addition, recent work suggests the possibility of doing away with many of these f-marks (Schwarzschild 1999, Féry and Samek-Lodovici 2006, Selkirk 2007).

Different types of focus can be identified in different ways. New information focus, or presentational focus, is classically diagnosed as the answer to a wh-question (Halliday 1967b on "informational focus," Jackendoff 1972, Selkirk 1995, Büring 2003, and many others). *Bart* in (10) is a new information focus, since this DP answers the question *who*. In English and many other stress languages, the focus is marked prosodically by bearing the primary sentential stress (the nuclear stress). I indicate this by <u>underlining</u>, while acute accent (´) indicates word-level stress.

(9) New information focus
A wh-question expression focuses a constituent, and an appropriate answer to a wh-question must focus the same constituent. (Selkirk 1995: 553)

(10) A: Whó cóoked <u>dínner</u>?
B: [<u>Bárt</u>]$_{FOC}$ cóoked dínner.

Wh-questions do not need to be overt in the discourse; information that answers an implicit wh-question is also focused (van Kuppevelt 1994, Büring 2003b, Krifka 2007).

New information focus is often distinguished from contrastive focus (eg. Rochemont 1986, Gussenhoven 2004, Féry and Samek-Lodovici 2006, Selkirk 2007; É. Kiss 1998 on "identificational" focus in Hungarian/English).

(11) A: I heard Janice found some <u>mushrooms</u>.
B: No, [<u>Kelly</u>]$_{FOC}$ found some mushrooms.

Contrastive focus sequences are distinguished from new information focus in that they involve dual and symmetric frames in which only one element differs. The background is shared between both configurations. In (11), this frame is *x found some mushrooms*, and *Janice* and *Kelly* are the contrastive foci in a type of anaphoric relationship (Ladd 1980, Rochemont 1986, Rooth 1992:80, Féry and Samek-Lodovici 2006:135). In (12), the frame is *x farmer* and the adjectives *American* and *Canadian* are the contrastive foci. In this case, the adjectives are contrasted within a single sentence, and use of the frame *x farmer* results in phrasal accent on *American* or *Canadian* rather than *farmer* in the two DPs (Rooth 1992: 80, ex. 11).

(12) An [<u>Américan</u>]$_{FOC}$ fármer was tálking to a [<u>Canádian</u>]$_{FOC}$ fármer.

Like in the Nɬeʔkepmxcin example in (2), structural focus can also be used for contrastive focus in English. In English clefts, the contrastively focused cleft head (*Bart* in 13B) bears the nuclear stress of the clause.

(13) A: Did Sám cóok <u>dínner</u>?
B: Nó, it was [<u>Bárt</u>]$_{FOC}$ who cóoked dínner.

A contrastive focus can be embedded within a new information focus. In these cases, marking the contrastive focus is more important than marking the new information focus (Büring 2003, Féry and Samek-Lodovici 2006). In the example below, *a new pair of black boots* answers the wh-question and thus constitutes the new information focus. However, the nuclear stress falls on *black*; the adjective is the contrastive focus in the frame *a new pair of x boots.*[6]

(14) A: Nátalie bóught a néw páir of brówn bóots. Whát did Ándrea búy?
B: Ándrea bóught [a néw páir of [<u>bláck</u>]$_{FOC}$ bóots]$_{FOC}$.

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[6] As Büring (2003) points out, it is not always clear whether stress on *black* here is a result of a local contrastive focus frame, or because *black* constitutes the only non-given item within the new information focus. Thus, deaccenting of given material will similarly result in nuclear stress on *black* (eg. Schwarzschild 1999). It is not my aim to decide between these two approaches; I will continue to treat these as cases involving a local contrastive focus. The important point is that, in either case, we expect the nuclear stress on the contrasted adjective *black*.

1.3.2 The semantic notion of focus

Both new information focus and contrastive focus as discussed in the previous section fall under what Krifka (2007) identifies as *expression focus*. Expression focus is pragmatic; it steers the conversation, or otherwise manages what is in the Common Ground of discourse (eg. Karttunen 1974, Stalnaker 1974). For example, the new information focus in (10) satisfies A's need to add the information about who cooked dinner to the Common Ground. However, it does not immediately affect truth conditions – that is, the meaning of the propositions in the Common Ground. (10B) still means that Bart cooked dinner.

This contrasts with what Krifka calls *denotation focus*, in which semantic operators are associated with focus. These change the truth conditions of the utterance. For example, *only* adds the truth conditional meaning that the focus denotation is the only alternative that makes the proposition under discussion true (Krifka 2007: 25). I primarily look at expression focus in this dissertation, though I will discuss association with focus in Chapter 8. There is not always a clear distinction between expression focus and denotation focus (Krifka allows that the latter may have developed from the pragmatic principles governing expression focus). In the data in this dissertation, we shall see that focus particles often surface with both new information and especially contrastive focus cases (section 3.5).

Both types of focus identified by Krifka have in common "the presence of alternatives that are relevant for the interpretation of linguistic expressions" (2007: 18). This is the insight of Rooth's Alternative Semantics account of focus (1985, 1992; Büring 1997 on extension to topics). I will assume that focus in Nɬeʔkepmxcin is also associated with alternatives.

In Rooth's theory, focus semantic values are generated alongside ordinary semantics values. The values for (10B) are shown below; the focus semantic value is a set of alternative propositions in which the focused subject DP varies (eg. Michele cooked dinner, Mabel cooked dinner, Bart cooked dinner).

(15) $[\underline{\text{Bárt}}]_{\text{FOC}}$ cóoked dínner.

a. Ordinary semantic value: $[\![[\underline{\text{Bárt}}]_{\text{FOC}} \text{ cóok dínner}]\!]^{o} = \text{cook(Bart, dinner)}$

b. Focus semantic value: $[\![[\underline{\text{Bárt}}]_{\text{FOC}} \text{ cóok dínner}]\!]^{f} = \{\text{cook}(x, \text{dinner}) \mid x \in D_e\}$ where D_e is the domain of individuals

Jackendoff (1972) introduced the idea of a "presup," or what Rooth called a "presupposition skeleton." This is a lambda expression in which the focus of the sentence corresponds to a variable:

(16) [Bárt]$_{FOC}$ cóoked dínner.
Presup: λx. x cook dinner

The Structured Meaning Approach to focus interpretation develops this idea, splitting the clause into a focus, and a background that corresponds to Jackendoff's presup (von Stechow 1990, Krifka 1992). The background is applied to the denotation of the focus to yield the ordinary meaning of the sentence; the background is a function taking the focus as its argument. Background and focus are represented as a pair, <Background, Focus>.

(17) <λx. x cook dinner, Bart>

Unlike Alternative Semantics, the Structured Meaning Approach allows direct access to the focus denotation (*Bart* in this case) to yield the ordinary meaning. And, alternatives can still be introduced independent of the <B, F> structure in (17). We will see that narrow subject or object focus in Salish splits the clause neatly into focus and background, though the syntactic role of predicate and argument is reversed from the semantic relationship expressed in (17): the focus is made the predicate, while backgrounded information is a clausal argument of this predicate (Kroeber 1997).

1.3.3 The prosodic expression of focus

Current theories on the marking of focus in stress languages generally have in common the correspondence between stress and focus. The observation is that focused material bears the dominant sentential or phrasal accent. I will call these "stress-focus" accounts, though "stress" is somewhat misleading. Assuming that "stress" is a property of prosodic words (Sluijter and van Heuven 1996a), and that pitch accents are assigned at the level of the p-phrase and i-phrase (Nespor and Vogel 1986), then "stress-focus" is better described as "accent-focus." For the sake of consistency with previous literature, I will continue to refer to "stress-focus" here. In any case, some examples of "stress-focus" accounts are shown below.

(18) Proposals on the marking of focus

a. Basic Focus Rule: An accented word is F(ocus)-marked. (Selkirk 1995: 555)

b. Stress-Focus Correspondence Principle: The focus of a clause is a(ny) constituent containing the main stress of the intonational phrase, as determined by the stress rule. (Reinhart 1995: 62)

c. FOCUS: A Focus-marked phrase contains an accent. (Schwarzschild 1999: 173)

d. FOCUS-PROMINENCE: Focus needs to be maximally prominent. A prosodic category C that contains a focused constituent is the head of the smallest prosodic unit containing C. (Truckenbrodt 1995, Büring 2003)

e. STRESS-FOCUS: a focused phrase has the highest prosodic prominence in its focus domain. (Féry & Samek-Lodovici 2006: 135-6)

The correspondence between focus and stress has been assumed as a universal feature of stress languages (eg. Vaissiere 1995, Hartmann 2007):

> Intonation languages use pitch accents as the principal means of focusing. Most intonation languages use the H*L falling tone as a pitch accent to mark focus, where the * following the H tone signals that the tone on the accented syllable is high.
> (Hartmann 2007: 225)

In the remainder of this subsection, I give a brief typology of possible focus strategies in stress languages. In English, the nuclear stress (<u>underlined</u>) surfaces on the focused constituent, without any change in surface word order.

(19) a. A: Who squashed a peach?
B: [<u>Frank</u>]$_{FOC}$ squashed a peach. [subject focus]

b. A: What did Frank do with the peach?
B: Frank [<u>squashed</u>]$_{FOC}$ the peach. [verb focus]

c. A: What did Frank squash?
B: Frank squashed [a <u>peach</u>]$_{FOC}$. [object focus]

While English can mark narrow focus without changes in word order, Hungarian employs movement to bring the focused constituent into the default nuclear stress position.

Default nuclear stress is leftmost, on the verb *bemuttatam*,[7] as shown in the wide focus question and answer pair in (20) (Szendröi 2003).

(20) A: *What happened?*
B: [Tegnap este <u>bemutattam</u> Petert Marinak.]$_{FOC}$
yesterday evening PRT.introduce.I Peter Mary
"[Yesterday, I introduced Peter to <u>Mary</u>]$_{FOC}$." (Szendroi 2003: 71, ex. 55)

Narrow focus constituents (*Marinak* in 21B) move into a syntactic focus projection to the left of the verb – that is, to the nuclear stress position. While this has been conceived of as syntactically driven movement to satisfy a [+Focus] feature (Bródy 1995), it also receives a natural explanation as phonologically driven movement, to satisfy the "stress-focus" principles of (18) (Szendröi 2003; but see Horváth 2005 for a reply).

(21) A: *Who did you introduce Peter to?*
B: Tegnap este [<u>Marinak</u>$_m$]$_{FOC}$ mutattam be Petert t_m.
yesterday evening Mary introduce.I PRT Peter t_m
"Yesterday evening, I introduced Peter to [<u>Mary</u>]$_{FOC}$." (Szendroi 2003: 65, ex. 45)

Romance languages like Portuguese display a similar surface pattern (Cruz-Ferreira 1998, Costa 1998; Samek-Lodovici 2005 on Italian; Zubizaretta 1998 on Spanish), except in the other direction. Like Thompson Salish, as we shall see, nuclear stress is rightmost in default wide focus utterances (22). As expected under a stress-focus account, narrowly focused material appears at the right edge of the clause (23).

(22) A: *What's going on?*
B: Eu prefiro que ela <u>ven</u>ha.
I prefer that she come
"[I would prefer her to <u>come</u>]$_{FOC}$." (Cruz-Ferreira 1998)

---

[7] Left adjunctions like *Tegnap este* 'yesterday evening' can precede the verb/nuclear stress constituent.

(23) A: *Who would you prefer to come?*

B: Eu prefiro que t_e venha [ela$_e$]$_{FOC}$.

I prefer that t_e come she$_e$

"I would prefer [her]$_{FOC}$ to come." (Cruz-Ferreira 1998)

Finally, in German, non-focal constituents scramble away from the nuclear stress position (Krifka 1998b; also Neeleman and Reinhart 1998 on Dutch). This "selfless" movement allows focus constituents to surface in the nuclear stress site and carry sentential stress (Krifka 1998b). Sentential stress in German is immediately before the final verb; in (24), the direct object focus *den Roman* 'the novel' is base-generated in this location. Thus, the focus carries the primary stress by default.

(24) A: *What did Hans read to Maria?*

B: Hans hat der Maria [den Roman]$_{FOC}$ vorgelesen.

Hans has the.DAT Maria the.ACC novel read

"Hans read Maria [the novel]$_{FOC}$." (Krifka 1998b: 88, ex. 33)

In (25), however, the indirect object *der Maria* is the focus. The direct object *den Roman* has scrambled leftward so that now *der Maria* surfaces before the verb and receives the nuclear stress. Once again, the focus carries primary stress, but this time as a result of scrambling of the non-focal constituent.

(25) A: Who did Hans read the novel to?

B: Hans hat [den Roman]$_k$ [der Maria]$_{FOC}$ t_k vorgelesen.

Hans has [the.ACC novel]$_k$ [the.DAT Maria] t_k read

"Hans read the novel to [Maria]$_{FOC}$." (Krifka 1998b: 88, ex. 34)

In this section, I have illustrated three strategies employed in stress languages to satisfy the stress-focus correspondence. English leaves focus in-situ, and changes the location of the nuclear stress to the focus constituent. In Hungarian and Portuguese/Romance, focused constituents move to the edge of the clause where the nuclear stress is located (leftmost in Hungarian, rightmost in Portuguese). And in German, unfocused material scrambles out of the nuclear stress position so that the focus may surface there (see also Ishihara 2001: 172 for similar claims for Japanese).

(26) "Stress-focus" strategies

(i) move the nuclear stress to the focus (English)

(ii) move the focus to the nuclear stress position (Hungarian, Portuguese)

(iii) scramble non-foci away from the nuclear stress site (German)

1.3.4 Focus projection

Selkirk (1995) discusses the phenomenon of focus projection in English. A single rightmost nuclear stress can indicate a focus on a variety of ever larger constituents, each time "projecting" upwards through the syntax. The idea is that a listener is able to identify which constituent carries the nuclear stress, and use this information to help recover the focus of a speaker's utterance.

Example (27d) illustrates the phenomenon of focus projection. Default nuclear stress falls rightmost in English (Chomsky and Halle 1968, Cinque 1993), on the deepest syntactic constituent. The nuclear stress on *peach* in (27d) can be used to answer any of the questions in (27a-c), which mark CP, VP, or narrow object focus. This is what Selkirk (1995) identified as focus projection: the primary stress indicates an f-mark on the object in (27d), by the rule in (28). This f-mark can optionally "project" upwards through the syntax from the object, to the verb, to the VP, and all the way to the CP, by the rules in (29). The focus is identified by the rule in (30). Thus, focus projects from the nuclear stress position.

(27)	a. What happened?	[sentence-wide CP focus question]
	b. What did Frank do?	[wide VP focus question]
	c. What did Frank squash?	[narrow object focus question]
	d. [Frank [[squashed$_f$ [a <u>peach</u>$_f$]]$_f$]$_{f, FOC}$.	[optional focus projection]

(28) Basic Focus Rule (English): "An accented word is f-marked."

(29) Focus Projection

(a) f-marking of the *head* of the phrase licenses the f-marking of the phrase

(b) f-marking of the *internal argument* of a head licenses the f-marking of the head

(30) Defining the Focus

The Focus of a sentence is defined as an f-marked constituent not dominated by any other f-marked constituent. (Selkirk 1995: 555, 561)

In this dissertation, I will only identify the focus 'FOC,' and not individual f-marks in the syntax, though nothing hinges on this method of representation.

Recent work by Büring (2003, 2006) aims to do away with Selkirk's focus projection system. I'll briefly introduce some of the key points of his focus marking system here, as the issue will be relevant to the discussion in chapter 3 (section 3.4.2).

Projection from heads to phrasal categories (29a) is what Büring calls "vertical" focus projection. In fact, Büring shows that Selkirk's rules for focus projection are too narrowly defined in (29), since they do not allow projection from accented adjuncts or specifiers. He restates Selkirk's rules of focus projection as the "restricted view:"

(31) Restricted vertical focus projection:
Only heads and arguments can project focus. (Büring 2003)

Büring gives empirical data for English and German showing that, in fact, any syntactic category (including transitive subjects, adverbs, and indirect objects) can project focus vertically to another dominating syntactic category. The breadth of the focus is indicated by the preceding wh-question, by the rule in (9). Yet, in each case below, the accent falls on a subconstituent not predicted by (31). As Büring notes, the more unusual accentuation patterns in the examples below are due to given material being deaccented; but this accent still projects focus vertically.

(32) Focus projection from accented transitive subject DP to CP
Q: Why did Helen buy bananas?
A: $[_{CP}$ Because $[_{DP}$ <u>John</u>$]$ bought bananas $]_{FOC}$. (Büring 2003: ex. 17)

(33) Focus projection from accented adverb to VP
Q: What will she do if her call doesn't go through?
A: She'll $[_{VP}$ call him $[_{AdvP}$ <u>again</u>$]]_{FOC}$. (Büring 2003: ex. 23)

(34) Focus projection from accented indirect object to VP
A: They accused Sinatra of having given money to the mob.
What did Dean Martin do, to avoid having his image ruined, too?
B: He $[_{VP}$ gave $[_{DP}$ money$]$ $[_{PP}$ to $[_{DP}$ the Salvation <u>Army</u>$]]]_{FOC}$.
(Büring 2003: ex. 20)

Büring therefore proposes unrestricted focus projection:

(35) Unrestricted vertical focus projection:
Any subconstituent can project focus. (Büring 2003)

It should still be noted that the subconstituent projecting the focus in (32-34) does so by virtue of carrying the most prominent phrasal accent.

For the present study, we will want to know what categories count for focus projection in Thompson Salish, in terms of vertical focus projection. Neeleman and Reinhart (1998) describe this as the syntactic heads or projections which form the "focus set."

The projection from arguments to heads, as described by Selkirk in rule (29b), has been termed "horizontal" focus projection by Büring. Büring argues that this asymmetry between heads and arguments is a matter of default prosody, and not special rules of focus projection (see also Truckenbrodt 1995, 1999). The asymmetry is regulated by a constraint against predicates bearing pitch accents (in chapter 4, we will see similar surface facts for Nɬeʔkepmxcin: nuclear stress falls rightmost, typically on arguments of the verb, and not on the lefmost predicate):

(36) *STRESS-PREDICATE: Verbs/predicates/heads don't bear prominence.
(Büring 2003; see also Kahnemuyipour 2004, Selkirk and Kratzer 2007 on deriving this constraint)

In wide focus cases (VP or CP), stress falls on the argument instead of the predicate, since by the rule below, the focused phrase must still bear prominence on a subconstituent:

(37) FOCUS-PROMINENCE: Focus needs to be maximally prominent.
A prosodic category C that contains a focused constituent is the *head* of the smallest prosodic unit containing C. (Truckenbrodt 1995, Büring 2003)

Crucially, prominence is still defined as phrasal accent, carried on prosodic heads. Since prominence is assigned by default prosody, though, one might wonder why the focus rule needs to refer to prosodic heads at all. This matter will be taken up in chapter 8. For now, we can note that in Nɬeʔkepmxcin we still expect horizontal focus projection from arguments (which we will see bear the nuclear stress when rightmost) to heads (the predicate).

1.3.5 Focus summary and preview of results

In this section, I have reviewed some basic ideas about focus that feature prominently in the literature. I will assume that focus is a syntactic category marked by a FOCUS feature, and that semantically it is associated with alternatives.

The data presented in this dissertation will, however, reveal trouble for the "stress-focus" accounts. Focus projection will necessarily also proceed in a different manner in Nɬeʔkepmxcin. In stress languages, focus has been widely held to bear the most prominent phrasal accent (the nuclear stress). This phrasal accent can "project," or indicate to a listener that the focus is equal to one of an ever larger group of dominating syntactic constituents. This prosodic focus marking enables listeners to keep track of or recover focused information in the discourse; in Krifka's expression focus cases, this amounts to managing the content of the Common Ground of a discourse. In cases of Krifka's denotation focus, the prosodic marking will be required for the proper interpretation of the truth conditions of the utterance.

I will show that the stress-focus correspondence fails to account for focus marking or focus projection in Nɬeʔkepmxcin. Narrow focus utterances employ the same prosodic patterns as neutral, all-new utterances. Focus does not receive additional prosodic prominence, nor is given material deaccented. As far as focus projection is concerned, the focus projects from the first phonological phrase in the utterance containing the matrix predicate. The focus may be equivalent to this p-phrase; it may be a subconstituent of this p-phrase (even if it does not bear the phrasal stress, unlike English); or, in the cases of wide focus, the focus may itself contain the first p-phrase.

An example is shown on the next page.

The contrastive focus *Karsten* is the leftmost lexical element in the clause. It does not carry a large pitch excursion; compare *Rois* in the English example in figure 1.2. And, the given material *ʔex nc̓ew̓m* is not deaccented: pitch is reset to a higher level on this phrase, and the stressed verb also carries an amplitude peak (again, compare given material *that called me today* in the English example below). Thus, nuclear stress falls on the rightmost lexical element here, while the focus is the leftmost lexical element. The focus *e Karsten* is the only lexical information in the first p-phrase, so a listener can recover the focus by identifying the first p-phrase.

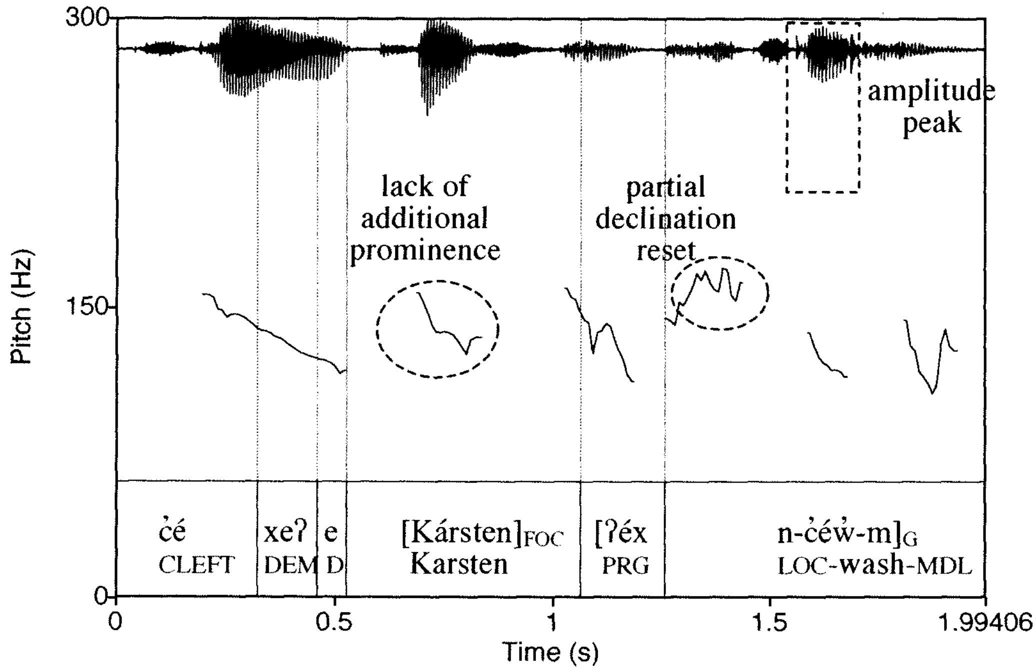

Figure 1.1 Pitch tracing and waveform:
"[No,] it was [<u>Kársten</u>]$_{FOC}$ [that washed them]$_{G}$."

In the English example, contrastive focus on *Rois* is marked with a large pitch excursion and amplitude peak. After the focus, F0 drops more than 50 Hz (–4.8 semitones) from the peak on *Rois,* to the rightmost word of the utterance, *today*; amplitude peaks drop from 73 db to 63 db, a –10 db change. This pattern of H*L prominence on the focus and post-focal deaccenting is widely reported for stress languages; see Hartmann (2007) for discussion.

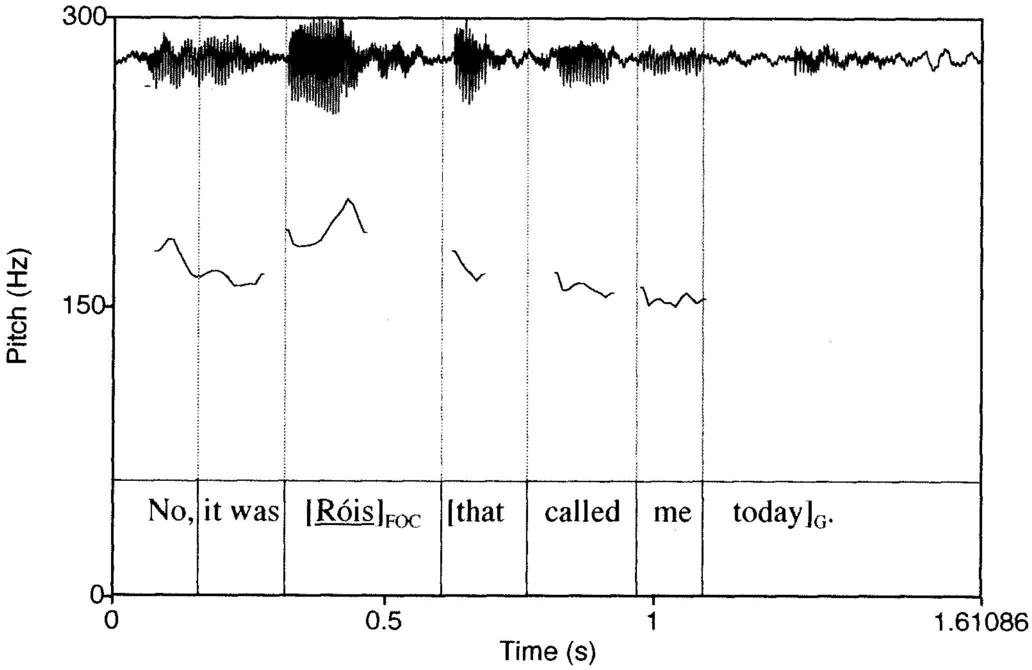

Figure 1.2 Contrastive focus accent and post-focal deaccenting in English

The discussion of these figures brings us to to the next section, where I review givenness.

1.4 What is givenness?

Roughly speaking, given material is old information that is already in the Common Ground of a conversation.

1.4.1 A syntactic representation

Given material is also assumed to carry a syntactic feature, the given feature 'G' (Féry and Samek-Lodovici 2006, Selkirk 2007, Selkirk and Kratzer 2007). Like the FOC feature, G mediates between the phonological expression of given material on the one hand and its semantic interpretation on the other. I will assume that given material is syntactically marked, and I will indicate this with a subscript 'G' where relevant.

1.4.2 The semantics of givenness (Schwarzschild 1999)

Schwarzschild (1999) proposes that given constituents are entailed by prior discourse. He gives the following definition for GIVEN material. I give both the informal and formal version.

(38) Definition of GIVEN (informal version)

An utterance U counts as GIVEN iff it has a salient antecedent A and

a. if U is type e, then A and U corefer;

b. otherwise: modulo $\exists$-type shifting, A entails the Existential F-Closure of U.

(Schwarzschild 1999:151)

(39) Definition of GIVEN (formal version)

An utterance B counts as GIVEN iff it has a salient antecedent A and

a. if the semantic type of B is e, $\forall\langle w, g\rangle \in c\ \exists h\ [\ [[A]]^{g} = [[B]]^{g, h}]$

b. if the semantic type of B is conjoinable:

$\forall\langle w, g\rangle \in c\ \exists h\ [ExClo([[A]]^{g})(w) \rightarrow ExClo([[B]]^{g, h})(w)]$

(Schwarzschild 1999:152)

In the example below (from Schwarzschild 1999), *John* is given in the question, while the relation *praise* is not. That is, the question does not entail $\exists x \exists y$[y praised x]. Therefore, the nuclear stress falls on the verb *praised* and not on *him*.

(40) A: What did John's mother do?

B: She [[<u>praised</u>] $\text{him}_{G}]_{FOC}$.

The next case has the nuclear accent on the given pronoun *him*. The pronoun is also the focus, though, since it answers the preceding wh-question. Moreover, given material entailed by the preceding question includes *She*, and crucially $\exists x$[She praised x], where x corresponds to the wh-word *Who*. Crucially, *him* is not in a given relationship with other material: the question does not entail *She praised him*, $\exists y$[y praised him], or $\exists R$[She R-ed him]. Thus, focal accent falls on *him* (see Schwarzschild 1999:157-161 for the full account).

(41) A: Who did John's mother praise?

B; She praised [<u>him</u>]$_{G, FOC}$.

Schwarzschild's treatment also allows non-constituents, such as *her [...] convertible* below, to be identified as given (1999: 146-147, 161-162; Taglicht 1982, 1984).

(42) A: John drove Mary's red convertible. What did he drive before that?

B; He drove [her [<u>blue</u>]$_{FOC}$ convertible]$_{FOC}$.

The sentence *John drove Mary's red convertible* entails, for example, the NP: $\exists X \exists P[P(\text{her X convertible})]$ (Schwarzschild 1999: 161). The adjective *blue* is not entailed, so focal accent falls on *blue*. Note that the fact that given material can be a non-constituent is problematic for a syntactic G feature (section 1.4.1). This issue is beyond the scope of the present study, however, and I will continue to use a subscript G as a convenient way to identify given material where necessary.

Schwarzschild's definition of givenness allows us to identify given material in the Common Ground of utterances, but does not identify degrees of givenness. Work by Baumann and Grice (2006) has suggested that the degree of accessibility can also affect the prosodic marking of given material. In German, given material in whole-part relationships with priorly mentioned material, or given material that is predictable from context but not previously mentioned, may carry some level of accentuation, but a different accent from new information.

Given material in this dissertation is compatible with Schwarzschild's definition, though I will not be providing any detailed semantics to illustrate. For the sake of clarity, I will just use subscript 'G' to indicate given material where necessary.

1.4.3 The prosodic expression of givenness

Krifka (2007: 37-40) identifies three ways (in addition to the use of anaphors) to mark givenness:

> Deaccentuation, the reduction of the prosodic realization of expressions that are given in the immediate context; deletion, which can be seen as an extreme form of reduction; and the realization of an expression in a non-canonical position, typically before the canonical position.

Given material in Thompson Salish can be deleted (Kinkade 1983, Gerdts and Hukari 2004 on 3rd person transitive subjects being null and topical, for example). Nɬeʔkepmxcin speakers also use word order to mark given material (though, in narrow focus cases, given material appears *after* its normal canonical position rather than before). However, deaccenting of given information is not routinely attested. This suggests that there is no link between deletion and reduction as suggested by Krifka in the above quote; rather, DESTRESS-GIVEN and DELETE-GIVEN are two different processes.

In stress languages, much attention has been paid to the deaccenting of given information, particularly after the nuclear stress position. This generalization has been strongly stated by Hartmann (2007), who I quote again here:

> Another very general feature of focus intonation is the drop in pitch after an early nuclear accent. The postfocal contour is deaccented, due to the fact that there are no more accent targets following the focus. Thus, the pitch range, which is expanded on the focus constituent, is compressed post-focally.
>
> (Hartmann 2007: 225-226)

These observations are illustrated by the English sentence in figure 1.2. The "deaccent-given" generalization is formally described in the constraint DESTRESS-GIVEN proposed by Féry and Samek-Lodovici (2006):[8]

(43) DESTRESS-GIVEN: A given phrase is prosodically non-prominent.
(Féry and Samek-Lodovici 2006:135-6)

1.4.4 Givenness summary and preview of results

I will identify given material with a subcript G, and assume Schwarzschild's account for the semantic identification of given information.

In terms of the prosodic marking of given material, we shall see that focus in Thompson Salish is associated with an early position in the clause (leftmost), yet post-focal material does not appear to be deaccented, as Hartmann suggests for stress languages. This was already illustrated in figure 1.1.

Deaccenting of given information does not appear to be a universal property of stress languages. Gumperz (1982) identifies Indian English and Caribbean English as non-deaccenting languages (see also Ladd 1996 on Italian, Romanian, and an overview of

---

[8] It should be noted that this constraint fails to account for the observation expressed by Hartmann that given information is deaccented above all post-focally (Büring, p.c.); that is, DESTRESS-GIVEN is not a directional constraint. However, this is a general problem for "destress-given" approaches as far as I can tell, and I do not address the issue further.

languages that lack deaccenting; Ortiz-Lira 1993, 1995 on Spanish). The following example from Gumperz (cited in Ladd 1996: 176) illustrates:

(44) If you don't give me that cigarette, I will have to buy a cigarette.

While the second instance of *cigarette* is clearly given, it continues to carry the nuclear stress. For a speaker of a standard variety of English, this accentuation pattern induces the interpretation that the second instance of cigarette refers to a different kind of entity than the first. Compare the typical intonation pattern found on such cases, where accent falls on *buy* rather than the final instance of *cigarette*:

(45) If you don't give me that cigarette, I will have to buy a cigarette.

Similar examples can be constructed in Thompson Salish. Example (46), notably, was elicited as a translation from the English counterpart, where the pronoun *it* marks the given status of the final object DP (and lacks phrasal accent). Despite the potential bias toward the speaker producing an English intonation pattern in the Salish version, however, *sq̓ʷíyt* 'fruit' is not only produced sentence-finally, but is also accented in both occurrences in the Nɬeʔkepmx version. Neither occurrence of *sq̓ʷíyt* (shown in the dashed boxes) has reduced pitch or amplitude curves in figure 1.3; the nuclear stress remains rightmost.

(46) When Mary is hungry, she picks some fruit and then she eats it.

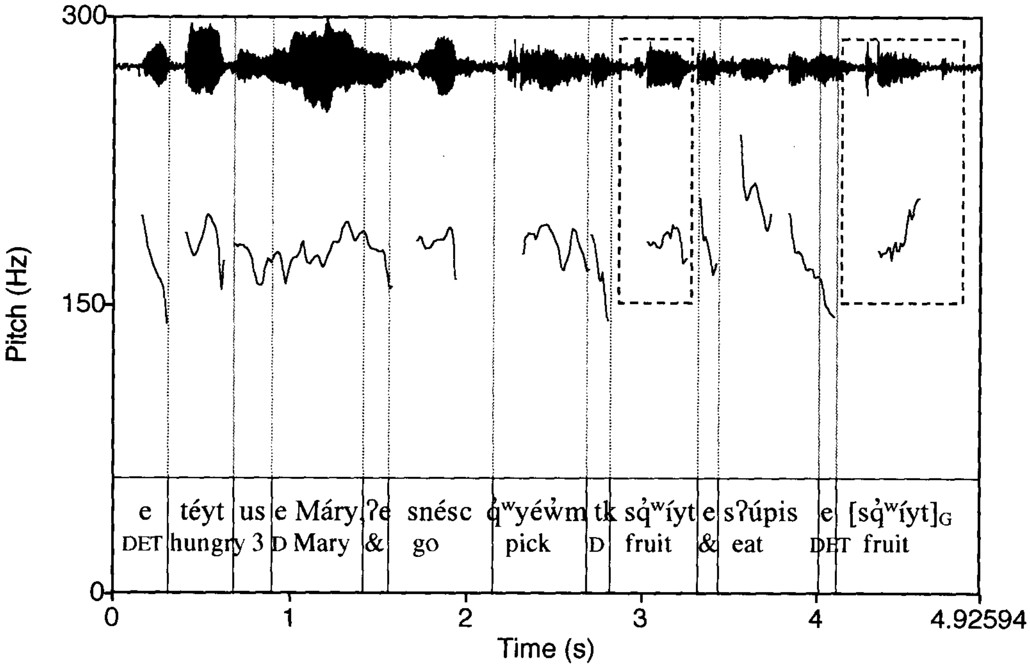

Figure 1.3 Pitch tracing and waveform: "When Mary is hungry, she picks some fruit and then she <u>eats</u> [the fruit]$_G$."

1.5 Representing STRESS-FOCUS and DESTRESS-GIVEN phonologically

The marking of focus in "stress-focus" accounts is through alignment with the prosodic heads of phrases: phonological phrases, and intonational phrases. For the purposes of this dissertation, I will adopt the prosodic hierarchy proposed by Nespor and Vogel (1986).

(47) The prosodic hierarchy (Nespor and Vogel 1986, Hayes 1989)

Utterance (U)
|
Intonational Phrase (i-phrase)
|
Phonological Phrase (p-phrase)
|
Clitic Group (cl-gp)
|
Prosodic Word (PWd)
|
Foot (Ft, Φ)
|
Syllable (σ)

Prosodic categories are in an exhaustive, hierarchical relationship. Each prosodic constituent (from the foot onward) has a single head, at the left or right edge. These ideas are captured in the Strict Layer Hypothesis (Selkirk 1984, 1995b, Samek-Lodovici 2005). For this dissertation, I adopt the following constraints:

(48) Conditions on prosodic structures:

a. HEADEDNESS:
Each prosodic constituent has one and only one head, at the left or right edge. (see McCarthy 2003:111 on "End Rule" constraints)

b. LAYEREDNESS: no prosodic constituent is dominated by a constituent lower in the prosodic hierarchy.
Example: A syllable (σ) does not dominate a foot (Φ).

c. EXHAUSTIVITY: no prosodic constituent immediately dominates a constituent that is not immediately below it on the prosodic hierarchy.
Example: A PWd does not immediately dominate a syllable (σ).

d. NONRECURSIVITY: No prosodic constituent dominates a constituent of equal rank in the prosodic hierarchy.
Example: No foot (Φ) dominates another foot (Φ).

Selkirk (1995b) notes that while HEADEDNESS and LAYEREDNESS appear to be universally undominated, EXHAUSTIVITY and NONRECURSIVITY are sometimes violated.

I will primarily be concerned with p-phrases and i-phrases in this dissertation, since this is the level where phrasal accent is assigned. Pitch accents are assigned at the p-phrase, and the nuclear pitch accent at the i-phrase. Prosodic heads build on each other at each level of the prosodic hierarchy; thus. p-phrase heads are built on Prosodic Word heads, PWd heads are built on the head foot of that word, and so on. In English, phrasal accents fall on the rightmost head in their phrase, as expressed in the constraints HP and HI (HEAD P-PHRASE, HEAD I-PHRASE) below (from Féry and Samek-Lodovici 2006:134, adapted from McCarthy and Prince 1993, Truckenbrodt 1999). Thus, HP and HI account for the observation in HEADEDNESS in (48a) that phrasal heads fall at either the left or right edge of a prosodic phrase, and not on potential intermediate heads.

(49) a. "HP:" Align the right boundary of every p-phrase with its head.
ALIGN(P-PH, R; PHEAD, R)

b. "HI:" Align the right boundary of every i-phrase with its head.
ALIGN(I-PH, R; IHEAD, R)

In "stress-focus" languages like English, the focus carries both the p-phrase accent and the i-phrase accent. In the object focus example below, the focus *peach* carries the p-phrase accent and the i-phrase accent. The verb phrase *squashed a peach* is parsed into one p-phrase, while the subject *Frank* is parsed into another (eg. Kahnemuyipour 2004, Selkirk and Kratzer 2007).

(50) A: What did Frank squash? [object focus]

(	X)	i-phrase	[nuclear pitch accent]
(X)(	X)	p-phrase	[pitch accent]
B: Fránk squáshed	[a <u>péach</u>]$_{FOC}$.		

The representation of "destress-given" is less clear at the outset. There are two possibilities: given material may still carry a p-phrase accent, just so long as the nuclear pitch accent has shifted elsewhere; or given material carries no phrasal pitch accent at all, just word-level stress. These two possibilities are represented in (b) and (c) below. In (b), the nuclear pitch accent has shifted to the middle p-phrase headed by the verb, to satisfy "stress-focus." In this case, the given object *peach* still carries phrasal accent, but less than when it is itself the object focus in (50B). In (c), the given object *peach* carries no phrasal accent at all; this achieved, roughly, by not parsing *peach* into a p-phrase at all (Selkirk and Kratzer 2007; a more detailed summary of their account is given in section 1.5.1).

(51) a. A: What did Frank do with the peach? [verb focus]

(X   )   i-phrase   [hypothetical phrasing]
(X) (X   )   (X)   p-phrase

b. B: Fránk$_G$ [<u>squáshed</u>]$_{FOC}$ the péach$_G$.

(X   )   i-phrase
          (X   )   p-phrase

c. B: Fránk$_G$ [<u>squáshed</u>]$_{FOC}$ the péach$_G$.

I will argue that, at least for in situ focus languages like English where "destress-given" is active, a representation along the lines of (c) is what we must adopt (I'll revise it somewhat in section 1.5.1). This is the position implicit in, for example, Hartmann (2007): "The postfocal contour is deaccented, due to the fact that there are no more accent targets following the focus." Lacking "targets" means that there are no more potential p-phrase heads after the focus.[9]

Because given material appears post-focally in Thompson River Salish, (c) is also the representation assumed if "destress-given" is active in Nɬeʔkepmxcin. There are two reasons to suppose (c) is on the right track. First, phonologically, a structure like (b) is ill-formed: this is because the i-phrase head falls on the middle of three p-phrases. Since prosodic heads fall at either the left or right edge (that is, phonology cannot count), structure (b) is not possible. In (c), where *peach* is not parsed into a p-phrase, this problem does not arise – the i-phrase head simply falls on the rightmost p-phrase head.

Secondly, numerous scholars distinguish the prosodic properties of pitch accents at the phrasal level (p-phrases and i-phrases) from word level stress (Halliday 1967b, Vanderslice and Ladefoged 1972, Beckman and Edwards 1994, Sluijter and van Heuven 1996a, 1996b, Astruc and Prieto 2006). For example, Sluijter and van Heuven (1996a,

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[9] It should be noted that the "destress-given" constraint, as far as I can tell, has no account for why deaccenting of given information appears to be primarily restricted, above all, to post-focal deaccenting (Büring p.c.). This is a general problem that I will not be addressing in this dissertation, as it is not crucial for the present study.

1996b, 1997) give phonetic evidence that phrasal accent differs from pure word-level stress. The former is marked primarily by additional pitch movements (eg. phrasal pitch accents) in comparison to word-level stress. Deaccented given material, crucially, lacks the pitch movements characteristic of phrasal stress. This again suggests that a representation along the lines of (c) is correct. That is, "destress-given" is truly lack of phrasal pitch accenting on given material.

The representation in (c) can be achieved purely by appealing to "destress-given," and does not require reference to a "stress-focus" constraint. That is because, once given material is deaccented, the stress will fall on the focus by default. We may wonder if we need representations for both given and focused material, then, or if just one will do. However, there is evidence that we need both categories. First, in many languages contrastive focus is distinguished from new information focus (eg. Gussenhoven 2004, Féry and Samek-Lodovici 2006, Selkirk 2005, 2007, Selkirk and Kratzer 2007). While "destress-given" can account for stress falling on new information focus cases (as in 50c), we thus still need a category of contrastive focus. There are also instances where a constituent can be both given and focused. The following example is from Schwarzschild (1999: 172). Here, the final DP *the rising of the tides* is given since it is also the subject of the first clause; yet it is still accented, by virtue of being focused (see also Féry and Samek-Lodovici 2006: 133, for discussion).

(52) The rising of the tides depends upon the moon being full and
the boat being empty depends upon [the rising of the <u>tides</u>]$_{\text{FOC, G}}$.

Thus, we need both discourse categories, focus and givenness. Recent work by Selkirk (2007; also Selkirk and Kratzer 2007) suggests a three-way split, with focus marking for contrastive foci, givenness marking, and new information focus the unmarked category. However, in this dissertation, I will continue to mark all focus with the subscript 'FOC.' I will claim that in Thompson River Salish, there is no "destress-given" constraint active, so information structure is necessarily marked by appealing to the category of focus; furthermore, contrastive focus and new information focus are treated with the same constraints.

Table 1.1 Focus and givenness marking in English and Salish

	Focus marking		Givenness
	Contrastive	New information	(Destress-given)
English	X	--	X
Salish	X		--

I will show that focus in Thompson River Salish is marked by alignment to prosodic edges, while in English focus is marked by alignment to prosodic heads ("stress-focus"). The generalization that emerges is that languages which do not deaccent given material also do not have a "stress-focus" constraint; instead, alignment to prosodic edges is the key to focus marking.

1.5.1 Phase theory and a two step parse into p-phrases

In this dissertation, I'm going to be assuming a two-step process in the interface of syntactic phrases and phonological phrases. This will give us a slightly more refined representation of (51c). Numerous theorists have proposed that, at the interface of syntax and phonology, prosodic phrases are parsed into phonological phrases (p-phrases) (Truckenbrodt 1995, 1999, Legate 2003, Fox and Pesetsky 2005, Ishihara 2007, Selkirk and Kratzer 2007). Prosodic parsing has thus been proposed to be a two step process (Legate 2003, Selkirk and Kratzer 2007). In Step 1, syntactic phrases are parsed into p-phrases at the interface of syntax and phonology. In Step 2, the remaining prosodic units (PWds, i-phrases, etc.) are parsed by the phonological component alone. I will adopt this model because of its restricted view of the syntax-phonology interface (eg. syntactic phases are exported only to p-phrases, and not other phonological categories); and because discourse constraints like STRESS-FOCUS and DESTRESS-GIVEN are assigned as interface constraints to Step 1. I will be appealing to other interface constraints in this dissertation.

In the case of given material, Selkirk and Kratzer (2007) suggest that DESTRESS-GIVEN is an interface constraint which prevents given material from being parsed into a p-phrase at the interface of syntax and phonology. Instead, given material is parsed recursively into p-phrases in Step 2, by the phonological component. This means that it shares a phrasal head with the focused p-phrase of Step 1; since p-phrases can have only a single head, no further accents can fall on given material.

Thus, the representation of (51c) in this two-step interface model looks as follows:

(53) p-phrases at the interface and in the phonological component: two steps

(		X		)	i-phrase: STEP 2
(	(	X	)	)	recursive p-phrase: STEP 2
	(	X	)		p-phrase at interface: STEP 1

Fránk$_{G}$ [squáshed]$_{FOC}$ the péach$_{G}$.

Again, this approach doesn't capture the fact that DESTRESS-GIVEN applies above all to post-focal information, but that is a general problem that I will not be addressing in this dissertation.

1.6 Bilingualism and intonation

The present study is based on conversational data from two female speakers of Nɬeʔkepmxcin; in both cases, Nɬeʔkepmxcin was the first language they learned. However, both are also fluent speakers of English. This raises the possibility of cross-linguistic "contamination" of the intonational properties of Nɬeʔkepmxcin observed in the collected data. I review some literature on this subject in the present section. In short, there are no clear guidelines to be drawn. It may be that English intonation influences the intonation that speakers of Nɬeʔkepmxcin employ, but it is equally possible that their dialect of English is influenced by features of Nɬeʔkepmxcin intonation. However, the statistical results of the phonetic study in chapter 5 indicate that the intonational properties of Nɬeʔkepmxcin are significantly different from those of English.

There has been very little research on intonation in bilingual speakers. The question is important since speakers may incorporate the intonation system of one language into the other. In a "substratum" theory of language contact, intonation is a key feature of the native language that persists in the non-native language, while "adstratum" proponents find that immigrants (for example) incorporate prosodic features of the target language into their native language (Vildomec 1971, discussed in Thomason and Kaufman 1988:9).

In the present study, there are four possible results of language contact between Nɬeʔkepmxcin and English, as far as intonation is concerned. First, bilingual speakers may have no noticeable cross-linguistic influence in their intonation systems. Secondly, features of English intonation may have been incorporated into Nɬeʔkepmxcin. Thirdly, intonation features of Nɬeʔkepmxcin may have been incorporated into the variety of English spoken in Lytton. Note that these latter two possibilities are not mutually exclusive, such that a fourth possible result is that bilingual speakers may borrow features from both languages and come up with a single intonation system for both of the languages they command.

Colantoni and Gurlekian (2004) analyzed declarative sentences for two speakers of Buenos Aires Spanish. They found that the prenuclear pitch accent has early alignment, unlike other varieties of Spanish, which have a late-aligned accent (though they note that the early alignment is used in other environments, namely to signal contrastive focus, in these other varieties of Spanish). In addition, Buenos Aires Spanish has pronounced down-step on postnuclear peaks in intonational phrases (DESTRESS-GIVEN), again unlike other varieties of Spanish (eg. Ortiz-Lira 1993, 1995). The authors conclude that these features of Buenos Aires Spanish have been transferred from Italian, including through bilingual populations during the 20th century. It should be noted, however, that it is very difficult to establish the intonational features both of early 20th century immigrant Italian or Buenos Aires Spanish from written descriptions alone, so these results are speculative at best (McMahon 2004). Moreover, Colantoni and Gurlekian's hypothesis is based on examination of descriptive statistics only, not significance tests; and as the authors note, they looked only at F0 but not other potential indicators of phrasal accent like duration or amplitude.

McDonough (2002) compared tonal contours of yes/no questions, focus constructions and declaratives in Navajo, a tone language. Again, the author inspected descriptive statistics only, and only for F0. The investigation examined the claim that Navajo lacks focus or other tonal intonation, and found no evidence for pitch perturbations at edges or elsewhere to differentiate focus or yes/no structures from normal declaratives. McDonough attributes the lack of intonational focus in Navajo to its being a pronominal argument language (Willie and Jelinek 2000), and to the fact that languages tend to mark accents on arguments over predicates (eg. Bollinger 1986, Schwarzschild 1999, Büring 2003, 2006, Kahnemuyipour 2004, Selkirk and Kratzer 2007). Regarding bilingualism, McDonough's study shows that Navajo intonation is quite different from English, suggesting a lack of influence from American English intonation patterns.

Queen (2001) looked at Turkish-German bilinguals' intonation in interrogatives, focus constructions and phrase-final rises. This study is also based on descriptive statistics. Subjects were four 10-12 year-old bilinguals, two monolingual German children and one adult male Turkish speaker. Queen found that the degree of intonation mixing varied both by speaker and by structure. Thus, bilinguals maintained language-specific interrogative marking. The author speculates that this is due to "the particular morphosyntactic patterns that govern interrogative formation in the two languages" (2001: 68), since the German intonation pattern was maintained even in code-switching cases where a German wh-word was used in an otherwise Turkish utterance; or when the Turkish question-particle was used in a German matrix utterance. In focus constructions in the bilinguals' German, the speakers employed a non-German postposing, which was accompanied by Turkish intonation when it occurred (this finding was based on 9 sentences). Finally, for phrase-final rises, the bilinguals used both Turkish L%H% and German L*HH% contours in both German and Turkish. These contours appear to have taken on meanings of "discourse continuation" and "discourse cohesion" respectively, though results are not consistent across the four speakers. The results suggest that bilinguals may mark their bilingual status with intonation contours that differ from either monolingual language, but in specific constructions rather than across-the-board. These findings underline Thomason and Kaufman's (1988) remarks on the importance of the sociolinguistic situation when considering language change through contact.

Similar findings were obtained by Cichocki and Lepetit (1986) in their examination of declination in French-English bilinguals in Welland, Ontario. Cichocki and Lepetit studied 14 bilingual grade 5 children in three groups: high French use (n=4), equal French-English use (n=6), and high English use (n=4). All children attended a francophone school. They had subjects read 30 semantically unrelated sentences varying in length from three to nine syllables. Using a multivariate statistical analysis, the authors determined that the three groups used different declination rates when the sentence-initial subject was a pronoun (including French *ce*), rather than a full lexical NP, in which case declination did not differ significantly for the three groups. When sentences started with a pronoun, speakers in the French-dominant group (F) showed least declination, those in the French-English group (FE) used greatest declination, and subjects from the English-dominant (E) group were in between. The authors hypothesized that the FE and E speakers allowed the pronoun to carry a high tone H, not possible for the F group. They concluded that the "important result for declination theory is that a syntactic constraint is operative in intonation" (1986: 245). They note that the FE group in fact leads the E group in the use of the "putatively more English-like variant" (245), suggesting that "the FE group may be insisting on the relative strength of their bilingualism within the community" (1986: 245). Unfortunately, the authors do not provide statistical results to indicate which of the groups, FE, E or F, are significantly different from each other, merely that they are not all identical; they do note that "the significant effect is due to the FE group" but give no statistical figures. What these results show, like Queen's (2001) study of Turkish-German bilinguals, is that cross-linguistic influences in intonation can be linked to a specific syntactic construction, and can result in a different intonational pattern from that used in either source language. The results also suggest that declination can be subject to language or dialect-specific phonetic implementation.

Penfield (1984) analyzed recordings of spontaneous English conversation among bilingual Mexican-Americans from El Paso. In a purely descriptive study, she found that the intonation contours in "Chicano English" differed from Standard English in a variety of ways (she did not explicitly attribute these contours to the influence of Spanish). For example, Chicano English speakers use sentence-final rising contours to signal emphasis or contrast on the final word in declaratives, which would get a falling contour in English. Penfield identifies five such intonational features of Chicano English, and, like Cichocki and Lepetit (1986), concludes that "prosody not only marks ethnic membership but, in the case of code-switching Chicanos, it also marks the degree of identification with this membership" (1984: 57).

Finally, Atterer and Ladd (2004) looked at German speakers' intonation of English, and found that they timed the anchoring of English L + H contours using their native German timings. Though these were second language learners of English and not bilinguals, the results suggest that there is a global L + H contour, which German speakers recognize in English, but implement using the phonetic timing specific to German.

Overall, the results do not give any clear indication of what kind of influence, if any, we ought to expect from the effect of bilingualism on the intonation of Nɬeʔkepmxcin. The most common theme in the literature reviewed above is that bilingual speakers can employ particular intonational features, in particular constructions, as a sociolinguistic marker. However, this does not help us identify potential influences in the present study. I thus confine myself to describing and analyzing the prosodic properties of focus constructions in Nɬeʔkepmxcin, with frequent comparison to English. The results suggest that prosody plays out quite differently in Nɬeʔkepmxcin than in standard dialects of English.

1.7 Intonation in Salish

Intonation has not been documented to very great extent in any of the Salish languages. To be sure, some grammars make cursory observations (to which I'll return below for Nɬeʔkepmxcin; but see Montler 1986 on Senchóthen), but these typically don't allow us to draw theoretical cross-linguistic comparisons, nor are they accompanied by detailed examples or phonetic analysis.

Some exceptions among more recent work are Bennett and Beck (1998), Beck (1999), and Beck and Bennett (1997) on discourse prosody in Lushootseed Salish; Jacobs (2007) on question intonation in Squamish; Bar-el and Watt (1998) and Watt et al. (2000) on correlates of stress (and phrasal accent) in Squamish; Benner (2006) on Senchóthen prosody; Caldecott (2006) and Oberg (2007) on St'át'imcets; and Barthmaier (2004) on prosody in Okanagan discourse.

Some general observations that have emerged are that the Salish languages generally have similar acoustic correlates of stress as you would find in stress languages like English: higher pitch, greater amplitude and longer duration are associated with accented syllables (Bar-el and Watt 1998, Watt et al. 2000, on Squamish; Benner 2006 on Senchóthen, Caldecott 2006 on St'át'imcets, Thompson and Thompson 1992 on Nɬeʔkepmxcin). A notable exception is Upriver Halkomelem, which has lexical tone (Galloway 1991, 1993; whether this is tone, or a pitch accent type system like Swedish or Japanese, is not clear – see Brown and Thompson 2005, 2006, for more discussion). Because these observations on "stress" are based on words produced in phrases (at a minimum, the phrase containing the single word), they actually reflect the properties of phrasal accent rather than word-level stress (eg. Sluijter and van Heuven 1997, 1998, for discussion).

At the phrasal level, prosodic phrases generally follow a declination of amplitude and F0 from left to right. The beginnings of prosodic phrases can be marked by complete or partial reset of declination, and boundaries are also marked by pauses of various lengths (Beck 1999, Beck and Bennett 2007 on Lushootseed, Barthmaier 2004 on Okanagan, Benner 2006 on Senchóthen). Edge tones (in the sense of Pierrehumbert 1980, Ladd 1996, etc.) can mark continuation or uncertainty (see the discussion of contrastive topics in chapter 2, section 2.2.4). For example, the descriptions of phrase level prosody in Nɬeʔkepmxcin provided by Thompson and Thompson (1992) describe general declination patterns and phrase final boundary tones (what they call "phrase-end melodies" - 1992: 24). They identify four general patterns:

(54) General prosodic patterns in some Nɬeʔkepmxcin clauses
(Thompson and Thompson 1992: 24)

- (i) non-terminal clauses: "ends below mid-range without dramatic rise or fall"
- (ii) general (sentence-final, including "factual questions"): "mid-high with last primary stress, abrupt drop to low"
- (iii) consulting: "mid-high with last primary stress, light rise: request for confirmation, check on validity of assumption"
- (iv) inconclusive: "mid or high-mid with last primary stress, somewhat lower pitch on any following syllables, but no fall to low: disinterest, incompleteness, non-final item in a series (common in prepared recording of citation forms)"

The descriptions don't tell us much about focus, pitch accents, or any relationship that exists between the two. That is the topic of the present study. Thompson and Thompson remark that what is "needed is deeper study of discourse patterns and the intonational phenomena that accompany them" (1992: 183), a challenge that this dissertation takes up.

1.8 Methodological, empirical and theoretical contributions

The current research makes significant empirical, methodological and theoretical contributions to language research in the Salishan, and other Amerindian, languages. Because I am examining the discourse concepts of focus and givenness, the analysis is based on conversational language data. However, this data first had to be collected through original fieldwork, a process which included the application of new elicitation methodologies in the fieldwork setting.

Empirically, therefore, this project contributes a significant amount of new, high quality recordings and transcriptions of natural and elicited dialogue in Nɬeʔkepmxcin. This is significant because most fluent speakers of Nɬeʔkepmxcin are in their 60's or older. At the same time, very few texts of conversations between fluent speakers of the language have been collected (or at least, collected, published and analyzed). Numerous traditional narratives involving a single speaker recounting a story have been recorded by Thompson & Thompson, and Egesdal (for example, see Thompson & Thompson 1992:199-227; Thompson and Egesdal 1993; Egesdal 1984), yet naturalistic dialogue remains an empirical gap which this project has begun to fill. These conversational texts will be of broad interest to a variety of researchers, and some examples are given in the appendix. Moreover, because of their nature as "everyday conversations," these texts also provide an excellent potential resource for teaching materials.

Absence of conversational texts is not limited to Nɬeʔkepmxcin, but is a broader empirical gap in the documentation of many Amerindian languages, given the traditional methodology of single speaker text collection (eg. the work of Franz Boas, James Tait and other early field linguists in the Pacific Northwest). More recent research has often focused on single sentence elicitation, as part of a Generative Linguistics approach to elicit both positive and negative data, often of more complex sentences or structures not likely to be found in traditional texts. Such data also does not provide the sort of stretches of discourse which are necessary for the examination of discourse notions like focus and givenness (at least not *a priori*; we shall see in chapter 5 [section 5.3] that language consultants are able to closely approximate discourse conditions in single sentence utterances when provided with sufficient context [see also Matthewson 2004]). Thus, by contributing conversational data, this project addresses an empirical gap in Amerindian language research more generally (but see for example Muehlbauer 2005, Cook and Muehlbauer 2005, Muehlbauer and Cook 2005 on prosody in Plains Cree discourse).

Methodologically, the current research required the development of new techniques for gathering conversational texts in a fieldwork setting. The corpus analysis of chapter 3 and the phonetic studies in chapters 4 and 5 are based on a corpus of new conversational recordings. The recordings fall into three basic categories. First is spontaneous conversation (Appendix B, C). Second is scripted conversation (Appendix A). Third is single sentence elicitation (*How do you say X?*). The first two categories required new fieldwork techniques.

Because language consultants often feel uncomfortable or unable to produce conversation on demand, the current research developed methodologies to facilitate conversation. Spontaneous conversation was prompted in several ways: providing discourse topics (Appendix B), developing audio-visual material for speakers to respond to (Burton 2005, Koch 2007c, Caldecott and Koch 2007, Koch and Caldecott 2007 – Appendix C), or engaging in "everyday" activities (playing games, looking at photographs, etc.). While these techniques resulted in large volumes of naturalistic data, more targeted techniques were used to elicit specific discourse structures: in scripted conversation, consultants were provided with a dialogue (in English), and asked to role play, performing the dialogue in Nɬeʔkepmxcin (Appendix A). Finally, single sentence elicitation was used to check very specific sentences, and to provide negative data as well. While the methodologies themselves will be familiar from psycholinguistic or laboratory phonetic work on more common languages like English (eg. Anderson et al. 1991 on the "map task"), their application in a fieldwork setting is more novel. These methodologies will be relevant for researchers investigating things like information structure, discourse coherence, and intonation, not only in other Salish languages, but in fieldwork research in general.

Finally, the current research makes new theoretical contributions in the study of intonation and information structure in conversation in Nɬeʔkepmxcin. This research will add to the typological knowledge of a small but growing body of literature on intonation in Salish (eg. Bennett & Beck 1998, Caldecott 2006, Benner 2006, Jacobs 2007), as well as the study of intonation cross-linguistically. The lack of a stress-focus correspondence contradicts what has previously been considered to be a universal in stress languages (Vaissière 1995, Hartmann 2007). Instead, it suggests that Lindström and Remijsen's observations are on the right track, made in their study of Kuot, another stress language that does not employ pitch accent to mark discourse information: "English and other well-studied European languages [may be] simply typologically unusual in the extent to which intonation expresses speaker attitude" (2005: 843-4).

Chapter II: Nɬeʔkepmxcin Basics

In this chapter, I establish that Nɬeʔkepmxcin is a stress language with rightmost nuclear stress, and a default word order of (Aux)VSO.

Nɬeʔkepmxcin is a member of the Northern Interior branch of the Salish language family. It is spoken in the southwest of British Columbia, Canada, in an area bounded roughly by the Fraser and Thompson Rivers to the west and north. The traditional language area continues south over the Merritt plateau and into northern Washington State in the United States. Most fluent speakers are in their 60's or older. The language is most closely related to St'át'imcets (Lillooet) and Secwepmc (Shuswap), which it borders to the west/ northwest and north, respectively. In the east, the Nɬeʔkepmx territory shares borders with the Okanagan language area, and, to the south, Halkomelem.

Table 2.1 The Salish language family (adapted from Kroeber 1999: 4)

A. Bella Coola	D. Tsamosan (Olympic)
	1. Inland
B. Central (Coast) Salish	Upper Chehalis
Comox	Cowlitz
Pentlatch	2. Maritime
Sechelt	Quinault
Squamish	Lower Chehalis
Halkomelem	
Nooksack	E. Interior Salish
Straits	1. Northern
Northern Straits	Lillooet (St'át'imcets)
Clallam	Nɬeʔkepmxcin (Thompson)
Twana	Shuswap
Lushootseed	2. Southern
	Columbian
C. Tillamook	Okanagan
	Kalispel
	Coeur d'Alene

The present study is based on a corpus of conversational recordings collected during fieldwork with two female speakers of the *ƛ̓qəmcín*, or Lytton, dialect of Nɬeʔkepmxcin. Both are bilingual, also being fluent speakers of English, and are in their late 60's.

2.1 Phonemic inventory

The phonemic inventory of Nɬeʔkepmxcin, based on the Spuzzum dialect, is taken from Thompson and Thompson (1992, 1996). The dialect of the speakers in this study seems to be very similar in terms of phonemes, with the notable exception being the replacement of [ɣ] by [j] (orthographic 'y'). Nɬeʔkepmx /z/ is considerably more lateral than English /z/, and Thompson and Thompson classify it as a resonant (1992: 8, for more description); the pharyngeal fricative series /ʕ ʕʷ ʕ̓ ʕ̓ʷ/ also seems to pattern with resonants rather than fricatives in terms of being glottalized (Thompson and Thompson 1992).

Table 2.2 Phonemic inventory (adapted from Thompson and Thompson 1992)

CONSONANTS	labial	alveolar	alveo-palatal	velar	uvular	pharyngeal	glottal
Stops	p	t		k kʷ	q qʷ		ʔ
Ejectives	p̓	t̓		k̓ k̓ʷ	q̓ q̓ʷ		
Lateral Eject.		ƛ̓					
Nasal	m	n					
Glottalized	m̓	n̓					
Affricates		c̣ [ts]	c [tʃ]				
Ejective		c̓ [ts']					
Fricatives		ṣ [s]	s [ʃ]	x xʷ	x̣ x̣ʷ		h
Lateral		ɬ					
Approximant	(w)	z	y [j]	w		ʕ ʕʷ	
Lateral		l					
Glottalized	(w̓)	z̓	y̓	w̓		ʕ̓ ʕ̓ʷ	
Glott. Lateral		l̓					

VOWELS		front		central		back
	high	i	ị			u
	mid	e		ə	ə̣	o
	low			a		

2.2 Word order and other syntactic background

In this section, I review the basic word order of Thompson Salish (VSO). I discuss predicate-argument flexibility, the determiner system, and the structure and morphology of relative clauses.

I also introduce two structures which have been identified by Kroeber (1997) as focus constructions, a hypothesis that will be empirically tested in the following chapter.

2.2.1 Basic word order: VSO

Nɬeʔkepmxcin is a strongly predicate-initial language. Usually, this initial predicate is a verb like *kəntes* 'help' in (1), or a light verb (auxiliary) like the 'progressive' *ʔex* in (2).[10] The basic word order, at least in the Lytton dialect that is the subject of the present study, is verb-subject-object (Davis 2005 on VSO order in Lower St'at'imcets, a neighbouring Salish language). Examples in this section are wide focus (CP focus) utterances, where all information is new. These would be suitable responses to a wh-question like "What happened?" or "What's going on?" This provides us with a default word order, and default intonation pattern, with which to compare other types of focus. Focus is indicated with a subscript FOC; in the examples below, the whole clause comprises the focus. Nuclear stress is indicated by underlining the word bearing the nuclear pitch accent. The pitch tracings and waveforms are from Praat (Boersma and Weenink 2007).

At the moment, I present only informal observations on the location of nuclear stress; after introducing the primary Nɬeʔkepmxcin data in this and the next chapter, I provide detailed phonetic arguments for the rightmost nuclear stress position in chapter 4.

(1)

V	[2nd pos. clitic]		S		O
[kən-t-Ø-és	xeʔ	e	skíxzeʔ-kt	e	<u>sínciʔ</u>-kt]FOC
help-TRANS-3O-3TS	DEM	DET	mother-1PL.POSS	DET	brother-1PL.PS

"[Our mother helped our <u>brother</u>]FOC."
(*"Our brother helped our <u>mother</u>.")

[10] See the List of Symbols for keys to the orthography, and to the abbreviations in the gloss, and Thompson and Thompson (1992, 1996) for further detail. For reasons of space and clarity, I often do not provide full morphological breakdowns for nouns, adjectives, adverbs, and so on.

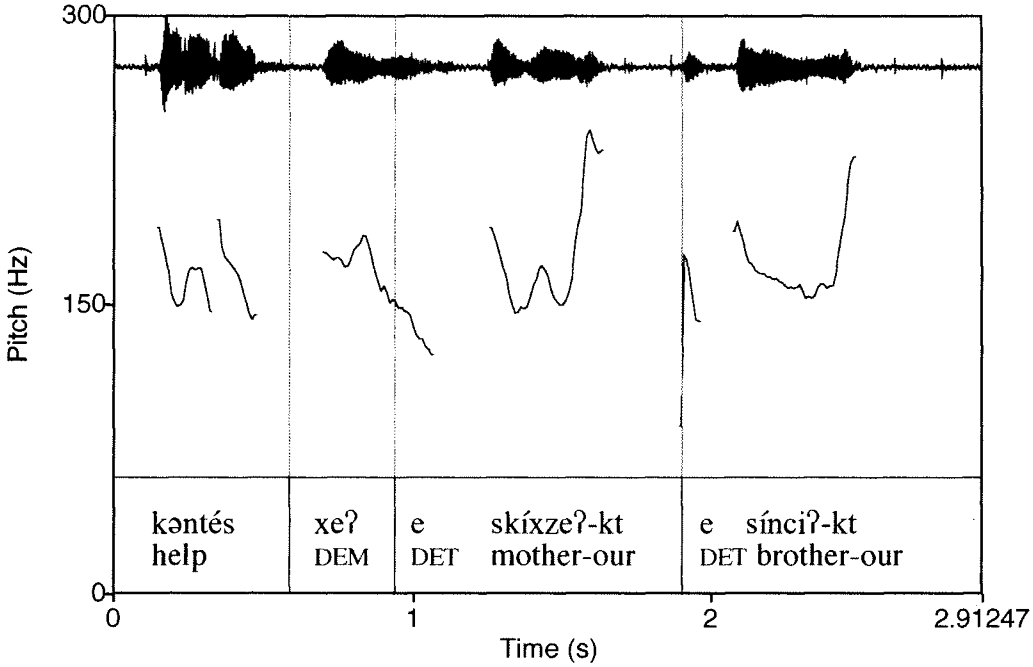

Figure 2.1 Pitch tracing and waveform: "[Our mother helped our <u>brother</u>]$_{FOC}$."

(2)

Aux	[2^{nd} pos. clitic]	V		S		O
[ʔéx	xeʔ	c̓ax̣-t-Ø-és	ɬ	n-sx̣ áy̓wi	e	<u>swúxʷt</u>.]$_{FOC}$
PROG	DEM	clean-TR-3O-3TS	DET	1SG.PS-husband	DET	snow

"[My husband was cleaning up the <u>snow</u>]$_{FOC}$."

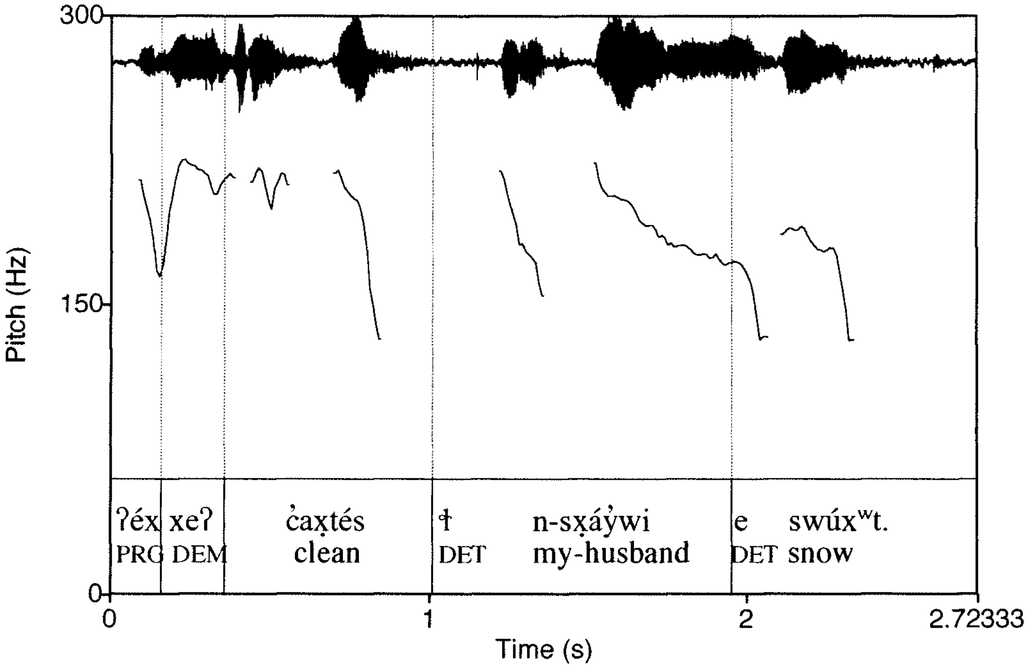

Figure 2.2 Pitch tracing and waveform:
"[My husband was cleaning up the <u>snow</u>]$_{FOC}$."

Second position clitics, including evidentials, clause-typing morphology, and the ubiquitous discourse level deictic *xeʔ* in (1) and (2), follow the first prosodic word. The deictic *xeʔ* could either be doubling one of the arguments, or referring to a discourse-level situational argument. I'll take the latter view (following Thompson and Thompson 1992: 135, 142); since transitive sentences with two *xeʔ* deictics are not possible, it suggests that its role is not to refer to subject or object arguments when these arguments are themselves overt.

Nuclear, or primary sentential stress, typically appears rightmost (<u>underlined</u>), on the object in basic transitive sentences (1-2) (Chomsky and Halle 1968, Cinque 1993, on English). In intransitive sentences, the subject is generally the rightmost constituent, and so the subject receives nuclear stress (3). At this point, I just make an informal observation about the location of nuclear stress; the claim is investigated in detail, and given phonetic support, in the study presented in chapter 4.

(3)	V				S
	[k̓ətní-m̓	e	pé[p]yeʔ	te	<u>x̌uʔsqáyxʷ</u>.]$_{FOC}$
	rodfish-MDL	DET	one[DIM]	OBL	man.
	"[One man is <u>fishing</u>]$_{FOC}$."				

Where adjuncts, like the adverbial phrase "tonight," appear rightmost, they receive the nuclear stress.

(4) Aux [2nd position clitics] V Adv

[x^{w}uy̓ ek^{w}u xeʔ téḳɬ tk <u>sítist</u>]$_{FOC}$.

FUT EVID DEM rain OBL.IRL night

"[I heard it's going to <u>rain</u> tonight]$_{FOC}$."

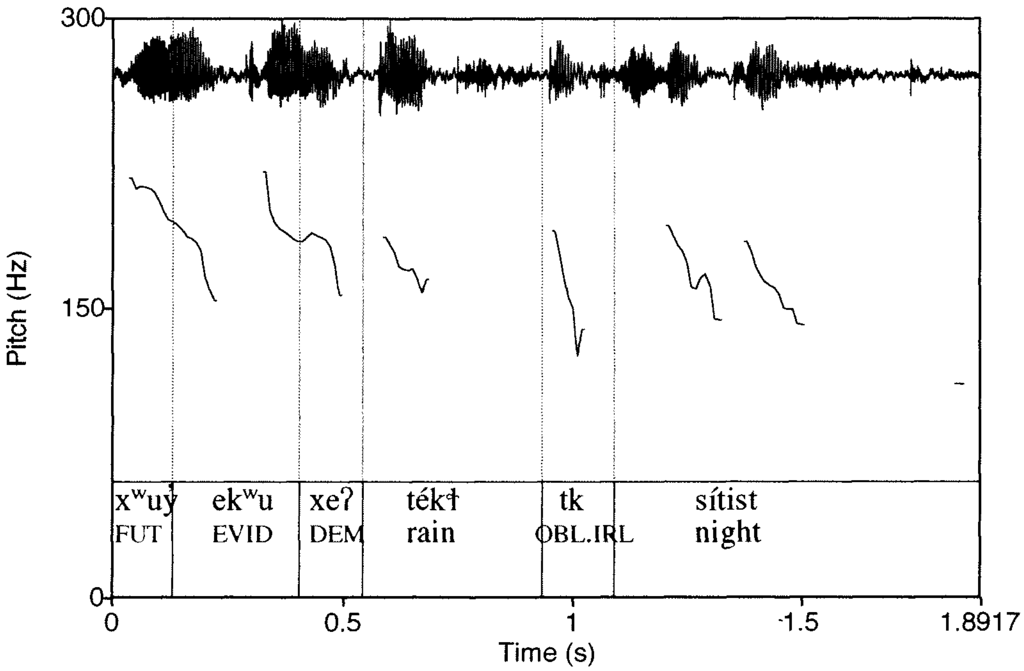

Figure 2.3 Pitch tracing and waveform: "[I heard it's going to <u>rain</u> tonight]$_{FOC}$."

2.2.2 Different types of predicates: verbs, nouns, adjectives

Bare nouns (5) or adjectives (6) can also function as initial predicates. Rightmost subjects again carry the nuclear stress.

(5) N [2nd position clitic] S

[sqáqx̣a xeʔ e <u>Hérmann</u>]$_{FOC}$.

dog DEM DET Hermann

"[Hermann is a <u>dog</u>]$_{FOC}$."

(6) A S
[x̣zuméyxkn e Éddie]FOC.
big DET Eddie
"[Eddie is heavy]FOC."

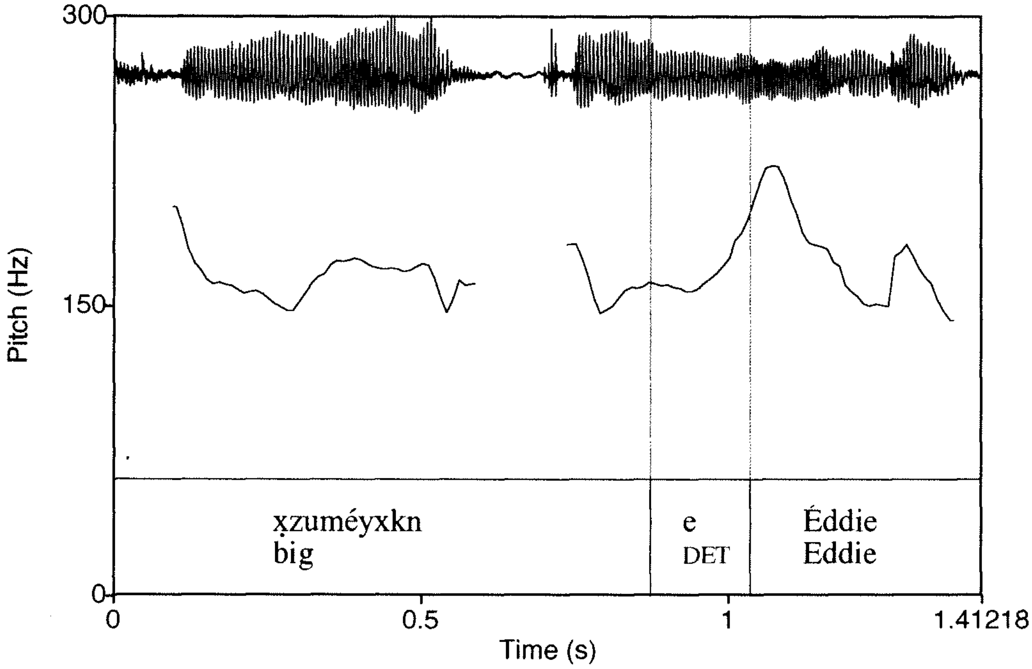

Figure 2.4 Pitch tracing and waveform: "[Eddie is heavy]FOC."

Nominal predicates can be complex, comprising (for example) a modified noun, like *x̣zúm xeʔ tk spzúʔ* 'big bird' below. I'll assume that the deictic *xeʔ* is not syntactically a part of the complex NP; but, as a second position clitic, *xeʔ* is positioned prosodically after the first word.

(7) [[NP x̣zúm xeʔ tk spzúʔ] e sqə́c̓ə]FOC
big DEM OBL.IRL bird DET chickenhawk
"[The chickenhawk is a big bird]FOC."

2.2.3 Demonstratives and headless relative clauses as arguments

Overt subjects or objects can be argument DPs, as seen so far. Demonstratives can apparently also function as arguments,[11] as can headless relative clauses. I will assume that headless relative clauses are headed by a null NP.

(8) [nq̓íx̣cetn]$_{\text{FOC}}$ xéʔe.
key DEM
"That's a [key]$_{\text{FOC}}$."

(9) y̓e-mín-Ø-Ø-e xeʔ [$_{\text{DP}}$ e Ø [$_{\text{CP}}$ s-cuw=éɬxʷ-s
good-REL-3O-1SG.TS DEM DET NP NOM-build=house.3sg.poss
ɬ n-snúk̓ʷeʔ]].
DET 1SGPOSS-friend
"I liked the house that my friend built."
(more literally: "I like the (one that) my friend house-built.")

2.2.4 The topic projection at the left edge

So far, all of the examples presented have been predicate-initial. Contrastive topics constitute the only instance where a DP precedes the predicate (Gardiner 1998 on neighbouring Shuswap Salish). In these cases, however, the contrastive topic is set off in its own intonational phrase, typically ending in a high boundary tone and followed by a pause. In (10), the speaker is describing a game of "hide-and-go-seek." The contrastive topic, *e pepyeʔ te sqaczeʔiyxs* 'one of their fathers,' precedes the matrix verb *punms* 'find,' but constitutes its own intonational phrase (i-phrase). Its last prosodic word *sqaczeʔiyxs* carries a high boundary tone to mark continuation, and is followed by a pause of approximately 600 milliseconds and an intake of breath. The second intonational phrase resets declination, starting at a high pitch, and generally declining throughout.

[11] It is probable that *xeʔe* is still a situational deictic in (8), and that the clausal subject is just null (see Thompson and Thompson 1992: 135, 142, for discussion).

(10) [e pépyeʔ te <u>sqaczeʔ-íyxs</u>]$_{\text{i-phrase}}$,
DET one[DIM] OBL father-3PL.POSS,
[pún-m-Ø-Ø-s ekʷu xeʔ e siséye te <u>smuɬmúm̓ɬec</u>]$_{\text{i-phrase}}$.
find-REL-TR-3O-3TS EVID DEM DET two[AUG] OBL woman[AUG][DIM]
"One of the fathers, he found two little girls."

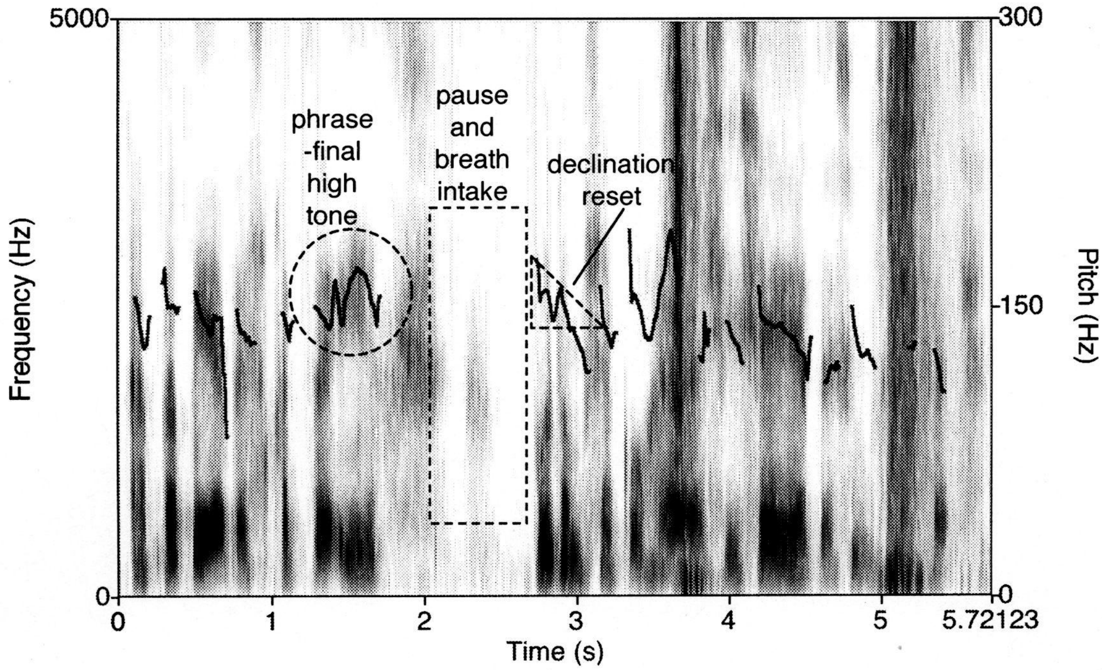

Figure 2.5 Pitch tracing and spectrogram for example (10)

Thus, even in the case of contrastive topics, the following generalization holds: the intonational phrase bearing the matrix predicate is always predicate-initial. The undominated constraint in (11) describes this state of affairs (see Krifka 1998 on the constraint VERB-RIGHT in German):

(11) PREDICATE-LEFT:
Align the matrix predicate with the left edge of an intonational phrase.

(11) is meant as a decription of the facts presented thus far, and not as an Optimality Theoretic constraint to derive syntactic ordering. I will assume that the syntactic derivation provides verb-initial structures, but employ the terminology PREDICATE-LEFT as a convenient description of these facts.

It should be pointed out that the "fronting" of DPs as well as various adverbial phrases has previously been described as "unmarked fronting" (Kroeber 1999: 391; see also Thompson and Thompson 1992: 159-161); "unmarked" here means that it is morphologically unmarked, inducing no special morphology on the verb. However, I observe that such fronting is always prosodically marked, by setting the fronted material in a separate i-phrase marked with boundary tones.

2.2.5 Determiners

In this section, I discuss four important morphemes in the determiner system of Nɬeʔkepmxcin. The following discussion is based on Thompson and Thompson (1992), Kroeber (1997), and Jimmie (2002, 2003), as well as my own observations. The distribution of determiners will be used to argue against a focus movement account for Nɬeʔkepmxcin.

I will gloss the first two determiners, *(h)e* and *ɬ(e)* as DET. *(h)e* introduces DPs that are present and visible. Often this determiner reduces to [ə] or zero. Its counterpart is remote *ɬ(e)*, which introduces DPs that are removed in space or time (either not visible or referring to the past or future). Both of these determiners introduce subject and object in transitive clauses (12ab), as well as subjects of intransitive clauses (12cd).

(12) a.

kʷéw-Ø-Ø-es	xeʔ	e	Jóhn	e	syép
float-TRANS-3O-1SG.TS	DEM	DET	John	DET	tree

"John let the tree float down the river." (DPs present)

b.

sik-t-Ø-és	xeʔə	ɬ	n-sínciʔ
hit-TRANS-3O-3TS	DEM	DET	1SG.POSS-younger.brother

ɬ	n-snúk̓ʷeʔ
DET	1SG.POSS-friend

"My younger brother hit my friend on purpose." (DPs absent)

c.

qíɬ-t	ʔéyl	e	sk̓ʷúk̓ʷmiʔt.
wake-IM	now	DET	child

"The child finally woke up." (DP present)

d.

cuw=éɬxʷ	weʔe	ɬ	x̌uʔsqáyxʷ
build=house	DEM	DET	man

"The man builds houses." (DP absent)

Irrealis *k* marks complements that are unrealized, as in contexts of negation or hypothetical situations. I gloss this morpheme as IRL.

(13)	ó, x̣zúm	nke	k	eʔ-cítxʷ.
	oh, big	EVID	IRL	2SG.POSS-house
	"Oh, I guess your house is big."			

Finally, oblique *t(e)* serves a variety of functions typical of a general preposition like English *of* (Kroeber 1997 glosses this as a preposition). I gloss it as OBL. The oblique marker introduces patients in morphologically intransitive (14) and ditransitive clauses (15), as well as indefinite 3rd person agents in 'passive' constructions (16). *t(e)* also serves to introduce instruments (17).

(14)	k̓éx̣-m	xeʔ	ɬ	n-skíxzeʔ	te	epl̩s
	dry-MDL	DEM	DET	1SG.POSS-mother	OBL	apple
	"My mother dried some apples."					

(15)	xʷuy̓	xeʔ	ƛ̓q̓uʔ-xí-t-sm-s	ɬ	n-skíxzeʔ
	FUT	DEM	sew-APPL-TRANS-1SG.O-3TS	DET	1SG.POSS-mother
	te		nƛ̓p̓íc̓eʔ		
	OBL		1SG.POSS.shirt		
	"My mother will be sewing me my shirt."				

(16)	q̓áy̓-ə-t-Ø-m	xeʔ	te	snúk̓ʷeʔ-s
	shot-DRV-TRANS-3O-IDF.TS	DEM	OBL	friend-3SG.POSS
	"He got shot by his friend."			

(17)	c̓əq̓-t-Ø-éne	xeʔ	e	n-k̓ʷəṅ=ús-tṅ
	hit-TRANS-3O-1SG.TS	DEM	DET	LOC-look.at=opening-INSTR
	te ʔeʔ=úseʔ			
	OBL RED.egg=berry			
	"I hit the window with an egg."			

In the above instances, we can think of *te* as a combination of the oblique *t–* plus the determiner *e* (Kroeber 1997). That oblique *t–* can combine with the other determiners is most evident with the irrealis determiner *k* (18). When the oblique marker combines with the remote determiner *ɬ*, as in the ditransitive in (19), the result for my consultants is typically loss of the *t–* portion through assimilation (Kroeber 1997 reports the same tendency).

(18)	xʷúy̓	xeʔ	ṅ-t-sém-s	ɬ	n-sínciʔ
	FUT	DEM	give-TRANS-1SG.O-3.TS	DET	1SG.POSS-younger.brother
		tk	k̓ətní-ṁ-tn		
		OBL.IRL	rod.fish-MDL-INSTR		

"My younger brother is gonna' give me a fishing rod."

(19)	ʔéx	xeʔ	cúɬ-x-ə-Ø-ne	ɬ	n-snúk̓ʷeʔ
	PROG	DEM	show-APPL-DRV-3O-1SG.TS	DET	1SG.POSS-friend
		Ø ɬ	n-cítxʷ		
		OBL DET	1SG.POSS-house		

"I'm showing my friend my house."

The combination of oblique *t–* and irrealis *k* is particularly common in complex nominals. Thompson and Thompson (1992: 153) call this *tk* a single 'descriptive' marker (it is frequently used in descriptive complex predicates like (20)), but I gloss it as a combination of the two primitive morphemes OBL and IRL. It should be noted, however, that *tk* does not indicate that the noun *dog* stands in an oblique relationship with its modifier *big* (as Thompson and Thompson's use of "descriptive" suggests). Rather, I assume that the noun is the head of these complex structures, and not the initial adjective (following Davis, Lai and Matthewson 1997, on complex nominals in St'át'imcets Salish).

(20)	[$_{NP}$ x̣zúm	xeʔ	tk	[$_{N}$ sqáqx̣a]]	e	Bérnie
	big	DEM	OBL.IRL	dog	DET	Bernie

"Bernie is a big dog."

In addition, *t(e)*, as noted by Kroeber (1997), also introduces all relative clauses.[12] Kroeber (1997:385) distinguishes this use of *t(e)* from the oblique marker, identifying it as 'attributive', though he speculates that it may be the same morpheme as oblique *t(e)*. I simply

[12] Exceptions include headless relative clauses, which are introduced by the matrix determiner *k, (h)e* or *ɬ*, and locative relative clauses, which are introduced by the relevant preposition (see Kroeber 1997; (22b), (23)).

gloss all instances of *t(e)* as OBL. Relative clauses are formed by fronting the determiner from the clause-internal argument corresponding to the head of the relative clause (for detailed argumentation, see Kroeber 1997, Koch 2004, 2006; Davis 2004 on St'át'imcets). This is achieved by fronting of a DP with null NP complement to the specifier of CP. The determiner combines with the oblique marker that introduces the relative clause. This is readily apparent where the determiner involved is present *(h)e*, since oblique *t* and present *e* combine to give *te*.

(21) né-x-t-sm-e he seʔlís t-e_d cu-t-éxʷ t_d
give-APPL-TR-1SG.O-IMP DET knife OBL-DET fix-TR-3O-2SG.TS t_d
"Give me the knife that you fixed."

However, when the remote determiner *ɬ* is involved, oblique *t* is lost (22a), presumably due to similarities in pronunciation of these two segments, as previously mentioned. For my consultants this is almost always the case, and Kroeber (1997) reports this as a strong tendency for his consultants also. In locative relatives, the preposition from inside the relative clause fronts to introduce the relative clause, and not the oblique marker (22b).

(22) a. qʷín-t-Ø-éne xeʔ ɬ sk̓ʷúk̓ʷmiʔt
talk.to-TRANS-3O-1SG.TS DEM DET child
Ø-ɬ-ex wík̓-t-Ø-ne t_d
OBL-DET-PROG see-TRANS-3O-1SG.TS t_d
"I talked to the child that I saw."

b. ʔéx kn xʷíʔ-m
PROG 1SG look.for-MDL
te npúytn n-e_i xʷúy̓ wn ʕʷóy̓t t_i
OBL bed in-DET_i FUT 1SG.CONJ sleep t_i
"I'm looking for a bed where I'm gonna' sleep."

In headless relative clauses, only the matrix determiner surfaces; the oblique marker and relative-clause internal determiner are lost. Presumably there is an independent restriction against a double determiner structure without an intervening nominal. In the example below, 'dog' is an NP predicate, and takes a headless relative clause as subject. The structure of these is important because given material surfaces in clausal DP arguments.

(23)

[NP sqáqx̣a]	[DP	e	Ø	[CP	(*t-e_d)	<u>pún</u>-m-Ø-ne	t_d]
dog		DET	NP		(OBL-DET)	find-REL-3O-1SG.TS	t_d

"I found a dog."
(more literally: "The (thing that) I found was a dog.")

I will assume that this determiner movement[13] creates an operator-variable configuration that allows the relative clause to be interpreted as a type <e,t> predicate (lambda abstraction, or predicate abstraction), following Heim and Kratzer (1998). That is, the oblique-determiner combination is the same as a relative pronoun like *who* or *what* or *that* in English relative clauses. The following structure illustrates a relative clause in Thompson River Salish; the NP may be overt or, as below, null.

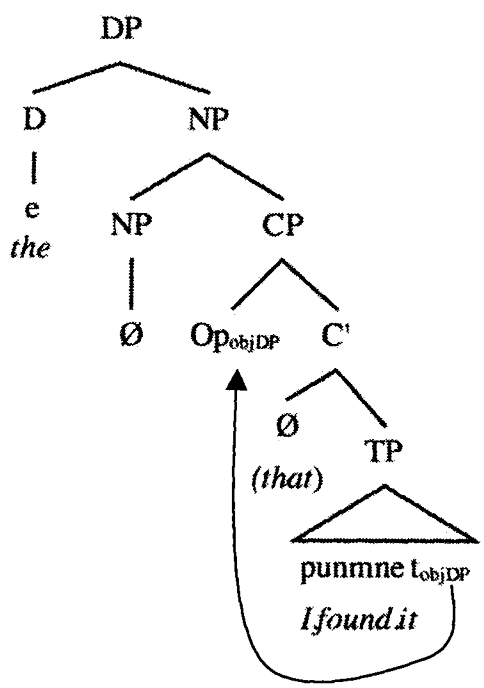

Figure 2.6 Relative clause in Nɬeʔkepmxcin: "the (thing that) I found"

(24) Predicate (lambda) abstraction:
If α is a branching node whose daughters are a relative pronoun and β,
then $[[\alpha]] = \lambda x \in D_e.\ [[\beta]]^x$. (Heim and Kratzer 1998: 96)

[13] More precisely, a DP with null NP complement; the DP raises to specifier of CP.

The determiners *e* and *ɬ*, oblique *t(e)*, and irrealis *k* can also act as complementizers. They may introduce adjunct clauses and complement clauses (see Thompson and Thompson 1992 and Kroeber 1997 for further examples).[14]

(25) təté? k n-ṣ-tʕʷ-iyx-nwéɬn
NEG COMP 1SG.POSS-NOM-run-AUT-NCM
"I can't run." (more literally: "It's not the case that I can run.")

(26) ʔéx xeʔ piláx̣-t-sm-s ɬ n-snúk̓ʷeʔ
PROG DEM tell-TRANS-1SG.O-3TS DET 1SG.POSS-friend
te s-xʷúẏ-s nés u ɬ x̌qəmcín ɬ Jóhn
COMP NOM-FUT-3SG.POSS go to DET Lytton DET John
"My friend told me that John was going to Lytton."

(27) e wúxʷt us, xʷúẏ kt ɬáx̣i
COMP snow 3CONJ FUT 1PL cold
"If it snows, we're gonna' get cold."

The determiner system of Nɬeʔkepmxcin is summarized in the table below.

Table 2.3 Determiners in Nɬeʔkepmxcin

he/ə/Ø	specific; present, visible (DET)
ɬ(e)	remote (in space or time) (DET)
t(e)	oblique (OBL)
k	unrealized/irrealis (IRL)

2.2.6 Relative clauses and their morphology (Kroeber 1997)

Kroeber (1997) gives a detailed description of the morphology involved in relative clauses in Nɬeʔkepmxcin (see Kroeber 1999 for a comparison across the Salish language family). I summarize the main points here; as we will see, focus structures employ this agreement morphology as well.

[14] Kroeber (1997: 381) notes that *ɬ* is "quite rare" as a complementizer, an observation with which I concur.

Relative clauses are typically head initial, with the restricting clause following the head (though the other order is sometimes also attested). The head may also be omitted entirely. When subjects of intransitive clauses are restricted, the verb in the restricting clause bears no special morphology (28). The same is true for transitive clauses with relativized objects (29). The indicative morphology of matrix clauses is used in these cases.

(28) pún-m-Ø-ne n-ciʔ [$_{DP}$ Ø x̌ʷuʔsqáyxʷ [$_{CP}$ t-e$_s$ ʔx k̓ətní-m̓ t$_s$]].
find-REL-3O-1SG.TS at-there DET man OBL-DET PROG fish-MDL t$_s$
"I found [$_{DP}$ a man [$_{CP}$ fishing there]]." (Kroeber 1997: 390)

(29) kʷís-Ø-Ø-ne [$_{DP}$ ɬ pəták [$_{CP}$ Ø ɬ$_d$ ʔúpi-n-Ø-xʷ t$_d$]]
drop-TR-3O-1TS DET potato OBL DET eat-TR-3O-2TS t$_d$
"I dropped [$_{DP}$ the potato [$_{CP}$ that you ate]]."

When the head of the relative clause corresponds to the transitive subject of the restricting clause, the subordinated verb is marked with special subject extraction morphology *–emus*, but only if the object of the verb is also in the 3rd person (Kroeber 1997: 391). Use of *–emus* distinguishes relativization of transitive subjects from transitive direct objects.

(30) swét [$_{DP}$ k [$_{CP}$ ʔúpi-t-**emus** ɬ heʔúseʔ]]
who IRL eat-TR-SUBJ.EXTR DET egg
"Who ate the egg?"

Nonlocative obliques that are relativized induce nominalization morphology on the verb in the relative clause. These obliques include instruments, patients of morphologically intransitive verbs (like *ɬaʔx̣ans* 'eat' in (31)), and patients of ditransitive verbs.

(31) y̓e-míne xeʔ [$_{DP}$ e sqyéytn [$_{CP}$ t-ɬ$_i$ **n-s-**ɬaʔx̣áns t$_i$]]
good-REL.3O.1SG.TS DEM DET fish OBL-DET 1SG.POSS-NOM-eat t$_i$
"I liked [$_{DP}$ the fish [$_{CP}$ that I ate]]."

Finally, relativization of locatives induces conjunctive[15] morphology on the predicates of the relative clause. In addition, the preposition is fronted to introduce the relative clause, along with the determiner corresponding to the NP that has been relativized.

(32) (w)ʔéx kn xʷíʔ-m t [DP e npúytn [CP **n**-e₁ xʷúẏ
PROG 1SG look.for-MDL OBL DET bed in-DET FUT
wn ʕʷóẏt t₁]]
1SG.CONJ sleep t₁
"I'm looking for a bed where I'm gonna' sleep."

The generalizations are summarized in the table below. We will see the same sort of morphology surfacing in focus structures, as discussed in detail by Kroeber (1997). While the focus is associated with the predicate, given material surfaces in headless relative clause arguments.

Table 2.4 Relative clauses and their morphology (Kroeber 1997)

GRAMMATICAL RELATIONSHIP OF RESTRICTED NP TO RELATIVE CLAUSE VERB	GRAMMATICAL AGREEMENT OF RELATIVE CLAUSE VERB
Subject of intransitive verb	indicative
Object of transitive verb	indicative
Subject of transitive verb (when object is 3rd person)	*–emus* suffix on verb
Nonlocative oblique	nominalized
Locative	subjunctive (conjunctive)

2.2.7 Two focus structures

There are two common narrow focus structures in Thompson Salish (Kroeber 1997), and indeed across the Salish language family (Kroeber 1999 for comparison). In predicate constructions, a bare noun or adjective acts both as the matrix predicate and as the focus.[16] The focus is usually followed by a clausal DP argument which contains the backgrounded, or

[15] Subjunctive morphology is glossed 'conjunctive' in the Interior Salish tradition to avoid confusion with 'subject' in the glosses.

[16] Kroeber (1997) has thus called these "bare clefts." However, I stick with the less misleading term "predicate constructions," following Davis et al. (2004).

given, portion of the utterance. Like a headless relative clause, the cleft clause is typically introduced by a determiner and carries the same subordinating morphology seen in the previous section. I'll refer to these clausal argument DPs as "residue clauses," as a convenient cover term for the clausal arguments found in both types of focus structures. Residue clauses serve as syntactic subjects; thus, clefts are truly biclausal, with the focus base generated and not moved from within the cleft clause (see Kroeber 1997, 1999, Koch 2007b, for detailed argumentation; also Davis et al. 2004, on St'át'imcets Salish;). The syntactic structure of clefts will be taken up in more detail in chapter 7.

(33)	A:	Stéʔ	xʷúẏ	k	s-ɬaʔx̣áns-əp	tk	ṣʕáp.	
		what	FUT	IRL	NOM-eat-2PL.POSS	OBL.IRL	evening	
		"What are you people going to eat this evening?"						
	B:	[píns̩]$_{FOC}$	nceʔ	xʷúẏ	e	n-s-ɬaʔx̣áns.		
		bean	1SG.EMPH	FUT	DET	1SG.POSS-NOM-eat.		
		"I'm gonna' eat [beans]$_{FOC}$."						
		(more literally "The (thing that) I'm gonna' eat is [beans]$_{FOC}$.")						

In example (33), the bare noun *pinṣ* is both the predicate and the object focus; the subordinated verb *ɬaʔx̣ans* 'eat' is introduced by a determiner *e* and prefixed with nominalizing morphology *n-s-*.[17] Nuclear stress remains rightmost (this informal observation will be tested phonetically in chapter 4).

The second type of focus structure is what Kroeber calls an introduced cleft. Introduced clefts consist of a cleft predicate *c̓e* or *ʔe* which "introduces" the focused DP (the head of the cleft). DPs such as proper names are typical arguments and cannot be predicates in Nɬeʔkepmxcin (though they can in the neighbouring Salish languages St'át'imcets and Secwepmctsin, when not introduced by a determiner – Davis p.c.). Therefore they require a cleft predicate at the left edge of the clause when focused; recall that Nɬeʔkepmxcin is a

[17] The position of the future marker *xʷúẏ* is also somewhat anomolous in (33), coming before the determiner that introduces the clause whose verb *xʷúẏ* modifies; but Kroeber (1997, 1999:390) has noted that residue clauses with future markers are sometimes not introduced by a determiner at all, or sometimes only erratically, with the consultants he has worked with. I concur with this finding, adding that sometimes consultants will have the future marker preceding the determiner, as in example (33). Similarly, my consultants sometimes omit the determiner introducing residue clauses beginning with another auxiliary, 'progressive' *(w)ʔex* (eg. 35A).

predicate-initial language, so DPs may not be clause-initial.[18] In (34), the DP *e Monique* is the object focus, and follows the cleft predicate *c̓e* and the second position clitic *xeʔ*. In the residue clause, the given verb *wiktne* 'I saw' is preceded by the determiner *e*.

(34)

A:	swét	xeʔ	k	wík-t-Ø-xʷ.		
	who	DEM	IRL	see-TR-3O-2SG.TS		
	"Who did you see?"					
B:	c̓é	xeʔ	[e	Moníque]$_{FOC}$	e	<u>wík-t-Ø-ne</u>.
	CLEFT	DEM	DET	Monique	DET	see-TR-3O-1SG.TS
	"I saw [<u>Monique</u>]$_{FOC}$."					
	(literally "It was [<u>Monique</u>]$_{FOC}$ that I saw.")					

Again, there is a divorce of the primary stress (rightmost) from the focus (the leftmost lexical element). This divergence of the focus from the nuclear stress position is unexpected under common accounts of focus marking.

Like in English, the clausal argument in focus structures may be omitted entirely (DELETE-GIVEN). However, we shall see that it is not deaccented (DESTRESS-GIVEN). Thus, we cannot see deletion as the most extreme form of deaccenting (eg. Krifka 2007). In (35), *has been working at the café* is given in the question, and is not produced in a residue clause in B's answer.

(35) Residue clauses may be omitted in focus structures

A:	Swét	meɬ	Ø	ʔex	cw-úm	ne: ... nə--,	nɬaʔx̣anséyqʷ.
	who	CNSQ	IRL	PROG	work-MDL	in.DET ... in.DET--,	café
	"Who's been working at the café?"						
B:	c̓é	ekʷu	e	Sálly.			
	CLEFT	EVID	DET	Sally			
	"Sally." [has been working at the cafe]						

It should be noted, as Kroeber remarks, that there is nothing unexpected about these focus structures per se, especially nominal predicate constructions. We have already seen that

---

[18] Except, of course, as contrastive topics, as discussed earlier. In these cases, however, they are set into their own intonational phrase, and the matrix verb is still initial in its intonational phrase.

bare nouns can act as predicates (section 2.1.2), and that headless relative clauses can act as arguments (section 2.1.3), independent of one another:

> It should also not be understood to imply that [focus structures] as defined constitute a distinct construction type in Salish languages. Headless relative clauses are solidly attested in Salish languages in ordinary DP positions other than subject (hence, outside of cleft constructions), and ... Salish languages readily allow nominal expressions to act as predicates even when the subject of the sentence is something not obviously clausal; that [focus structures] like the [ones] cited above should exist is simply an automatic consequence of these facts of Salish constituent structure, requiring no special stipulations.
>
> (Kroeber 1999: 261-262)

The examples below illustrate these facts. In (36), the bare noun *sqáqx̣a* 'dog' acts as the predicate, taking a DP subject *e Hermann*. In (37), the headless relative clause *e punmne* 'what I found' acts as an object argument for the transitive matrix verb 'eat.' Example (38) shows a nominal predicate construction, which simply combines the bare noun predicate of (36) with the headless relative clause argument of (37). Finally, (39) shows a cleft with a DP focus (DPs cannot be predicates, and so must be introduced by the cleft predicate). Since Kroeber notes that nominal predicate constructions (NPCs) and clefts are used as focus constructions, I have marked the focus with a subscript FOC; Kroeber's "cleft-focus" observation will be tested empirically in chapter 3, and observations about the nuclear stress (<u>underlined</u>) will be tested phonetically in chapter 4.

(36)	sqáqx̣a	xeʔ	e	<u>Hérmann</u>.
	dog	DEM	DET	Hermann
	"Hermann is a dog."			

(37)	ʔúpi-Ø-Ø-ne	xeʔ	e	<u>pún</u>-m-Ø-Ø-ne.
	eat-TR-3O-1SG.TS	DEM	DET	find-REL-TR-3O-1SG.TS
	"I ate what I found."			

(38)	[sqáqx̣a]$_{FOC}$	xeʔ	e	<u>pún</u>-m-Ø-Ø-ne.
	dog	DEM	DET	find-REL-TR-3O-1SG.TS
	"I found a [<u>dog</u>]$_{FOC}$."			
	(more literally "The (thing that) I found was a [<u>dog</u>]$_{FOC}$.")			

(39)	c̓é	xeʔ	[e	sqáqx̣a]$_{\text{FOC}}$	e	<u>pún</u>-m-Ø-Ø-ne.
	CLEFT	DEM	DET	dog	DET	find-REL-TR-3O-1SG.TS

"I found the [<u>dog</u>]$_{\text{FOC}}$."
(literally "It was [the <u>dog</u>]$_{\text{FOC}}$ that I found.")

As Kroeber notes, however, clefts are certainly unique constructions in other respects. Though cleft predicates take two arguments (the focus, and the residue clause), they are the only transitive predicate to lack transitivizing morphology. They also have a strict word order of cleft predicate – focus – residue clause, whereas typical transitive sentences allow some degree of flexibility in post-predicative word order.

We can also note that both focus structures abide by the predicate-initial structure of Nɬeʔkepmxcin. In nominal predicate constructions (38), the focus *sqáqx̣a* 'dog' is leftmost, and since bare nouns can be predicates, the matrix predicate, again *sqáqx̣a,* is also initial. No further morphology is required. In the case of focused DPs (39), there is a conflict for the leftmost position between the focus and the predicate; but DPs cannot be predicates, and so focused DPs must be introduced by a cleft predicate at the left edge of the clause. This sets Nɬeʔkepmxcin apart from its neighbours St'át'imcets and Secwepemctsín Salish, where proper names are nominalized and can act as predicates when not preceded by a determiner (Davis, p.c.; Thoma 2007 on proper name predicates as covert clefts).

Finally, focus structures neatly split the clause into a <BACKGROUND, FOCUS> configuration as in the focus semantics proposed in the Structured Meaning Approach reviewed in section 1.2.2 (von Stechow 1990, Krifka 1992; also Jackendoff's 1972 'presup'). The surface order is of course different in Salish, corresponding to <FOCUS, BACKGROUND>. In the Structured Meaning focus semantics, the background is the function taking the focus as its argument. The ordinary semantics operate just the other way around here: in the actual surface structure of Salish focus constructions, the focus is the predicate which takes the background information as a subject clause. I will assume that residue clauses, like relative clauses elsewhere, are formed by clause-internal movement of the DP which corresponds to the focus (see figure 2.6). This turns the residue clause CP into a predicate of type <e,t>, by lambda abstraction (24) (Heim and Kratzer 1998: 96).

In the nominal predicate construction, the focus is the matrix predicate taking the residue clause as its argument. The structure creates a clear division between focus and background.

(40)	[sqáqx̣a]$_{\text{FOC}}$	xeʔ	e	pún-m-Ø-Ø-ne.
	dog	DEM	DET	find-REL-TR-3O-1SG.TS
	FOCUS		BACKGROUND	
	dog		λx. I found x	

"I found a [dog]$_{\text{FOC}}$."
(more literally "The (thing that) I found was a [dog]$_{\text{FOC}}$.")

In clefts, the focused DP is part of the cleft predicate VP. The residue clause containing the background is the clausal subject. Focus and background are linked by the cleft predicate.

(41)	c̓é	xeʔ	[e	Moníque]$_{\text{FOC}}$	e	wík-t-Ø-ne.
	CLEFT	DEM	DET	Monique	DET	see-TR-3O-1SG.TS
			FOCUS		BACKGROUND	
			Monique		λx. I saw x	

"I saw [Monique]$_{\text{FOC}}$."
(literally "It was [Monique]$_{\text{FOC}}$ that I saw.")

2.3 Summary

This chapter has provided background information about Nɬeʔkepmxcin. I showed that Thompson Salish is a stress language with verb-initial word order. Bare nouns and adjectives can also act as predicates, and predicates are always initial in their intonational phrase (PREDICATE-LEFT). Cleft structures and nominal predicate constructions are common, and employ the same verbal morphology found in relative clauses.

In the next chapter, I test Kroeber's observation about clefts and nominal predicate constructions that I introduced in section 2.2.7: clefts and NPCs are used to mark the focus of the sentence ("cleft-focus"). We will see that this observation is difficult to reconcile with another common account of the marking of focus, the "stress-focus" generalization. This is because nuclear stress is rightmost (an observation which will be tested phonetically in chapter 4), but clefts and NPCs have the effect of restructuring the clause such that the focus is at the left edge.

Chapter III: Focus Structure

In chapter 2, I observed that nuclear stress is rightmost in Nɬeʔkepmxcin. In contrast to the rightmost location of sentential accent, however, is the observation that narrow focus is marked by restructuring the focus toward the left edge of the clause (Kroeber 1997, 1999), by employing clefts or nominal predicate constructions (NPCs). This divergence of the focus from the nuclear stress position is unexpected under many of the common accounts of focus marking in stress languages. Moreover, these focus structures are very generally and commonly employed across the Salish language family, including for wh-questions (see Kroeber 1999 for a thorough treatment; Kuipers 1967, Kuipers 1974, Gerdts 1988, P. Davis and Saunders 1997, Davis, Gardiner and Matthewson 1993, Galloway 1993, Gardiner 1993, van Eijk 1997, Suttles 2004, Davis 2008). It is likely that examination of nuclear stress in other languages in the family would find a similar divergence of focus and stress (though Benner 2006 suggests leftmost nuclear stress in Senchóthen).

The purpose of this chapter is thus to test Kroeber's "cleft-focus" observation through a corpus study of focus types and their surface syntactic form. How are various focus types syntactically realized: in the default verb-initial order, or as clefts or NPCs? I begin by examining the default case (wide CP focus) where all information is new, as well as wide VP focus. Then I compare the surface structure of various types of narrow focus: narrow verb focus, subject focus, object focus, and number quantifier focus. The results support Kroeber's generalization: while CP focus, VP focus and narrow verb focus are realized in default VSO order, narrow focus on subject, object, or number quantifier is indeed predominantly marked through the use of left edge clefts or NPCs. The generalization for all types of focus is that the left edge of the clause is important for focus marking, and for focus projection, whereas the rightmost nuclear stress position does not play a role.

3.1 "Stress-focus" theories and predictions for Thompson River Salish

Current theories on the marking of focus in stress languages generally have in common the correspondence between stress and focus. I examined these claims in section 1.3.3. The main proposals are repeated here:

(1) Proposals on the marking of focus

a. Basic Focus Rule: An accented word is F(ocus)-marked. (Selkirk 1995: 555)

b. Stress-Focus Correspondence Principle: The focus of a clause is a(ny) constituent containing the main stress of the intonational phrase, as determined by the stress rule. (Reinhart 1995: 62)

c. FOCUS: A Focus-marked phrase contains an accent. (Schwarzschild 1999: 173)

d. FOCUS-PROMINENCE: Focus needs to be maximally prominent. A prosodic category C that contains a focused constituent is the head of the smallest prosodic unit containing C. (Truckenbrodt 1995, Büring 2003)

e. STRESS-FOCUS: a focused phrase has the highest prosodic prominence in its focus domain. (Féry and Samek-Lodovici 2006: 135-6)

The examination of English, Portuguese, Hungarian and German focus marking revealed three strategies to ensure that the location of focus and nuclear stress coincide:

(2) "Stress-focus" strategies

(i) move the nuclear stress to the focus (English)

(ii) move the focus to the nuclear stress position (Hungarian, Romance)

(iii) scramble non-foci away from the nuclear stress site (German)

In chapter 2, we saw that Nɬeʔkepmxcin has a default verb-initial order with rightmost nuclear stress. The claim about the location of nuclear stress will be tested empirically in chapter 4. In the meantime, we can predict three possible ways that narrow focus on object, verb or subject will be marked in Nɬeʔkepmxcin, assuming that the "stress-focus" generalization holds.

In an English-type system, we don't expect a change in word order, just a change in the location of the primary stress.[19] If Nɬeʔkepmxcin is a Romance-type system, we expect focused constituents to move to the right edge of the clause, where the nuclear stress position is. And in a German-type system, we expect non-focal constituents to scramble away from the right edge so that the focus can surface there. These predictions are summarized in table 3.1.

For narrow object focus, we never expect changes in word order. Since objects are in the nuclear stress site in default VSO word order, they are already in the ideal "stress-focus" position.

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[19] Of course, English focus structures like clefts or pseudo-clefts do involve a different word order; but the nuclear stress will still shift to the focused constituent. In addition, use of such structures is motivated, for example, by the semantics they provide (Percus 1997, Hedberg 2000 on English clefts); we shall see in chapter 7 that Salish focus structures lack this semantic motivation. For the purposes of table 3.1, I am just concerned with English in situ focus.

Table 3.1 Stress-focus systems and predictions for Nɬeʔkepmxcin

	Predictions for Nɬeʔkepmxcin			
System type	BASIC WORD ORDER	OBJECT FOCUS	SUBJECT FOCUS	VERB FOCUS
English (in situ)	$vs\underline{O}$	$vs\underline{O}$	$v\underline{S}o$	$\underline{V}so$
Romance (movement)	$vs\underline{O}$	$vs\underline{O}$	$v\ [t_k]\ o\ \underline{S}_k$	$[t_v]\ so\ \underline{V}_v$
German (scrambling)	$vs\underline{O}$	$vs\underline{O}$	$v\ o_m\ \underline{S}\ [t_m]$	$s_k\ o_m\ \underline{V}\ [t_k]\ [t_m]$

note: underlined <u>CAPITALS</u> show the location of focus and nuclear stress

It should be pointed out that the predicted surface orders of the Romance and the German systems are the same, so we would have to develop some language-internal diagnostics to decide between the two hypotheses (Pulleyblank, p.c.). In general, it is not clear whether Romance movement and German scrambling are syntactically- or phonologically-driven movement systems (for varying views, see Krifka 1998, Costa 1998, Zubizaretta 1998, Szendröi 2003, Davis 2007, etc.), but the issue is not critical for the present purposes.

3.2 Focus projection and predictions for wide focus in Thompson Salish

Chapter 2 showed that the default word order is verb-initial, and that this order is used for clause-wide focus (CP focus). For wide focus on the VP, we also want to know what sort of focus marking is to be expected.

In chapter 1 (section 1.3.4), I reviewed the concept of focus projection. Selkirk (1995) for example noted the phenomenon of focus projection in English, where a single rightmost nuclear stress can indicate focus on a variety of ever larger constituents, each time "projecting" upwards through the syntax. Wide VP focus or wide CP focus thus employs the default prosodic marking, with nuclear stress on a rightmost object, for example. The example below is repeated from section 1.3.4:

(3) a. What happened? [sentence-wide CP focus question]

b. What did Frank do? [wide VP focus question]

c. What did Frank squash? [narrow object focus question]

d. [Frank [[squashed$_f$ [a peach$_f$]]$_f$]$_{f, FOC}$. [optional focus projection]

Thus, the same syntactic form that marks narrow object focus should also project to mark both types of wide focus. Because the nuclear stress falls on objects, another way of stating this observation is that focus projects from the nuclear pitch accent.

(4) Focus projection and predictions for Nɬeʔkepmxcin

a. Wide VP and CP focus employs the default word order (VSO), and

b. Wide VP and CP focus employs the same word order as narrow object focus.

3.3 A corpus study: Focus type and syntactic realization

In this section, I present results from a corpus study of collected conversational recordings in Thompson Salish. Focus types were identified and coded for syntactic form: either default verb-initial order, or non verb-initial order (clefts or nominal predicate constructions). For each focus type, I present several typical examples, as well as examples that deviate from the norm. For an introduction to clefts and nominal predicate constructions, see section 2.2.7.

3.3.1 Subjects

The language data was collected from two female speakers of Nɬeʔkepmxcin in their late 60's (FE and PM). Both are speakers of the Lytton dialect, and fluently bilingual in English.

3.3.2 Method

Different instances of focus were identified from a corpus of conversational recordings. Recordings were made at the residence of either the language consultants or of the researcher, using a Marantz PMD 670, 671 or 660 digital audio recorder. Each consultant was recorded on a separate channel using a Countrymax Isomax EMW Lavalier lapel microphone. The microphone was attached onto the exterior of the consultants' clothing, approximately at the sternum.

Conversational recordings fell into three general categories (Caldecott and Koch 2007, Koch and Caldecott 2007). First were spontaneous conversations. These included conversations initiated by the consultants, as well as conversations in which one consultant was asking prepared questions of the second consultant, who was free to answer spontaneously, as she liked. Questions were either general questions about the consultant's day to day affairs, or were questions about a media display (photographs, drawings, or computer animations) which the consultant was looking at.

Scripted conversations were ones where each consultant had a prepared part of a conversation. Consultants then engaged in role-playing to hold the conversation. Scripts were prepared in English, so the task involved translation as well as engaging in mock dialogue. This format allowed for more targeted data gathering than spontaneous conversation.

Finally, single sentence elicitations were used to ask consultants how to say a particular sentence (or small set of sentences), given a particular situation (Matthewson 2004). This technique allowed for very precise targeting of particular linguistic data.

Gussenhoven distinguishes contrastive, or "corrective" focus, from new information, or "presentational," focus (2004: 86 for discussion). While some researchers (i.e. É. Kiss 1998, Féry & Samek-Lodovici 2006, Selkirk 2007) treat new and contrastive focus as two different primitives, others do not formally distinguish between the production and interpretation of these two apparent types of focus (i.e. Selkirk 1995, Rooth 1992). Krifka (2007) also notes that both types of focus are what he calls *expression focus*. That is, neither changes the truth conditions of the utterance (see section 1.3.2 for discussion). It is also plausible that the apparent different prosodic properties of contrastive focus may in fact be related to higher emotional arousal (eg. Bänziger and Scherer 2005) rather than a distinction in focus type.

For the purposes of this study, I also did not differentiate between contrastive focus and presentational focus, as there were no obvious differences in their syntactic realization as verb-initial or non verb-initial. Where a given utterance contained both a contrastive focus and a new information focus, I counted it according to the type of the contrastive focus for the purposes of this study, since contrastive focus in English is marked preferentially over new information focus (Féry and Samek-Lodovici 2006). The generalizations made in this chapter seem to hold of both types of focus; I'll return to this issue in section 3.5, since other research in both Nɬeʔkepmxcin (Koch 2007c) and St'át'imcets (Thoma 2007) suggests that clefts have a contrastive semantics not found in nominal predicate constructions. Also, I'll show that constrastive contexts are often marked by the introduction of second position focus particles. The presence of focus particles (i.e. *even* or *only* in English) does introduce different truth conditions, what Krifka calls *denotation focus*. Thus, the line between expression focus and denotation focus is often blurred in contrastive contexts.

Following Selkirk (1995), I assume that focus is a syntactic category which can be identified by a series of f(ocus)-marks in the syntactic derivation. In view of recent work which aims to eliminate intermediate f-marks (Schwarzschild 1999, Büring 2003, 2006, Féry and Samek-Lodovici 2006) I indicate only the focus constituent with subscript FOC and square brackets [...] in the target utterance. I do not mark intermediate f-marks, to avoid excessive subscripts, though nothing hinges on this theoretically. Nuclear stress is indicated by <u>underlining</u> the word containing the nuclear stress. Word-level stress is indicated by an acute accent (´).

In the examples in this chapter, I often provide discourse preceding the target utterance (where space allows), since examples are taken from larger portions of dialogue. In some cases I provide a preceding wh-question only in English *italics* to reflect the previous discourse (where the wh-question was not overt, where hesitations etc. make the preceding relevant discourse excessively lengthy, or where the question was asked by a non-native speaker of the language – the elicitor, or a computer animation).

Focus was identified in one of several ways. First, I adopted the common diagnostic that a new information focus is the answer to the wh-word in a question, like (5B) and (6B) (eg. Jackendoff 1972, Selkirk 1995, Büring 2003 etc.). The wh-question need not be overt, since new information can be introduced in a series of declaratives, as in (6C) (van Kuppevelt 1994, Büring 2003b, Krifka 2007).

(5) A: ʔe swét k ɬaʔx̣áns tk seplíl ɬ snwénwen.
and who IRL eat OBL.IRL bread DET morning
"Who ate some bread this morning?"
B: c̓e ekʷu [e Patrícia]$_{FOC}$ k ɬaʔx̣áns
CLEFT EVID DET Patricia IRL eat
tk seplíl ɬ <u>snwénwen</u>.
OBL.IRL bread DET morning
"[<u>Patricia</u>]$_{FOC}$ ate some bread this morning."

(6) A: *Where did she go?*
B: [xʷes-xʷesít we syəpyép te təm-tmíxʷ]$_{FOC}$.
AUG-walk to.DET tree[AUG] OBL AUG-land
"She went [walking in the forest]$_{FOC}$."

C: [Pún-m-Ø-s e q̓émes]$_{\text{FOC}}$. [Pún-m-Ø-s e q̓émes]$_{\text{FOC}}$.
find-REL-3O-3TS DET mushroom. find-REL-3O-3TS DET mushroom.
"She [found some mushrooms]$_{\text{FOC}}$. She [found some mushrooms]$_{\text{FOC}}$."
note: C answers a covert VP-focus wh-question *What did she do?*

Secondly, a contrastive focus sequence occurs, for example, when the speaker contradicts or updates a portion of the information in a previous utterance (7), possibly by responding to a yes/no question (8).

(7) A: Qeʔním-Ø-Ø-ne xeʔ k s-wik-t-Ø-íyxs
hear-TR-3O-1SG.TS DEM COMP NOM-see-TR-3O-3PL.TS
ʔeɬ x̣̌uʔ xeʔ e spéʔec u cíʔ ʔeɬ.
ACCM PERS DEM DET bear to there ACCM
"I heard they saw a bear too."

B: Heʔáy. [Sésy̓e]$_{\text{FOC}}$ xeʔ tk spéʔec
Yes. Two[DIM] DEM OBL.IRL bear
ə ʔes-wik-t-Ø-íyxs.
DET STAT-see-TR-3O-3PL.TS
"Yes. They saw [two]$_{\text{FOC}}$ bears."

(8) A: wʔéx ń meɬ x̣̌uʔ xeʔə wʔex-s-t-Ø-és
PROG Q CNSQ PERS DEM PROG-CAUS-TR-3O-3TS
k mús tk cíkn-s.
IRL four OBL.IRL chicken-3SG.POSS
"Does he still have his four chickens?"

B: Téʔe, [piʔéyeʔ]$_{\text{FOC}}$ x̣̌uʔ xeʔ
NEG, one[DIM] PERS dem
e s-wʔx-úm-s te cíkn.
DET NOM-PROG-MDL-3SG.POSS OBL chicken
"No, he only has [one]$_{\text{FOC}}$ chicken."

Utterances were coded for one of six focus types: CP focus, VP focus, narrow verb focus, subject focus, object focus, or number quantifier focus. Focus type served as the independent variable. Each utterance was then coded for syntactic type: default verb-initial word order, or non verb-initial order. Non-verb-initial order could be realized either as clefts or nominal predicate constructions as introduced in section 2.2.7. Occasionally, left-extraposed contrastive topics (see section 2.2.4) were employed instead of clefts to mark narrow subject focus cases. The corpus analysis yielded a total of 338 utterances. Results are reported as absolute numbers and percentages for each focus type.

3.3.3 Results: Wide CP focus

Sentence-wide, or CP focus, answers the question *What happened?* so that (roughly) all information in the sentence is new. In chapter 2, I showed that the default word order in wide CP focus cases is verb-initial. This hypothesis was tested here empirically, by examining the actual realization of wide focus cases across the collected corpus. As expected, wide CP focus cases were typically verb (9-10) or auxiliary initial (11-12).

(9) A: *What's going on in the picture?*

B: V ... S

[k̓ətní-m̓ e pé[p]yeʔ te x̌̓uʔsq̣áyxʷ]FOC.

rodfish-MDL DET one[DIM] OBL man.

"[One man is fishing]FOC.

(10) [*at the beginning of a discourse*]

[k̓iʔ-k̓éy̓ ekʷu e téwn ɬ spiʔx̣áwt]FOC.

AUG-quiet EVID DET town DET day.

"[Yesterday sure was a quiet day in town]FOC."

(11) A: *What happened?*

B: Aux V ... S ... O

[ʔéx xeʔ c̓ax̣-t-Ø-és ɬ n-sx̣áy̓wi e swúxʷt]FOC.

PROG DEM clean-TR-3O-3TS DET 1SG.PS-husband DET snow

"[My husband was cleaning up the snow]FOC."

(12) [*deciding what will happen next during a translation activity*]

[Nes kéy̓-nm-s-t-s-n]FOC.

go follow-deliberate.progress-CAUS-TR-2SG.O-1SG.TS

"[I'll follow you]FOC."

Occasionally, however, a predicate construction was used to answer wide focus questions. The predicate in these cases is typically a quantified NP (13) or locative demonstrative (14). As the literal translations show, these responses are odd in English, but acceptable in Salish (Koch 2007c; see also Davis et al. 2004 on St'át'imcets and Northern Straits Salish). I will return to this issue when discussing the semantics of clefts in chapter 7.

(13) A: *What was going on yesterday?*

B: [xʷʔít ekʷu xeʔ tk séytknmx
many EVID DEM OBL.IRL people
k ʔéx n ɬ téwn]$_{\text{FOC}}$.
IRL be in DET town
"[Everybody was in town]$_{\text{FOC}}$."
(more literally ?? "The (ones that) were in town were lots of people.")

(14) A: kén-m meɬ xéʔe.
what.happen-MDL CNSQ DEM
"What happened?"

B: Um, [néʔ ekʷu xéʔ k ʕʷy-ép us
um, there EVID DEM IRL burn-INCH 3.CONJ
ne nx̌pénk-s e: ... e s-ɬa-- e ... e sq̓ʷíyt]$_{\text{FOC}}$.
in.DET under-3.POSS DET ... DET NOM-eat-- DET... DET fruit
"[A fire started under the fruits]$_{\text{FOC}}$."
(more literally ?? "The (place that) a fire started under the fruits was there.")

Of 64 instances of CP focus that were identified in the corpus, only 6 (9.4%) deviated from the verb-initial word order by employing predicate constructions.

3.3.4 Results: Wide VP focus

Wide VP focus, for example, answers the question *What did X do?* where agent *X* is known in the discourse. Thus, a verb (and its object, if it is transitive) are focused, but the subject is not. Nuclear stress remains rightmost. In (15B), the focused VP is a new information focus answering the wh-question. In (16B), the VP is contrastively focused with the VP in the preceding question. Both cases results in standard verb-initial utterances.

(15) A: stéʔ k ṣ-zéy-tn-s e Flóra ɬ spiʔx̣áwt.
what IRL NOM-do-INSTR-3SG.POSS DET Flora DET day
"What did Flora do yesterday?"

B: [q̓^{w}íc̓-m]$_{FOC}$ ek^{w}u xeʔe e Flóra ɬ spiʔx̣áwt.
launder-MDL EVID DEM DET Flora DET day.
"Flora [did laundry]$_{FOC}$ yesterday."

(16) A: ʕ^{w}óy̓-t k^{w} n̓. *[whispering]*
sleep-IM 2SG Q
"Are you asleep?"
B: [Qíɬ kn nuk^{w} ʔéyɬ]$_{FOC}$. [Qíɬ]$_{FOC}$ kn nuk^{w}.
wake 1SG EVID now. wake 1SG EVID.
"I'm [awake now]$_{FOC}$. I'm [awake]$_{FOC}$."

In the next two examples, consultants are describing photos about a woman, Michelle. The subject is known, but the VP is new information in each case. The first example has an unergative verb 'to laugh,' while the second has an intransitive middle 'win' with oblique object 'lots of money.' Both examples are in the standard auxiliary-initial word order. The topical subject is elided. Nuclear stress is rightmost.

(17) Mmm. [ʔex ʔe-ʔúy-m̓]$_{FOC}$.
Mmm. PROG AUG-laugh-MDL
"Mmm. She's [laughing]$_{FOC}$."

(18) [X^{w}úy̓ xeʔ ƛ̓x^{w}-úm tk x^{w}ʔít tk snúye.]$_{FOC}$ [laughter]
FUT DEM win-MDL OBL.IRL much OBL.IRL money
"She's [gonna' win lots of money]$_{FOC}$!" [laughter]

In the next example, B's response is split into two intonational phrases (indicated by the comma). The gap is phonetically marked by a ¼ second pause, and declination is reset in the second phrase. In the first intonational phrase, nuclear stress falls rightmost, on the phrase-final demonstrative (interesting because this is a functional element). The second phrase, 'the man,' has only one stress, which is the nuclear stress by default.

(19) A: stéʔ meɬ xeʔ k s-cwú-s
what CNSQ DEM IRL NOM-work-3.POSS
e tákte k smʔéʔm-s cʔéyɬ.
DET doctor IRL wife-3.POSS today
"What did the doctor$_{i}$'s wife do today?"

B: [ƛ̓íxʷ-Ø-Ø-es ekʷu xé?e, e ƛ̓u?sq̣áyxʷ]FOC.
yell-TR-3O-3TS EVID DEM, DET man.
"She [yelled at him_i]FOC." (literally: "She yelled at him_i, the man_i.")

The term VP focus also describes cases where adjectives serve as the main predicate and focus. The case below is interesting for stress-focus accounts, because the focused portion in B's reply is restricted to the adjectival root plus proportional suffix *k̓ʷmi?me?* 'small.' However, stress falls on the lexical suffix for 'house,' *=(m)éɬxʷ*.[20] Contrastive focus does not induce a stress-shift from the lexical suffix to the root 'small.'

(20) A: ó, x̣zúm nkə k e?-cítxʷ.
oh, big EVID IRL 2SG.POSS-house
"Oh, I guess it's a big house."
(literally "Oh, I guess your house is big.")
B: teté? k s-x̣zúm-s. [k̓ʷmi?me?]FOC=méɬxʷ ƛ̓u? xé?ə.
NEG IRL NOM-big-3SG.POSS. small.PRP=house just DEM
"It's not big. It's [small]FOC."

Of the VP focus cases in the corpus, 76 were in the default auxiliary- or verb-initial word order. Only one employed a cleft structure. In that case, the speaker was describing a series of photographs describing the weekend activities of a man named Chris. The head of the cleft is a null element here; it could be the given topic, 'Chris,' or perhaps a null situational deictic like 'here' or 'now.' In the latter case, the focus may extend all the way to the left edge of the clause (as indicated by the bracketing below). Note that the clefted focus is in this case a null element; this is surprising for "stress-focus" accounts, but not if stress and focus diverge. I'll introduce some more examples along these lines in section 8.4.1.

(21) [?é ƛ̓u? Ø e s-cúkʷ-s e s-cw-úm-s]FOC.
CLEFT PERS Ø DET NOM-finish-3SG.POSS DET NOM-work-MDL-3SG.POSS
"He's [finished work now]FOC."
(more literally: "It is [Ø] that he is finished with his work.")

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[20] The initial [m] in the lexical suffix appears to be a speech error here, and is corrected by the speaker in the following sentence. The usual form for this lexical suffix is *=éɬxʷ*.

3.3.5 Results: Narrow verb focus

Narrow verb focus answers a question like *What did Gary do with the beans?* Under a "cleft-focus" account, we might expect a response like *It was picking that Gary did with them.* Such a construction with a clefted verb is bad in English, and Nɬeʔkepmxcin as well.[21]

Instead, narrow verb focus employs the default verb-initial word order. Subject and object are often elided. In this case, the verb may end up sentence-final, in the default nuclear stress position, as in B's reply below.

(22) A: Ké-s-t-Ø-s ƛ̓əm̓ xéʔe
what.happen-CAUS-TR-3O-3TS PERF DEM
e s-cwú-s, ne s-páqʷ.
DET NOM-work-3SG.POSS, in.DET NOM-watch
"What did he do with the work (he did) in the book?"

B: wʔéx nke ƛ̓uʔ xeʔ neʔ [k̓ʷéń-Ø-Ø-es]$_{\text{FOC}}$.
PROG EVID PERS DEM there look.at-TR-3O-3TS
"He was just [looking at]$_{\text{FOC}}$ it."

The narrowly focused verb may also be sentence-initial, with nuclear stress falling on a rightmost deictic.

(23) Tetéʔ k s-páqʷ-Ø-es. [ʕʷey-t-Ø-és]$_{\text{FOC}}$ ƛ̓əm̓ xeʔ néʔe.
NEG IRL NOM-watch-TR-3O-3TS. burn-TR-3O-3TS PERF DEM there
"He didn't look at it. He [burned]$_{\text{FOC}}$ it."

(24) Tetéʔ k s-ník̓-Ø-es. [ʔúpi-Ø-Ø-s]$_{\text{FOC}}$ ƛ̓uʔ c̓iy téʔe.
NEG IRL NOM-cut-TR-3O-3TS. eat-TR-3O-3TS PERS similar DEM.
"He didn't cut it. He [ate]$_{\text{FOC}}$ it like that."

Nuclear stress may fall on a rightmost object that remains overt. There does not appear to be any deaccenting effect (I'll take this matter up in more detail in chapters 4 and 5).

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[21] An exception is in "only" clefts, which employ the "only" cleft predicate *cukʷ*, and can take clefted VPs as their single argument (see example 59 and footnote 23 in section 8.4.3).

(25) A: *What is the woman doing to the cow?*

B: ʔéx xeʔ kʷ-- [kʷúp-Ø-Ø-es]$_{FOC}$ e smúɬec e mósmos.
PROG DEM kʷ-- push-TR-3O-3TS DET woman DET cow
"She's [pushing]$_{FOC}$ the cow."

In the present corpus study, all 19 cases of narrow verb focus retained the standard verb- or auxiliary-initial word order.

3.3.6 Results: Narrow subject focus

Subject focus answers a question like *Who fell into the river?* or *Who fixed my bicycle?* The present corpus study confirms Kroeber's observation that narrow foci are restructured at the left edge, contrary to the "stress-focus" predictions of section 3.1. Nuclear stress, however, is retained at the right edge (typically old information in the residue clause). In the first example below, B's response employs an introduced cleft to focus the subject DP *e Flora* as the leftmost lexical element. The cleft clause contains old information, and is subordinated: it is introduced by complementizer *e* and the verb 'wear' carries *–emus* subordination morphology. Again, there is no deaccenting effect (I'll give acoustic phonetic support for this observation in chapters 4 and 5).

(26) A: ʔe swét xeʔ k s-ɬúm-s-t-Ø-emus
and who DEM IRL STAT-wear-CAUS-TR-3O-SUBJ.EXTR
e ʔes-típ-tep-t te nk̓npáx̣n.
DET STAT-black-AUG-IM OBL vest
"Who is wearing the black vest?"

B: c̓e xeʔ [e Flóra]$_{FOC}$ e s-ɬúm-s-t-Ø-emus
CLEFT DEM DET Flora DET STAT-wear-CAUS-TR-3O-SUBJ.EX
e ʔes-típ-tep-t te nk̓npáx̣n.
DET STAT-black-AUG-IM OBL vest
"[Flora]$_{FOC}$ is the one wearing the black vest."

(27) A: swét xeʔ k cu-t-émus e s-ɬaʔx̣áns
who DEM IRL make-TR-SUBJ.EXTR DET NOM-eat
"Who made the food?"
B: c̓é e [Kársten]$_{FOC}$ e cu-t-émus xeʔ
CLEFT DET Karsten DET make-TR-SUBJ.EXTR DEM
e s-ɬaʔx̣áns-c.
DET NOM-eat-3SG.POSS
"It was [Karsten]$_{FOC}$ that made his food."

Since subjects are typically DPs, which cannot be predicates, introduced cleft predicates are usually employed to mark narrow subject focus. Among the exceptions in the current study are quantified subject DPs, which usually surface as predicate constructions:

(28) A: *Who's shopping?*
B: [xʷʔít te séytknmx]$_{FOC}$ Ø ʔéx téw-m.
much OBL people DET PROG buy-MDL
"[Lots of people]$_{FOC}$ are shopping."
(more literally: "The (ones that) are shopping are lots of people.")

(29) A: ʔe swét meɬ tuxʷeʔ eʔ-s:cméy̓t
and who CNSQ of.DET 2SG.POSS-kids
k y̓e-mín-t-Ø-əmus xéʔe.
IRL good-REL-TR-3O-SUBJ.EXTR DEM
"And who of your kids likes it?"
B: [tékm]$_{FOC}$ us xeʔe e s-y̓e-min-t-Ø-íyxs.
all 3.CONJ DEM DET NOM-good-REL-TR-3O-3PL.TS
"They [all]$_{FOC}$ like it."

Assuming that the cleft predicate selects a focus argument of type e, this patterning of quantifier foci as predicate constructions is not surprising. Under the standard analysis (eg. Bach 1989), quantified noun phrases are not of type e. Therefore, they cannot be the focused argument of the cleft predicate *c̓e* or *ʔe*. In section 3.3.8, we shall see that number quantifiers pattern the same way. The strong universal quantifier in (29) is unusual in this regard; it's not clear whether it's really acting as a predicate here; in St'át'imcets Salish the universal quantifier can't act as the main predicate (Matthewson 1996).

Emphatic pronouns may also surface as nominal predicate constructions (though they may be the head of clefts with a null cleft predicate – Thoma 2007 on St'át'imcets Salish).

(30) A: ʔe swét k ɬaʔx̣áns tk seplíl ɬ snwénwen.
CLEFT who IRL eat OBL.IRL bread DET morning
"Who ate some bread this morning?"
B: [Ncéweʔ]$_{\text{FOC}}$ e ɬaʔx̣áns te seplíl ɬ snwénwen.
1SG.EMPH DET eat OBL bread DET morning
"[I]$_{\text{FOC}}$ ate some bread this morning."
(more literally: "[I]$_{\text{FOC}}$ was the (one that) ate some bread this morning.")

Of 56 subject focus sentences in the data, only 4 (7.1%) retained basic auxiliary- or verb-initial order. Most (52, or 92.9%) had subjects appear at the left edge, confirming Kroeber's "cleft-focus" generalization. However, it should be noted that 7 of these cases (12.5%) had the focused subject in the contrastive topic position. This indicates that, unsurprisingly, other discourse factors such as topic-marking are also at work, and may sometimes conflict with straightforward focus-marking as clefts or nominal predicate constructions.

One of the exceptions in which basic verb-initial word order was retained is shown in the example below. A and B are discussing a series of pictures illustrating Stef's day at the lake. B's reply focuses narrowly on the subject, *Stef*, yet this focus is not clefted in this case. This may also be because of additional discourse factors, namely that B is metalinguistically correcting A's use of 'one person' to the more specific *Stef*, and so does not alter the basic word order of A's utterance.

(31) A: Wʔéx xeʔ neʔ ʔes-ɬáq-ix e séytknmx
PROG DEM there STAT-sit.PLURAL-AUT DET people
ʔeɬ ʔes-téɬ-ix e pépyeʔ.
and STAT-stand-AUT DET one[DIM]
"People are sittin' there and one person is standing."

B: ʔes-téɬ-ix [e Stéf]$_{\text{FOC}}$.
STAT-stand-AUT DET Stef
"[Stef]$_{\text{FOC}}$ is standing."

3.3.7 Results: Narrow object focus

Results for narrow object focus were similar to those for subject focus: focused objects were typically restructured to the left edge, in clefts or nominal predicate constructions. Recall that all of the stress-focus mechanisms examined in section 3.1 predicted that narrow object focus should employ the default word order (Aux)VSO, because the focused object appears in the nuclear stress position in this default word order. Yet the results contradict this hypothesis.

We already saw an example of a nominal predicate object focus ((33) in chapter 2), and a clefted object focus in ((34) in chapter 2). While the focus is at the left, the nuclear stress position is on the right. Below are some further examples. (32) shows a cleft with a focused object DP *e sqʷáx̣ts* 'her leg', and example (33) shows a nominal predicate *kapi* 'coffee' that also doubles as the focused object.

(32) tém ekʷu teʔ k s-máʕ̓-t-s ɬ kéyx-s.
NEG.SUBJ EVID that IRL NOM-break-IM-3SG.POSS DET hand-3SG.POSS.
"I heard she didn't break her arm."
c̓é ekʷu [e sqʷáx̣t-s]FOC k máʕ̓t.
CLEFT EVID DET leg-3SG.POSS IRL break-IM
"It was her [leg]FOC she broke."

(33) A: Stéʔ tk s-ʔúqʷeʔ
WHAT OBL.IRL NOM-drink
k eʔ-s-cw-úm ɬ snwénwen.
IRL 2SG.POSS-NOM-make-MDL DET morning
"What did you make to drink this morning?"

B: [Kápi]FOC xeʔ e n-s-cw-úm,
coffee DEM DET 1SG.POSS-NOM-make-MDL
ʔeɬ e n-s-ʔúqʷeʔ ɬ snwénwen.
and DET 1SG.POSS-NOM-drink DET morning
"I made [coffee]FOC to drink this morning."
(more literally: "The (thing that) I made was [coffee]FOC, and that I drank this morning.")

Of object focus cases in the corpus, 43 (79.6%) were produced as left edge clefts while 11 (20.4%) remained in situ in the basic verb-initial word order. Thus, the majority of instances confirm Kroeber's "cleft-focus" generalization.

3.3.8 Results: Number quantifier focus

Narrow focus on number quantifiers typically results in the quantified DP being focused at the left edge of the clause as part of a nominal predicate. There is a variation on this pattern, however. The basic pattern is shown in the next example (see also 7B). The complex nominal predicate *mus (ƛ̓uʔ xeʔ) tk síɬc̓uʔ* 'four shoes' in (34B) is the left edge predicate containing the focus *mus* 'four.' The second position clitics *ƛ̓uʔ xeʔ* follow the first word of the complex predicate, *mus*. The residue clause is introduced by the determiner *e* and carries nominalizing morphology *s-...-s* on the verb *txʷup* 'buy.'

(34)	A:	e	sx̣áy̓wi-s ...	cú-t	e	sx̣áy̓wi-s	
		DET	husband-3SG.POSS ...	say-IM	DET	husband-3SG.POSS	
		k	s-kʷn-ə́m-s	tk	cíykst	tk	síɬc̓uʔ-s.
		COMP	NOM-grasp-MDL-3SG.POSS	OBL.IRL	five	OBL.IRL	shoes-3SG.POSS

"Her husband said that she got five pairs of shoes."

B: [Mús]$_{FOC}$	ƛ̓uʔ	xeʔ	tk	síɬc̓uʔ	e	s-txʷ-úp-s.
four	PERS	DEM	OBL.IRL	shoes	DET	NOM-buy-INCH-3SG.POSS

"She only bought [four]$_{FOC}$ pairs of shoes."
(more literally: "The (thing that) she bought was just [four]$_{FOC}$ pairs of shoes.")

The next example follows a similar pattern. Note that the focused root 'three' in the last line of (35B) does not carry even word-level stress, which falls on the lexical suffix *=eyus*; this suffix, meaning 'leg' or 'pants,' carries old semantic information, but is still stressed. This is unexpected under "stress-focus" and "destress-given" accounts. Nuclear stress remains rightmost; contrastive focus on the root 'three' does not attract the stress from the lexical suffix *=eyus*.

(35)	A:	Cú-t	xeʔ	meɬ	e	Nátalie	k	s-kʷn-ə́m-s
		say-IM	DEM	CNSQ	DET	Natalie	COMP	NOM-get-MDL-3SG.POSS
		tk	... umm ...	cíyci	tk	sqéyus-c.		
		OBL.IRL	... umm ...	new	OBL.IRL	pants-3SG.POSS		

"Natalie said that she got new pants."

B: Teté? k s-[pi?éy- ... péye?]$_{\text{FOC}}$-s ƛ̓u? k s-tx^{w}-úp-s ...
NEG IRL NOM-one- ... one-NOM PERS IRL NOM-buy-INCH-3SG.PS ...
"She didn't buy just [one]$_{\text{FOC}}$ pair ..."
(more literally: "It was not just [one]$_{\text{FOC}}$ (pair) that she bought...")
[Ke?ɬ]$_{\text{FOC}}$=éyus tk sqéyus e s-tx^{w}-úp-s.
Three=pants OBL.IRL pants DET NOM-buy-INCH-3SG.POSS
"She bought [three]$_{\text{FOC}}$ pairs of pants."
(more literally: "The (thing that) she bought was [three]$_{\text{FOC}}$ pants.")

In the second pattern, the nominal predicate may also be separated in the surface order, with the number quantifier remaining at the left edge but the NP right extraposed. In (8B), *pi?éye?* 'one' is at the left edge while *te cikn* 'chicken' is extraposed to the right, past the residue in the clausal DP *e sw?xúms* 'that he has.'

In the next example, B's reply restructures the clause such that the predicate is the complex nominal 'six potatoes,' yet only the quantifer surfaces at the left edge. The NP portion, *tk ṣtqóḷṣ* 'potatoes,' is right extraposed past the cleft clause *e nsx̣^{w}óx̣^{w}st* 'that I want.' For the "destress-given" generalization of information marking, this type of extraposition is rather surprising, since a given element, *tk ṣtqóḷṣ*, is being "moved" into the rightmost nuclear stress position. This extraposition can be seen as an interpretive strategy to isolate the narrow focus at the left edge of the clause, though it seems to be optional in cases like these (see section 8.4.4 for more discussion). The subscripted 't' represents the 'trace' of the extraposed NP.

(36) B: ké? k e?-s-w?x-úm tk ṣtqóḷṣ.
is.it.case IRL 2SG.POSS-NOM-PROG-MDL OBL.IRL potato
"Do you have potatoes?"
A: he?áy, k^{w}ínex k e?-s-x̣^{w}óx̣^{w}-t.
yes, how.many IRL 2SG.POSS-NOM-want-IM
"Yes, how many do you want?"
B: [ƛ̓áq̓mekst]$_{\text{FOC}}$ t_p e n-s-x̣^{w}óx̣^{w}-st [tk stqóls$_{\text{G}}$]$_{\text{P}}$.
six t_p DET 1SG.POSS-NOM-want-REFL [OBL.IRL potato]$_{p}$
"I want [six]$_{\text{FOC}}$ potatoes."
(more literally: "It is [six]$_{\text{FOC}}$ t_p that I want [potatoes$_{\text{G}}$]$_{p}$.")

The rightmost NP is in fact extraposed, and not an in situ argument of the subordinated verb in the residue clause. This can be seen when the embedded verb is transitive (37): the right extraposed NP is always introduced by the oblique marker (*te* or *tk*), and not by the determiners *e* or *ɬ* which introduce direct arguments of transitive verbs. Thus, like English, structures which focus a modifier of the NP, but "strand" the NP as an argument inside the residue of the clausal DP, are not attested (38b). Unlike English, the NP portion of the predicate may be extraposed to the right (38c provides a rough surface approximation).

(37) A:

wʔéx	ṅ	xeʔ	x^{w}íʔ-m	tk	- uh -	cíyci
PROG	Q	DEM	look.for-MDL	OBL.IRL	- uh -	new
tk	- uh -	qemút-s.				
OBL.IRL	- uh -	hat-3SG.POSS				

"Was she looking for some new hats?"

B:

[Keʔɬés]$_{FOC}$	nke	xeʔ	t_h	k	s-pún-m-Ø-Ø-s
three	EVID	DEM	t_h	IRL	NOM-find-REL-TR-3O-3TS
[tk	(/*e)	<u>qemút</u>-s]$_h$.			
[OBL.IRL	(/*DET)	hat-3SG.POSS]$_h$			

"She found <u>[three]</u>$_{FOC}$ hats."

(38) a. The (thing) that she was looking for was three hats.
b. *The (thing) that she was looking for hats was three. [also ungrammatical in Nɬ.]
c. *Three t_h was [the (thing) that she was looking for] hats$_h$. [grammatical in Nɬ.]

These split nominal predicate structures are attested independently of narrow focus structures, as can be seen in the two pairs of attributive sentences below. The NP *smúɬec* 'woman/lady' can either precede or follow the subject *Mary*, but in either case is part of the complex nominal predicate *puti (xeʔ) tk smúɬec* 'pretty lady.'

(39) a.

púti	xeʔe	tk	smúɬec	e	Máry
pretty	DEM	OBL.IRL	woman	DET	Mary

"Mary is a pretty lady."

b.

púti	xeʔ	t_w	e	Máry	[tk	smúɬec]$_w$
pretty	DEM	t_w	DET	Mary	[OBL.IRL	woman]$_w$

"Mary is a pretty lady."

In the data collected for this study, there were 68 cases of narrow focus on a number quantifier. Only 1 case (shown below) was produced using the default verb-initial order.

(40) A: č̓kéʔə met̓ xéʔ k s-wík-t-Ø-s e ṣtʔáṣze.
which CNSQ DEM IRL NOM-see-TR-3O-3TS DET squirrel
"Did they see any squirrels?"
B: Heʔáy, wik-t-Ø-íyxs ekʷu xeʔ e s-...
yes, see-TR-3O-3PL.TS EVID DEM DET NOM-...
[piʔéyeʔ]$_{\text{FOC}}$ te stʔásze.
one[DIM] OBL squirrel
"Yes, they saw [one]$_{\text{FOC}}$ squirrel."

3.3.9 Results: Summary

Wide CP focus, VP focus and verb focus typically retains the basic verb-initial order. Narrow focus on objects, subjects and quantifiers generally results in a cleft or nominal predicate construction with the focus restructured to the left edge of the utterance. Table 3.2 summarizes the findings. Implications are discussed in the next section.

Table 3.2 Focus type and syntactic realization – a corpus study of 338 cases

	Focus Constituent					
Word order	CP	VP	Verb	Object DP	Subject DP	QP
V- or Aux-initial	58 (90.6%)	76 (98.7%)	19 (100%)	11 (20.4%)	4 (7.1%)	1 (1.5%)
Non Verb-initial	6 (9.4%)	1 (1.3%)	0 (0%)	43 (79.6%)	52 (92.9%)	67 (98.5%)

3.4 Discussion

3.4.1 Implications for the "stress-focus" generalization

The findings presented in section 3.3 support Kroeber's (1997, 1999) observation that left edge clefts and nominal predicate constructions are employed to mark narrow focus in Nɬeʔkepmxcin. The dissociation of narrow focus from the nuclear stress position is unexpected under a "stress-focus" account, in which a variety of strategies may be employed to ensure that the focus and nuclear stress coincide.

Unlike English speakers, speakers of Thompson Salish do not retain the default word order, in which "stress-focus" is satisfied by simply altering the location of the nuclear stress to the narrow focus constituent. Neither is there movement of the focus to the rightmost nuclear stress position (as in Portuguese). Unlike German, there is also no scrambling of unfocused material away from the right edge.

Narrowly focused subjects and number quantifiers surface at the left edge. Even objects, which are in the rightmost nuclear stress position in the default VSO word order, are generated in left edge clefts or NPCs when focused. This demonstrates the primary finding of this chapter, namely that a prosodic condition which aligns the focus with the nuclear stress cannot be what is driving the "cleft-focus" generalization in Nɬeʔkepmxcin. Thus, the Stress Focus Correspondence Principle (Reinhart 1995) or other principles like it are at best language-specific, and not universal principles for stress languages.

Narrow verb focus, too, is not marked by any sort of movement of the verb to the rightmost nuclear stress position. On the other hand, focused verbs are not clefted either. Instead, the default verb-initial word order is retained.

The generalization that emerges is that the left edge of the clause is relevant for focus marking, while nuclear stress is not relevant. Verbs are already at the left edge, so default word order is used to mark VP, verb, or CP focus. Other narrow foci have to be clefted or turned into predicates to appear at or near the left edge. Thus, another generalization that emerges is that the focus is closely associated with a syntactic constituent, namely the predicate.

Recall the generalization made in chapter 2, namely that matrix predicates are always leftmost in their intonational phrase.

(41) PREDICATE-LEFT:
Align the matrix predicate with the left edge of an intonational phrase.

Now we can add a second generalization, which we will call FOCUS-LEFT.

(42) FOCUS-LEFT: The focus is leftmost in an intonational phrase. [first attempt]

These constraints are similar to how Krifka (1998b) describes the German system of focus marking (see 24-25 in chapter 1). Recall that in German, nuclear stress surfaces immediately before the verb, and the focus also optimally surfaces in this preverbal surface position. Krifka describes this situation as a competition between the constraints VERB-

RIGHT and FOCUS-RIGHT. Since VERB-RIGHT is undominated, the focus does the next best thing, and surfaces preverbally, or as rightmost as possible.

Focus is marked in a similar way in Thompson Salish. I have claimed that there is an undominated requirement that matrix predicates be initial in an intonational phrase. When verbs or VPs are focused, the focus therefore aligns with the left edge of the clause in the default VSO order. For wide CP focus too, which necessarily includes the entire clause, the focused CP is by default aligned with the left edge.

When narrow focus falls on subjects, objects, or number quantifiers, focus is marked using a cleft or a nominal predicate construction. For clefts, used to mark focus on DPs like proper names, the cleft predicate is at the left edge of the clause. This is because DPs cannot be predicates in Thompson Salish, and indicates that PREDICATE-LEFT is undominated. However, using a cleft ensures that the focus is still the leftmost lexical item in the clause, therefore satisfying FOCUS-LEFT "as best as possible" given the undominated status of PREDICATE-LEFT. That is, the cleft predicate is a functional element, and cannot be focused. In the case of nominal predicate constructions, both PREDICATE-LEFT and FOCUS-LEFT are satisfied, since nominal predicates are both the focus and the matrix predicate of the sentence.

3.4.2 Implications for focus projection

For focus projection, results also did not turn out as expected under a Selkirk-type system (1995 – see section 1.3.4 for discussion). The first prediction (4a) was that wide focus (VP or CP) would be marked using the default verb-initial word order. The results (table 3.2) confirm this first prediction, and are thus far compatible with a system where, like in English, nuclear stress on the righmost object in a VSO configuration can project to the VP or CP level as well.

(43) Hypothetical focus projection from rightmost object to VP and CP in Nɬeʔkepmxcin

$[_{CP}[_{VP}$ wík-t-Ø-ne$_{f}$ xeʔ $[_{DP}$e Moník$]_{f}$ $]_{f}$ $]_{f,FOC}$.

see-TR-3O-1SG.TS DEM DET Monique

"$[_{CP}$I $[_{VP}$saw$_{f}$ $[_{DP}$Moníque$]_{f}]_{f}]_{f,FOC}$."

However, the predicted link between wide focus and narrow object focus (4b) was not found, since narrow object focus was marked using left edge clefts or NPCs. If focus projects horizontally from the nuclear stress position, we would have to say that, in cases of VSO word order, focus MUST project beyond the object, and cannot be confined to narrow focus on the object.

The same situation holds of intransitive predicates where the subject is rightmost. In the standard verb-subject order, nuclear stress falls on the post-verbal subject. However, narrow subject focus is expressed structurally. Once again, if the nuclear stress is relevant for focus projection, in standard V-S order we would have to stipulate that focus MUST project beyond the subject (in fact, "project" downward to the VP).

(44) Impossible focus configurations in Nɬeʔkepmxcin verb-initial order:
Lack of focus projection beyond the nuclear stress

a. Narrow object focus: *Who did you see?*
#$[_{\text{CP}}$ $[_{\text{VP}}$ wík-t-Ø-ne xeʔ $[_{\text{DP}}$ e Moník$]_{\text{FOC}}$]].
see-TR-3O-1SG.TS DEM DET Monique
intended: "$[_{\text{CP}}$ I $[_{\text{VP}}$ saw $[_{\text{DP}}$ Monique$]_{\text{FOC}}$]]."

b. Narrow subject focus: *Who ran?*
#$[_{\text{CP}}$ $[_{\text{VP}}$ tʕʷ-íyx] $[_{\text{DP}}$ e ƛ̓uʔsqáyxʷ$]_{\text{FOC}}$].
run-AUT DET man
intended: "$[_{\text{CP}}$ $[_{\text{DP}}$ The man$]_{\text{FOC}}$ $[_{\text{VP}}$ ran]]."

This is an undesirable and ad-hoc stipulation: objects must be restructured to the left edge of the clause when narrowly focused, but in those cases, nuclear stress is not relevant at all in indicating the focus. The focus cannot project from the nuclear pitch accent in clefts or NPC structures, since the rightmost element (the cleft clause, or residue clause) is not part of the focus. We would have a situation where focus projected from the nuclear pitch accent in the default word order, but did not project from the nuclear pitch accent in focus constructions.

(45) Narrow focus cannot be "projected" from rightmost nuclear pitch accent in clefts
$[_{\text{CP}}$ $[_{\text{VP}}$ c̓é xeʔ $[_{\text{DP}}$ e Moník$]_{\text{FOC}}$] e wík-t-Ø-ne]].
CLEFT DEM DET Monique DET see-TR-3O-1SG.TS
"$[_{\text{CP}}$ It $[_{\text{VP}}$ was $[_{\text{DP}}$ Monique$]_{\text{FOC}}$] that I saw]."

The more straightforward account of Nɬeʔkepmxcin simply abandons the idea of focus projection from pitch accents.

I conclude that horizontal focus projection (from accented complements to unaccented heads) is not operative in Nɬeʔkepmxcin. This conclusion is in line with Büring's (2003, 2006) finding that "horizontal focus projection" in English and German is in fact a matter of default prosody, and does not require special rules of focus projection. If, in Nɬeʔkepmxcin, nuclear pitch accents are not relevant for marking focus, we don't expect to see any "horizontal focus projection" effects from pitch accents either. The dissociation of the focus from the nuclear stress position suggests that nuclear stress assignment is a prosodic phenomenon, and not a syntactic one. Davis (2007) has stated this in the strongest possible terms:

(46) Postulate 1
The Nuclear Stress Rule is a purely prosodic phenomenon. (Davis 2007)

This differs from previous conceptions of nuclear stress, in which it was related to the deepest syntactic constituent (eg. Cinque 1993). As stated in (46), surface position, prosodic phrasing, and rules for headedness (left or right) would be the only factors determining where the nuclear pitch accent falls; any relation to syntax is only indirect. This was the strong position claimed for Nɬeʔkepmxcin in chapter 2, where I observed that nuclear stress falls on the righmost constituent in the surface order, whatever its syntactic category. However, to the extent that prosodic constraints refer to syntactic categories, there continues to be a role for syntax in constraining where the nuclear pitch accent will fall. Evidence that certain syntactic categories (like prepositions in English – eg. German et al. 2006) are more resistant to carrying the nuclear stress, for example, suggests that (46) is too strong. It may turn out that in Salish, too, certain syntactic categories are disprefered as hosts for the nuclear pitch accent; for example, rightmost adverb phrases may resist carrying the nuclear stress in favour of preceding direct objects. However, this issue will have to await future research.

Thus far we have seen that the location of the nuclear pitch accent is not important for focus projection. So what *is* relevant? Focus is marked by pitch accent in English and German, and focus projects vertically. Since any syntactic category can bear the nuclear pitch accent, focus can therefore project from any syntactic category (Büring 2003). So, accented heads, arguments, adjuncts or specifiers are all sources for focus projection (see section 1.3.4 for examples and discussion).

The situation in Salish is rather different, as noted by Davis (2007). The generalization for all types of focus is that focus aligns to the left edge, which is also the position of the matrix predicate. Arguments, adjuncts and specifiers do not appear at the left edge of the intonational phrase containing the matrix predicate. We can make the strongest possible statement: focus always and only projects from the matrix predicate. The focus projection line is thus always from verb (or predicate), to verb phrase (or predicate phrase), to IP, to CP. Thus, in Salish, the "focus set" (Neeleman and Reinhart 1998) is restricted to {Predicate, PredP, TP, CP} (Davis 2007), where "PredP" is any predicate phrase (NP, AP, VP).This is a syntactically oriented view of focus projection, argued for by Davis (2007):

(47) Postulate II
Focus projection is a purely syntactic phenomenon. (Davis 2007)

In languages like English or German, on the other hand, any syntactic category can project focus vertically onto a dominating syntactic category.

(48) Unrestricted vertical focus projection:
Any subconstituent can project focus. (Büring 2003)

But we have made the strong claim that in Thompson Salish, focus projects from the predicate (see also Davis 2007):

(49) Restricted vertical focus projection (Salish) [first attempt]
The head of the predicate can project focus. {Pred, PredP, TP, CP}

The examples below illustrate focus projection from the predicate in Thompson Salish. In the case of verb, VP or CP focus in the default VSO word order, the leftmost position is occupied by the verb. The focus minimally includes the verb, but may include the VP or the entire CP. I've deliberately kept the syntactic representations fairly simple for the present purpose of illustration, by not labelling additional intermediate projections such as AgrS or AgrO (subject and object agreement nodes), and so on.

(50) Focus projection in the default VSO order
a. Narrow verb focus (no projection beyond verb head)
A: *What is the cow doing to the cat?*
B: ʔéx xeʔ $[_V$ miʔx-e-t-Ø-és$]_{FOC}$ e mó̩smo̩s e pú̱s̱.
PROG DEM kick-DRV-TR-3O-3TS DET cow DET cat
"The cow is $[_V$ kicking$]_{FOC}$ the cat."

b. VP focus projected from verb head to VP

A: *What is the woman doing?*

B: [$_{CP}$ ʔex [$_{VP}$ [$_{V}$ ʔes-k̓ʷéṅ-s-t-Ø-s] [$_{DP}$ e <u>pús</u>]]$_{FOC}$].

PROG STAT-look-CAUS-TR-3O-3TS DET cat

"She's [looking at the <u>cat</u>]$_{FOC}$."

c. CP focus projected from verb head to CP

A: *What's happening in the picture?*

B: [$_{CP}$ wʔéx neʔ [$_{VP}$ [$_{V}$ ʔes-tét-ix] [$_{PP}$ ne tmíxʷ] [$_{DP}$ e <u>smúɬec</u>]]]$_{FOC}$.

PROG there STAT-stand-AUT in.DET land DET woman

"[A woman is standing on the <u>ground</u> there]$_{FOC}$."

In nominal predicate constructions, the focus and matrix predicate coincide; focus may be confined to this constituent, or may project on to the clausal level from there (51).

(51) Focus projection in nominal predicate constructions

a. Narrow focus on the NP (no projection beyond NP predicate)

A: *What did you make to drink this morning?*

B: [$_{NP}$ Kápi]$_{FOC}$ xeʔ e n-s-<u>cw-úm</u>.

coffee DEM DET 1SG.POSS-NOM-make-MDL

"I made [<u>coffee</u>]$_{FOC}$."

(literally: "The (thing that) I made was [<u>coffee</u>]$_{FOC}$."

b. CP focus projected from complex NP predicate

A: *What was going on yesterday?*

B: [$_{CP}$ [$_{NP}$ xʷʔít ekʷu xeʔ tk séytknmx]

many EVID DEM OBL.IRL people

k ʔex n ɬ <u>téwn</u>]$_{FOC}$.

IRL be in DET town

"[Everybody was in <u>town</u>]$_{FOC}$."

(literally ?? "[The (ones that) were in town were lots of people]$_{FOC}$.")

For clefts (52), the focus is the cleft head that serves as internal argument to the cleft predicate; here, focus necessarily includes this predicate complex since it projects from the cleft predicate head to the VP including the cleft head. From there, focus can again optionally project to the clausal level.

(52) Focus projection in introduced clefts

a. Narrow focus on the cleft head (no projection beyond cleft predicate VP)

A: *I heard that it was Fred who painted it.*

B: Téʔə. $[_{CP}[_{VP}[_{V}$ c̓é] $[_{DP}$ ɬ Róss] $]_{FOC}$ e <u>pínt-ə-t-Ø-mus</u>].

no, CLEFT DET Ross DET paint-DRV-TR-3O-SUBJ.EXTR

"No, it was [<u>Ross</u>]$_{FOC}$ that painted it."

b. CP focus projected from cleft predicate

A: *What's going on in this picture?*

b. $[_{CP}[_{VP}[_{V}$ c̓é] xeʔ neʔ $[_{DP}$ e pə́ɬuskʷu

CLEFT DEM there DET lake

n ɬ ʔéx ut k̓ətní-m̓]]]$_{FOC}$.

in DET PROG 1pl.CONJ rodfish-MDL

"[This is the lake we went fishing]$_{FOC}$."

Since the verb is a subconstituent of the residue clause (eg. *cwum* 'make' in 51a), we predict that neither bare nor introduced clefts can be used to mark VP focus, since we cannot project focus from the cleft head to a subconstituent of the cleft clause. The results (table 3.2) confirm this prediction. While some 10% of wide focus cases were expressed using focus structures, only one marginal case of VP focus was expressed this way. The fact that not more than 10% of wide focus cases were expressed using focus structures may be because they are biclausal (section 7.1), so they are less economical to produce when standard VSO structures are available.

In the case of complex NPs (modified by adjectives or number quantifiers, for example), the focus may comprise only one part of the clefted nominal predicate. In these cases, the focus may be restricted to a subconstituent of the predicate phrase that is not the predicate head. This suggests that (49) is too strong focus projection; the predicate phrase is important, but not the predicate head. Also, an additional principle needs to be invoked to cover cases of narrow focus that are only a subconstituent of the predicate phrase:

(53) a. Restricted vertical focus projection (Salish) [revised]
The predicate phrase can project focus. {PredP, TP, CP}

b. Narrow focus (Salish)
Focus may be restricted to the predicate phrase or any subconstituent of the predicate phrase.

This differs from "stress-focus" languages like English, where the focus may be restricted to the constituent bearing the nuclear stress, and bears no relationship to the predicate phrase. In the example below, a simple number quantifier *ciykst* 'five' is the narrow focus, though it is embedded within a complex nominal predicate 'five pants.' There does not appear to be any deaccenting after the focus (a fact I show in chapter 5).

(54) Narrow focus on a number quantifier within a complex predicate

A:	K^{w}ínex	xeʔ	tk	sqéyus	k	s-tx^{w}úp-s.
	how.many	DEM	OBL.IRL	pants	IRL	NOM-buy-INCH-3SG.POSS

"How many pants did she buy?"

B:	[$_{NP}$ [Cíykst]$_{FOC}$	xeʔ	tk	sqéyus-c]	e	s-k^{w}n-ə́m-s.
	five	DEM	OBL.IRL	pants-3SG.POSS	DET	NOM-get-MDL-3SG.POSS

"She got [five]$_{FOC}$ pairs of pants."

We have seen that, while stress languages like English or German allow for focus projection from any syntactic constituent, focus in Salish projects from the predicate phrase. In addition, narrow focus can be restricted to any subconstituent of the predicate. In turn, this suggests a syntactic view of focus projection (47). The results of the corpus study in this chapter are not explained by the common prosodic account of focus marking, as embodied in "stress-focus" proposals.

We may ask if there is not a role for prosody, however. For one thing, there are two interfaces of the grammar where focus projection is relevant: (i) at the semantics-syntax interface, and (ii) at the phonology-syntax interface. The former may be syntactically driven (assuming that focus is marked as a syntactic category), and satisfies the interface between syntax and logical form.

The primary role of the interface between syntax and phonological form (PF), however, is to communicate information from speaker to hearer. Focus projection in this case serves to allow the listener to reconstruct where the focus is in the sentence, and is necessarily mediated phonologically since communication is packaged in a speech signal.

Where the locus of the nuclear pitch accent mediates focus projection in English, I have suggested that alignment with the left edge of the intonational phrase may be a phonological principle mediating focus projection in Thompson Salish. I'll return to this question in chapters 7 and 8.

3.5 Clefts versus nominal predicate constructions: The role of contrast

We have seen that the two focus structures, clefts and nominal predicates (NPCs), can be employed to mark both informational focus or contrastive focus. In fact, due to the FOCUS-LEFT constraint, narrow new information focus is necessarily expressed structurally, and not by employing the standard verb-initial word order. We might wonder, however, what difference in interpretation exists between clefts and NPCs, if any. In addition, we might wonder how contrastive focus is expressed.

In St'át'imcets Salish, Thoma (2007) found that clefts are used in contrastive contexts, while nominal predicate constructions are not. (55A') is not felicitous in the contrastive situation below, where the speaker has to identify only one of the available alternatives.

(55) Context: two pictures, one with a sleeping dog, another with a bear climbing a tree.

Q: swat ku=ʕʷuy̓táľmen *[St'át'imcets Salish]*
who DET=sleepy
"Who is sleepy?"

A: niɬ ti=sqáx̣ʔ=a ti=wáʔ ʕʷuy̓t
CLEFT DET=dog=EXIST DET=IMPF sleep
"It's the dog who's sleeping."

A': # sqáx̣aʔ ti=wáʔ ʕʷuy̓t
dog DET=IMPF sleep
"A dog is sleeping." (Thoma 2007)

Similar facts describe simple contrastive contexts in Nɬeʔkepmxcin (Koch 2007c). To test for the difference between clefts and NPCs, consultants were presented with computer displays of either one object (new information condition) or two objects (contrastive condition) (Appendix C). In the experiment, animated computer characters asked questions about the objects on the screen. In the new information condition, the computer character asked "What's this?" Consultants responded with the name of the item, using either a simple bare nominal predicate, or a cleft.

(56)	A:	stéʔ	meɬ	xéʔe.		
		What	indeed	DEM		
		"What's this?"				
	B:	[qʷléweʔ]$_{\text{FOC}}$	xéʔe.			[nominal predicate construction]
		onion	DEM			
		"Those are [onions]$_{\text{FOC}}$."				
	B':	c̓é	xeʔ	[e	qʷléweʔ]$_{\text{FOC}}$.	[cleft]
		CLEFT	DEM	DET	onion	
		"Those are [onions]$_{\text{FOC}}$."				

In the contrastive focus condition, the animated character asked, for example, "Are these flowers?" while pointing at a book. Consultants responded by identifying the book, and continuing with a contrastively focused demonstrative to correctly point out the actual flowers; this last utterance was the target for analysis here, where two objects were being explicitly contrasted. Simple nominal predicate constructions were heavily dispreferred in this context; when they were used, NPCs always contained additional lexical items asserting the existence of a contrast between two items. It should be pointed out that questions were presented either as clefts (eg. 57A) or as nominal predicate constructions (eg. (6) in Appendix C1). with no obvious correlation to clefts or NPCs in the answer; that is, the syntax or semantics of the question did not force clefts in the answer.

(57)	A:	c̓é	ṅ	xeʔ	e	sp̓áq̓m.		*[pointing at book]*
		CLEFT	Q	DEM	DET	flowers		
		"Is this flowers?"						
	B:	tetéʔ	xeʔ	k	sp̓áq̓ms.	spáqʷ	xéʔe.	
		NEG	DEM	IRL	flowers.	book	DEM.	
		"That's not flowers. That's a book."						
		TARGET:	c̓é	m̓	[xʔé]$_{\text{FOC}}$	e	sp̓áq̓m.	
			CLEFT	EMPH	DEM	DET	flowers.	
			"[That]$_{\text{FOC}}$ is the flowers."					

Table 3.3 summarizes the results of the experiment. Only a single simple NPC was employed in the target contrastive context.

Table 3.3 Focus construction and focus type

	This is X. [new focus]	(No,) THAT's x. [contrastive focus]
Cleft	33 (46%)	41 (73%)
Nominal predicate construction (NPC)	39 (54%)	1 (2%)
NPC plus other lexical items	0 (0%)	14 (25%)

Let us look at the additional morphology that indicates a contrastive interpretation. First, the results indicate that the cleft predicate itself, *c̓e* or *ʔe*, is associated with contrast in a way that simple nominal predicate constructions are not. The cleft predicate may provide a weak implicature of exhaustivity; in chapter 7, we shall see that this implicature is easily cancelled, as shown for St'át'imcets and Straits Salish by Davis et al. (2004; see also Shank 2003 for a semantic analysis of the [semantically] cognate cleft predicate *niɬ* in Northern Straits Salish). In addition, the demonstratives *xeʔ* and *xʔe* can not be predicates in Thompson Salish, so must appear in cleft structures when focused; however, this fact does not account for all of the clefts used in the contrastive condition, since often the NP *sʔixʷɬ* 'others' was employed instead of a demonstrative (eg. the TARGET in 59B), yet was still clefted as a DP rather than acting as a bare nominal predicate.[22]

Secondly, in more complex cases, nominal predicate constructions *are* extensively used for contrastive focus; quantifiers in particular seem to be used in NPC structures rather than clefts (see examples in section 3.3.8). This fact follows if cleft predicates select for a focus of type e, and quantified NPs are not of type e (eg. Barwise and Cooper 1981, Bach 1989). However, results here indicate that additional morphology is employed to overtly mark the presence of a contrastive context. In (57B), the speaker responds using the emphatic marker *m̓* (in this case, in a cleft structure). Emphatic *m̓* is a second position clitic. Though Thompson and Thompson (1996: 209) describe *m̓* as "rare" and "not completely

[22] This points to the fact that the target clefts in this task are all equational, equating either a demonstrative with a DP, or equating two DPs. In chapter 7, I will argue for a different semantics for cleft predicates that have a residue clause as an argument.

understood," I find that it is quite common exactly in this contrastive conversational context. Consultants state that a clause without *m̓* "is ok with just one item," but that a clause with *m̓* "is for [when you are talking about] two things."

The contrastive demonstrative *xʔé* seen in (57B) also surfaced only in the contrastive focus condition, and never in the new information focus condition. When asked about using this demonstrative instead of the usual *xéʔe* in the simple new information focus condition (with only one item on display), consultants commented: "what is the other thing you are talking about? You have to say what it is...." Thus, the demonstrative *xʔé* seems to presuppose the existence of another item for comparison.

In other cases, overt DPs that presuppose contrast, such as 'the others' or 'another one,' were employed in addition to the focus structures. In (58B), the DP *e sʔixʷɬ* 'the others' serves as the subject of the nominal predicate *heʔuseʔ* 'egg.' In addition, the prepositional phrase *u ciʔ* 'over there' serves to overtly introduce contrast of the locations of the two objects, "here" and "over there."

(58) A: c̓é ṅ meɬ xeʔ e ʔeʔúseʔ. *[pointing at potatoes]*
CLEFT Q CNSQ DEM DET egg
"Are these eggs?"

B: .... heʔúseʔ u cíʔ e s-ʔíxʷɬ.
.... egg to there DET NOM-other
"Those [others over there] are eggs."

What Thompson and Thompson (1992: 139) call an aspectual marker, *meɬ* of (59B) (the 'consequential' CNSQ, in their terms) is used to indicate "change from present situation: anyway, anyhow; despite the evidence, contrary to expectations." Like other morphological items in contrastive focus contexts, this particle may presuppose contrast between situations in some way – the exact semantics of these elements remains a topic for future research.

(59) A: c̓é ṅ meɬ xeʔ e ṣtqóḷṣ. *[pointing at eggs]*
CLEFT Q CNSQ DEM DET potato
"Are these potatoes?"

B: Tetéʔ xeʔ k ṣtqóḷṣ-c. Heʔúseʔ xéʔe.[23]
NEG DEM IRL potato-3.POSS. Egg DEM.
"That's not potatoes. Those are eggs."
TARGET: c̓é m̓ meɬ e s-ʔíxʷɬ u ciʔ e ṣtqóḷṣ.
CLEFT EMPH indeed DET NOM-other to there DET potato
"[That's]$_{FOC}$ some potatoes there."
(lit. "It is those others over there that are potatoes.")

The "perfective" particle *ƛ̓əm̓* seems to introduce exhaustive interpretations (60, 61B, 62b; Thoma p.c.), even where only two salient alternatives are discussed (eg. babysitting or not in 62a, being here or returning home in (63)).

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[23] Büring (p.c.) points out that the first line of (59B), *heʔúseʔ xéʔe*, though not the target in this task, may also be taken as contrastive (with the NP 'eggs' contrasting with 'potatoes'). Why is it not always clefted, then, but instead often expressed as a nominal predicate construction (see also the response 57B *spáqʷ xéʔe*)? Because the contrastive stress in the English answer here could fall on either the NP (*Those are eggs*) or both demonstrative and NP (*Those are eggs*), I did not make this utterance a target in this task. My feeling is it typically falls on the NP alone (*Those are eggs*), in which case we would expect either a nominal predicate construction or a cleft to be possible (to the extent that the English and Salish cases are parallel in their marking of contrast – an interesting area for future exploration here).

Another answer may be due to the expression of definiteness/indefiniteness: though Salish determiners do not encode definiteness like in English (eg. Matthewson 1996), when something like definiteness must be expressed, a cleft can be used, while an NPC typically expresses indefiniteness (Davis p.c.). In (59B), 'eggs' have not been introduced in the prior discourse (eg. the question in (59A)), so are expressed using an NPC. Rather than thinking of this in terms of (in)definiteness, more recent work by Matthewson (p.c.) accounts for these differences in terms of *familiarity*: determiners encode familiarity, while NPCs do not. Thus, the notion of contrast may be reduced to concepts like exhaustivity, familiarity, (in)definiteness and discourse newness/oldness, or at least interact with the marking of these notions (eg. Horváth 2007).

(60) *Context: Discussing what she did with all the papers that she cleaned up at her home.*

ʔe s-ʔús-t-Ø-ne x̌əm̓ xeʔ tékm us.

and NOM-discard-TR-3O-1SG.TS PERF DEM all 3.CONJ

"And I threw them [all] out."

(61) A: kéʔ k eʔ-s-wʔx-úm tk sqyéytn.

is.it.case IRL 2SG.POSS-NOM-PROG-MDL OBL.IRL salmon

"Do you have any salmon?"

B: téʔ x̌uʔ teʔ k n-s-wʔx-úm tk sqyéytn.

NEG PERS DEM IRL 1SG.POSS-NOM-PROG-MIDDLE OBL.IRL salmon

"I don't have any salmon."

c̓íǩ x̌əm̓ k sqyéytn.

use.up PERF IRL salmon

"The salmon is all gone."

(62) Context: Speaker A has said that she still babysits some of her grandchildren. Speaker B's reply is below.

a. B: cúkʷ x̌əm̓ xeʔ ə n-s-ʔém=it ncéʔ.

stop PERF DEM DET 1SG.POSS-NOM-GUARD=agent 1SG.EMPH

"I quit babysitting myself."

b. B: tékm x̌əm̓ xeʔ skʷúl e scmémiʔt

all PERF DEM school DET children

"All the kids are at school now."

(63) Context: Discussing B's houseguests.

A: Mm. ʔéx n̓ meɬ x̌uʔ nʔéye.

Mm. PROG Q indeed PERS here.

"Mm. Are they still here?"

B: Nwén̓ x̌əm̓ p̓ént xʷúy̓.

already PERF return go

"They already went back."

Finally, the emphatic particle and second position clitic *x̌uʔ,* which can mean 'just' or 'only,' often surfaces in contrastive focus contexts (8B, 20B, 22B, 24, 34B, 61B, 63A). This particle seems to introduce the semantics of exhaustivity which is provided for free by the structure of English clefts.[24] Like emphatic *m̓* and *xʔe*, *x̌uʔ* also seems to overtly specify a contrastive context, though the exact semantics of this particle needs further research. A further example is shown in the discourse below; A and B are discussing starfruit, and the fact that they haven't tried it. In B's reply, nuclear stress remains on the verb (striking in comparison to the English translation).

(64) *Context: discussing starfruit*

A:	Teteʔ	témn̓	k-ex	s-msténe.
	NEG	on.the.contrary	IRL-PROG	NOM-try.TR.3O.1SG.TS

"I haven't tried it."

B:	Téʔ	x̌uʔ	téʔ	k	s-<u>msténe</u>.
	NEG	PERS	DEM	IRL	NOM-try.TR.3O.1SG.TS

"I haven't tried it <u>either</u>."

It is worth noting that the focus particles *m̓, xʔe, meɬ, x̌əm̓* and *x̌uʔ* are all second position clitics, meaning that they are prosodically positioned after the first word in the clause. Thus, like the focus, these focus particles seek out the left edge of the clause. I'll return to this point in chapter 8 (section 8.4.3).

Thus, it seems that simple bare nominal predicates are not suited to contrastive contexts, except when used in conjunction with other morphemes or lexical items that explicitly encode the semantics of contrast elsewhere in the clause. Cleft predicates, on the other hand, are preferred in contrastive contexts, though additional morphology or lexical material is typically employed as well. In more complex sentences, the split between the two forms (clefts and NPCs) in terms of their contrastive use breaks down. This is because, as noted previously, quantifiers are expressed in NPCs rather than clefts; and focused DPs (eg. proper names) are always expressed using clefts, since they cannot be predicates, no matter whether the focus is presentational or contrastive.

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[24] Interestingly, a phonological cognate of this particle seems to serve as the cleft predicate *x̌a* in Musqueam and Chilliwack Halkomelem, as reported in Kroeber (1999: 370; citing Suttles 1984, and Galloway 1977).

In this section I reported the results from a series of tasks in which consultants responded to questions posed by computer characters. The goal was to determine whether the two focus structures differed in their use in new information versus contrastive focus contexts. While both were equally used in new information focus contexts, clefts were preferred in contrastive contexts. We also observed the use of other emphatic clitics in the contrastive context: emphatic *m̓*, demonstrative *xʔé*, aspectual *meɬ*, perfective *ƛ̓əm̓*, and *ƛ̓uʔ*. The use of these additional particles presumably affects the truth conditions of the utterance, and so represents instances of Krifka's *denotation focus*. The structural form of the focus, as a cleft or NPC, does not change however.

3.6 Metalinguistic focus: A residual "stress-focus" effect

There is one context where the focus does attract the greatest prosodic prominence of the utterance, even in Nɬeʔkepmxcin: metalinguistic focus. This has also been informally observed for St'át'imcets Salish by Davis (p.c.) and Caldecott (p.c.), who suggest that the "stress-focus" effect in metalinguistic cases may be a universal feature of human language.

Metalinguistic focus is necessarily of the corrective or contrastive variety, since it involves a speaker correcting a portion of her own or someone else's utterance. These types of utterances have also been termed "metalinguistic negation" (Ducrot 1972, 1973, Horn 1985, 1989). In English, this type of focus can attract the nuclear stress of the utterance to a word (65a), or just a part of a word (65b).

(65) Metalinguistic focus attracts nuclear stress: English

a. Around here, we don't <u>like</u> coffee, we <u>love</u> it. (Horn 1989: 382)

b. I didn't manage to trap two mon-<u>geese</u> — I managed to trap two mon-<u>gooses</u>. (Horn 1989: 371)

The same is true in Nɬeʔkepmxcin. In the first example (66a), the speaker is correcting the transitive ending she utters on the verb root *qʷin–* 'talk.' She begins with *–em*, but changes it to *–es*. The corrected suffix has the highest amplitude and F0 peak in the utterance, having attracted the nuclear stress. In (66b), speaker B objects to A's phrasing of possession (see the literal translation); B uses instead the verb *wʔxum* 'to have,' which is metalinguistically focused and attracts the nuclear stress. Finally, in example (c), speaker B corrects A's use of *smuɬec*, insisting on the reduplicated form *smuɬmuɬec* instead to mark the plural; once again, this metalinguistic focus attracts the nuclear stress, on the augmentative reduplicant here, which is phonetically marked by a dramatic 5 semitone pitch rise and the absolute amplitude peak of the clause.

(66) Metalinguistic focus attracts nuclear stress: Nɬeʔkepmxcin

a. ʔe swét meɬ tk sx̣áy̓x̣iʔwi, qʷin-t-ém--
and who indeed OBL.IRL husband[AUG] talk.to-TRANS-em--
qʷin-t-Ø-és e smʔéʔm-s.
talk.to-TRANS-3O-3TS DET wife-3.POSS
"Which of the husbands talk-- talked to their wives?"

b. A: xʷʔít e sqáqx̣a-s. ...
many DET dog-3.POSS
"They have lots of dogs." (more literally: "Their dogs are many.")
B: xʷʔít e s-wʔx̣úm-s te sqáqx̣a.
many DET NOM-have-3.POSS OBL dog
"They [have]$_{FOC}$ lots of dogs."

c. A: [keʔkeʔɬés neʔ tk smúɬec]$_{FOC}$ Ø ʔex k̓etním̓.
three[AUG] there OBL.IRL woman DET PROG rodfish.MDL
"The ones that are fishing there are [three women]$_{FOC}$."
B: keʔkeʔɬés xeʔ neʔ tk smuɬmúɬec Ø ʔex k̓etním̓.
three[AUG] DEM there OBL.IRL woman[AUG] DET PROG rodfish.MDL
"The ones that are fishing there are three wo[men]$_{FOC}$."

The waveforms for these examples illustrate the type of dramatic deaccenting of non-focused information that is typical of languages like English, but not generally found in Nɬeʔkepmxcin (as we shall see in chapters 4 and 5; see also the figures in chapter 2). Figure 3.1 shows (66b), and figure 3.2 the waveform for figure (66c). While the metalinguistic focus carries a large peak, the non-focused information is greatly reduced in prominence, a pattern we do not typically find in Thompson Salish focus contexts. In figure 3.2, it is in particular the post-focal material *ʔex k̓etním̓* 'that are fishing' that is dramatically deaccented, again a pattern that is common in English (and many other languages), but not in Nɬeʔkepmxcin.

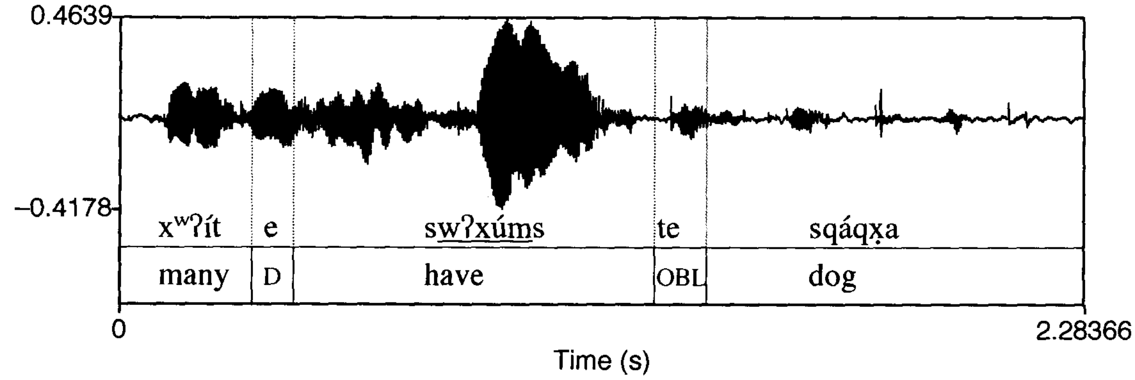

Figure 3.1 Metalinguistic focus: "They [have]$_{FOC}$ lots of dogs."

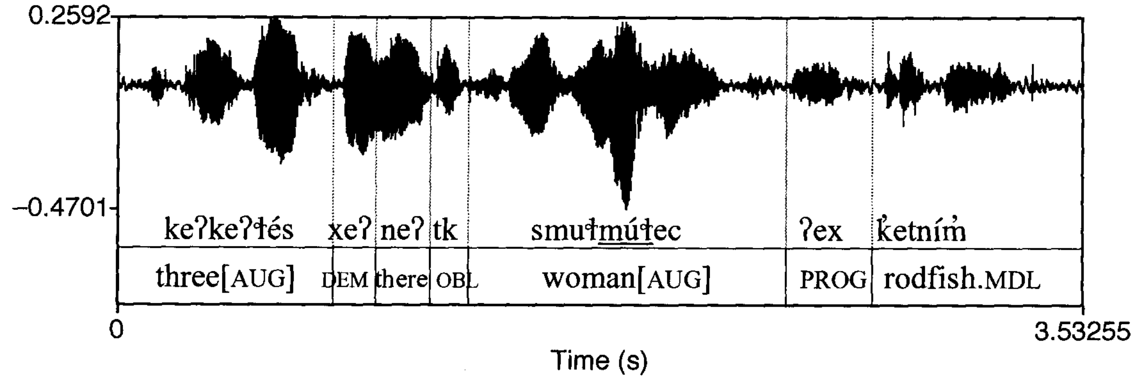

Figure 3.2 Metalinguistic focus:
"The ones that are fishing there are three wo[men]$_{FOC}$."

I will not discuss metalinguistic focus prosody any further in this dissertation.

3.7 Summary

The present chapter has shown that clefts or nominal predicate constructions are used to mark narrow focus, while default word order is used to mark CP, VP or verb focus. In addition, CP focus is sometimes marked using clefts. The results confirm Kroeber's (1997, 1999) "cleft-focus" generalization.

In all cases of focus marking, the left edge of the clause is the relevant position, and not the rightmost nuclear stress position identified in chapter 2. The conclusion is that "stress-focus" cannot be the primary motivation for cleft or NPC focus structures. Predictions of "stress-focus" accounts were not realized in Nɬeʔkepmxcin: narrow focus was not marked by shifting the location of the nuclear stress, nor by moving the focus to the nuclear stress position, nor by scrambling unfocused information away from the nuclear stress site.

Focus projection also operates somewhat differently in Nɫeʔkepmxcin than in English. We saw that in wide focus cases, focus projects from the predicate phrase rather than from the nuclear pitch accent, while narrow focus is restricted to any subconstituent of the predicate phrase. In a "stress-focus" language like English or German, on the other hand, wide focus projects from any subconstituent bearing the nuclear pitch accent. Narrow focus can in turn be restricted to any constituent bearing the nuclear pitch accent (NPA).

Table 3.4 Nɫeʔkepmxcin versus "stress-focus" systems

	Focus type	*Wide focus projects from:*	*Narrow focus restricted to:*
Nɫeʔkepmxcin	Structural "cleft-focus"	Predicate Phrase	Predicate or subconstituent of the Predicate Phrase
English etc.	Intonational "stress-focus"	Any subconstituent of the wide focus bearing the NPA	Any constituent bearing the NPA

I concluded by observing some differences between clefts and nominal predicate constructions. Clefts are preferred in contrastive contexts, though the use of additional morphology plays the most important role in indicating a contrastive interpretation.

For now, it is time to turn to the phonetics of some of the focus cases observed in the present corpus study. I made the observation that nuclear stress is rightmost in Thompson River Salish, and in chapter 4 I will offer detailed support for this claim.

I have also observed in this chapter that, in narrow focus clefts or NPCs, nuclear stress continues to surface rightmost (usually on given material in the residue clause). This observation will be phonetically tested in chapter 5, against the hypothesis that given material is deaccented ("destress-given"). It is also possible that there is a residual "stress-focus" effect in clefts or NPCs. Under this hypothesis, focused material in left edge clefts or NPCs receives greater prosodic prominence than the left edge in the default VSO word order employed in neutral (wide CP focus) sentences; this greater prosodic prominence would surface despite the left edge focus position not being associated with the nuclear stress position on the right. These hypotheses are tested phonetically in chapter 5.

Chapter IV: A Case Study of Nuclear Stress in Nɬeʔkepmxcin

In chapters 2 and 3, I made the informal observation that nuclear stress is rightmost in Nɬeʔkepmxcin, as it is in English (Chomsky and Halle 1968, Cinque 1993, Selkirk 1995). In this chapter, I formally test this observation. I begin by presenting more informal evidence from Thompson and Thompson (1992) and Egesdal (1984), before I provide acoustic phonetic evidence from neutral wide CP focus utterances. Because these utterances lack narrow foci or given information, they constitute the "neutral" focus case and are expected to carry the default stress pattern (Gussenhoven 1984: 17-18, 65-68; Hayes and Lahiri 1991: 56, Selkirk 1995). Finally, I give phonological evidence that nuclear stress is rightmost (following Wasow 2002, Anttila 2007).

4.1 Nuclear stress

Nuclear stress is the most prominent prosodic peak in an utterance. Phonetically, prominence is defined as a combination of increased F0, amplitude and duration (eg. Fry 1958), which is typically measurable on the vowel bearing the nuclear stress. Phonologically, I will define the nuclear stress as the locus of the nuclear pitch accent in an intonational phrase, adopting the well-known model of phonological constituents in the prosodic hierarchy (Nespor and Vogel 1986, Hayes 1989). Using this model will allow more straightforward comparison of the phrasal structure of Nɬeʔkepmxcin to other languages, since it has been commonly employed by researchers across a wide variety of languages.

Other models may differ in terminology (Büring 2003, 2006, Selkirk and Kratzer 2007); see Shattuck-Hufnagel and Turk (1996: 206, Figure 2), for comparison with other theories. For example, Selkirk (eg. 1995b) distinguishes major phrases and minor phrases, where Nespor and Vogel have only p-phrases. For the purposes of this dissertation, nothing hinges on the existence of minor phrases, so I adopt the simpler and more widely used model of Nespor and Vogel.

(1) The prosodic hierarchy (Nespor and Vogel 1986, Hayes 1989)

Utterance (U)
|
Intonational Phrase (i-phrase)
|
Phonological Phrase (p-phrase)
|
Clitic Group (cl-gp)
|
Prosodic Word (PWd)
|
Foot (Ft)
|
Syllable (σ)

In English, the nuclear stress is assigned rightmost, on the most deeply embedded syntactic constituent (Chomsky and Halle 1968, Cinque 1993). Pitch accents are assigned at the level of the p-phrase (the head of each p-phrase bears a pitch accent), and the nuclear pitch accent is carried by the head of the intonational phrase.

The example below shows default parsing for the English wide-focus sentence *John saw Monique*. There are three prosodic words (PWd); PWd stress is shown by acute accent (´).Verb and object are typically parsed into a single p-phrase (Chomsky 1971, Jackendoff 1972, Gussenhoven 1983, Selkirk 1995, Kahnemuyipour 2004, Selkirk and Kratzer 2007), while the subject *John* forms a second p-phrase. This gives us two pitch accents at the p-phrase level. Finally, there is a single right-headed i-phrase carrying the nuclear pitch accent, on *Monique*.

(2)	(X)	i-phrase	(nuclear pitch accent)
	(X) (X)	p-phrase	(pitch accent)
	[Jóhn sáw <u>Moníque</u>]$_{FOC}$.		

Thus, in English, nuclear stress is rightmost. Another way to describe this state of affairs is to say that intonational phrases are right-headed. That is, when more than one p-phrase is parsed into one intonational phrase, the rightmost p-phrase pitch accent will also carry the nuclear pitch accent at the i-phrase level.

In the remainder of this chapter, I show that nuclear stress in Thompson Salish is also rightmost.

4.2 Informal observations about nuclear stress in Nɬeʔkepmxcin

At first glance, Nɬeʔkepmxcin is a stress system similar to English. In their grammar of the language, Thompson and Thompson remark that word-level stress "seems to manifest itself as a complex of loudness, force, and pitch differences, rather similar in type to the phonetic reality of English stress" (1992: 21). This is shown in the Praat picture (Boersma and Weenink 2007), where the initial [a] of the word *sʔáʔaʔ* 'crow' is louder, longer, and higher in pitch than the unstressed second [a]. The pitch tracing is superimposed on the spectrogram.

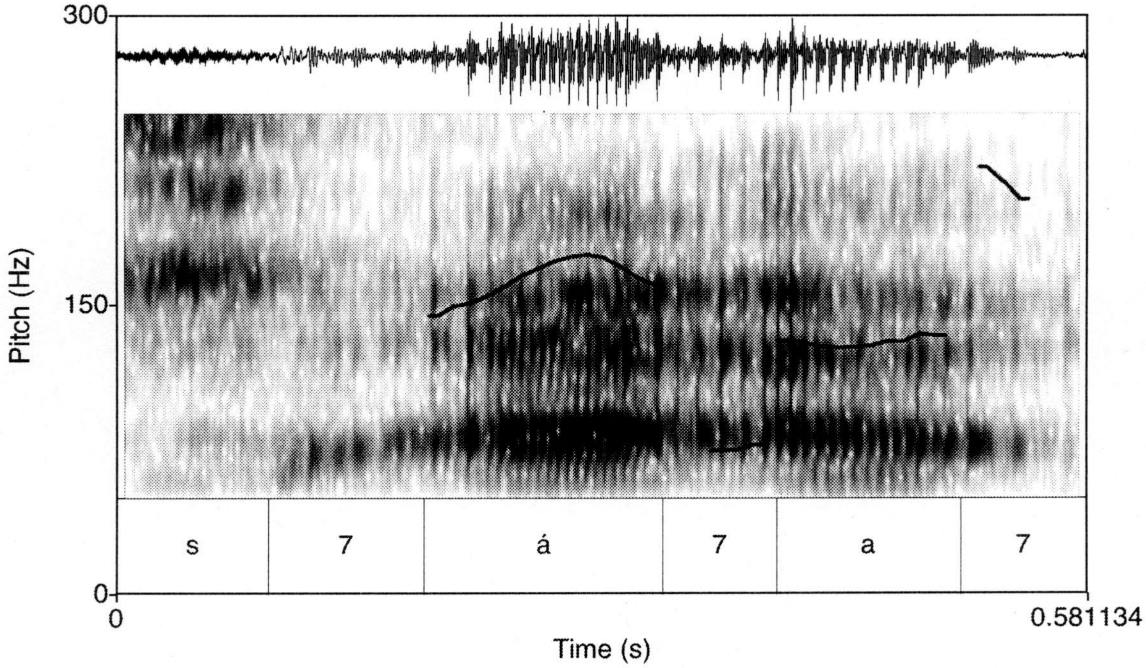

Figure 4.1 Stress on *sʔáʔaʔ* 'crow' (spectrogram shows 0–5000 Hz)

Similarly, Watt et al. (2000) examined stressed /u/ and /a/ vowels in a carrier phrase in Squamish Salish, and found that the acoustic correlates of stress are increased length, higher pitch and greater amplitude (see also Bar-el and Watt 1998). Because they analyzed words from a carrier phrase, their findings probably better reflect the correlates of phrasal accent (possibly the nuclear stress) than strictly word-level stress (Sluijter and van Heuven 1997, 1998, for discussion). Watt et al.'s findings thus also suggest that Squamish speakers use pitch accent in a way similar to English.

Returning to Thompson, Egesdal (1984:109) also identifies Nɬeʔkepmxcin as a "stress-timed language." In his study of the stylized use of speech in Nɬeʔkepmxcin narratives, Egesdal found that classic correlates of stress (duration, pitch and amplitude) were among the suprasegmental features manipulated by storytellers as "rhetorical or performative devices" (1984: 6). Indeed, "rythmic or assonant stylized speech" is employed to "convey salient information toward advancing the narrative, occurring at crucial or exciting points" (Egesdal 1984: 102). It is perhaps all the more surprising, then, that stress is not employed to mark focus, but this is precisely what I will claim (see also Davis 2005: ft.18, on neighbouring St'át'imcets Salish).

Sentence-level accent, like English, appears to be rightmost. I introduced this idea in chapter 2, based on informal observation. Thompson and Thompson (1992:148) also describe the final position in the Nɬeʔkepmxcin clause as having "emphatic force," or being "mildly emphatic." In their desciption of clausal intonation patterns, they always identify the last stressed syllable as standing out ("mid-high with last primary stress"), followed by a drop to the end of the phrase (1992: 24; see (51) in section 1.7). I explicitly formalize these observations as a case of rightmost nuclear stress.

Given the surface verb-object order, this is not surprising: we expect main stress to fall on the object, since cross-linguistically phrasal accent falls on arguments rather than heads (Schwarzschild 1999: 127 "HEADARG" constraint, Büring 2003 "*STRESS-PREDICATE" constraint, Kahnemuyipour 2004, Selkirk and Kratzer 2007).

The following data is from Egesdal (1984: 14, ex. 2.1e), and presents evidence from a traditional narrative that corroborates the idea of rightmost nuclear stress. The character Robin is foretelling "the coming of fish at different points in a legend." Egesdal makes the following observations about these lines of narrative: "Stressed /i/ vowels are lengthened in each phrase except the first. These same vowels also show a sharp rise in pitch." This observation is indicated by underlining the final vowel in each phrase below; in each case, this is the proposed nuclear stress position. Egesdal gives four lines for each line of discourse: underlying form - gloss - translation - surface form. I have added <u>underlining</u> to indicate the nuclear stress in both Nɬeʔkepmxcin and English. Word-level stress and phrasing is as marked by Egesdal.

(3) yuʔ=cín-m <u>cə́ɬ</u>
toast=fish-MDL spurt
"Toast fish—<u>spurt</u>." (as in fish dipping in hot oil)
[yuʔɪc̓ínm̩ c̓íɬ]

yuʔ=cín-m
toast=fish-MDL
"Toast fish."
[yuʔɪc̓ínm̩]

ƛ̓ʔék e písuɬ
arrive DET fish
"The fish are here."
[ƛ̓ʔɛ́k ɛ pí:šuɬ]

zəm̓=cín-m
toast=fish-MDL
"Toast fish."
[zəm̓=c̓í:nm̩]

síp-e-t-e
bend-DRV-TR-IMP
"Bend it!" [fishing rod over the fire to make it strong]
[ší:pɛtɛ]

kʷén-t-e ɬ eʔ-c̓eʔqíntn
grasp-TR-IMP DET 2SG.POSS-angling.rod
"Grab your angling rod!"
[kʷɛ́n-t-ɛ ɬ ɛʔ-c̓ɛʔqé:ntn̩] (adapted from Egesdal 1984: 14, ex. 2.1e)

The first /i/ case in line 1 (the only /i/ lacking longer duration and higher pitch) is the only /i/ which is not the rightmost stressed vowel in its phrase; hence the /i/ in line 1 is predicted to lack these prominent acoustic characteristics if nuclear stress is rightmost.

Interestingly, in later lines, we see that nuclear stress ends up rightmost despite being hosted by old information; in many languages, we have seen that old or given information is deaccented ("destress-given"). Line 3 has a rightmost subject DP *e písuɬ* 'the fish' which carries the nuclear stress, despite being old information. In the previous two lines of discourse, Robin has announced that it is time to toast fish, using a lexical suffix for 'fish'; nevertheless, the DP 'fish' in line 3 gets nuclear stress, even though we might consider only the verb 'arrive' to be new information here.

Line 6 has a similar phenomenon. Here, we find a rightmost object DP 'angling rod' that is given in the previous line of discourse (though not overtly) and a narrowly focused verb 'grab.' 'Grab' is narrowly focused since is contrasts with 'bend' of the previous line. The narrow contrastive focus is expected to attract greater prosodic prominence (Féry and Samek-Lodovici 2006), while old information is expected to be deaccented ("destress-given"). Once again, however, the rightmost given object DP gets nuclear stress, and not the contrastively focused verb. The apparent violations of "stress-focus" and "destress-given" are a common theme in this dissertation, and will be empirically tested in the next chapter.

It is also worthwhile noting that the final lengthening observed by Egesdal occurs on the final stressed syllable in each of lines 2-6, even when it is not the absolutely final syllable. In each case of lengthening at least one or two unstressed syllables follow the lengthened vowel. This suggests that final lengthening is also a marker of nuclear stress.

Egesdal's observations about the phonetic markers of prominence leads us to the next section, where I investigate the acoustic phonetic properties of neutral utterances to determine if there is support for the perceptual observation of rightmost nuclear stress.

4.3 Phonetic observations about nuclear stress

4.3.1 Background

When looking for phonetic correlates of nuclear stress, we can consider pitch (fundamental frequency, or F0, in Hertz or semitones), loudness (amplitude, or energy, in db) and duration (ms). However, it is not enough to simply look for the point in the utterance with the greatest absolute values of these measures. The task is complicated by declination across the breath group: F0 and amplitude (db) show a gradual downward trend from left to right, as air is expelled from the lungs and subglottal pressure decreases (Cohen and 't Hart 1965, Pierrehumbert 1979, 't Hart et al. 1990, Strik and Boves 1995, Trouvain et al. 1998, and many others; Vatikiotis-Bateson and Fowler 1988 on articulatory declination). This general trend can be observed for Nɬeʔkepmxcin in the pitch tracings and waveforms shown in the figures throughout chapter 2. Declination from left to right means that a rightmost peak, such as the nuclear stress accent in English, will still be perceived as more prominent even though its absolute pitch and amplitude is lower than in preceding stressed vowels (eg. Pierrehumbert 1979: 363).

An English example is shown in the pitch tracing and waveform below. The figure depicts the neutral utterance *My móther drinks cóffee* by a female speaker of English. Though nuclear stress is on the rightmost object, *cóffee*, its absolute amplitude and F0 are lower than on the stressed vowel in *móther*. While *móther* has a pitch peak of 187.5 Hz and amplitude peak of 76.6 db, *cóffee* has a pitch peak of 162.7 Hz (a difference of 2.46 semitones) and amplitude peak of 73.3 db (3.3 db less).

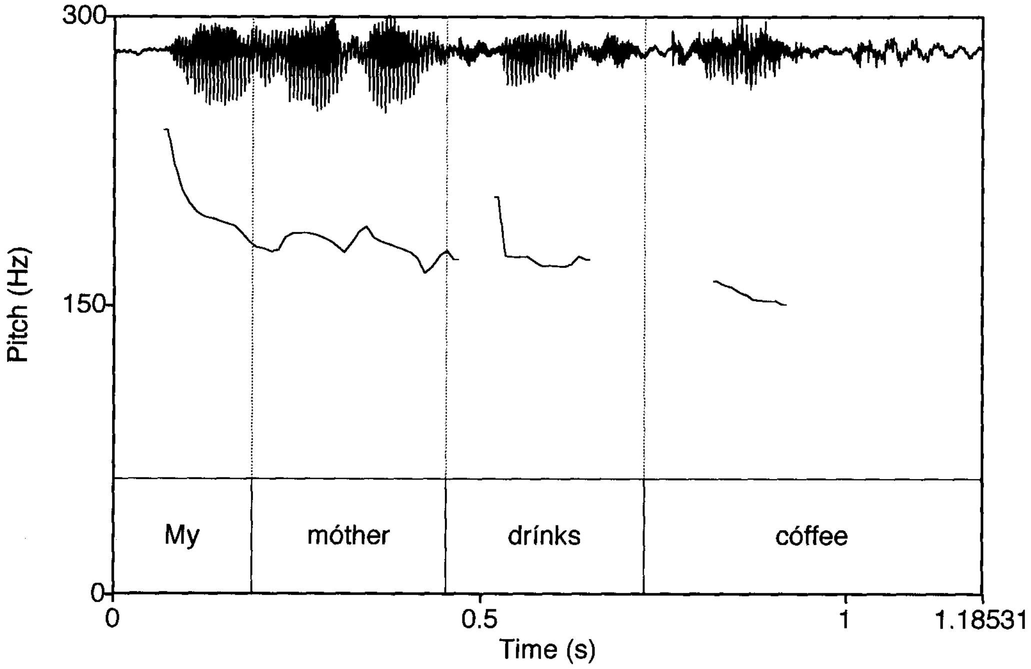

Figure 4.2 Pitch tracing and waveform for the sentence *My móther drinks cóffee*.

Studies of English can give us some idea of the type of declination effects to expect in Nɬeʔkepmxcin, if, as predicted, nuclear stress is rightmost there too. Sorenson and Cooper (1979) found declination of 6.7 Hz/syllable in utterances of 8 syllables (as reported in Pierrehumbert 1979: 368). This length closely matches the average number of syllables in the present set of neutral CP focus Nɬeʔkepmxcin utterances to be examined (9.2 syllables for FE, 8.6 syllables for PM). If nuclear stress is not rightmost in Nɬeʔkepmxcin, we would expect greater declination than this.

Pierrehumbert (1979) tested for the perception of peak F0 declination across utterances with 2 or 3 stressed syllables. Utterances consisted of nonsense syllables with artificially manipulated pitch and amplitude contours. The rightmost syllable was perceived as most prominent even when pitch declined from left to right peaks; the decline was typically between 6.8 and 11.1 Hertz (0.73 to 1.16 semitones). This is less declination than reported by Sorenson and Cooper, but perhaps a function of Pierrehumbert's study being perceptual and using artificial stimuli. The present study, on the other hand, examines production of real speech in Nɬeʔkepmxcin.

Regarding amplitude declination, Pierrehumbert (1979) notes that declines of 4 db are common within an intonation group. Trouvain et al. (1998) examined average amplitude declination for two speakers of English, in utterances containing between 1 and 6 stressed vowels. By examining their figures, we see an approximate amplitude declination between left and right peaks of between 1 to 6 db.

4.3.2 Subjects

The language data was collected from two female speakers of Nɬeʔkepmxcin in their late 60's (FE and PM), as also reported in chapter 3. Both are speakers of the Lytton dialect, and fluently bilingual in English.

4.3.3 Method

Instances of neutral, wide CP focus were identified from the corpus of conversational recordings that served as a source for the data reported in Chapter 3. Recordings were made at the residence of either the language consultants or of the researcher, using a Marantz PMD 670, 671 or 660 digital audio recorder. Recordings were made at 44.1 kHz. Each consultant was recorded on a separate channel using a Countrymax Isomax EMW Lavalier lapel microphone. The microphone was attached onto the exterior of the consultants' clothing, approximately at the sternum.

To account for declination effects, only utterances which were completed in a single breath group were considered. For the present case study, neutral cases (wide CP focus), where everything in the utterance was new information, were used to provide a default intonation marking. These CP focus cases give us a baseline intonation pattern where we expect to find the default nuclear stress pattern.

This criteria yielded 20 utterances for the first speaker, FE, and 19 for the second speaker, PM. For the present acoustic phonetic analysis, I compared the declination between the leftmost stressed syllable and the righmost stressed syllable (see Sorenson and Cooper 1979, Pierrehumbert 1979, 't Hart et al 1990, Strik and Boves 1995, on this "topline" declination measure). Stressed vowels were segmented in Praat (Boersma and Weenink 2007). Utterance length was also identified.

For both individual vowels and entire utterances, a variety of acoustic measurements were then made by using automated scripts in Praat. Pitch measurements of primary interest were the maximum and minimum F0, the standard deviation of F0, and the timing of the F0 maximum and minimum (expressed as a percentage of the vowel duration). Where the Praat algorithm mismeasured F0 (eg. in the presence of glottalization, etc.), measurements were done by hand via visual inspection of the waveform, and automated measurements were disregarded. The average and maximum intensity (in decibels) was also recorded, as was vowel and utterance duration. The number of syllables per utterance was counted, to provide a measure of speech rate.

4.3.4 Results and discussion

I report means (M) and standard deviations (SD) individually for each speaker, due to their differing pitch ranges, though both showed the same fundamental patterns. Basic characteristics indicated that both sets of utterances were comparable. FE had an average utterance length of 9.20 syllables (n=20, SD=3.58), or 2.39 seconds (n=20, SD=0.75). Her speech rate averaged 3.85 syllables/second (SD=0.77). For PM, utterances averaged 8.63 syllables in length (n=19, SD=3.51), or 2.15 seconds (n=19, SD=0.90). PM's speech rate was, on average, 4.12 syllables/second (SD=1.04).

For F0 declination, FE had a mean decline from left to right peaks of 2.51 semitones (n=20, SD=1.93 semitones), or from approximately 211 Hz to 183 Hz. PM showed a similar F0 decline (2.34 semitones, n=19, SD=1.86 semitones), or from an average of 168 Hz to 147 Hz. Rate of decline between peaks was considerably less than that the 6.7 Hz/syllable reported in Sorenson and Cooper (1979, as presented in Pierrehumbert 1979): FE averaged 3.84 Hz/syllable, and PM 3.15 Hz/syllable. If nuclear stress in Nɬeʔkepmxcin were not rightmost, as in English, we would expect larger topline F0 declines.

Amplitude declination was also not greater than that previously reported for English. Amplitude peaks, for FE, actually increased slightly from left to right stressed vowels, shown by a negative declination of –0.24 db (n=20, SD=4.18 db). Average amplitude declined 0.78 db (SD=4.25 db). For PM, amplitude peaks did have a positive decline (M=1.25 db, n=19, SD=5.86 db), as did average amplitude declination (M=2.38 db, SD=5.60 db), but well within the 1–6 db range reported by Trouvain et al. (1998) for English. The results suggest that rightmost nuclear stress is marked by relative suspension of amplitude declination.

There was a final lengthening effect, as observed by Egesdal (3). Rightmost stressed vowels were on average 81.0 ms longer for FE (n=20, SD=76.6 ms) than left edge stressed vowels. For PM the difference was 58.7 ms (n=19, SD=54.6 ms). Lengthening occured when the stressed vowel was on both the final syllable or a non-final one (as also noted by Egesdal – see (3) and discussion), though final stressed syllables incurred greater lengthening (M=123.3 ms, n=10, SD=83.4 ms for FE; M=65.6 ms, n=13, SD=62.0 ms for PM).

Lengthening was less when the rightmost stress fell on a non-final syllable (M=38.5 ms, n=10, SD=38.0 ms for FE; M=43.7 ms, n=6, SD=33.3 for PM).

Finally, there is one more suggestive result. When we consider stressed vowels in between the right and left edges, we can document declination across more than two peaks. In particular, we can calculate the expected F0 value on the rightmost peak based on the declination the first two peaks. For both speakers, the final vowel carried an F0 peak above the declination line expected from extrapolation of the first two peaks ("left" and "middle" in figures 4.3 and 4.4). If nuclear stress is rightmost, as predicted, this is exactly the pattern that we anticipate. Whiskers indicate error bars of one standard deviation in either direction.

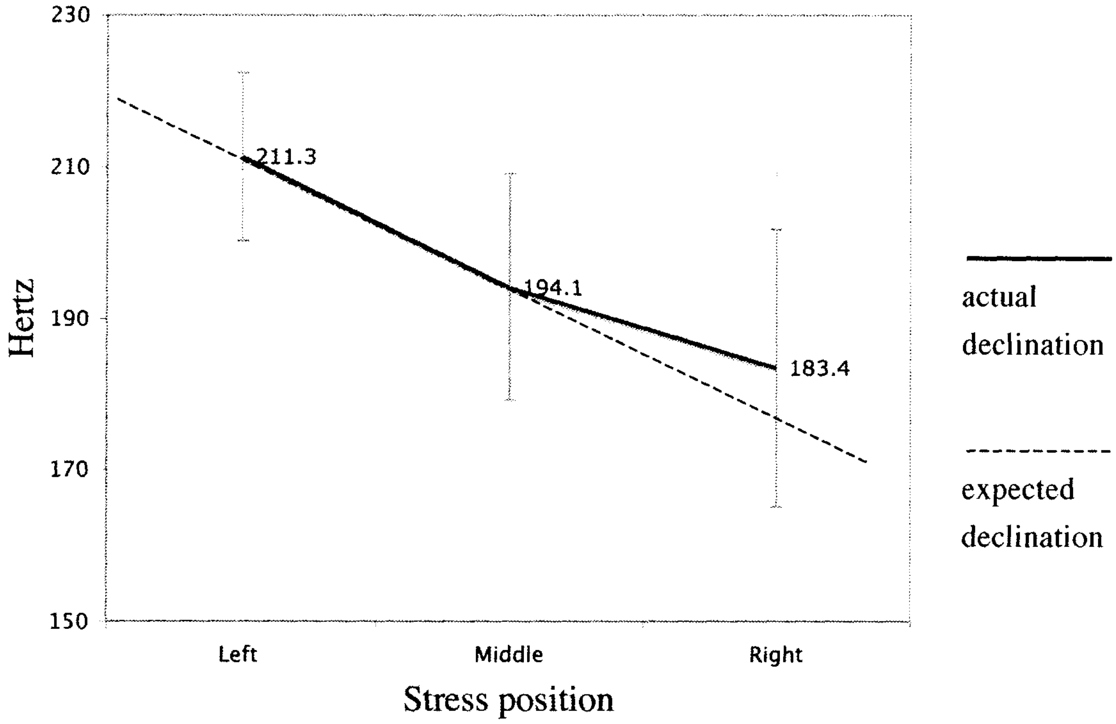

Figure 4.3 F0 declination for FE across multiple peaks: final peak has a mean F0 above the anticipated declination line

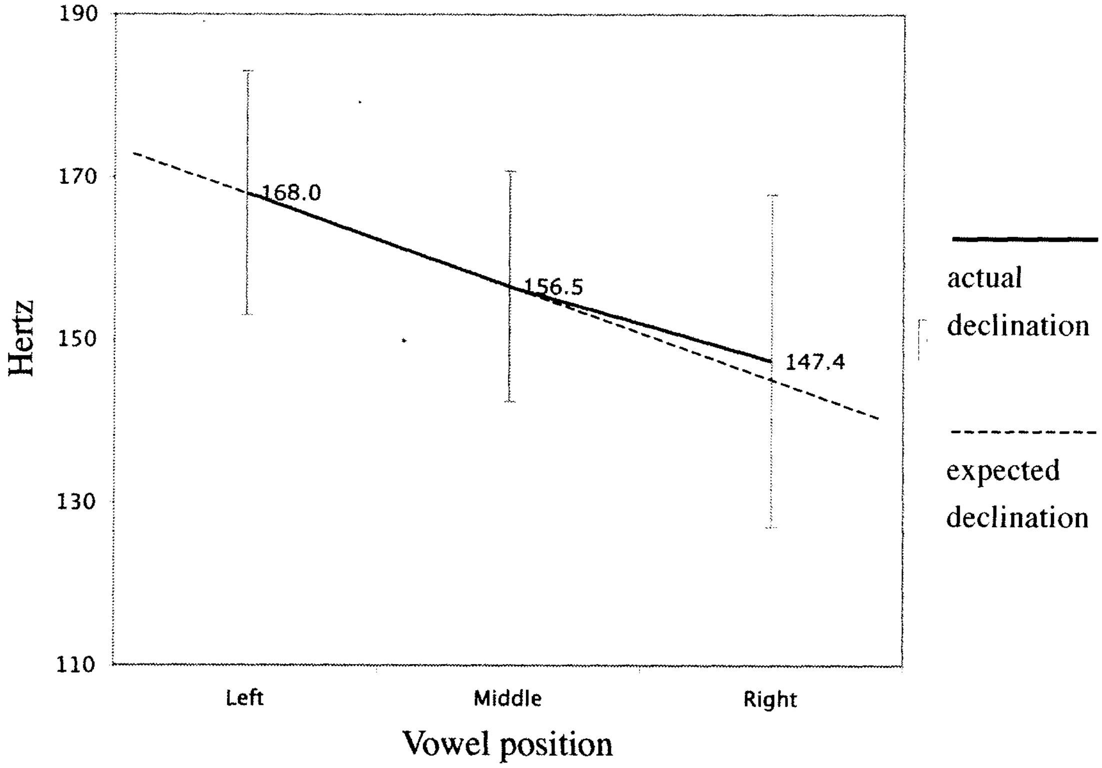

Figure 4.4 F0 declination for PM across multiple peaks: final peak has a mean F0 above the anticipated declination line

As a whole, these results support the informal observations that Thompson Salish is a language with rightmost nuclear stress. The nuclear stress is marked by comparable or lesser F0 declination than English, another language with rightmost nuclear stress; by relative suspension of amplitude declination; and by final lengthening of the syllable bearing the nuclear pitch accent. These results are illustrated in the pitch tracings and waveforms in figures 4.5 and 4.6, where the nuclear stress is indicated inside the dashed line.[25] Both utterances show a general downward trend in F0 and amplitude from left to right.

[25] The steep pitch climbs indicated at the end of each DP in figure 4.5 are a local phonetic effect due to the glottal stop ending these words; that is, these rises are not perceived as part of the general downward declination trend. In addition, the pitch tracing may be exaggerated due to Praat misreading the pitch cue (eg. Gussenhoven 2004: 5-6 on algorithm errors in computing pitch).

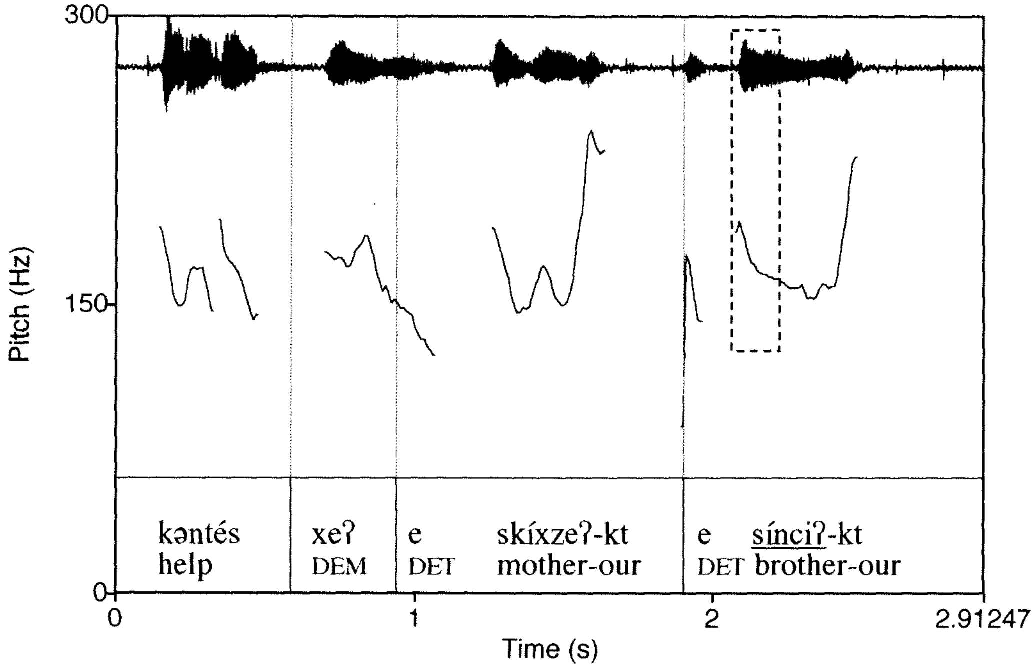

Figure 4.5 Pitch tracing and waveform: "[Our mother helped our brother]$_{FOC}$"

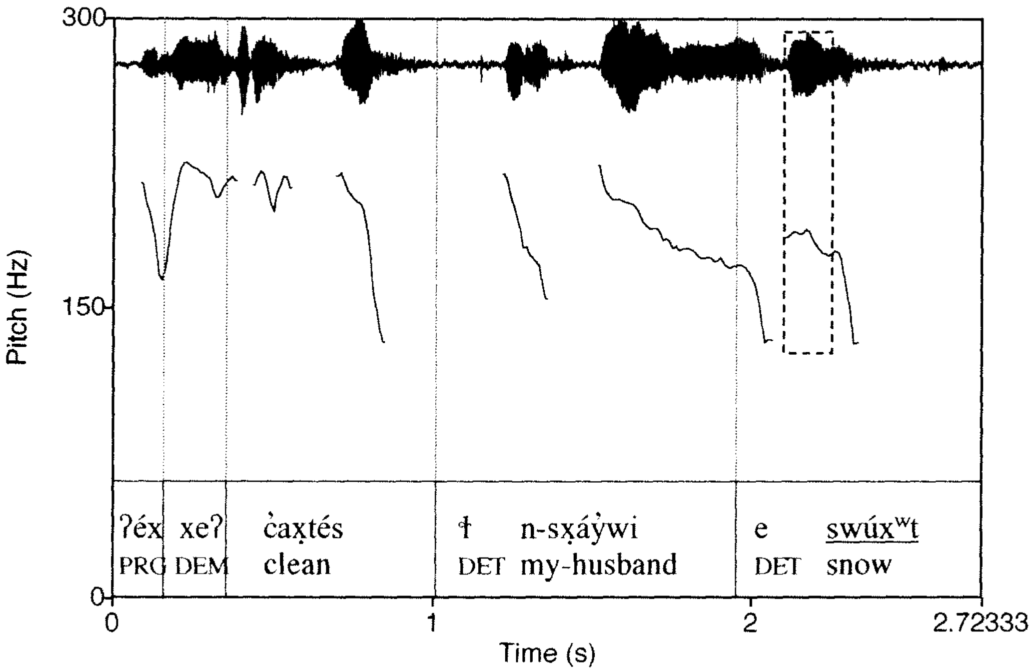

Figure 4.6 Pitch tracing and waveform: "[My husband cleaned up the snow]$_{FOC}$."

The findings are summarized in the table of means below; standard deviations are reported in brackets.

Table 4.1 Declination measures by speaker in default wide focus utterances

MEASURE	FE	PM
GENERAL MEASURES		
Number of utterances examined (n)	20	19
Utterance length (syllables)	9.20 (3.58)	8.63 (3.51)
Utterance duration in (ms)	2.39 (0.75)	2.15 (0.90)
Speech rate (syllables/second)	3.85 (0.77)	4.12 (1.04)
DECLINATION MEASURES FROM LEFT TO RIGHT PEAK		
F0 declination (semitones)	2.51 (1.93)	2.34 (1.86)
F0 declination rate (Hz/syllable between peaks)	3.84	3.15
Peak amplitude declination (db)	–0.24 (4.18)	1.25 (5.86)
Average amplitude declination (db)	0.78 (4.25)	2.38 (5.60)
Lengthening of rightmost stressed syllable total (ms)	81.0 (76.6)	58.7 (54.6)
Lengthening (sentence-final syllable only)	123.3 (83.4)	65.7 (62.0)
Lengthening (non-sentence-final syllable only)	38.6 (38.0)	43.7 (33.3)

4.4 Phonological observations: the direction of heavy NP shift (HNPS)

A third piece of evidence for the location of nuclear stress in Nɬeʔkepmxcin is phonological: heavy NP shift is rightward in languages where nuclear stress is also rightmost (Wasow 2002, Anttila 2007). Heavy NP shift is often grouped with extraposition from heavy NPs, another process which shifts heavy prosodic material to the rightmost nuclear stress position in English (eg. Rochemont and Culicover 1990).

In this section, I'll review recent arguments to this effect by Anttila (2007) for English, another language with rightmost nuclear stress. In addition, I'll review evidence (also mentioned in Anttila) that Japanese shows evidence for HNPS to the left, the same direction as nuclear stress (McCawley 1977, Cinque 1993, Yamashita and Chang 2001).

Then I'll show that Thompson Salish has heavy NP shift to the right, in line with Davis's (2005) findings for neighbouring Lillooet Salish.

Anttila (2007) explores the role of prosody in driving the well-known dative alternation. In English ditransitive verb constructions, full argument NPs may occur in either order; pronouns, however, are not generally produced in final position. This is accounted for because pronouns, as clitics, do not generally carry phrasal stress and thus are poor candidates for occupying the rightmost nuclear stress position (shown by underlining).

(4) a. Pat gave [food] [to Chris] ~ Pat gave [Chris] [food].
b. Pat gave [it] [to Chris] ~ *Pat gave [Chris] [it]. (Anttila 2007: ex. 4)

As the size of two full NPs increases, the same principle holds. Wasow (2002) and Anttila (2007) show that, when there are two full NPs, only the relative weight of the two NPs determines which surfaces at the right. In the ditransitive construction in (5), the theme occupies the rightmost nuclear stress position when heavier than the goal (a). When the goal is heavier than the theme (b), the goal is rightmost. Finally, if both goal and theme are equally heavy, either order is possible (c). The data in (5) comes from a corpus study by Antilla.

(5) a. Goal < Theme: I gave (my síster) (twénty dóllars)
b. Goal > Theme: I gave (the móney) (to my líttle síster)
c. Goal = Theme: I gave (my síster) (the móney) ~ I gave (the móney) (to my síster)
(Anttila 2007: ex. 19)

The coincidence of the larger prosodic unit and the nuclear stress position maximizes the number of word-level stresses that are dominated by the nuclear stress; Wasow (2002) calls this the Principle of End Weight, and Anttila (2007) the Stress-to-Stress Principle. There are several important predictions made by these principles (Anttila 2007). First, if the nuclear stress is "lured away," for example to a sentence-final adverb, the weight effect should be mitigated or eliminated. Anttila (2007: ex. 20) reports several examples from a corpus study that seem to confirm this prediction: where an adverb follows the arguments of a ditransitive verb and bears the nuclear stress, pronouns may follow full NPs.

(6) ... showing [people] [him] through our life. (from Bresnan and Nikitina 2003: 19-20)

For the present study, the prediction is as follows: if left edge predicates in focus structures (which narrowly focus subject, objects, and so on) attract the nuclear stress, there should not be any rightward HNPS effects in narrow focus constructions in Thompson Salish. However, we have already seen that extraposition from complex nominal predicate constructions is rightward (section 3.3.8; see also section 8.4.4).

Secondly, Anttila (2007) predicts that function words, which do not bear stress, should not count for HNPS. This reduces nuclear stress to a prosodic phenomenon, rather than a syntactic one, where, for example, individual nodes (including function word nodes) would count for heaviness. In chapter 2, I claimed that nuclear stress in Thompson Salish was also a prosodic phenomenon, since the rightmost lexical constituent bears the nuclear pitch accent irrespective of its syntactic status (subject, object, adjunct).

Finally, and importantly for the present issue, Anttila (2007) notes that his study predicts that nuclear stress and HNPS coincide. That is, languages where nuclear stress is leftmost should exhibit heavy NP shift to the left. This is counter to processing theories of HNPS, which argue that heavy NP shift is a result of more complex and newer information being processed later in the sentence (eg. Arnold et al. 2000 for detailed discussion). Anttila proposes that Japanese may be one such language with leftmost nuclear stress (following Cinque 1993, and McCawley 1977), and leftward HNPS. Indeed, Yamashita and Chang (2001) report that Japanese has a "long before short" preference, such that heavy NPs are uttered before shorter NPs (but see Ishihara 2001, Shiobara 2004, for an alternate view of the site of nuclear stress). Hungarian is another language with leftmost nuclear stress, on the verb (Vogel and Kenesei 1987, Szendröi 2003: 44, Neeleman and Szendröi 2004). As expected under Anttila's account, heavy NPs in Hungarian are preferably before shorter NPs when in the preverbal nuclear stress position (Hawkins 1994: 131, Yamashita and Chang 2001: B54).

Heavy NP shift is often grouped with extraposition from heavy NPs, another process which shifts heavy prosodic material to the rightmost nuclear stress position in English (eg. Rochemont and Culicover 1990).

(7) I wore $[_{DP}$ a ring t_h $]$ last night $[_{PP}$ of shiny <u>silver</u>$]_h$.

Nɬeʔkepmxcin exhibits both heavy NP shift and extraposition from NPs to the right, but not to the left (Davis 2005 on St'át'imcets; ft. 16 on extraposition from NP). Davis (2005) noted that Upper St'át'imcets, which has a canonical VOS word order, also allows a VSO interpretation just in case the object is prosodically heavier than the subject.

(8) a. xʷíl̓-ən-as [na-záxal̓qʷəm̓-a sáma? sqayxʷ] [kʷ s-Gertie]
seek-TR-3TS [ABS.DET-tall-EXIS white man] [DET NOM-Gertie]
(i) "Gertie was looking for the tall white man." not
(ii) *"The tall white man was looking for Gertie."

b. xʷíl̓-ən-as [kʷ s-Gertie] [na-záxal̓qʷəm̓-a sáma? sqayxʷ]
seek-TR-3TS [DET NOM-Gertie] [ABS.DET-tall-EXIS white man]
(i) "The tall white man was looking for Gertie." or
(ii) "Gertie was looking for the tall white man." (Davis 2005: ex. 55)

In section 2.1.1, I showed that VSO is the canonical order in Nɬe?kepmxcin. The examples below all show sentences with VOS interpretation; the rightward-shifted subject NPs are prosodically heavier than the objects.

(9) V O
c̓éw̓-Ø-Ø-es xe?ə [DP ɬ nk̓ʷən̓ústn]
wash-TR-3O-3TS DEM [DET window]
S
[ɬ n-skʷúze?-s ɬ smúɬec]
[DET 1SG.POSS-offspring DET woman]
"My daughter was the one that washed the windows."
(literally: "My female offspring washed the windows.")

(10) V O S
q̓ʷyéw̓-Ø-Ø-es xe?ə [DP e sq̓ʷíyt] [DP ɬ skíxze?-s ɬ Máry]
pick-TR-3O-3TS DEM DET fruit DET mother-3SG.POSS DET Mary
"Mary's mother picked the fruit."

Extraposition from complex nominal predicates is also common. In the canonical order, subjects follow these complex NP predicates. However, extraposition from the complex NPs targets the rightmost nuclear stress position. Non-heavy predicates (eg. those consisting of a single adjective or noun, as in (c-d)) may not be extraposed to the right. Extraposition is also never leftward (e). In each example, the second position clitic *xe?* follows the first prosodic word.

(11) a. [$_{NP}$ k̓ʷmiʔmeʔéyxkn xeʔ tk sqáqx̣a] e <u>Hérmann</u>.

[$_{NP}$ k̓ʷmiʔmeʔéyxkn	xeʔ	tk	sqáqx̣a]	e	<u>Hérmann</u>.
small	DEM	OBL.IRL	dog	DET	Hermann

"Hermann is a small dog."

b.

[$_{NP}$ k̓ʷmiʔmeʔéyxkn	xeʔ	t_d]	e	Hérmann	[tk	<u>sqáqx̣a</u>]$_d$.
small	DEM	t_d	DET	Hermann	OBL.IRL	dog

"Hermann is a small dog."

c. *

t_d	e	Hérmann	xeʔ	[$_{AP}$	<u>k̓ʷmiʔmeʔéyxkn</u>]$_d$
t_d	DET	Hermann	DEM		small

intended: "Hermann is small."

d. *

t_d	e	Hérmann	xeʔ	[$_{NP}$	<u>sqáqx̣a</u>]$_d$
t_d	DET	Hermann	DEM		dog

intended: "Hermann is a dog."

e.

*[tk	sqáqx̣a]$_d$	xeʔ [$_{NP}$	k̓ʷmiʔmeʔéyxkn	t_d]	e	<u>Hérmann</u>.
OBL.IRL	dog	DEM	small	t_d	DET	Hermann

intended: "Hermann is a small dog."

Thus, weight-driven movement in Nɬeʔkepmxcin targets the right periphery, as we would expect if the nuclear stress is rightmost (Anttila 2007).

4.5 Summary

This chapter has provided a study of nuclear stress in Nɬeʔkepmxcin. Informal observations by myself, Thompson and Thompson (1992) and Egesdal (1984) suggested nuclear stress was rightmost. Acoustic phonetic analysis of neutral, all new information sentences confirmed these observations; this was achieved by comparing the declination patterns of Thompson Salish with English, which also has rightmost nuclear stress. Finally, phonological evidence (Anttila 2007) is also consistent with nuclear stress in Nɬeʔkepmxcin being rightmost: heavy NP shift and extraposition from heavy NPs is to the right – to the nuclear stress position – and never to the left.

In the next chapter, I compare the acoustic phonetics of narrow focus utterances with the neutral wide focus cases examined in this chapter. If information structure in Nɬeʔkepmxcin is marked prosodically according to "stress-focus" and "destress-given" accounts, we would expect the prosodic characteristics of narrow focus utterances to differ from those of the neutral wide focus cases examined in this chapter. We shall see, however, that this is not the case: information structure is not marked through local prosodic prominence.

Chapter V: Phonetics of Intonation

In chapter 4, I gave phonological and acoustic phonetic evidence that nuclear stress (the primary sentential accent of the utterance) is rightmost in Nɬeʔkepmxcin. On the other hand, in chapter 3, we saw that focused constituents consistently appear at the left edge of the Nɬeʔkepmxcin clause, an unexpected result for "stress-focus" theories. Nevertheless, we may expect that narrow focus constituents are still marked by additional prosodic prominence on the focus, and lower prosodic prominence on given material ("destress-given"). I test this hypothesis in the present chapter.

I compare the acoustic phonetics of intonation in neutral (wide focus) contexts, with narrow focus contexts in Nɬeʔkepmxcin. Section 5.1 examines previous research on acoustic markers of prominence in human language. There are two questions here: (i) what sorts of acoustic parameters are relevant for marking discourse status (focus and givenness), and (ii) what degree of difference marks prominence on one item rather than another? After establishing predictions for the acoustic marking of focus, section 5.2 presents a case study comparing intonation contours in neutral focus utterances (the default intonation) with narrow subject or object focus sentences in Nɬeʔkepmxcin. In the present focus-oriented framework, "neutral" focus corresponds to wide CP focus, where all information is new (Gussenhoven 1984: 17-18, 65-68; Hayes and Lahiri 1991: 56). I then examine the acoustics of narrow object and subject focus, to determine if the narrowly focused constituent is marked by additional prominence. In section 5.3, I detail a second case study which compares the effect of data source (spontaneous conversation, scripted conversation, or single sentence elicitation) on intonation. Section 5.4 concludes.

5.1 Background: Acoustic markers of prominence

Before examining the acoustic phonetics of intonation in Nɬeʔkepmxcin, it will be useful to determine what sorts of physical characteristics of the acoustic signal are important for marking prominence. Classic markers of prominence in stress languages are pitch (fundamental frequency), duration, amplitude and vowel quality (Fry 1958, and many others). In this study, I will examine aspects of pitch, duration and amplitude, the markers of prominence identified by Lieberman (1967: 144).

A second question is what sorts of differences indicate relative prominence. For example, if we mark informational prominence with pitch accent, how much additional pitch do we require on focused items so that they are perceived as focused? This perceptual difference has been called a "just noticeable difference" or JND (eg. 't Hart 1981). We may also look at production differences in this regard.

In reviewing the literature on these two questions, I hope to gather a useful set of parameters that can be used as a guideline when investigating acoustic prominence. While no one to my knowledge has developed a successful formula to determine which combination of pitch, amplitude and duration will be perceived as more prominent than another (but see Lieberman 1960 on word stress cues), a summary of previous research findings will provide a useful reference point for individual acoustic parameters at least.

5.1.1 What I will be comparing

In chapter 2, we saw that default word order in Nɬeʔkepmxcin is verb-initial. The corpus study in chapter 3 showed that this is the order typically used in wide CP focus utterances, where all information is new. Wide CP focus cases will therefore serve as a baseline, default intonation pattern with which to compare narrow focus utterances. If narrow focus is marked prosodically, we expect to see some perturbation in the intonation contour of narrow focus utterances when compared to the neutral wide focus cases.

The corpus study in the previous chapter showed that narrow subject and object focus is marked through a left edge cleft or nominal predicate construction. Unfocused (or old, given) information is in the residue clause at the right edge. If a "stress-focus" generalization holds in Nɬeʔkepmxcin, then we would expect the left edge of focus constructions to carry greater acoustic prominence than the same left edge stress in neutral contexts. If a "destress-given" generalization holds, we also expect the right edge of clefted focus sentences to be deaccented relative to the right edge in the neutral broad focus context. The constraints below show one recent instantiation of these discourse prosodic principles.

(1) Stress-Focus:
A focused phrase has the highest prosodic prominence in its focus domain.
(Féry and Samek-Lodovici 2006: 135-6)

(2) DESTRESS-GIVEN: A given phrase is prosodically non-prominent.
(Féry and Samek-Lodovici 2006: 135-6)

Finally, the differences in the left and right edge should also be manifested in greater declination between the prosodic peaks at the left and right edge in narrow focus cleft sentences. On the focus, we are testing for the relative strength of phrasal pitch accents, while on given material we are looking for the absence of phrasal pitch accents (see the discussion in section 1.5). As such. changes in F0 are the primary cue (as opposed to word level stress, where amplitude and duration are thought to be of greater importance – Sluijter and van Heuven 1996a, 1996b, Shue et al. 2007).

Numerous scholars distinguish the prosodic properties of pitch accents at the phrasal level (p-phrases and i-phrases) from word level stress and unstressed items (Halliday 1967b, Vanderslice and Ladefoged 1972, Beckman and Edwards 1994, Sluijter and van Heuven 1996a, 1996b, Astruc and Prieto 2006). I follow these accounts in defining stress as a property of the head of a prosodic word, while accent is a property of phrasal prominence. Accents are realized on word-level stresses, but add additional prosodic characteristics. (In fact, this view suggests that "stress-focus" accounts would in fact be more accurately called "accent-focus.") In the present study, we will not be concerned with unstressed items, but will distinguish two levels of accentuation (simple p-phrase accents versus nuclear pitch accents), and the possibility of stressed but unaccented items. I follow the prosodic hierarchy proposal of Nespor and Vogel (1986) and Hayes (1989), who propose the following prosodic constituents (see Shattuck-Hufnagel and Turk 1996: 206, Figure 2, for comparison with other theories).

(3) The prosodic hierarchy (Nespor and Vogel 1986, Hayes 1989)

Utterance (U)
|
Intonational Phrase (i-phrase)
|
Phonological Phrase (p-phrase)
|
Clitic Group (cl-gp)
|
Prosodic Word (PWd)
|
Foot (Ft)
|
Syllable (σ)

In the default CP focus case in (4), there are three prosodic words (PWd), whose heads are marked by acute accent (´). Verb and object are typically parsed into a single p-phrase (Chomsky 1971, Jackendoff 1972, Gussenhoven 1983, Selkirk 1995, Kahnemuyipour 2004, Selkirk and Kratzer 2007), while the subject *John* forms a second p-phrase. This gives us two pitch accents at the p-phrase level. Finally, there is a single right-headed i-phrase carrying the nuclear pitch accent, on *Monique*. Example (4) thus shows three levels of stress: a stressed but unaccented verb *saw,* the pitch accented subject *John,* and the direct object *Monique* carrying the nuclear pitch accent. The horizontal line separates phrasal accents from word-level stress.

(4)	(X)	i-phrase	(nuclear pitch accent)
	(X) (X)	p-phrase	(pitch accent)
	[Jóhn sáw Moníque]$_F$.		

When the object is focused in a cleft (5), it attracts the main sentential stress (the nuclear pitch accent). The old, or "given," information in the residue clause *that John saw* is deaccented. This is achieved by not parsing *that John saw* into a p-phrase at the interface of syntax and phonology (Selkirk and Kratzer 2007). This means that, in Step 1, only the focus *Monique* is parsed into a p-phrase. The given material *that John saw* is parsed recursively into a p-phrase by the phonological component in Step 2, and then into an i-phrase. Deaccenting after the focal accent is a strategy employed in diverse languages (Schwarzschild 1999; Benkirane 1998 on Moroccan Arabic, Botinis 1998 on Greek, Grønnum 1998 on Danish, Kratochvil 1998 on Beijing Chinese, 't Hart 1998 on Dutch, and many others). This means that *John* and *saw* have word level stress, but no phrasal pitch accents (see section 1.5: ex. 48-49, for more discussion about adopting this particular representation). Givenness is shown by a subscript 'G.'

(5)	(X)	i-phrase: STEP 2
	((X))	recursive p-ph: STEP 2
	(X)	p-phrase at interface: STEP 1
	It was [Moníque]$_{FOC}$ [that Jóhn sáw]$_G$.	

In the default intonation case (wide CP focus – (4)), the rightmost stress is most prominent. In the focused cleft case (5), the leftmost (lexical) stress is most prominent. So, we would expect, all else being equal, that clefting focused items will result in greater prosodic prominence at the left edge in comparison with the default stress marking. Acoustically, we want to know what cues distinguish the nuclear pitch accent from simple p-phrase pitch accents.

Secondly, the given material in (5) does not receive phrasal stress due to deaccenting. Thus, we would expect given material at the right edge of a cleft to be marked with lesser prominence than the right edge in the default stress case (4). Acoustically, we would thus like to know what cues discriminate pitch accents (default intonation) from just word-level stress ('deaccented' material) (Sluijter and van Heuven 1996a, 1996b, 1997).

Thirdly, there should be greater declination between the left and right edge stresses in the narrow focus cases as compared to the default intonation in (4), since in (5) we are dropping from a nuclear pitch accent at the left to unaccented material at the right (Eady and Cooper 1986). Measuring declination as the difference in peak heights (the left and right phrasal accents in (4), and the left phrasal accent and rightmost stress in (5)) will reflect differences in the accentual level on these stressed syllables rather than "true" declination, but accentual differences are precisely what we are interested in. This has been called a "topline" declination measure ('t Hart et al 1990; also Sorenson and Cooper 1979, Pierrehumbert 1979, Strik and Boves 1995). It is worth noting that all three measurements can be recuced to the result of a single discourse principle (Büring, p.c.); that is, DESTRESS-GIVEN accounts for lack of accent on given material, greater accent on the focus (by default), and a resulting greater declination between the two. However, because a constituent can be both focused and given, I continue to employ notions of both focus and givenness (see section 1.5 for more discussion).

Now let us consider the parallel Thompson Salish examples. In chapter 2, I showed that the neutral word order in Nłeʔkepmxcin is verb initial. Chapter 4 showed that nuclear stress is rightmost. In the acoustic phonetic analysis that follows, I will consider only wide CP focus utterances containing a single i-phrase (for example, those which were split into two breath groups were not analyzed). An example is shown below.

(6)	(			X)	i-phrase	(nuclear pitch accent)
	(X)	(		X)	p-phrase	(pitch accent)
	[Wík-t-Ø-ne	xeʔ	e	Moníque]$_{\text{FOC}}$.		
	see-TR-3O-3S	DEM	DET	Monique		
	"[I saw Monique]$_{\text{FOC}}$."					

In (6), there are two phrasal stresses, one on the verb, and one on the direct object *Monique* (I'll provide more evidence for Thompson Salish phrasing in chapter 6). This means that there are two pitch accents at the p-phrase level. This differs from languages like English, where verb and object are typically parsed into a single p-phrase (4) (but see Beck 1999 on Lushootseed Salish, Barthmaier 2004 on Okanagan Salish, for similar claims; Hayes and Lahiri 1991 on individual p-phrases for verbs and arguments in Bengali, Schafer and Jun 2002 on Korean, Nespor and Sandler 1999 on Israeli Sign Language, Ishihara 2007 on Japanese). In (6), the nuclear accent is rightmost at the i-phrase level. At the prosodic word level, there are also just two stresses in this example (shown by acute accent ´).

When focusing an object or subject DP, a cleft structure is employed (Kroeber 1997, 1999). The surface form closely parallels clefts in English (Percus 1997, Hedberg 2000); I'll take up this matter in more detail in chapter 7.

(7)	Cleft predicate		Cleft head	Cleft clause/residue clause	
	It	is	[α]$_{FOC}$	that has the property Π	
	It	is	[Monique]$_{FOC}$	that I saw.	
	c̓é	xeʔ	[e Moníque]$_{FOC}$	[e	wík-t-Ø-ne]$_{G}$.
	CLEFT	DEM	DET Monique	DET	see-TR-3O-1SG.TS

"[I saw]$_{G}$ [Monique]$_{FOC}$."
(literally "It is [Monique]$_{FOC}$ [that I saw]$_{G}$.")

If we find the same "stress-focus" and "destress-given" constraints in Nɬeʔkepmxcin as we do in English, we should see the following sorts of prominence marking in a Thompson Salish cleft:

(8) Expected prominence relations in clefted foci [hypothetical]

(		X		)	i-phrase: STEP 2
(		(X)		)	recursive p-phrase: STEP 2
		(X)			p-phrase at interface: STEP 1
c̓é	xeʔ	[e Moníque]$_{FOC}$	[e	wík-t-Ø-ne]$_{G}$.	
CLEFT	DEM	DET Monique	DET	see-TR-3O-1SG.TS	

"I saw [Monique]$_{FOC}$."
(literally "It is [Monique]$_{FOC}$ [that I saw]$_{G}$.")

If information structure is marked acoustically in Nɬeʔkepmxcin like in English, then the acoustic cues should be parallel to the English case. In terms of focus marking, *Monique* is now at the left edge of the clause (the first lexical element, and the first p-phrase accent). The left edge accent of the clause should thus be acoustically distinguished by carrying a nuclear pitch accent instead of just a p-phrase pitch accent in the default case in (6). In terms of givenness marking, the right edge of the clause should now lack a pitch accent, while the right edge carries the nuclear pitch accent in the default case. Again, if this sort of deaccenting occurs in Nɬeʔkepmxcin, it should be marked by measurable acoustic correlates. Finally, the declination between stressed items within each utterance in the focused cleft cases should be greater than declination in the default case.

Table 5.1 Comparisons to be made

	DEFAULT UTTERANCE (WIDE CP FOCUS)		NARROW FOCUS UTTERANCE (CLEFT OR NPC)
1.	Left edge stress	⇔	Narrow foci at left edge
2.	Right edge stress (nuclear stress)	⇔	Given material at right edge
3.	Declination within each utterance	⇔	Declination within each utterance

5.1.2 Acoustic correlates of prominence: overview

Now the question arises as to what sorts of acoustic measures are relevant for the comparisons proposed in Table 5.1, and what constitutes a perceptual difference for each. In many respects, what we know about which combinations of acoustic cues are important for nuclear stress is still best summed up in the abstract of Fry (1958):

> Differences of stress are perceived by the listener as variations in a complex pattern bounded by four psychological dimensions: length, loudness, pitch and quality. The physical correlates of these perceptual factors are the duration, intensity, fundamental frequency and formant structure of the speech sound waves.
>
> Fry (1958: 126)

Fry (1958) reported on an experiment using artificial stimuli varying on the dimensions of duration, intensity and F0. Fry suggested that pitch outweighs duration and intensity as a cue for stress (a common theme in much of the literature to be examined). Changes in fundamental frequency, Fry found, tend to be judged as "all or nothing:" the fact that a change took place is more important than the magnitude of that change. Fry also found that stress is judged to be incrementally greater as duration and intensity increase, with duration playing a larger role than intensity, but F0 the dominant factor.

As Sluijter and van Heuven (1996a, 1996b, 1997) point out though, many experiments like Fry's have failed to differentiate correlates of stress from correlates of pitch accents (1996b: 2471 for discussion). This is because all utterances, even single word utterances, are parsed into prosodic phrases, which carry pitch accents, and many studies have confounded these two variables. Sluijter and van Heuven therefore compared the acoustic markers of pitch accented syllables with stressed but unaccented syllables. They showed that F0 movement characterizes pitch accents but not lexical level stress in stress-accent languages like Dutch and English (1996a, 1996b; also Choi et al. 2005, Shue et al. 2007; de Moraes 1998:188 on Brazilian Portuguese; Suomi et al. 2003 on Finnish).

F0 has therefore been perhaps the most consistently linked acoustic cue for pitch accents. Many studies of intonation in general have concentrated primarily on the role of F0 (eg. 't Hart, Collier and Cohen 1990, Gussenhoven 2004, and many others). In a stress language like Thompson Salish, we thus expect pitch to play an important role in cueing phrasal accent.

Overview of aspects of F0 change serving as accentual cues. Gussenhoven (2004) provides an excellent overview of F0 cues that signal greater emphasis:

(9) F0 cues for emphasis and example language (Gussenhoven 2004)

a. higher F0 peaks (English)
b. greater F0 excursions (English)
c. later F0 peaks (English, German)
d. earlier F0 peaks (Serbo-Croat)
e. different pitch accents in narrow focus versus wide focus (European Portuguese)
f. higher F0 register (Dutch)

Gussenhoven reports on various experiments examining what aspects of F0 are interpreted as signalling greater emphasis on one constituent over another. Basic cues are a higher peak F0, and a greater pitch excursion (a greater range between the maximum and minimum F0). The experiments reviewed, in this and the following sections, that look at height of the F0 peak find a difference of 2 to 7 semitones as a signal of emphasis (results vary by language and level of phonological accentual difference). In Nêhiyawêwin (Plains Cree), it is falling pitch which is taken as the marker of prosodic prominence (Edwards 1954, Muehlbauer 2005), and can be characterized as a low F0 accent L* (Muehlbauer 2005).

Gussenhoven also remarks that a later F0 peak can "substitute" for greater pitch excursion as a prominence cue (2004: 91-92). Later peaks are presumably interpreted as allowing for more time to implement a greater pitch excursion; indeed, accented syllables in American English are produced with both greater pitch excursions and later peaks (Sluijter and van Heuven 1996a, Choi et al. 2005, Shue et al. 2007). In Hamburg German (Peters 2002), narrow focus is also indicated by later pitch peaks.

In some cases, earlier peak accents are also characteristic of focal accents. Gussenhoven (2004: 93) reports that Serbocroat (Smiljanic and Hualde 2000) has pitch peaks that are 100 ms or so earlier on focus accents. Contra Shue et al. (2007), Eady and Cooper (1986) found that American English speakers used earlier pitch peaks in sentence-initial narrow focus accents. Gussenhoven surmises that earlier pitch peaks are more difficult to implement; presumably this can reflect the speaker's use of what Gussenhoven calls the Effort Code, the idea that important information is highlighted through additional articulatory effort (2004: 85-93).

Differences in timing of pitch peaks may also indicate that different pitch accent tunes are employed in narrow versus wide focus contexts. In European Portuguese, for example, broad focus is marked with a H+L* pitch accent, while contrastive narrow focus is marked with *H+L (Gussenhoven 2004: 61, 86-87; Frota 1998).[26]

Dutch listeners also perceived higher registers as signalling more emphasis (though British interpreted higher registers as less emphatic – Chen et al. 2002).

I will continue by reporting on what specific acoustic correlates have been found to indicate focus accenting across languages.

5.1.3 Acoustic correlates of focal accenting (nuclear pitch accent)

There are few studies, to my knowledge, that directly answer the question regarding our measurement 1 (what is the acoustic difference between a p-phrase accent at the left edge, and an i-phrase accent in the same position?). There are a few examples, sometimes estimated from tables provided by previous researchers (for example, a number of the studies in Hirst and Di Cristo 1998 provide useful tables or figures in this regard).

American English: Eady and Cooper (1986). This study directly addresses our measurement 1. Eady and Cooper had six subjects read both questions and statements with either "neutral focus" (wide focus), or narrow focus on the initial or final element. They found that narrow focus on the initial element resulted in 31.2% increase in duration (1986: 407, Table II). Interestingly (and unlike most other studies reviewed here), F0 peaks on the initial word did not increase significantly from the neutral condition when the initial word was narrowly focused; instead, there was a significant drop in pitch after the focal accent (deaccenting) of about 46 Hz (–5.6 semitones), between the focus and the next stressed word. This drop was 3.6 semitones greater than in the neutral case. Subsequent stressed words were

[26] It may be possible to characterize this difference as an early peak alignment in the narrow focus cases (Pulleyblank, p.c.).

deaccented approximately 10-20 Hz (–1.4 to –2.7 semitones) when compared to the neutral focus sentences (1986: 407-408). The authors conclude:

> ... sentence-initial focus does not result in an increased F0 value on the focused item. Instead, the presence of emphatic stress at this position is realized by an increase in word duration ... and by a very sharp post-focus F0 drop. (1986: 408)

Eady and Cooper also determined that initial narrow focus had an earlier pitch peak (at 0.35 of the vowel duration, standard deviation 0.13) than the same word in a neutral or given context (0.61 and 0.63 of vowel duration respectively, standard deviations 0.14 and 0.11). Earlier pitch peaks are more difficult to implement, and thus may reflect additional effort on the speaker's part to mark focused information (Gussenhoven 2004: 85, 93). Curiously, another similar study (Shue et al. 2007) found that American English speakers employed a later pitch peak in this position. This suggests that timing of pitch accents is not a consistent cue, or may vary with dialect.

American English: Cooper et al. (1985). In a related study, the authors presented two experiments to test the acoustic correlates of contrastive stress. In experiment 1, the authors had six subjects read a prepared sentence in answer to a questions. The location of the focus was manipulated in the question. Like Eady and Cooper (1986), Cooper et al. found that focus on the initial word did not result in significantly higher F0 peaks, but did manifest itself in a durational increase of 38% – 41%, and a sharp drop of 4.14 semitones to the next stressed word (1985: 2146, table III). A follow-up experiment with longer test sentences produced similar results, with a durational increase of 36.9% on initial focused words. Again, they found no evidence for higher F0 peaks on initial words, but F0 excursion appeared important, with a "dramatic" post-focus drop of 4.8 semitones to the next stressed word (1.5 semitones greater than in the neutral case) (1985: 2151, table VI).

American English: Eady et al. (1986). In a follow-up set of studies, the authors again investigated the influence of duration and F0 in differentiating neutral focus sentences from narrow focus sentences (exactly what we will be examining). In their experiment 1, seven subjects were asked to answer questions with prepared sentences; the questions manipulated the focus type. For initial words, there was no difference in duration or peak F0 between words in the neutral focus condition and narrow focus condition. A second experiment, using shorter speech stimuli (comparable to the data in the present experiment), did find significant effects. This time F0 peaks were 1.5 semitones higher on narrowly focused initial words in comparison to the neutral focus condition. An additional 2.3 semitone drop to the next stressed word in comparison to the neutral condition, and a 27% earlier pitch peak, also indicated greater pitch excursion (i.e. pitch range) on narrowly focused items. In addition, initial focused words were 34.4% longer than in the neutral case (1986: 244, table 3). The authors concluded that the acoustic effects of focus were more apparent in shorter utterances, comparable in length to those in the present study.

American English: Shue et al. (2007). Shue et al. examined accented versus unaccented syllables for ten speakers of American English, for the sentences "Da**GA**da gave Bobby doodads" and "Dagada gave Bobby **DOO**dads." The authors looked at both statements and echo questions. These examples again very closely parallel the cases to be examined in the present study. The focal accent on *Dagada* (English subject focus) places the focus at the left edge of the clause, like we would expect in narrow focus Salish clefts, while the material at the right edge is given. The focal accent on *doodads,* in comparison, has the nuclear accent at the right edge, just like default wide CP focus cases in Thompson Salish. Shue et al. found that stressed syllables at the left edge carrying a H* nuclear pitch accent were, for males, "about 15 Hz higher" (about 2 semitones) than without the nuclear accent, while the H* peak was realized only at the start of the following syllable (about a 100ms delay) (2007: 2626-7).

Finnish: Suomi et al. (2003). A similar experiment manipulated the location of focal accent in Finnish sentences read by speakers in a laboratory study. The authors distinguished strong accent (eg. contrastive focus), moderate accent, and deaccented words, though the measurements occurred quite late in the utterance as opposed to the initial position of interest in the present study. Strong accent corresponds to our focus condition, while moderate accent corresponds to our neutral condition. The study examined words with the syllable structures CVCV, CVVCV, and CVCVV. Strong accents (eg. focused words) had a 2.0 semitone greater pitch peak than accents in the neutral condition, and a 3.4 semitone greater F0 fall (2003: 130). Vowels in the strong accent condition were from 24 – 37% longer for V_1, or 11 – 34% longer for V_2 (2003: 122), than vowels under moderate accent or no accent.

Dutch: 't Hart (1981). In a perception experiment, 't Hart tested listeners' ability to distinguish the difference in prominence-lending pitch movements in utterances containing two stressed syllables. 't Hart manipulated the amount of pitch rise and the end pitch of the speech stimuli. He found that listeners were broadly grouped into three levels of perceptual ability: quite a few failed to discriminate pitch-rise differences of less than 4 semitones ("nondiscriminators"); another group falsely based the pitch comparison on the final pitch point ("final pitch discriminators"); and the remaining subjects could discriminate differences of 1.5 to 2 semitone in peak F0 heights. The results were essentially the same when repeated with piano tunes rather than speech stimuli. 't Hart concluded that, in order to be interpreted as a more prominent accent, the second pitch movement in running speech should be at least 3 semitones greater in range than the first.

Swedish: Gårding (1998). Gårding reports on a study of Southern Swedish, comparing pitch contours in a default utterance ("focus-free" in her terms) with rightmost sentential accent, and the same utterance with narrow focus on the initial pitch accent. This comparison closely parallels the Thompson Salish cases to be examined here. Placing narrow focus on the leftmost pitch accent resulted in an additional 20 Hz or so (2.3 semitones) in the upward pitch movement (1998: 125, Figure 4).

Danish: Grønnum (1998). Grønnum reports on a study comparing neutral intonation in sentences with three stress peaks, with contrastive focus on one of the three stress peaks. For the left edge, the additional focal prominence resulted in 2 semitones greater F0 peak, and an F0 fall that was 4 semitones greater, than phrasal stress alone on the left edge (1998: 142-3, Figure 6).

Greek: Botinis (1998). Botinis reports on a production experiment for Greek, and finds that focal stress added an additional 12.1% duration over and above simple phrasal stress (1998: 302). Focal accent also seems to result in much larger pitch movements, with a greater F0 peak of 100 Hz or more, though exact details are not recoverable from the graphic representations provided (1998: 303, Figure 7).

Hungarian: Fónagy (1998). Fónagy reports that contrastive focus ("focalisation with implication" in his terms) in Hungarian results in a sharp 7-8 semitone pitch rise on the first syllable of the focal constituent, followed by a large 13-14 semitone fall. Unfortunately comparison with the default case is not provided, so we are unable to determine how much greater these rises and falls are for a p-phrase accent alone (1998: 340-341, Figure 3).

Beijing Chinese: Kratchovil (1998). The author reports the results of a study of the sentence *méiyǒu <u>àiqíng</u>* 'there was no love,' with non-emphatic phrase-final stress (underlined), with *<u>méiyǒu</u> àiqíng* where emphatic stress falls on the first word. The test consists of a single pair of sentences taken from a corpus recording of a single speaker, and should be treated with caution regarding generalizability. Shifting the primary accent to the first word resulted in overall higher tone (presumably because the first word carries higher tone than then second), but crucially an additional 120 Hz (7.4 semitones) on the focused *<u>méiyǒu</u>* F0 peak, and an additional 95 Hz difference (4.3 semitones) in the fall between the focused *<u>méiyǒu</u>* F0 peak and the deaccented *àiqíng* F0 peak (1998: 428-429, Tables 2-3).

Nêhiyawêwin (Plains Cree): Cook and Muehlbauer (2005). In a general descriptive study examining acoustic cues to various constituents in Plains Cree, the authors find that pitch (F0) plays an important and consistent role. Cook and Muehlbauer report that right-edge focus has "exaggerated pitch movement" that is clearly visible in pitch tracings, as well as final lengthening and glottalization.

Summary: correlates of nuclear pitch accent. Given the above findings, the best estimates for acoustic markers of nuclear pitch accent on left edge focus are as follows. 2 semitones greater F0 peak seems to be a conservative estimate for the increase in maximum F0 on focused items. In absence of a higher F0 peak, we might look for a greater F0 range, again conservatively estimated at 3.6 semitones (Eady and Cooper 1986). Timing of the F0 peak may be offset in either direction by a rather large value (100 ms), but we'll adopt the more conservative estimate from Eady and Cooper (1986) and Eady et al. (1986), where F0 peak was reached 27% earlier in initial words carrying the nuclear stress. Alternately, we can look for delay of pitch peak into the following syllable, which should be indicated by overall late timing of the F0 peak in the vowels of interest. There are fewer estimates of durational increases, but we may expect duration of vowels carrying the nuclear stress to increase anywhere from 12% to 34% in comparison to vowels carrying just a p-phrase stress. The table on the next page summarizes the results.

Table 5.2 Acoustic cues for left edge narrow focus accent (nuclear pitch accent), as compared to wide focus accent (p-phrase pitch accent)

DEFAULT UTTERANCE (WIDE CP FOCUS)		NARROW FOCUS UTTERANCE (CLEFT OR NOMINAL PREDICATE CONSTRUCTION)
Left edge stress	⇔	**Narrow foci at left edge**
American English		• No additional F0 peak, +3.6 semitones greater fall (Eady and Cooper 1986) • +1.5 semitones peak F0, +2.3 semitones greater fall (Eady et al. 1986) • +2 semitones peak F0 (Shue et al. 2007)
Swedish		• +2.3 semitones peak F0 (Gårding 1998)
Dutch (perception)		• ≥3 semitones greater pitch excursion on prominent peak ('t Hart 1981)
Danish		• +2 semitones peak F0, +4 semitones greater F0 fall (Grønnum 1998)
Hungarian		• 7-8 semitones F0 rise, 13-14 semitone F0 fall (Fónagy 1998)
Finnish		• +2.0 semitones peak F0, +3.4 semitones greater F0 fall (Suomi et al. 2003)
American English		• earlier pitch peak (0.35 vs. 0.61/0.63) (Eady and Cooper 1986) • earlier pitch peak (0.37 vs. 0.64) (Eady et al. 1986) • later pitch peak (100 ms) (Shue et al. 2007)
Hamburg German		• later pitch peak (Peters 2002)
Serbocroat		• earlier pitch peak (100 ms) (Smiljanić and Hualde 2000)
American English		• +31.2% duration (Eady and Cooper 1986) • +34.4% duration (Eady et al. 1986)
Greek		• +12.1% duration (Bonitis 1998)
Finnish		• +11-37% duration (Suomi et al. 2003)

5.1.4 Acoustic correlates of deaccenting

The experiments reported in this section all tested laboratory speech. Experimenters had speakers produce a target word in a carrier phrase. The focal accent of the utterance was varied to be either on the target word, or on another word in the carrier phrase. Results from these tests thus illustrate what acoustic measures characterize pitch accented syllables from stressed but unaccented syllables. The target word was stressed on either the first or second syllable. To what extent these properties are generalizable to spontaneous discourse is a matter for debate, but at least some research suggests that the similarities of "lab speech" and spontaneous speech are more pronounced than the differences (Klatt 1976: 1209, Lickley et al. 2005). I'll return to this issue in section 5.1.6 and section 5.3.

Dutch, American English: Sluijter and van Heuven (1996a, 1996b). In an experiment, Sluijter and van Heuven (1996b) had 12 Dutch speakers produce a two-syllable minimal pair differing only in stress placement (/'ka:nɔn/ 'cannon' versus /ka:'nɔn/ 'canon') in a carrier phrase, *Wil je [target] zeggen* 'Will you say [target].' The words were produced either with a pitch accent ([+Focus] condition), or with a contrastive focus on the verb *say* in the carrier phrase instead ([-Focus] condition). Words were produced both in lexical form, and as reiterant 'nana' syllables. A similar experiment with 6 speakers of American English (1996a) looked at four two-syllable verb/noun pairs that are distinguished by stress placement (eg. 'permit'), again in the carrier phrase *Will you say [target].*

The key findings relevant to the present study can be summarized as follows.

Sluijter and van Heuven found that accented syllables [+Focus] have a significantly greater intensity than unaccented syllables. In Dutch this difference was found to be 2.9 db, regardless of which of the syllables in the two-syllable Dutch words examined carried the stress (1996b: 2475, Table II). In American English, Sluijter and van Heuven found the effect of stress on intensity to be small (1-3 db), but found a "considerably larger effect of [focus] accent" – an estimated 5 db, based on their graphic presentation (1996a: 3, Figure I).

The second finding of relevance concerns the value of duration as a cue for deaccenting. Duration was found to be a very reliable cue of stress, but remained relatively unaffected in the additional presence of pitch accents (1996b: 2475). Accented syllables were, however, still slightly longer (significantly so) than unaccented ones. Sluijter and van Heuven measured the duration of syllables while the present study measures just vowel duration, but the percentage change from accented to unaccented position is still relevant. In the two-syllable Dutch words examined in Sluijter and van Heuven (1996b: 2475, Table II), accented syllables were 11.9% longer than unaccented syllables when the first syllable carried the stress, and 6.1% longer when the second syllable carried the stress. In American

English (1996a: Table I), accented syllables were 19.6% longer when the first syllable was stressed, and 17.3% longer when the second syllable was stressed. Because Dutch has a verb-final order and hence a phrase-final nuclear accent when the verb is contrastively focused, the Dutch data measures deaccenting on prenuclear stresses; the American English data is therefore more relevant, since deaccenting was measured in the postfocal position, just like the right edge of Salish clefts.

It is worthwhile noting that the experimental methodology employed by Sluijter and van Heuven depends on DESTRESS-GIVEN being operative in the target language; if given information is not deaccented, then the correlates of pure word-level stress can not be straightforwardly measured.

Catalan: Astruc and Prieto (2006). A similar experiment with 6 female Catalan speakers found that accented syllables had about 32 Hz (3.5 semitones) greater peak pitch, 11% greater duration, and 4 db greater intensity than unaccented but stressed syllables (calculations adapted from their Figure 1). Astruc and Prieto noted that increased duration tended to be tied to increased pitch excursions on accented syllables, presumably to provide more time to realize the greater pitch movement.

Finnish: Suomi et al. (2003). Another experiment in the spirit of Sluijter and van Heuven, this time on Finnish, found no significant differences in length when comparing vowels under moderate accent (our neutral condition) and word-level stress only (eg. deaccented vowels) (2003: 120, 122). However, pitch did play an important role, with moderate accent (eg. neutral condition) words having a 4.0 semitone movement to the pitch peak, and 4.1 semitone fall thereafter; in contrast, word-level stress alone showed no tonal movement (2003: 130).

Scottish English: Turk and White (1999). This series of studies also looked at the effects of contrastive accent on duration, but in Scottish English. For one-syllable words, the authors found a 23% increase in length for accented versus unaccented but stressed words, while two-syllable words showed a 16% increase in duration when accented (1999: 184, Figure 3). A later experiment also found 23% increases in length, this time on the initial accented syllable in three-syllable words (1999: 197, Figure 7). Interestingly, this accentual lengthening spread rightwards and sometimes leftwards to neighbouring syllables within the Prosodic Word boundary.

American English: Shue et al. (2007). As discussed in the previous section, this study tested 10 speakers of American English, who were asked to produce utterances varying the location of the focal stress. For stressed syllables at the right edge, females had approximately 40 Hz greater F0 on accented than on unaccented syllables (about 3.5 semitones), but no peak delay (2007: 2627, Figure 2).

American English: Okobi (2006). This dissertation examined the acoustic correlates of stress and accent in American English (5 adult male speakers) on both novel and real words. Focus accents were either on the target word ("My grey [**DI**di]$_{FOC}$ / [**STA**tue]$_{FOC}$ drove here"); or on the preceding adjective ("My [**BLUE**]$_{FOC}$ didi / statue drove here") or possessor ("[**YOUR**]$_{FOC}$ grey didi / statue drove here"). Like the Sluijter and van Heuven experiments, this allowed comparison of pitch accented syllables with unaccented syllables. Novel words were *didi, dodo,* and *dada*, with stress either on the first or second syllable. Because the present study also examines the correlates of accent in Thompson Salish across vowel types, Okobi's results (computed from the measurements provided in his appendix B) should prove informative here.

Okobi found that higher F0, greater peak intensity and longer duration correlated with pitch accented (2006:43-46), as compared to deaccented syllables.[27] The differences were greater when stress was on the second than the first syllable (an effect attributed by Turk and White 1999 to greater intrinsic prominence at the right edge of a prosodic constituent, the PWd in this case), and the differences were also generally greater for the real words than for the nonsense words.

When the first syllable was stressed, pitch acccented syllables were 4.7 semitones higher in their F0 peak, 4.2 dB louder, and 18.4% longer than deaccented syllables, for nonsense words. Real words were 7.3 semitones higher in pitch, 4.95 dB louder and 15.6% longer when pitch accented than when deaccented.

When word-level stress fell on the second syllable, pitch accents were 6.7 semitones higher, 6.15 dB louder, and 27.7% longer than deaccented syllables for nonsense words. For real words, a pitch accent resulted in 7.9 semitones greater F0, 6.15 dB more amplitude and 27.5% longer duration.

Averaged across conditions, pitch accented syllables were 6.65 semitones higher, 5.36 dB louder, and 22.3% longer than unaccented, but stressed, syllables.

American English: Eady and Cooper (1986). Eady and Cooper had six subjects read both questions and statements with either "neutral focus" (wide focus) or narrow focus on the initial or final element. There was a significant drop in pitch after the focal accent (deaccenting) of about 46 Hz (–5.6 semitones) between the focus and the next stressed word. Subsequent stressed words were deaccented approximately 10-20 Hz (–1.4 to –2.7 semitones) when compared to the neutral focus sentences (1986: 407-408).

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[27] Okobi also found greater amplitude as measured in the first harmonic, H1*, but I will not be considering spectral measures in this study.

American English: Cooper et al. (1985). In a related study, the authors reported on an experiment in which six subjects read answers to questions manipulating the site of contrastive focus. Cooper et al. found that final post-nuclear unaccented words had a 2.5 semitone lower F0 peak (1985: 2146, table III). In addition, the durational difference between an unaccented final word and a final word carrying the nuclear stress was an average of 16.7%. A follow-up experiment with longer sentences and comparison to a neutral (wide focus) condition found somewhat different results. Unaccented final words were not shorter than in the neutral focus condition (1985: 2145, table IV). However, they were 2.3 semitones lower in F0 peak (1985: 2151, table 6).

American English: Eady et al. (1986). In follow-up study, the authors tested for the difference between neutral (wide CP) focus and narrow focus. In their experiment 1, deaccenting on the rightmost word produced no difference in F0 peak or duration from the neutral sentence condition in this study. A second experiment, using shorter speech stimuli, deaccented righmost words had 1.4 semitones lesser F0 peaks and 8.3% lesser duration than in the neutral case (1986: 244, table 3), but no difference in F0 peak timing (0.23 and 0.22 of word duration respectively).

Western Arabic (Morocco): Benkirane (1998). Benkirane reports that the rightmost nuclear stress is characterized by approximately a 6 semitone pitch rise, and an octave fall (12 semitones) to the end of the utterance. Unaccented syllables have no notable pitch movement (1998: 351-352, 356).

Warlpiri: Butcher and Harrington (2003). In a study with two speakers of Warlpiri, the authors investigated the acoustic effects of words in a [focused] and [unfocused] condition. Focused words carried a prominent pitch accent, while unfocused words lacked this pitch movement. The differences in F0 between the two conditions ranged from about 3.5 to 5.5 semitones (results estimated from their figure 1).

Summary: correlates of deaccenting. Best estimates for acoustic correlates for deaccenting based on the above findings are as follows. Maximum F0 peaks are expected to be approximately 3.5 semitones (or more) lower on deaccented material (eg. Shue et al. 2007). Maximum amplitude is expected to be 3 db (or more) lower, while deaccented vowels are from 6% to 28% shorter in duration.

Table 5.3 Acoustic cues for deaccenting of given material in nuclear stress position

DEFAULT UTTERANCE (WIDE CP FOCUS)		NARROW FOCUS UTTERANCE (CLEFT)
Right edge stress	⇔	**Given material at right edge**
Catalan		• –4 db (Astruc and Prieto 2006)
Dutch		• –2.9 db (Sluijter and van Heuven 1996b)
American English		• –5 db (Sluijter and van Heuven 1996a) • –5.36 dB (Okobi 2006)
American English		• –3.5 semitones F0 peak (Shue et al. 2007) • –6.65 semitones F0 peak (Okobi 2006) • –1.4 to –2.7 semitones F0 peak (Eady and Cooper 1986) • –1.4 semitones F0 peak (Eady et al. 1986) • –2.3 to –2.5 semitones F0 peak (Cooper et al. 1985)
Catalan		• –3.5 semitones F0 (Astruc and Prieto 2006)
Western Arabic (Morocco)		• –6 semitones F0 (Benkirane 1998)
Finnish		• –4.0 semitones F0 (Suomi et al. 2003)
Warlpiri		• –3.5 to –5.5 semitones F0 peak (Butcher and Harrington 2003)
Dutch		• –6.1% to –11.9% duration (Sluijter and van Heuven 1996b)
American English		• –17.3% to –19.6% duration (Sluijter and van Heuven 1996a) • 0% to –16.7% duration (Cooper et al. 1985) • –8.3% duration (Eady et al, 1986)
Finnish		• no significant change in duration (Suomi et al. 2003)

5.1.5 Declination

Our final measurement concerns the amount of topline declination between left and right edge stresses within each utterance. As air is expelled from the lungs during the course of an utterance, subglottal pressure drops, and is associated with an intrinsic accompanying decline in F0 and intensity from left to right (Cohen and 't Hart 1965, 't Hart et al. 1990, Strik and Boves 1995, Trouvain et al. 1998, etc.). Because we are interested in the effect of declination on peak prominences, I will measure declination as the difference in acoustic prominence between stressed syllables within an utterance. This means that we won't have a "true" measure of declination, but a "topline" measure indicating differences in accentual level (eg. 't Hart et al. 1990).

The wide focus case will give us a default declination level for comparison. In narrow focus clefts, under a stress-focus account, the nuclear stress will shift leftward to the focus. This should result in increased prominence on the left edge, while deaccenting of given material at the right edge of clefts ("destress-given") will result in decreased prominence there. As a result, declination between stressed syllables at the left and right edge in narrow focus clefts should be greater than in the default case.

I have not found any studies that directly address the question of which phonetic differences in declination contours are relevant for perceiving differences in prominence. We can test to see if the various measures of interest (F0 peak, F0 range, and amplitude declination) differ between the two focus types, and then consider if any differences are likely to be perceptually salient. Section 4.3.1 presented some background on declination measures for English, and neutral declination values for Nɬeʔkepmxcin are reported in section 4.3.4 and table 4.1.

5.1.6 Effects of data source

A secondary question to be answered in this study is the effect of the type of data on the acoustic realization of intonation. Data came from either spontaneous utterances, scripted role-playing conversations, or single sentence elicitations. Knowing that single sentence elicitations, for example, exhibit similar acoustic characteristics as utterances taken from spontaneous conversation would suggest that speakers produce natural sounding utterances even when not in full conversational mode – that is, given sufficient context, a speaker is able to "imagine" herself in the midst of a conversation and produce an appropriate utterance (see also Matthewson 2004). Since single sentence elicitation or scripted conversation can more rapidly and efficiently produce relevant linguistic data, we would like to know if these types of data also exhibit similar acoustic characteristics. This issue is addressed in a second study, reported in section 5.3.

We might expect that the acoustic characteristics of spontaneous conversation will differ from those of both scripted conversation and single sentence elicitations.

However, some previous research suggests that the acoustic differences between naturally produced speech and "lab speech" are less pronounced than the similarities (Klatt 1976: 1209, Lickley et al. 2005). Lickley et al. (2005) had speakers read test sentences in an examination of postnuclear F0 minima in Dutch falling-rising questions. Of particular interest in this study, the authors investigated concerns that read speech in "laboratory phonology" studies is not a valid method for characterizing the intonation of spontaneous speech. On the other hand, even if there are "higher level" cognitive differences in the planning of read versus spontaneous speech (Levelt 1989), there may not be differences in "lower level" processes where "the planned utterance is translated into phonological/phonetic code .... That is, once a speaker has chosen a contour, it is a reasonable assumption that the contour's phonetic properties are largely or wholly predictable from phonetic and phonological factors alone" (2005:172). To test these hypotheses, the authors had 4 speakers produce a task-oriented dialogue using the Map Task (Anderson et al. 1991), which resulted in 21 questions directly comparable to those tested in the reading task. Both examination of the descriptive statistics and some statistical analysis failed to find any difference between read speech and spontaneous speech produced in the task-oriented experiment. The authors conclude that read speech can be "used as a source of evidence in experimental work that addresses phonological and phonetic questions" (2005:179), with its obvious practical advantages of using tightly controlled speech materials.

Similar findings in the present study would prove useful for field linguists investigating intonation, or other phonetic and phonological phenomena.

5.2 Case study: neutral versus narrow focus

In this section, I report the results of a detailed acoustic phonetic study of different focus types in Thompson Salish; neutral, wide CP focus on the one hand, and narrow object or subject focus on the other.

5.2.1 Subjects

The language data was collected from two female speakers of Nɬeʔkepmxcin in their late 60's (FE and PM). Both are speakers of the Lytton dialect, and fluently bilingual in English.

5.2.2 Method

Different instances of focus were identified from the corpus of conversational recordings that served as a source for the data reported in Chapter 3. Recordings were made at the residence of either the language consultants or of the researcher, using a Marantz PMD 670, 671 or 660 digital audio recorder. Each consultant was recorded on a separate channel using a Countrymax Isomax EMW Lavalier lapel microphone. The microphone was attached onto the exterior of the consultants' clothing, approximately at the sternum.

To account for declination effects, only utterances which were completed in a single breath group were considered. For the present case study, neutral cases (wide CP focus), where everything in the utterance was new information, provided a default intonation marking (Gussenhoven 1984: 17-18, 65-68; Hayes and Lahiri 1991: 56, Selkirk 1995). Narrow subject and object focus, which is either clefted or produced in a nominal predicate construction, was compared to the default case to determine if and how the acoustic signal differed. Thus, one factor in the analysis was focus type: neutral focus, or narrow focus.

For each utterance, stressed vowels were identified in Praat (Boersma and Weenink 2007). Of primary interest were the vowels of the left and right edge. The first lexical vowel at the left edge is the verb in the default case, and typically the focused noun in the narrow focus utterances. These were the vowels that were compared when testing the hypothesis that narrowly focused items carry greater acoustic prominence.

Absolutely leftmost stressed vowels were also measured (sometimes these were functional items, like the cleft predicate or auxiliaries). These were the vowels that were measured for the purposes of calculating utterance declination from left to right stresses, since they had higher absolute F0 and amplitude peaks than following material.

At the right edge, the rightmost stressed vowel in the default case is the nuclear stress, while in the focus cases it is old/given information in the cleft clause. In addition, other stressed vowels throughout the utterance were identified, in order to provide a better overall picture of the declination contour throughout the utterance, as well as a better account of variability. Thus, the second factor in this analysis was vowel position: leftmost lexical stress (the verb, or the focus), rightmost stress (the nuclear stress position), or other.

Utterance length was also identified in Praat. For both individual vowels and entire utterances, a variety of acoustic measurements were then made by using automated scripts in Praat. Pitch measurements of primary interest were the maximum and minimum F0, the standard deviation of F0, and the timing of the F0 maximum and minimum (expressed as a percentage of the vowel duration). Where the Praat algorithm mismeasured F0 (eg. in the presence of glottalization, etc.), measurements were done by hand via visual inspection of the waveform, and automated measurements were disregarded. The average and maximum intensity (in decibels) was also recorded, as was vowel and utterance duration. The number of syllables per utterance was counted, to provide a measure of speech rate.

5.2.3 Statistical analysis

Results were analyzed for means (M), standard deviations (SD), and statistical significance. Numbers of observations (n) and degrees of freedom (df) are also reported where relevant.

The choice of analysis method is not immediately obvious. Since the data reflect repeated observations from each subject, a repeated measures ANOVA may seem like a promising candidate; but with only two subjects, this technique lacks statistical power (Ladd and Schepman 2003, Lickley et al. 2005). Because many phonetic experiments are based on a similar model, in which many observations are collected from a small pool of subjects, there is precedence for adapting statistical analyses to meet the needs of the experimental design. Ladd and Schepman (2003: 86-87) analyze the data from each of their two subjects by treating each speakers' data in a separate between-subjects ANOVA. Another possibility, employed in an experiment with seven subjects by Lickley et al. (2005:167), is to treat speaker as a between-items factor.

The primary objection to these modifications is that they violate an underlying assumption of the ANOVA framework, namely that each data point is independent: "Independence simply means that the observations within or between the [groups] are not paired, correlated, matched, or interdependent in any way" (Hopkins, Hopkins and Glass 1996: 207). In the present design, we can be reasonably certain that the observations comparing the left edge of wide focus sentences with the left edge of narrow focus sentences are fairly independent, since they come from different utterances (though still from the same vocal tract). Similarly, the measurements comparing the rightmost nuclear stress position across utterances are relatively independent.

However, observations taken within a single utterance (the left edge, the right edge, and other stressed vowels in between) will be less independent since they originate in the same breath group. In this case, the mathematical ANOVA model "is likely to underestimate the true variability of the results, leading to tests that are biased towards rejection of null hypotheses" (Keppel and Wickens 2004: 142-3, citing Scariano and Davenport 1987). Since the present hypothesis is that speakers of Thompson Salish do not mark focus or givenness with pitch accent, we expect not to find a significant result in an ANOVA framework; as such, violations of independence actually work against the present hypothesis since they increase the likelihood of its rejection. The ANOVA therefore seems a suitable method for testing for main effects and interactions. Nevertheless, reporting a series of non-significant results is not necessarily desirable.

Rather than using the ANOVA framework for analysis, another option is the t-test. The t-test easily allows the null hypothesis to be set to one which anticipates a difference between means (Keppel and Wickens 2004: 72). Since the null "stress-focus" hypothesis predicts that focused items will be marked with additional acoustic prominence, we can adapt the t-test to examine the anticipated difference for each acoustic parameter. Failure to mark focus acoustically will then be indicated by a significant statistical result. Since we are interested in specific comparisons (left edges in wide focus versus narrow focus utterances, and right edges, but not intermediate points), we can ignore the other stressed syllables which are the primary cause of concern for the violation of the assumption of independence.

The use of a null hypothesis where two means are expected to be unequal, and an experimental hypothesis where the means are expected to be equal, is somewhat unusual. However, it should be made clear that there is nothing in the statistical model requiring a null hypothesis of $\mu_1 - \mu_2 = 0$. Null hypotheses can perfectly well "specify outcomes rather than absence of an effect" (Keppel and Wickens 2004: 72), and an honest examination of the focus marking literature presents just such a case. The overwhelming result of research into focus marking is that focus is marked by additional prosodic prominence; this is the null hypothesis, and its rejection would be an interesting result. Thus, where possible, I specify a null hypothesis based on "stress-focus" generalizations in the literature.

This methodology risks missing the possibility that it is some combination of F0, amplitude and duration which marks prominence, rather than values of individual variables (Vatikiotis-Bateson, p.c.). A multivariate or regression model could get at this possibility, but is beyond the scope of the present study. However, even in English, no one to my knowledge has developed a model which predicts which combination of acoustic parameters mark prominence, and virtually all of the studies reviewed in the previous sections also examine acoustic variables individually (and often only one variable: F0). Thus, the present statistical design is broadly comparable to other research in the field. Furthermore, by reporting means and standard deviations for multiple aspects of all three indicators (F0, amplitude and duration), I also go some distance beyond many other studies in terms of providing a complete picture of speech prosody in Nɬeʔkepmxcin.

For the present case study, planned comparisons of the means between the left edge focus position and the right edge nuclear stress position were carried out using independent sample t-tests for each variable (using pooled variances). Due to the number of variables analyzed and number of comparisons performed (29 t-tests are reported on in total, for this case study), a conservative p-value of 0.001 was chosen for significance, to avoid an inflated family-wise error rate. With p=0.001, the family-wise error rate is limited to 0.029, close to the standard value of 0.05. To indicate trends in the data, however, I distinguish three levels of significance in the tables used to illustrate results: p<0.05 and p<0.01 are marginally significant (indicated with * and ** respectively), while p<0.001 is the chosen significance level (indicated by ***).

Since the phrasal accents that are under investigation are pitch accents, change in F0 parameters ought to be the primary phonetic indicator of both increased accent level on focused material, and deaccenting of old information. I will begin by considering the local effects of pitch at the left edge focus position, and then at the right edge nuclear stress position. I will conclude by examining declination effects across utterances as a whole. I report means (M), standard deviations (SD), number of observations (n), and degrees of freedom (df) where appropriate.

5.2.4 Results: the leftmost lexical stress

The left edge: general comparisons. In the two categories to be compared (neutral wide CP focus, and narrowly focused DPs), general measurements found that the utterances in the two groups were similar. Mean utterance duration was 2.33 seconds in the default cases (n=41, SD=8.29 sec), and 2.48 seconds in the narrow focus sentences (n=65, SD=7.65), a non-significant difference (t=0.898, df=104, p>0.3). The stressed vowels to be compared (in the first lexical item from the left edge) were an average of 2.41 syllables from the left edge in the default case (n=41, SD=2.76), and 2.48 syllables from the left in the narrow focus case (n=65, SD=1.92). Again, this difference was non-significant (t=0.137, df=104, p>0.8). These findings suggest that any differences found between the two utterance types is not likely to be due to any declination effects, but rather will reflect other factors (such as information structure).

The left edge: pitch (F0). In section 5.1, we saw that increased phonetic prominence could be marked by higher F0 peaks, later (or earlier) F0 peaks, and greater F0 excursions.

At the left edge, narrowly focused subject or object DPs were not marked with higher F0 peaks than left-edge verbs in the default wide focus utterances. For FE, left-edge verbs in the default case had a mean maximum F0 of 202.5 Hz (n=22, SD=16.9 Hz). Focused NPs in narrow focus clefts in fact had a slightly lower F0 peak, on average (M=193.8 Hz, n=34, SD=11.1 Hz). The same pattern was followed by the second speaker, PM. PM's left edge verbs in the default case had a mean maximum F0 of 164.8 Hz (n=19, SD=15.0 Hz). Focused NPs had, on average, a lower F0 peak (157.9 Hz, n=31, SD=19.1 Hz).

A note on boxplots. The boxplots (or "box and whisker" plots) throughout this chapter display the data separated by speaker and focus type. Figure 5.1 shows the results for peak F0 values on left edge lexical stresses. The dark line in the box represents the median value, and the box show the interquartile range (the middle 50% of the data points). The whiskers in either direction represent values 1.5 times the interquartile range. Outliers are indicated as open circles or stars beyond this range (see Howell 1992: 48-51 for a more detailed description of boxplots).

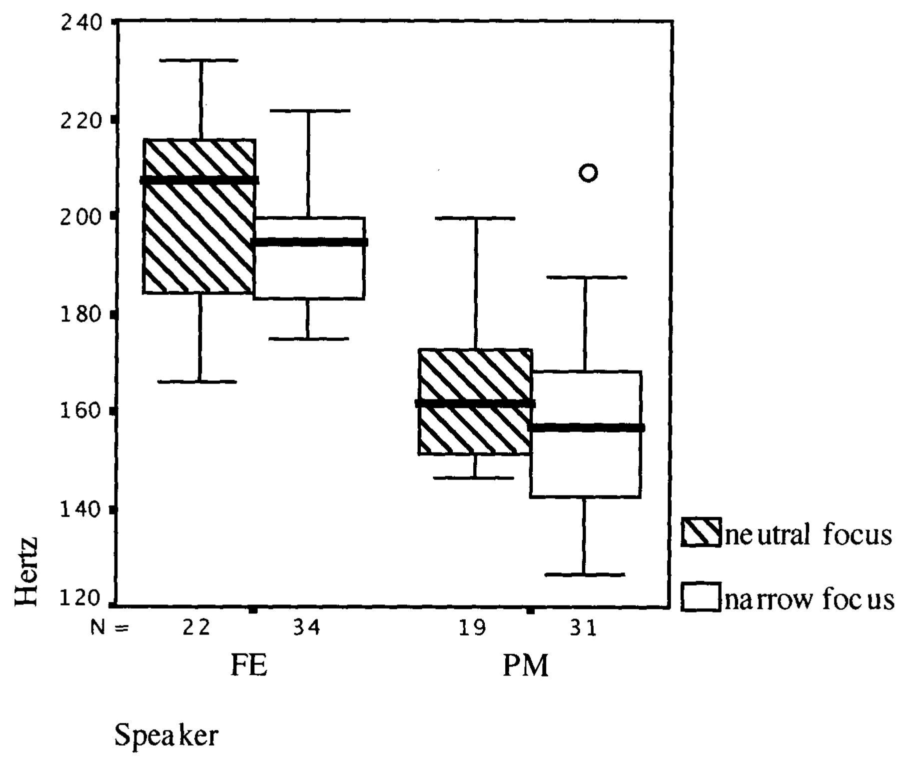

Figure 5.1 Maximum left edge F0 by speaker and focus type

Under the null hypothesis, narrowly focused items were expected to carry an F0 peak that was at least 2 semitones greater than the left edge verbs in the default focus cases.

(10) Null hypothesis (H_0): Left edge focused items have 2 semitones greater F0 peaks
$\mu_1 - \mu_2 \geq 2$ semitones

This hypothesis was not supported. Independent sample t-tests for both FE (t=–9.00, df=54, p<0.001) and PM (t=–5.27, df=48, p<0.001) were significant, allowing us to reject the null hypothesis that Thompson speakers mark narrowly focused items in left edge clefts with greater F0 peaks.

The size of the F0 excursion (the F0 range between maximum and minimum), in semitones, was also compared for the two focus cases. Again, both speakers followed a similar pattern. In the default wide focus utterances, FE had an average F0 excursion of 2.18 semitones (n=22, SD=1.03 semitones) on left edge verbs, while narrowly focused DPs at the left edge had a similar F0 excursion (M=2.53 semitones, n=34, SD=1.30 semitones). For PM, the left edge in the default case had an F0 range of 1.55 semitones (n=19, SD=1.10 semitones), while narrowly focused DPs at the left showed an F0 range of 1.64 semitones (n=31, SD=0.94 semitones).

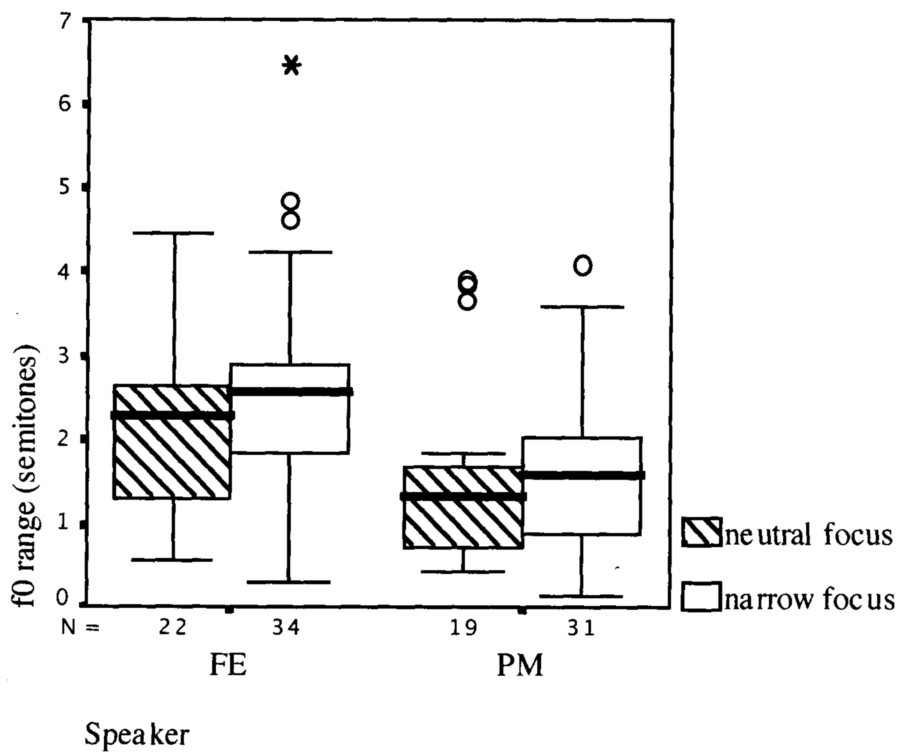

Figure 5.2 Left edge F0 range (semitones) by speaker and focus type

Based on previous research, the null hypothesis was that narrowly focused items at the left edge would show a greater pitch excursion of at least 3.6 semitones, when compared with left edge verbs in the default wide focus case.

(11) Null hypothesis (H_0): Left edge focused items have 3.6 semitones greater F0 range
$\mu_1 - \mu_2 \geq 3.6$ semitones

This null hypothesis was not supported. Neither speaker marked narrowly focused DPs with greater pitch excursions. Independent sample t-tests for both FE ($t=-9.89$, $df=54$, $p<0.001$) and PM ($t=-12.02$, $df=48$, $p<0.001$) were significant, allowing us to reject the null hypothesis that Thompson speakers mark narrowly focused items in left edge clefts with F0 excursions that are at least 3.6 semitones greater than pitch excursions in the default sentences.

Next, left edge lexical stresses were examined for the timing of F0 peaks. Previous research suggests that, as a percentage of total vowel duration, narrow left edge focus may be marked by earlier pitch peaks of as little as 27% (Eady and Cooper 1986), though other studies have reported differences of 100 ms or more (which would amount to an 80% earlier FO peak, given that average vowel duration was 124.7 ms).

(12) Null hypothesis (H_0): Left edge focused items have a 27% earlier or later F0 peak
$\mu_1 - \mu_2 \geq 0.27$

In the present study, lexical items at the left edge were similarly marked in terms of timing of F0 peaks in both focus conditions. For FE, F0 peaks occurred at 21% of vowel duration in left edge verbs in the default case (n=22, SD=30%). In narrowly focused DPs, FE marked F0 peaks slightly earlier (M=17%, n=34, SD=27%). In both cases, however, the majority of F0 peaks occurred very early or at the onset of the vowel: in neutral focus cases, over half the F0 peaks occurred in the first 10% of the vowel, while in narrow focus cases two-thirds of F0 peaks occurred in the first 10% of the vowel.

For PM, F0 peaks in the default case occurred on average at 45% of the vowel duration (n=19, SD=33%). PM's focused NPs had somewhat earlier pitch peaks (M=29% of vowel duration, n=31, SD=29%). In the default wide focus cases, PM's F0 peaks were quite evenly distributed throughout the vowel duration, but in the narrow focus cases, 45% of PM's F0 peaks occurred in the first 10% of the vowel duration.

For both speakers, average differences in peak timing were only about half of the expected difference of 27%, and much less than 100 ms (given that the average duration of the vowels was 124.7 ms). Since most pitch peaks occurred early in the vowel, there was no evidence for delay of F0 peaks until onset of following syllables (as found by Shue et al. 2007 for American English).

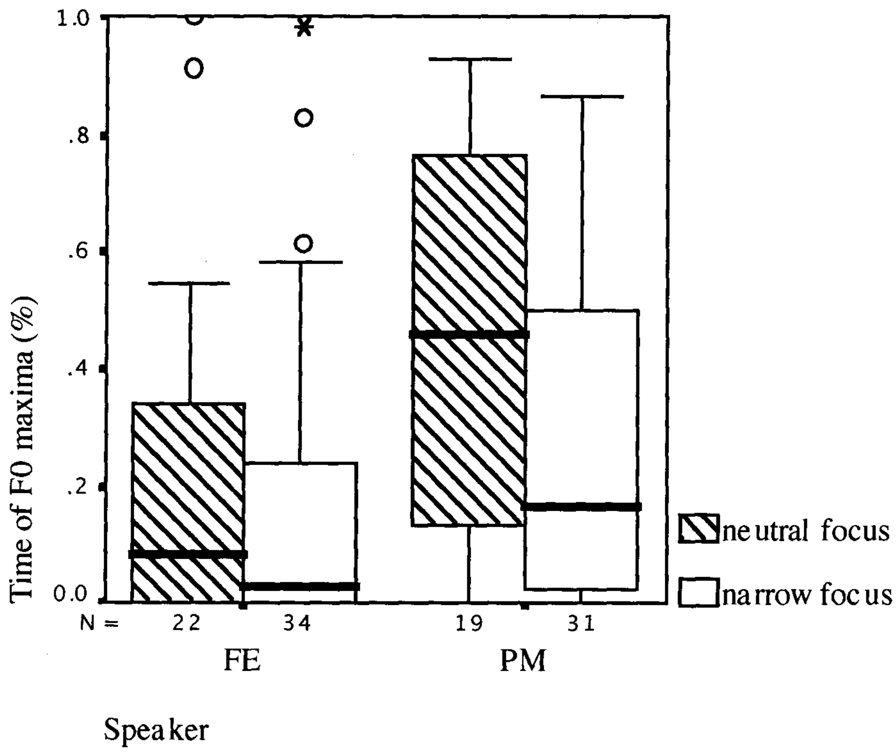

Figure 5.3 Left edge time of F0 peak as a percentage of vowel duration

Because the data were not normally distributed (most F0 peaks occurred near the start of the vowel) and did not have equal numbers across conditions, I did not perform t-tests for this variable.

The left edge: amplitude (db). Since amplitude is a correlate of stress, we would expect narrowly focused DPs carrying a nuclear pitch accent to carry greater amplitude. Review of previous studies, which tend to focus on F0, did not reveal any specific predicted differences for this variable for a left edge nuclear stress.

(13) Null hypothesis (H_0): Left edge focused items have a greater amplitude peak
$\mu_1 - \mu_2 > 0$ db

For FE, narrowly focused DPs did have a greater amplitude (M=76.0 db, n=34, SD=4.97 db) than left edge verbs in the default case (M=74.2 db, n=22, SD=4.64 db), a difference of 1.8 db. However, it is not clear whether this difference is perceptually salient. For example, Draper et al. (1989: 20-21) report that humans can tell apart two non-speech sounds differing 10 to 15 db in amplitude, considerably greater than the 1.8 db reported here. An independent sample t-test failed to find a significant difference between the two groups ($t=-1.347$, $df=54$, $p>0.1$).

The second speaker, PM, marked narrowly focused DPs with lower amplitude (M=73.5 db, n=31, SD=5.58 db) than left edge verbs in wide focus cases (M=74.4 db, n=19, SD=4.9 db). This is unexpected under the null hypothesis. An independent sample t-test failed to detect a significant difference in amplitude between the two focus types ($t=0.586$, $df=48$, $p>0.5$).

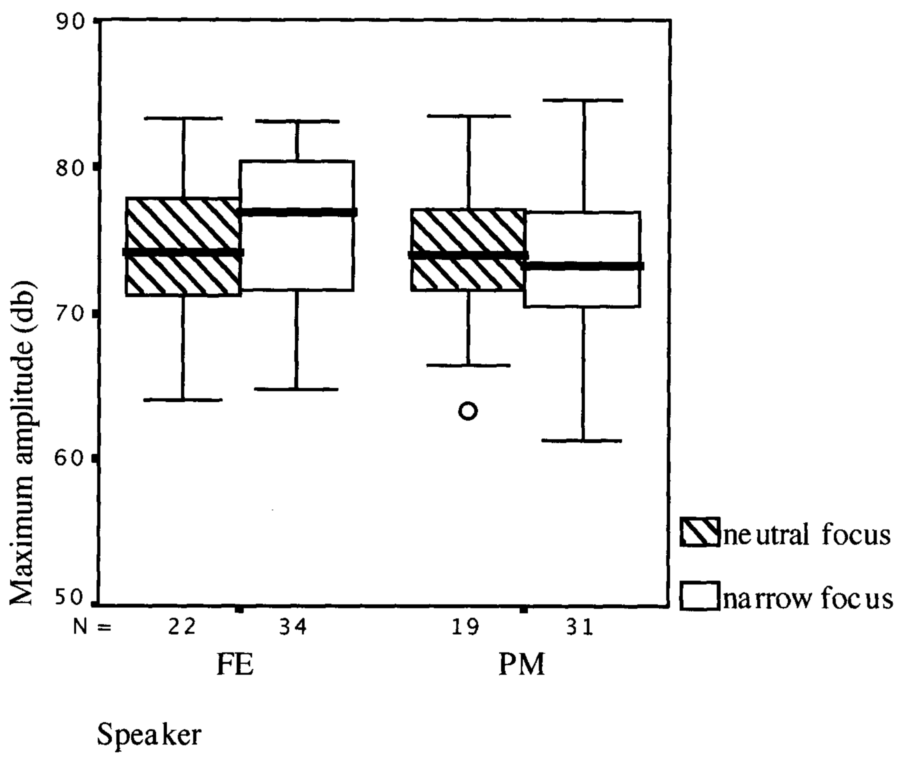

Figure 5.4 Left edge maximum amplitude (db)

Results are similar for average vowel amplitude. FE again had a greater average amplitude in narrowly focused items at the left edge (M=73.9 db, n=34, SD=5.29 db) than left edge verbs (M=72.2 db, n=22, SD=4.86 db). This difference of 1.7 db was not significant ($t=-1.208$, $df=54$, $p>0.2$). Results for PM again trended in the opposite direction: PM had a lower average amplitude on narrowly focused items (M=70.8 db, n=31, SD=6.08 db) than left edge verbs in wide focus utterances (M=72.3 db, n=19, SD=4.75 db). This difference of 1.5 db was not significant (t=0.919, df=48, p>0.3).

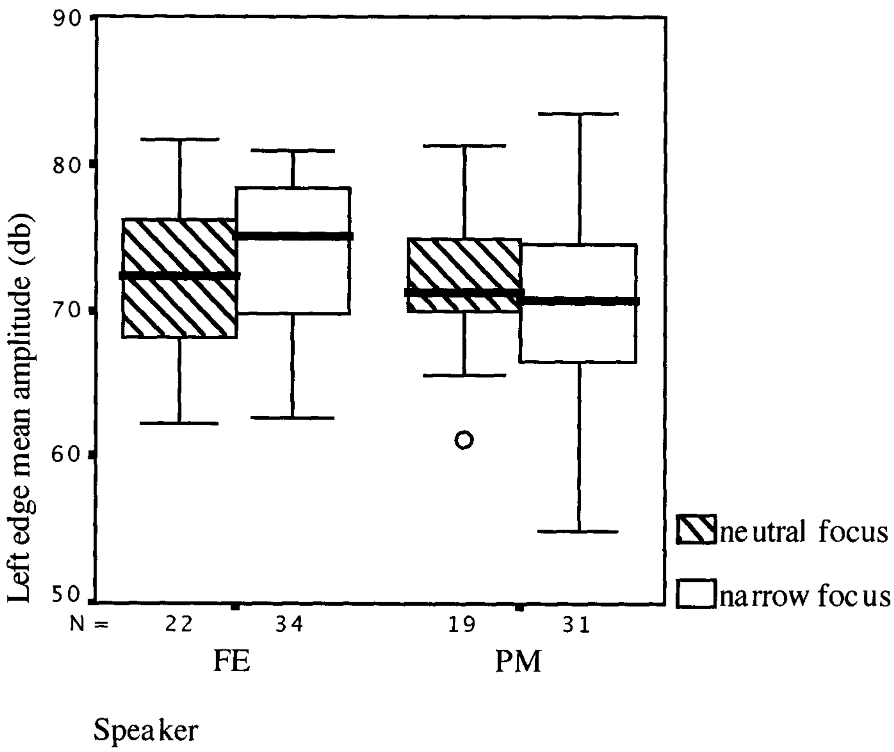

Figure 5.5 Left edge average vowel amplitude (db)

The left edge: duration (ms). Since duration is a correlate of stress, we would expect stressed vowels in narrowly focused DPs carrying a nuclear pitch accent to be longer. Few of the reviewed studies directly addressed this question; those that did found an increased duration of approximately 12% to 30% for narrowly focused items at the left edge. Because of the lack of ample precedent, I tested the standard null hypothesis, that the two focus types did not differ in vowel duration of the leftmost stressed lexical vowel.

(14) Null hypothesis (H_0): Left edge focused items are not longer
$\mu_1 - \mu_2 = 0$

For FE, narrowly focused DPs had an average stressed vowel duration of 123.7 ms (n=34, SD=40.17 ms); this average was 19.6% longer than left edge predicates in the default focus case (M=103.4 ms, n=22, SD=30.23 ms), but only marginally significant (t=–2.025, df=54, p=0.05).

For PM, the duration difference in means was more pronounced. Focused DPs in the narrow focus cases had an average stressed vowel duration of 145.2 ms (n=31, SD=59.26 ms), 50.6% longer than stressed vowels in left edge predicates in the default case (M=96.4 ms, n=19, SD=27.49 ms). An independent samples t-test revealed that this difference approached significance (t=–3.365, df=48, p=0.002).

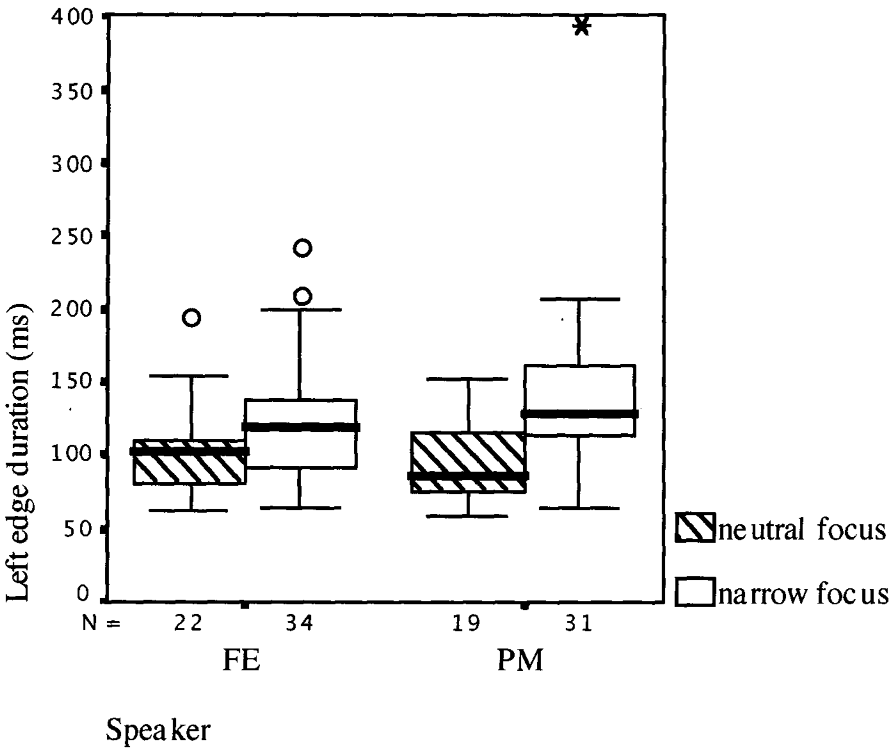

Figure 5.6 Left edge vowel duration (ms) by speaker and focus type

The left edge: summary. Narrowly focused items in left edge clefts were not marked by additional pitch height, greater pitch excursion, earlier pitch timing, or greater amplitude. Narrowly focused items were marginally longer for FE, and for PM, than leftmost predicates in the default focus utterances. Results for each speaker are summarized in the tables on the following pages.

Table 5.4 FE leftmost lexical stress: summary of acoustic cues, and t-test results

Measure	Focus	Mean (SD)	n	Null Hypoth.	t	p	df
Max F0 (Hz)	Neutral Narrow	202.5 (16.9) 193.8 (11.1)	22 34	$\mu_1 - \mu_2 \geq 2$ semitones	-9.00	***<0.001	54
F0 excursion (semitones)	Neutral Narrow	2.18 (1.03) 2.53 (1.30)	22 34	$\mu_1 - \mu_2 \geq 3.6$	-9.89	***<0.001	54
Time of F0 peak (%)	Neutral Narrow	21.0 (30.0) 17.0 (27.0)	22 34	$\mu_1 - \mu_2 \geq 0.27$	–	–	–
Maximum amplitude (db)	Neutral Narrow	74.2 (4.64) 76.0 (4.97)	22 34	$\mu_1 - \mu_2 > 0$ db	-1.347	>0.1	54
Average amplitude (db)	Neutral Narrow	72.2 (4.86) 73.9 (5.29)	22 34	$\mu_1 - \mu_2 > 0$ db	-1.208	>0.2	54
Vowel duration (ms)	Neutral Narrow	103.4 (30.2) 123.7 (40.2)	22 34	$\mu_1 - \mu_2 = 0$ ms	-2.025	*0.05	54

Key: SD=standard deviation, n=number of observations, p=probability, df=degrees of freedom, μ = mean, *=significant at p<0.05, **=significant at p<0.01, ***=significant at p<0.001 [note: *** corresponds to a p-value of p=0.029 after correcting for family-wise error]

Note: These tests applied to the leftmost lexical item. In the neutral case, this was the predicate. In the narrow focus cases, this was the focus (the head of the cleft, or the nominal predicate).

Table 5.5 PM leftmost lexical stress effects: summary of acoustic cues, and t-test results

Measure	Focus	Mean (SD)	n	Null Hypoth.	t	p	df
Max F0 (Hz)	Neutral Narrow	164.8 (15.0) 157.9 (19.1)	19 31	$\mu_1 - \mu_2 \geq 2$ semitones	-5.27	***<0.001	48
F0 excursion (semitones)	Neutral Narrow	1.55 (1.10) 1.64 (0.94)	19 31	$\mu_1 - \mu_2 \geq 3.6$	-12.02	***<0.001	48
Time of F0 peak (%)	Neutral Narrow	45 (33) 29 (29)	19 31	$\mu_1 - \mu_2 \geq 0.27$	–	–	–
Maximum amplitude (db)	Neutral Narrow	74.4 (4.90) 73.5 (5.58)	19 31	$\mu_1 - \mu_2 > 0$ db	0.586	>0.5	48
Average amplitude (db)	Neutral Narrow	72.3 (4.75) 70.8 (6.08)	19 31	$\mu_1 - \mu_2 > 0$ db	0.919	>0.3	48
Vowel duration (ms)	Neutral Narrow	96.4 (27.5) 145.2 (59.3)	19 31	$\mu_1 - \mu_2 = 0$ ms	-3.365	**0.002	48

Key: SD=standard deviation, n=number of observations, p=probability, df=degrees of freedom, μ= mean, *=significant at p<0.05, **=significant at p<0.01, ***=significant at p<0.001 [note: *** corresponds to a p-value of p=0.029 after correcting for family-wise error]

Note: These tests applied to the leftmost lexical item. In the neutral case, this was the predicate. In the narrow focus cases, this was the focus (the head of the cleft, or the nominal predicate).

5.2.5 Results: the right edge

The right edge: general comparisons. The stressed syllables to be examined were not always the final syllable in the utterance. Once again, however, global comparisons suggest that the rightmost stressed vowels in the two focus conditions occurred in similar utterance positions as far as timing of declination is concerned. For neutral focus cases, utterance length was an average 2.27 seconds (n=39, SD=8.24 sec), while for narrow focus utterances it was 2.46 seconds (n=64, SD=7.61 sec). These means were not significantly different ($t=1.143$, $df=102$, $p>0.25$). The rightmost stressed vowels that were measured were an average of 0.54 syllables from the right in the neutral focus sentences (n=39, SD=0.75), and 1.08 syllables from the right in narrow focus utterances (n=64, SD=2.13). Again, these means were not significantly different ($t=1.521$, $df=102$, $p>0.1$). Thus, any differences found are unlikely to be due to effects of declination or utterance-final lengthening, but instead due to other factors like information structure.

The right edge: pitch (F0). In the default case, the rightmost stress is where we find the nuclear stress. In narrow focus clefts, the rightmost stress is old, or given, information, and is predicted to be deaccented if "destress-given" is operative in Thompson Salish. Deaccenting means lack of phrasal pitch accent, and as such should be primarily indicated by lower F0 measures. Previous studies in other stress (and tone or pitch-accent) languages have found that deaccented material has F0 peaks that are 3.5 semitones or more lower than vowels carrying the nuclear stress in the same position (eg. Shue et al. 2007).

(15) Null hypothesis (H_0): Right edge given items have 3.5 semitones lower F0 peaks
$\mu_1 - \mu_2 \geq 3.5$ semitones

The results did not support the null hypothesis that given material is deaccented in Thompson Salish. FE's speech had similar right edge F0 peaks in both neutral (M=183.4 Hz, n=20, SD=18.4 Hz) and narrow focus utterances (M=180.2 Hz, n=35, SD=19.1 Hz). An independent samples t-test was significant ($t=-7.017$, $df=53$, $p<.001$), allowing us to reject the null hypothesis that FE had lower F0 peaks on given material. For PM, the F0 peaks tended to be slightly lower on right edge given items (M=134.7 Hz, n=29, SD=16.4 Hz) than in the default case (M=147.4 Hz, n=19, SD=20.4 Hz). However, an independent samples t-test was again marginally significant ($t=-3.277$, $p=0.002$), indicating that PM does not mark given material with perceptually salient lower F0 peaks either.

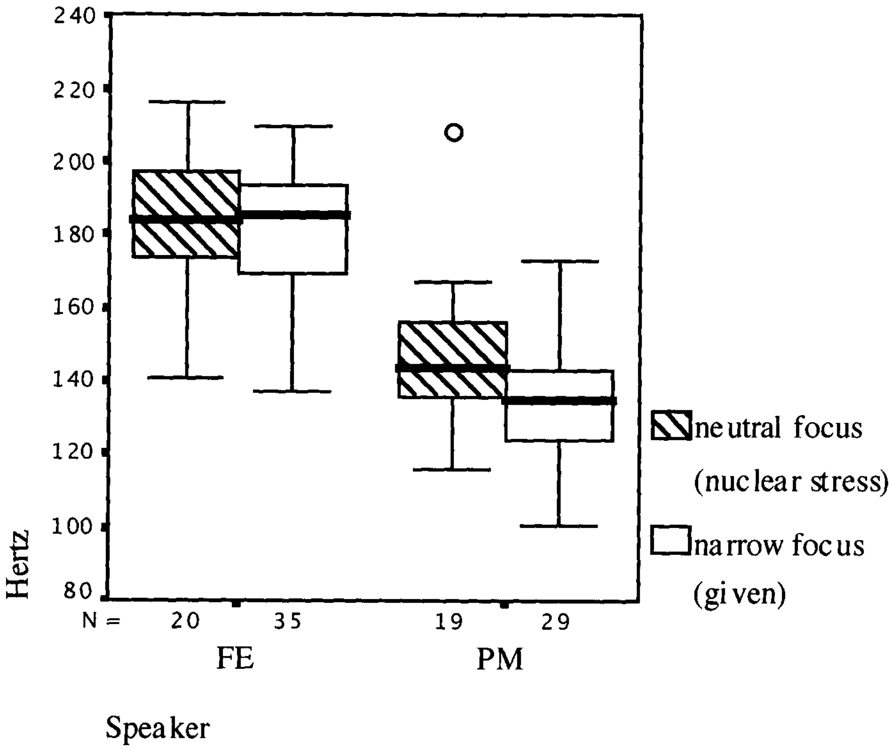

Figure 5.7 Maximum right edge F0 by speaker and focus type

Review of previous studies did not reveal any insights as to how much narrower we may expect pitch excursions on deaccented material; but, the shift from nuclear accent to no phrasal accent ought to be at least as great as the 3.6 semitone difference in F0 range considered for left edge material, where the change reflected the shift from a p-phrase accent to a nuclear pitch accent.

(16) Null hypothesis (H_0): Right edge given items have 3.6 semitones lesser F0 range
$\mu_1 - \mu_2 \geq 3.6$ semitones

Once again, the null hypothesis was not supported. Though FE did have a larger right edge F0 excursion in the neutral focus utterances (M=3.50 semitones, n=20, SD=1.65 semitones), the difference of 0.8 semitones is not likely to be perceptually different from F0 excursions on right edge given material (M=2.71 semitones, n=35, SD=1.49 semitones). A t-test of the null hypothesis proved significant ($t=-6.434$, $p<0.001$), allowing us to conclude that FE does not employ smaller F0 ranges on given material. For PM, the difference in right edge F0 excursions was even smaller, with the neutral focus case (M=2.01 semitones, n=19, SD=1.66 semitones) only 0.26 semitones greater than the given material in narrow focus utterances (M=1.75 semitones, n=29, SD=1.17 semitones). A t-test confirmed that PM did not employ lesser F0 range on given material (t=–8.27, p<0.001).

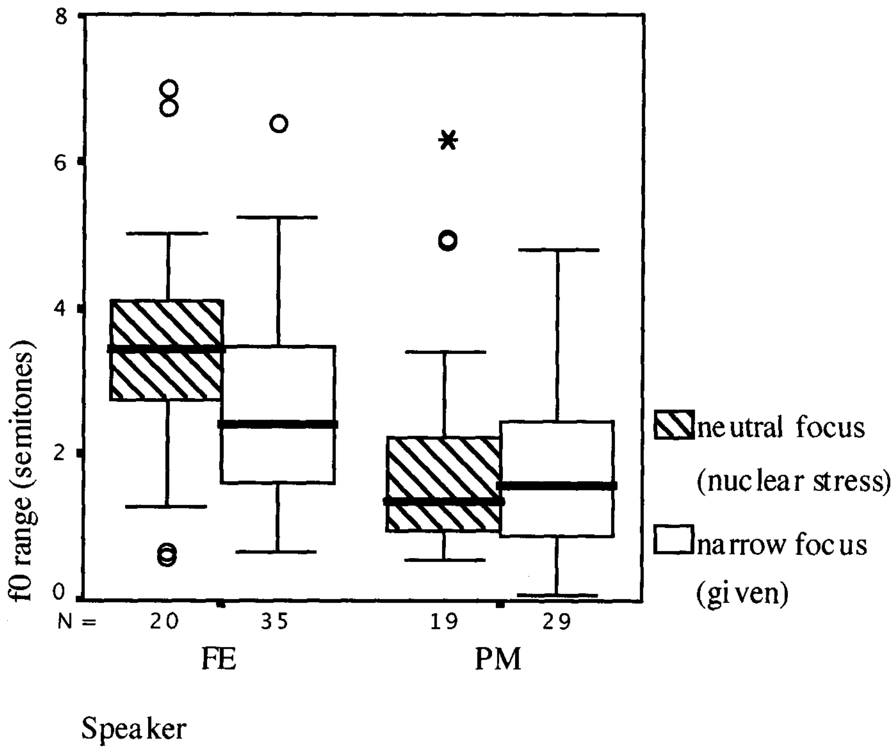

Figure 5.8 Right edge F0 range by speaker and focus type

Differences in peak timing can also reveal differences in pitch accentuation, though none of the previous research specifically addressed timing differences in F0 peaks in deaccented material. As a percentage of vowel duration, FE had pitch peaks at an average of 0.11 in right edge stress vowels in the neutral focus cases (n=20, SD=0.13), and a similar 0.14 average peak percentage time in given stressed vowels (n=35, SD=0.24). For PM, peaks came slightly later and had a greater variability. F0 peaks in right edge stressed vowels in the neutral focus utterances came at an average 0.24 of vowel duration (n=19, SD=0.32), while F0 peaks on right edge given items came at 0.37 of vowel duration (n=29, SD=0.35). Overall, the patterns are similar to F0 peak timing in the left edge vowels previously discussed: pitch peaks tend to occur early, and PM has somewhat later and more variable timings in her F0 maxima.

Because the data were not normally distributed (most F0 peaks occurred near the start of the vowel) and did not have equal numbers across conditions, I did not perform t-tests for this variable. The mean differences in timing (0.03 for FE, 0.13 for PM) are considerably less than the timing differences reported in previous studies looking at left edge material (table 5.2), and so are unlikely to be of perceptual significance here.

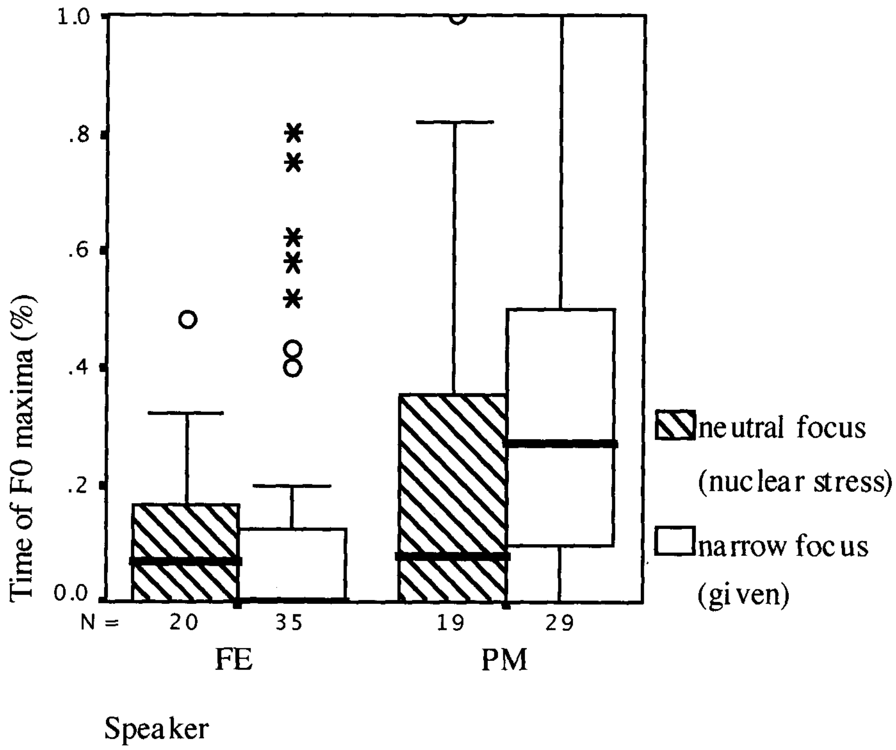

Figure 5.9 Right edge time of F0 peak as a percentage of vowel duration

The right edge: amplitude (db). Based on previous studies, deaccented stressed vowels are expected to be 3 db (or more) lower in their amplitude peak than vowels in the same position carrying the nuclear stress.

(17) Null hypothesis (H_0): Right edge given items have 3 db lesser peak amplitude
$\mu_1 - \mu_2 \geq 3$ db

Both speakers' data tended to be consistent with the null hypothesis, but diverged in degree: only for PM was the effect statistically detectable.

For FE, rightmost stressed vowels in the default case had an average peak amplitude of 73.7 db (n=20, SD=4.83 db). For rightmost given material in narrow focus utterances, this peak was an average of 72.5 db (n=35, SD=5.10 db). An independent samples t-test of the null hypothesis that given material has at least 3 db lesser peak amplitude was not significant (t=0.855, p>0.3), so we cannot count out the possibility that amplitude plays a role for FE.

However, the difference in the means is only 1.2 db, considerably less than the 3 db based on previous studies of deaccenting.

For PM, the amplitude differences were somewhat more pronounced. Rightmost nuclear stresses in the default cases had an average amplitude of 71.6 db (n=19, SD=5.65 db). In narrowly focused utterances, stressed vowels in rightmost given material had an amplitude that was on average 3.5 db lower (M=68.1 db, n=29, SD=5.79 db). A t-test of the null hypothesis was not significant (t=0.290, df=46, p>0.2), so we cannot rule out that PM marks given material through lower amplitude. In fact, the difference in the means (3.5 db) exceeded the predicted 3 db lesser amplitude on given items. A t-test of the more standard null hypothesis (that the two conditions are no different) in this case returns a marginally significant results (t=2.07, df=46, p<0.05), suggesting that PM may mark given material through lower amplitude.

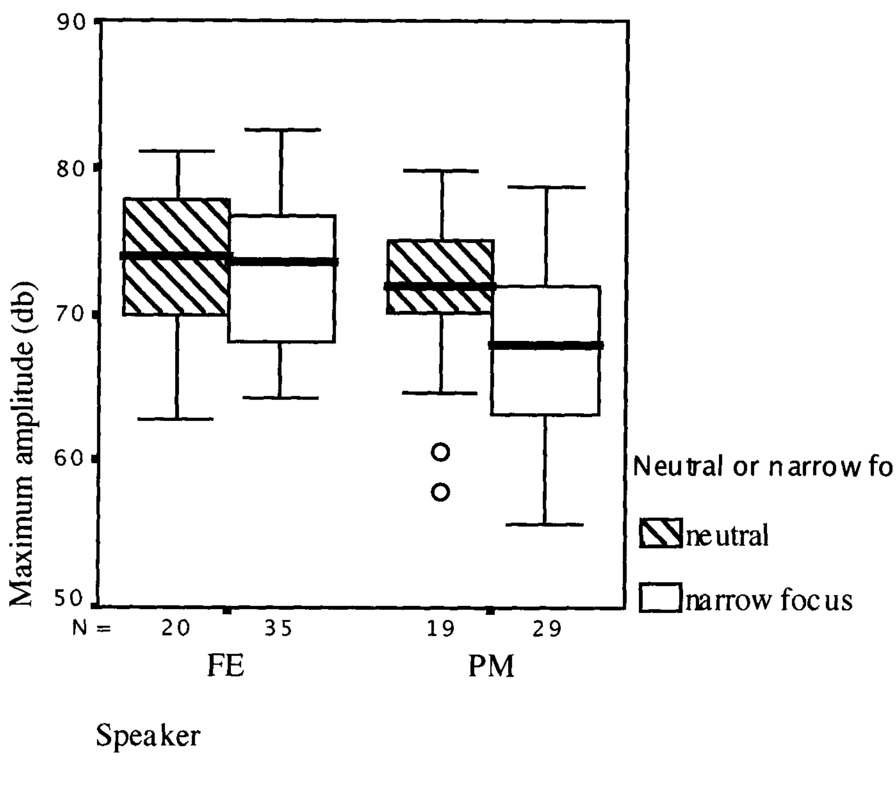

Figure 5.10 Right edge peak amplitude (db) by speaker and focus type

The right edge: duration (ms). Previous studies have found a duration difference of between 0% and 28% when comparing vowels carrying the nuclear pitch accent to vowels that are stressed but deaccented. The 6% figure from Sluijter and van Heuven (1996b) can be adopted as a conservative durational difference.

(18) Null hypothesis (H_0): Right edge given items have at least 6% lesser vowel duration
$\mu_1 - \mu_2 \geq 0.06*\mu_2$

Just as for the results for rightmost amplitude, the speakers diverged in their use of duration at the right edge. In this case, PM did not employ duration to mark a difference between focus conditions; results for FE were not conclusive.

For FE, rightmost nuclear stresses in the default case had an average duration of 176.3 ms (n=20, SD=78.2 ms), while rightmost stresses on given items in narrow focus utterances were shorter (M=145.2 ms, n=35, SD=57.4 ms), a difference of 31.1 seconds, or 21%. The null hypothesis that given items have at least 6% lesser duration was not rejected (t=1.22, p>0.2), suggesting that FE may employ shorter duration to mark given material. However, there is considerable variability in both neutral focus and narrow focus conditions; a t-test of the standard null (that there is no durational difference in the two conditions) also failed to reach significance (t=1.69, p<0.1). The picture that emerges is one where given material may sometimes be deaccented, but other times continues to carry the nuclear stress; if such a marking occurs, however, it is through durational means rather than F0 marking.

For PM, duration does not play a role in marking given material. In rightmost nuclear stresses in the default case, average vowel duration was 141.8 ms (n=19, SD=57.3 ms). Average rightmost vowel duration for given material in narrow focus clefts was only 5.6% less on average (M=134.3 ms, n=29, SD=56.2 ms). The null hypothesis that given material is at least 6% shorter was not rejected (t=–0.035, p>0.2), but given the small value of the mean (less than the minimally hypothesized 6% duration difference) and the relatively large variability, it is unlikely that the effect here is consistently perceptually salient.

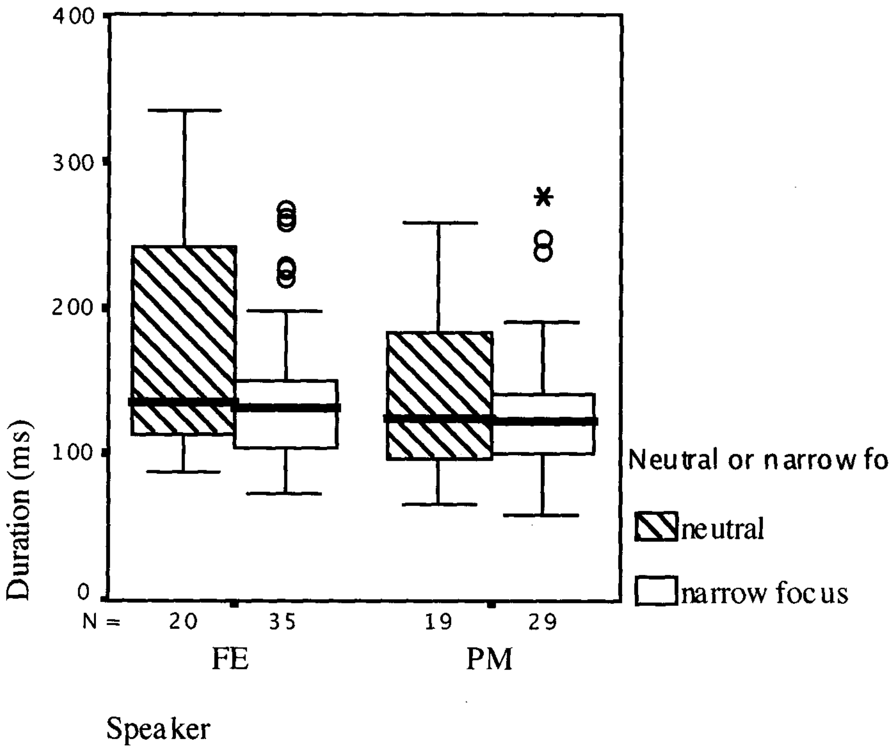

Figure 5.11 Right edge stressed vowel duration (ms) by speaker and focus type

The right edge: summary. Given items in right edge cleft clauses were not marked by lower pitch height, lesser pitch excursion, or different pitch peak timing. Given items were marginally lower in amplitude for PM only, but FE did not mark given material with lower amplitude. Given material may be marked with shorter vowel duration for FE, but not for PM, when compared to nuclear stress vowels in the same rightmost location. Results for each speaker are summarized in the tables on the following pages.

Table 5.6 FE rightmost stress effects: summary of acoustic cues, and t-test results

Measure	Focus	Mean (SD)	n	Null Hypoth.	t	p	df
Max F0 (Hz)	Neutral Narrow	183.4 (18.4) 180.2 (19.1)	20 35	$\mu_1 - \mu_2 \geq 3.5$ semitones	-7.017	***<0.001	53
F0 excursion (semitones)	Neutral Narrow	3.50 (1.65) 2.71 (1.49)	20 35	$\mu_1 - \mu_2 \geq 3.6$ semitones	-6.434	***<0.001	53
Time of F0 peak (%)	Neutral Narrow	0.11 (0.13) 0.14 (0.24)	20 35	$\mu_1 \neq \mu_2$	–	–	–
Maximum amplitude (db)	Neutral Narrow	73.7 (4.83) 72.5 (5.10)	20 35	$\mu_1 - \mu_2 \geq 3$ db	0.855	>0.3	53
Vowel duration (ms)	Neutral Narrow	176.3 (78.2) 145.2 (57.4)	20 35	$\mu_1 - \mu_2 \geq 0.06 * \mu_2$ $\mu_1 - \mu_2 = 0$	1.22 1.69	>0.2 >0.05	53 53

Key: SD=standard deviation, n=number of observations, p=probability, df=degrees of freedom, μ = mean, *=significant at p<0.05, **=significant at p<0.01, ***=significant at p<0.001 [note: *** corresponds to a p-value of p=0.029 after correcting for family-wise error]

Note: These tests applied to the rightmost stressed syllable. In the neutral case, this was the argument of the predicate, or an adjunct. In the narrow focus cases, this was given material in the cleft clause.

Table 5.7 PM rightmost stress effects: summary of acoustic cues, and t-test results

Measure	Focus	Mean (SD)	n	Null Hypoth.	t	p	df
Max F0 (Hz)	Neutral	147.4 (20.4)	19	$\mu_1 - \mu_2 \geq 3.5$	-3.277	**0.002	46
	Narrow	134.7 (16.4)	29	semitones			
F0 excursion	Neutral	2.01 (1.66)	19	$\mu_1 - \mu_2 \geq 3.6$	-8.27	***<0.001	46
(semitones)	Narrow	1.75 (1.17)	29	semitones			
Time of	Neutral	0.24 (0.23)	19	$\mu_1 \neq \mu_2$	–	–	–
F0 peak (%)	Narrow	0.37 (0.35)	29				
Maximum	Neutral	71.6 (5.65)	19	$\mu_1 - \mu_2 \geq 3$ db	0.290	>0.2	46
amplitude (db)	Narrow	68.1 (5.79)	29	$\mu_1 - \mu_2 = 0$	2.07	*<0.05	46
Vowel	Neutral	141.8 (56.2)	19	$\mu_1 - \mu_2 \geq$	-0.035	>0.2	46
duration (ms)	Narrow	134.3 (57.3)	29	$0.06 * \mu_2$			

Key: SD=standard deviation, n=number of observations, p=probability, df=degrees of freedom, μ = mean, *=significant at $p<0.05$, **=significant at $p<0.01$, ***=significant at $p<0.001$ [note: *** corresponds to a p-value of $p=0.029$ after correcting for family-wise error]

Note: These tests applied to the rightmost stressed syllable. In the neutral case, this was the argument of the predicate, or an adjunct. In the narrow focus cases, this was given material in the cleft clause.

5.2.6 Results: declination

The declination from left to right: pitch. The two speakers differed in the amount of declination across stressed vowels in neutral focus versus wide focus utterances. For FE, neutral focus utterances had a mean declination from left to right peaks of 2.51 semitones (n=20, SD=1.93 semitones), while narrow focus clefts had a mean declination of 2.80 semitones (n=34, SD=1.59 semitones). This difference of 0.29 semitones is unlikely to be perceptible, and is not statistically significant ($t=0.582$, $df=52$, $p>0.5$). The figure below shows a graphic representation of FE's mean pitch contour (in Hertz), by focus type. The whiskers indicate error bars of one standard deviation in either direction; error bars for neutral focus are dashed, while error bars for narrow focus are solid.

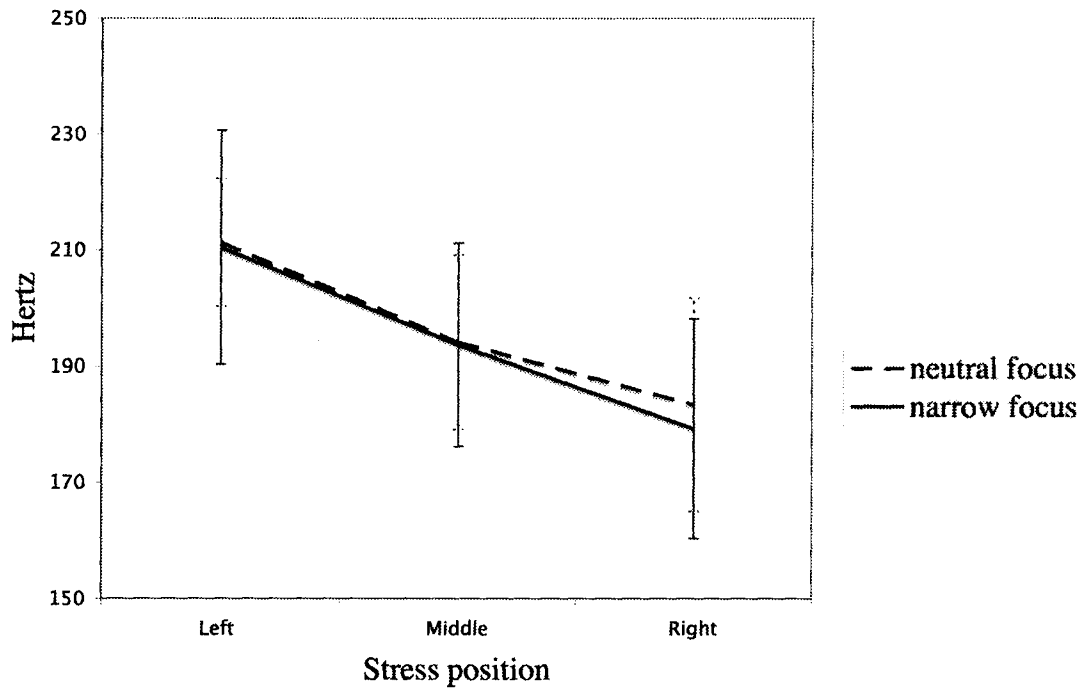

Figure 5.12 Pitch contour across F0 peaks for FE, by focus type

For PM, neutral focus utterances had a mean declination across stress peaks of 2.34 semitones (n=19, SD=1.86 semitones), while narrow focus clefts had an average F0 declination of 3.61 semitones (n=32, SD=2.50 semitones). This difference of 1.27 semitones was not significant (t=1.906, df=49, p>0.05).

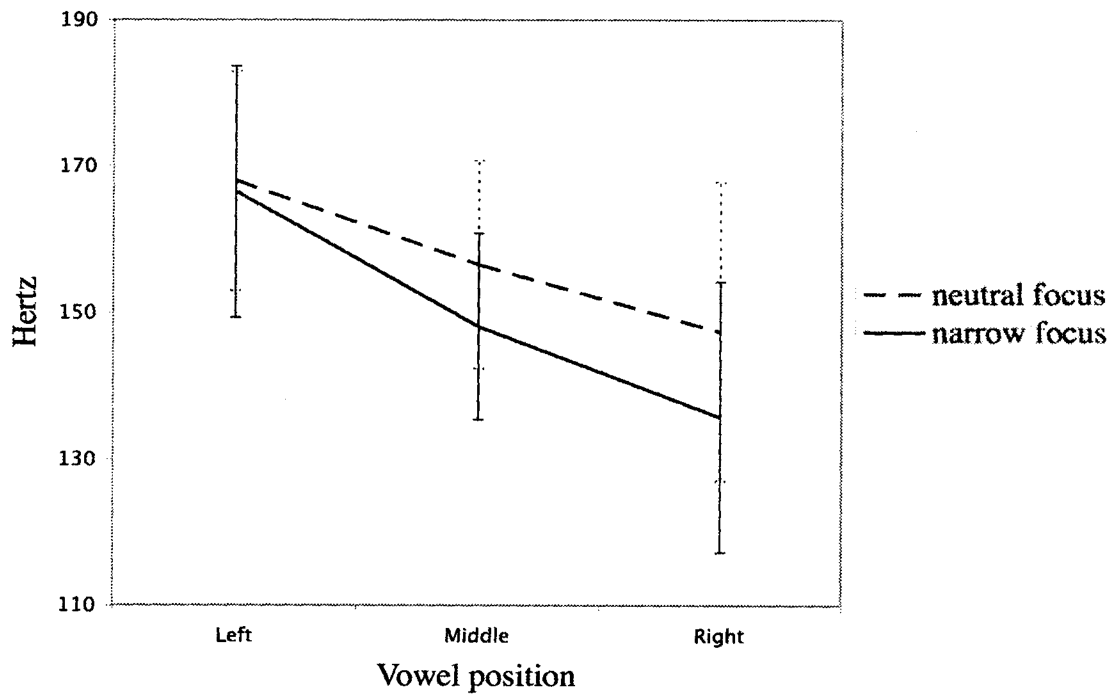

Figure 5.13 Pitch contour across F0 peaks for PM, by focus type

A second F0 measurement to be checked was the difference in F0 range within each utterance between left and right stresses. Since narrowly focused material was expected to carry greater F0 excursions (greater by 3.6 semitones or more), while deaccented material ought to carry smaller F0 excursions (smaller by 3.6 semitones or more), there should be a decrease in F0 range from left to right peaks (possibly of 7 semitones or more). In neutral focus sentences, FE had a change from left to right of –0.56 semitones in F0 range (n=20, SD=2.32), indicating that rightmost vowels had a slightly larger F0 excursion. In narrow focus sentences, FE's change in F0 range was 0.43 semitones (n=34, SD=2.17 semitones), indicating a slightly smaller F0 excursion on the rightmost vowel. Thus, the means differed in the expected direction. However, the difference between sentence types was not significant (t=1.584, df=52, p>0.1).

For PM, the results were very similar. Neutral focus sentences had a net change from left to right of –0.50 semitones (n=19, SD=2.19 semitones), again indicating a slightly greater F0 excursion, on average, on the right. For narrow focus sentences, the mean change from left to right was 0.36 semitones in F0 excursion (n=32, SD=1.66 semitones), indicating lesser F0 excursions on rightmost vowels. Once again, the means differed in the expected direction, but the difference between utterance type was non-significant (t=–1.583, df=49, p>0.1). For neither speaker did the difference in F0 excursion approach the ranges that have elsewhere been reported, suggesting that there is no significant change in F0 range from left to right when comparing neutral with narrow focus utterances.

The declination from left to right: amplitude (db). Taken across both speakers, there was marginally greater peak amplitude declination from left to right in narrow focus utterances than in neutral focus utterances. Each speaker followed a slightly different pattern. FE had greater peak amplitude on the rightmost vowel in default focus utterances, indicated by a negative mean amplitude declination of –0.24 db (n=20, SD=4.18 db). In narrow focus utterances, rightmost stressed vowels were an average of 3.06 db lower than those at the left edge (n=34, SD=5.19). PM had lower vowel amplitude on the right in both neutral focus sentences (M=1.25 db, n=19, SD=5.86 db) and in narrow focus utterances (M=3.84, n=32, SD=4.50). Taken together, the differences approach significance (t=2.971, df=103, p=0.004), suggesting that narrow focus utterance may be marked by greater amplitude declination.

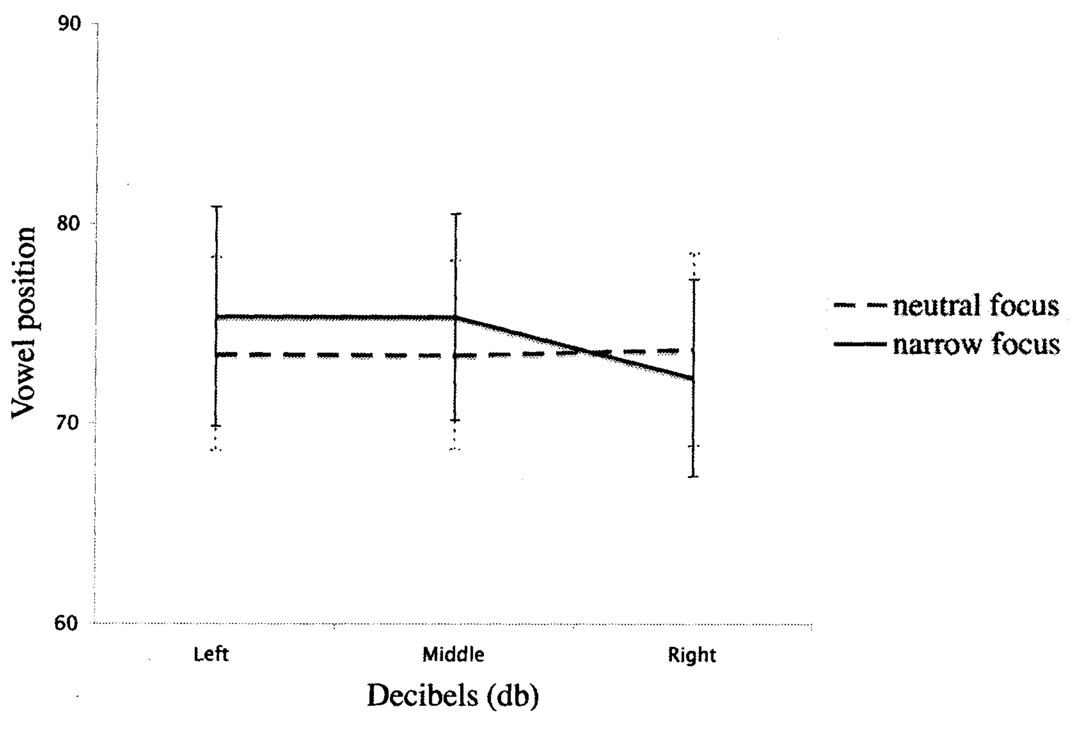

Figure 5.14 Amplitude contour across peaks for FE, by focus type

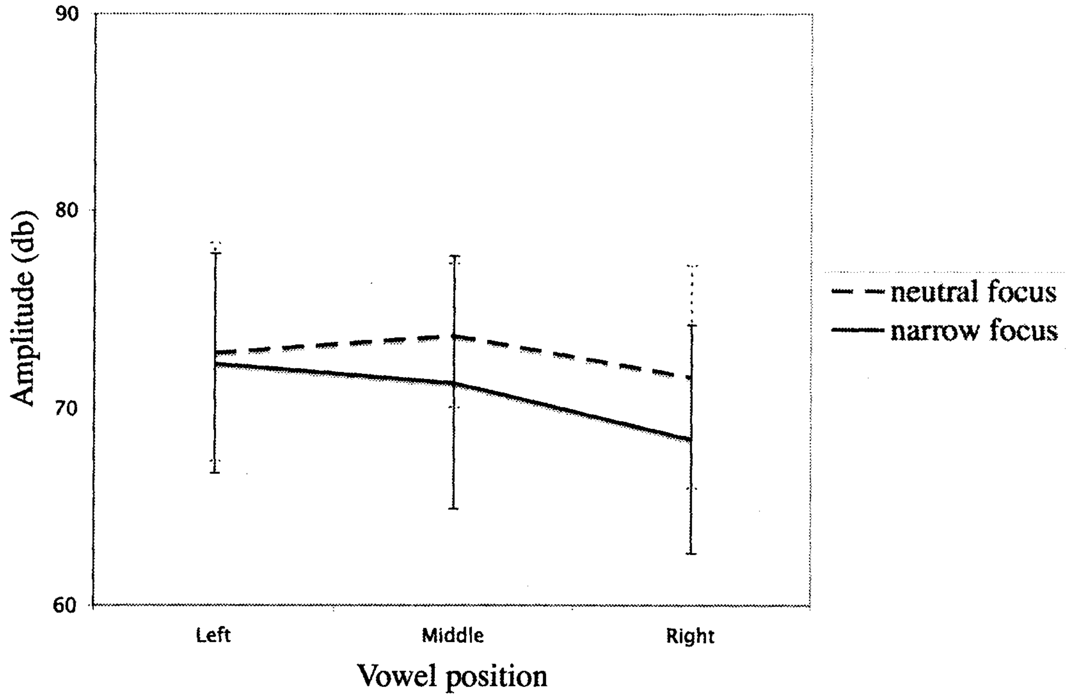

Figure 5.15 Amplitude contour across peaks for PM, by focus type

The declination from left to right: summary. Maximum F0 declination from left to right (in semitones) is not significantly different in neutral wide focus utterances and narrow focus sentences, nor is the change in F0 excursion between left and right stressed vowels. Peak amplitude declination is marginally greater in narrow focus utterances, though considerable variability is present.

Table 5.8 FE declination effects: summary of acoustic cues, and t-test results

Declination Measure	Focus	Mean (SD)	n	Null Hypoth.	t	p	df
Max F0 (semitones)	Neutral	2.51 (1.93)	20	$\mu_1 - \mu_2 = 0$	-0.582	>0.5	52
	Narrow	2.80 (1.59)	34				
ΔF0 excursion (semitones)	Neutral	-0.56 (2.32)	20	$\mu_1 - \mu_2 = 0$	-1.584	>0.1	52
	Narrow	0.44 (2.17)	34				
Maximum amplitude (db)	Neutral	-0.24 (4.18)	20	$\mu_1 - \mu_2 = 0$[28]	-2.971	**0.004	103
	Narrow	3.06 (5.19)	34				

Key: SD=standard deviation, n=number of observations, p=probability, df=degrees of freedom, μ= mean, *=significant at p<0.05, **=significant at p<0.01, ***=significant at p<0.001 [note: *** corresponds to a p-value of p=0.029 after correcting for family-wise error]

Note: These tests applied to the declination between the leftmost stressed syllable and the rightmost stressed syllable in each utterance (differences across stress peaks). The null hypothesis used in each case was the standard one assuming no differences between groups ($\mu_1 - \mu_2 = 0$).

[28] For this test, t is based on pooled data from both speakers.

Table 5.9 PM declination effects: summary of acoustic cues, and t-test results

Declination Measure	Focus	Mean (SD)	n	Null Hypoth.	t	p	df
Max F0 (semitones)	Neutral	2.34 (1.86)	19	$\mu_1 - \mu_2 = 0$	-1.906	>0.05	49
	Narrow	3.61 (2.50)	32				
ΔF0 excursion (semitones)	Neutral	-0.50 (2.19)	19	$\mu_1 - \mu_2 = 0$	-1.772	>0.05	49
	Narrow	0.36 (1.66)	32				
Maximum amplitude (db)	Neutral	1.25 (5.86)	19	$\mu_1 - \mu_2 = 0$[29]	-2.971	**0.004	103
	Narrow	3.84 (4.50)	32				

Key: SD=standard deviation, n=number of observations, p=probability, df=degrees of freedom, μ = mean, *=significant at p<0.05, **=significant at p<0.01, ***=significant at p<0.001 [note: *** corresponds to a p-value of p=0.029 after correcting for family-wise error]

Note: These tests applied to the declination between the leftmost stressed syllable and the rightmost stressed syllable in each utterance (differences across stress peaks). The null hypothesis used in each case was the standard one assuming no differences between groups ($\mu_1 - \mu_2 = 0$).

5.2.7 Discussion

The most notable finding in the present study is the complete absence of pitch cues in the marking of both narrowly focused items and given material in cleft structures. Neither F0 peak nor F0 excursion were employed to mark information structure; this null hypothesis was rejected at a very conservative significance level (p<0.001) for both speakers. The timing of F0 peaks was also not affected by the status of focus or givenness. Absence of F0 cues appears to be typologically unusual for stress-accent languages like Nɬeʔkepmxcin, but similar findings have been reported for the Niger-Congo language of Wolof (Rialland and Robert 2001), and the Papua New Guinean language of Kuot (Lindström and Remijsen

[29] For this test, t is based on pooled data from both speakers.

2005). Both of these languages are stress languages, yet fail to use pitch accents to mark information structure. The implication, also suggested by these authors, is that the role of phrasal stress in cueing focus marking has been overestimated by the study of focus marking in the European language realm. In addition, when we consider declination across multiple peaks, the F0 peak on the rightmost vowel was above the anticipated declination line as based on the previous peaks in the utterance; this effect was seen for neutral focus cases in chapter 4 (figures 4.3 and 4.4), and is also apparent for narrow focus cases (figures 5.12 and 5.13), a fact which suggests rightmost nuclear stress across focus conditions.

In the absence of F0 cues, we may turn to amplitude and duration to see if there was any role for those acoustic cues. At the left edge, where narrowly focused items surface, amplitude also played no role in distinguishing narrowly focused items from left edge lexical predicates in default wide focus sentences. Longer duration played a marginally significant role in marking narrowly focused items, though this finding should be treated with caution, and not just because of the marginal significance ($p=0.05$ for FE, $p=0.002$ for PM). In the default case, the leftmost lexical stress surfaces on a verb. Roots are canonically CVC closed syllables, and moreover may be either weak or strong, such that word-level stress may fall on a functional suffix (Thompson and Thompson 1992). Narrowly focused DPs, on the other hand, are nouns. In the present data set, a large number of these are loan words from English; in large part this is because proper names have for some time been anglicized in the Nɬeʔkepmxcin community. Because English syllable structure allows for open syllables, this fact means that stress often falls on an open syllable in the narrowly focused nouns in the present study. In addition, stress always falls on lexical content rather than a functional suffix. Some examples of open-syllable nouns are given below.

(19) Example of narrowly focused subject or objects in the data set

a. Péter b. tíy "tea" c. Súe

Thus, independent of their information status, we may expect verbs in the Thompson Salish data, on average, to have shorter stressed vowels. This is because vowels in closed syllables are typically shorter than those in open syllables (Laver 1984: 447), and because functional categories like verbal suffixes resist the sort of acoustic prominence found on lexical items.

At the right edge, duration was not found to play a significant role; because statistical tests were not significant, however, we cannot rule out the possibility that duration is employed to mark deaccentuation, though the effect would be too small to be detectable in the present data set. Given the large degree of overlap between average duration on given material on the right and default nuclear stress material on the right, the marking of given material through shorter duration is not likely to be a strategy that is consistently employed. Amplitude played a marginal role for PM, with given material at the right edge generally lower in amplitude than the rightmost nuclear stress in default wide CP focus utterances.

When we moved on to consider the global effects of focus on utterance intonation shape, F0 again played no role. Examination of the declination lines in wide focus utterances and narrow focus utterances failed to detect the sort of dramatic pitch drops after the narrow focus constituent that is characteristic of languages like English (eg. Eady and Cooper 1986). Instead, amplitude again surfaced to play a marginal role, with narrow focus utterances more likely to be marked by steeper amplitude declination. The steeper drop suggests that given material, at the right edge in narrow focus cleft clauses, is realized at a lower average amplitude than non-given material. Again, there is considerable overlap between wide focus cases and narrow focus cases, suggesting that given material is, at best, only sometimes marked through lesser amplitude. This is illustrated in the following scatterplots: for FE, amplitude declination does occur over a greater (and generally higher) range in narrow focus utterances, but there is much overlap with the neutral focus cases. For PM, neutral focus cases in fact have amplitude declination over a greater range than narrow focus utterances, again indicating a large degree of overlap between the two focus types. The dashed line across each graph shows the mean declination in the neutral focus cases (–0.24 db for FE, 1.25 db for PM), as a comparison to the narrow focus cases.

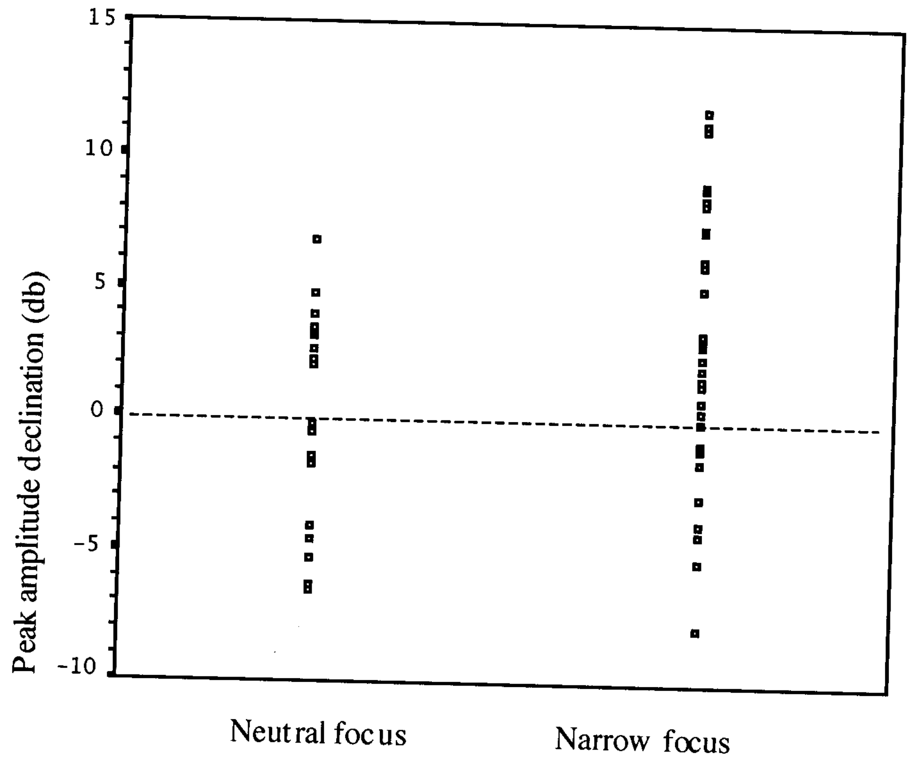

Figure 5.16 Peak amplitude declination values for FE by focus type

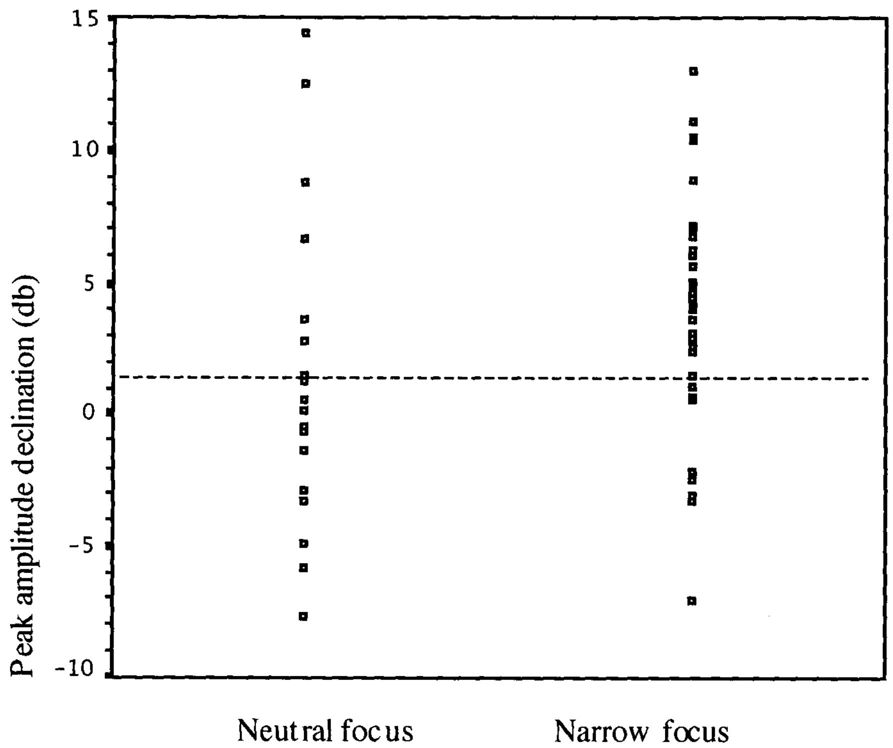

Figure 5.17 Peak amplitude declination values for PM by focus type

In terms of the correspondence of stress and focus, we then come to the following conclusion:

(20) STRESS-FOCUS is not operative in Nɬeʔkepmxcin
Narrowly focused constituents do not attract additional prosodic prominence.

When it comes to the deaccenting of given information, there is some evidence that lesser amplitude may sometimes be involved, though not lower F0, as expected. There are two possibilities I wish to discuss here. The first is that given information is not deaccented in Nɬeʔkepmxcin:

(21) Hypothesis 1: DESTRESS-GIVEN is not operative in Nɬeʔkepmxcin
Given information does not receive lesser prosodic prominence.

Hypothesis 1 would place Nɬeʔkepmxcin together with other languages that exhibit a lack of deaccenting of old information (eg. Ladd 1996 on Italian, Gumperz 1982 on Indian

English, Ortiz-Lira 1993, 1995 on Spanish). The lack of pitch cues for given information does suggest that pitch accents are not employed to distinguish information structure.

Figures 5.18 to 5.20 illustrate these results. Let's look at an English example for comparison. In figure 5.18, contrastive focus on *Rois* is marked with a large pitch excursion and amplitude peak. After the focus, F0 drops more than 50 Hz (–4.8 semitones) from the peak on *Rois,* to the rightmost word of the utterance, *today*; amplitude peaks drop from 73 db to 63 db, a –10 db change. Amplitude in the figures below is shown both as a waveform, and in the amplitude curve in light grey (db scale shown on right). The pitch tracing is in between these two amplitude markers.

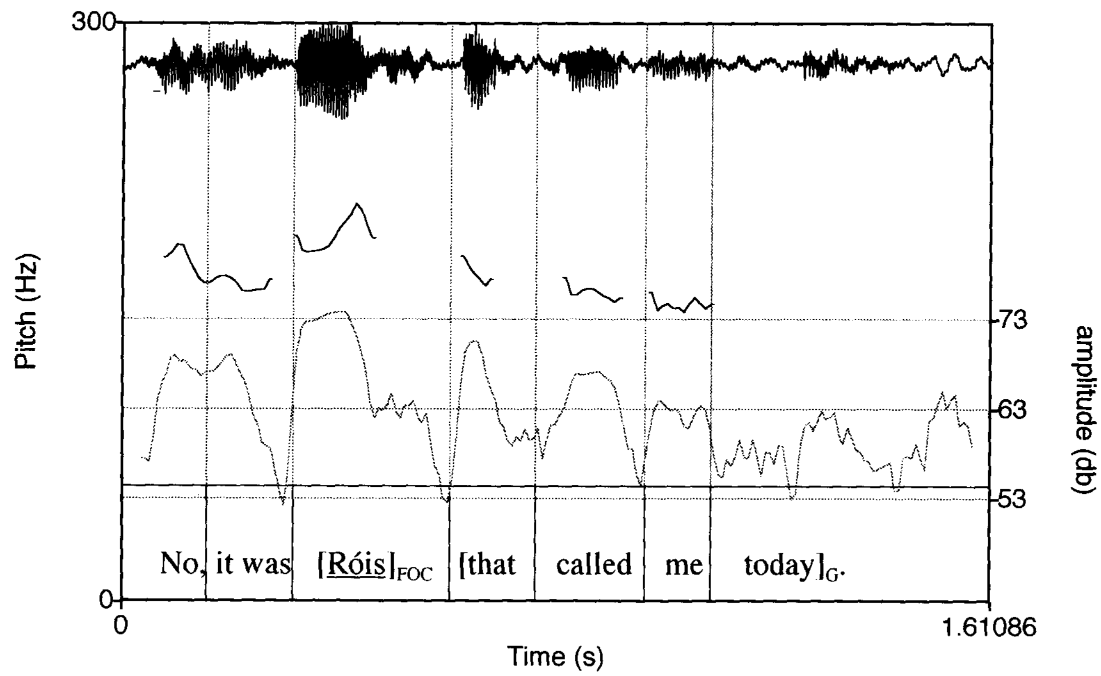

Figure 5.18 Focal accent and post-focal deaccenting in English

In Nɬeʔkepmxcin focus structures, while pitch and amplitude generally decline from left to right, the declination follows the same pattern as that found in default wide focus sentences. There is no additional prominence on left edge foci, nor is there the sort of precipitous deaccenting of post-focal information found in "destress-given" languages like English. In the cleft example, the peak pitch on *Róss* is less than 10 Hz (0.87 semitones) greater than the peak on *píntəmus,* while amplitude peaks decline only 3 db between peaks – and all this despite the fact that the utterance is over 1 second longer than the English case in figure 5.18.

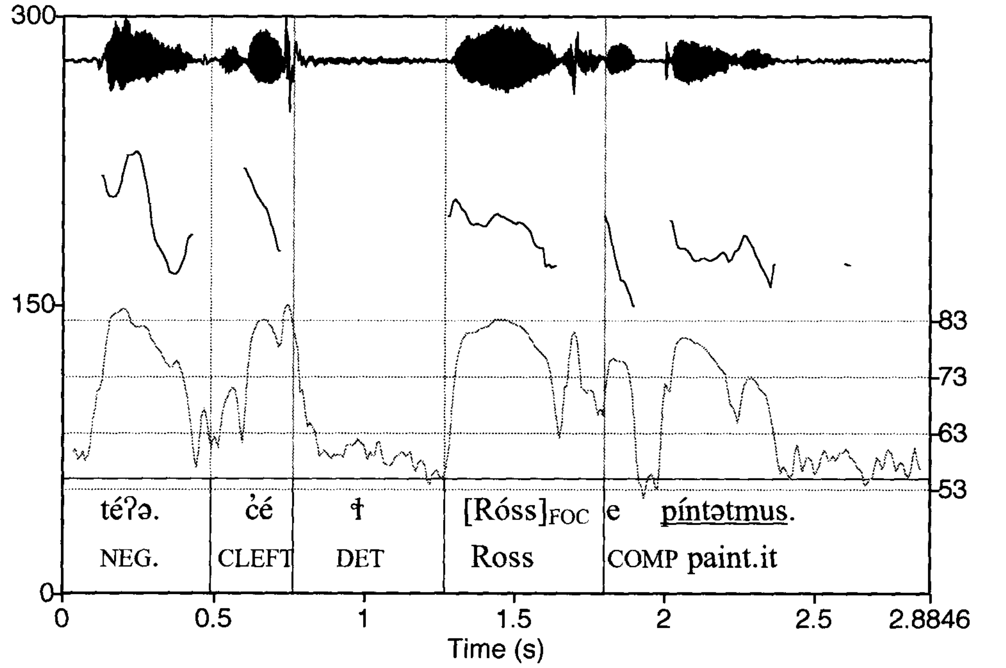

Figure 5.19 Pitch tracing, waveform and amplitude curve: "No, it was [Ross]$_{FOC}$ who painted it."

Finally, in the nominal predicate construction example in figure 5.20, focused *qʷú?* 'water' has a pitch peak higher than the righmost stressed verb, but lower than the pitch peak at the start of the second p-phrase *e qʷəzténe*. Amplitude drops only 4 db between left and right peaks, and the rightmost stressed vowel in *qʷəzténe* is about 40 ms longer than the vowel in *qʷú?*. These figures are similar to the indicators of nuclear stress reported for default wide focus utterances in chapter 4.

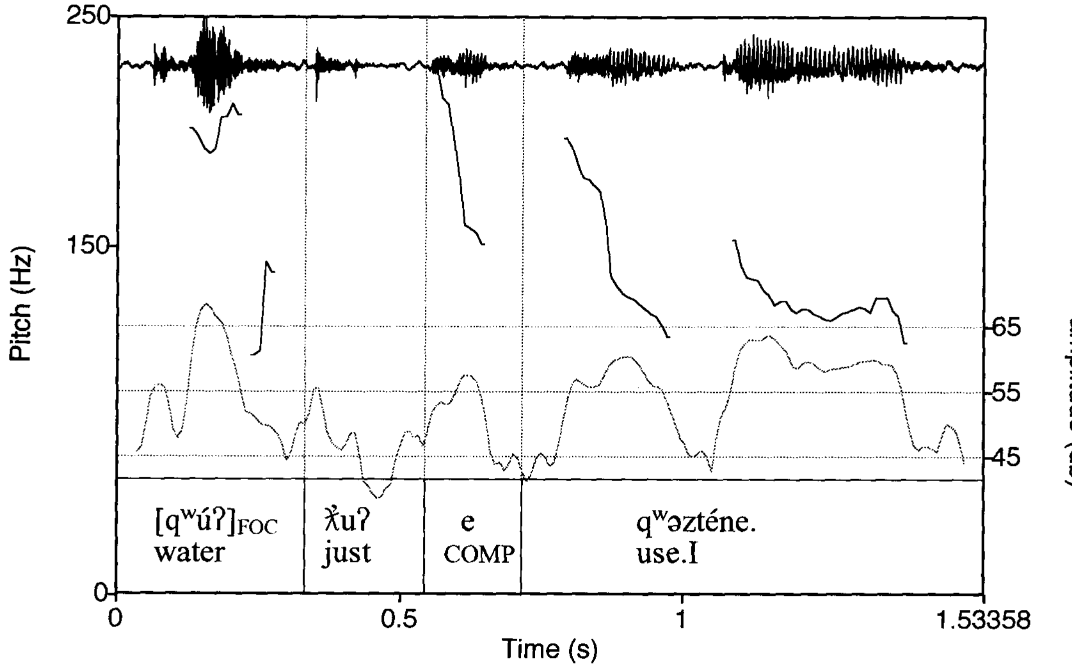

Figure 5.20 Pitch tracing, waveform and amplitude curve: "It's just [water]$_{FOC}$ that I use."

On the other hand, there was some evidence that lower amplitude may be involved in deaccenting given information in Thompson Salish. Thus, we may hypothesize that deaccenting involves amplitude rather than F0, but does not occur as regularly as in languages like English. In a constraint-oriented framework, we can think of DESTRESS-GIVEN as being relatively low-ranked in Nɬeʔkepmxcin, but sometimes still active in the grammar.

(22) Hypothesis 2: DESTRESS-GIVEN may be overridden by other factors

What might some of these other factors be? In fact, there is evidence that, even in English, DESTRESS-GIVEN is not always satisfied. Terken and Hirschberg (1994) examined the claim that given entities are deaccented in English. They judged the level of stress accent on given and focused items in collected discourses describing the changing positions of various geometrical shapes on a display. They found that given items sometimes carried as much accent as focused items if their grammatical role or surface syntactic position changed between utterances. In the examples below, the second instance of *the ball* is given, yet may still carry a phrasal pitch accent, just like new information. In the first case, *the ball* has changed both syntactic role, from object to subject, and surface syntactic position, from right to left. In the second case, *the ball* remains in the same rightmost surface position, but has changed grammatical role, from direct object to indirect object.

(23) a. *The cone touches the ball…*
The ball$_G$ touches the star. [*ball* given, but new as subject]

b. *The cross touches the ball…*
The box pushes the star against the ball$_G$. [*ball* given but new as indirect object]

In Thompson Salish clefts, argument structure in cleft clauses is necessarily in a different syntactic structure than in questions. Wh-questions are in the form of nominal predicate constructions: a wh-word is the predicate (*swet* in 24A), and takes the residue clause *k witx*^{w} 'that you saw' as its argument. In the answer (24B), the rightmost given verb *wiktne* 'I saw' still serves the role of syntactic subject, but this time to the cleft predicate which also takes an internal argument, the focus *e Monique* (Kroeber 1997, 1999). Thus, we have shifted from an intransitive structure in the question to a transitive structure in the answer. The structure of Salish clefts will be taken up in more detail in chapter 7.

(24) A:

swét	xeʔ	k	wík-t-Ø-x^w.
who	DEM	IRL	see-TR-3O-2SG.TS

"Who did you see?"
(more literally: "Who was the (one that) you saw?")

B:

c̓é	xeʔ	[e Moníque]$_{FOC}$	[e	wík-t-Ø-ne]$_G$.
CLEFT	DEM	DET Monique	COMP	see-TR-3O-1SG.TS

"[I saw]$_G$ [<u>Moníque</u>]$_{FOC}$."
(literally "It is [<u>Moníque</u>]$_{FOC}$ [that I saw]$_G$.")

The above facts suggests that there may be variation in what counts as being given. Rather than a strictly semantic approach to givenness (Schwarzschild 1999), we may have to allow for the syntactic relationships of a constituent to enter the equation: if an entity suddenly appears as a subject where it previously surfaced as an object, this counts as new information. Or, if the clause has shifted from intransitive to transitive, this may also count as new information. Even though an entity has been mentioned before, its new syntactic position is relevant for the prosodic marking of information structure. In a language like Thompson Salish, which employs a structural method (clefts or nominal predicate constructions) to mark information structure, a semantically-oriented constraint like DESTRESS-GIVEN may not be generally realized.

On the other hand, Büring (p.c.) notes that characterizing the changes of focus constituents across utterances is probably best thought of as a semantic rather than a syntactic change, something that Schwarzschild (1999) does take into account. Thus, focus is also about presenting old information in new ways. The following examples are from Büring (p.c.). In (25a), *he* is given since it refers to the previously mentioned *private eye*, yet is still accented (shown by underlining). The same is true of *her* and its referent *my mother* in (25b). In neither case has the grammatical function of the referent changed.

(25) a. The private eye must have gotten it from <u>you</u>,
and then <u>he</u> told the press.
b. I told my mother,
and my brother got it from <u>her</u>.

Other research has suggested that the degree of accessibility can also affect the level of (de)accentuation. In German, given material in whole-part relationships with priorly mentioned material, or given material that is predictable from context but not previously mentioned, may carry some level of accentuation, but a different accent from new information (Baumann and Grice 2006).

This issue will require further investigation. The findings here suggest that further examination of acoustic phonetic data of discourses both in languages that violate DESTRESS-GIVEN and in languages that satisfy DESTRESS-GIVEN will prove fruitful in establishing more exact specifications of this interface constraint.

In either case, hypothesis 1 and hypothesis 2 both support the idea introduced in chapter 3 that nuclear stress typically remains rightmost even in narrow focus cases, where the narrow focus has been clefted near the left edge. I will take the strong view that DESTRESS-GIVEN is not operative in Thompson River Salish.

5.3 Case study 2: The effects of data source

The final question to be addressed through analysis of the acoustic correlates of stressed vowels is whether the source of the utterance (spontaneous conversation, single sentence elicitations, or scripted conversation) has any significant effect on intonation.

5.3.1 Subjects

The subjects were the same as in the previous case study (see section 5.2.1).

5.3.2 Method

The present study used the same data analyzed in the previous case study (see section 5.2.2). For the present purposes, the recording sources were identified as instances of spontaneous utterances, scripted role-playing, or single sentence elicitations. Thus, the independent factor was utterance type (spontaneous, scripted, or single sentence elicitation). The vowels identified for analysis were the same as those in the previous case study in section 5.2.

5.3.3 Statistical analysis

ANOVAs were used to test for main effects and interactions. ANOVAs for each variable were performed, with data source, focus type and speaker as between factors. ANOVAs were conducted separately for left edge lexical stresses and right edge stressed vowels (to avoid violating the assumption of independence of measurements by including more than one measure per utterance). Separate ANOVAs were also conducted for global utterance measures. Variables examined at the left and right edges were F0 maximum (Hz), amplitude maximum (db), and vowel duration (ms). Global utterance variables examined were speech rate (syllables/second), F0 declination rate between peaks (semitones/second), and amplitude declination rate between peaks (db/second). Planned pairwise comparisons of data source were performed as post-hoc tests, using Tukey's HSD to control for Type I error. Due to the number of ANOVAs conducted (9), a conservative p-value of 0.005 was adopted to control for family-wise error rate at a level of 0.05. As in the previous study, to indicate trends in the data, I report three levels of significance in the tables used to illustrate results: $p<0.05$ and $p<0.01$ are marginally significant (indicated with * and ** respectively), while $p<0.005$ is the chosen significance level (indicated by ***).

5.3.4 Results

Full statistical figures are reported in the accompanying tables.

The effects of data source: the left edge. For leftmost lexical vowels, only maximum amplitude showed a main, but marginal, effect of text ($F(2, 94)=3.77$, $p<0.05$), with utterances from scripted conversation being louder than sentences from both spontaneous conversation or single sentence elicitation (figure 5.21). Post-hoc comparisons of amplitude peaks revealed that spontaneous utterances had significantly lower amplitude than scripted utterances (mean difference=–3.77 db, SD=1.13 db, $p<0.005$), while single sentence elicitations were also marginally quieter than scripted conversational data (mean difference=–3.84 db, SD=1.39 db, $p<0.05$).

As for F0 peaks, post-hoc comparisons indicated that spontaneous conversation sentences had marginally lower F0 at the left edge than in scripted conversation (mean difference=9.17 Hz, SD=3.54 Hz, $p<0.05$).

There was no effect of data source on vowel duration.

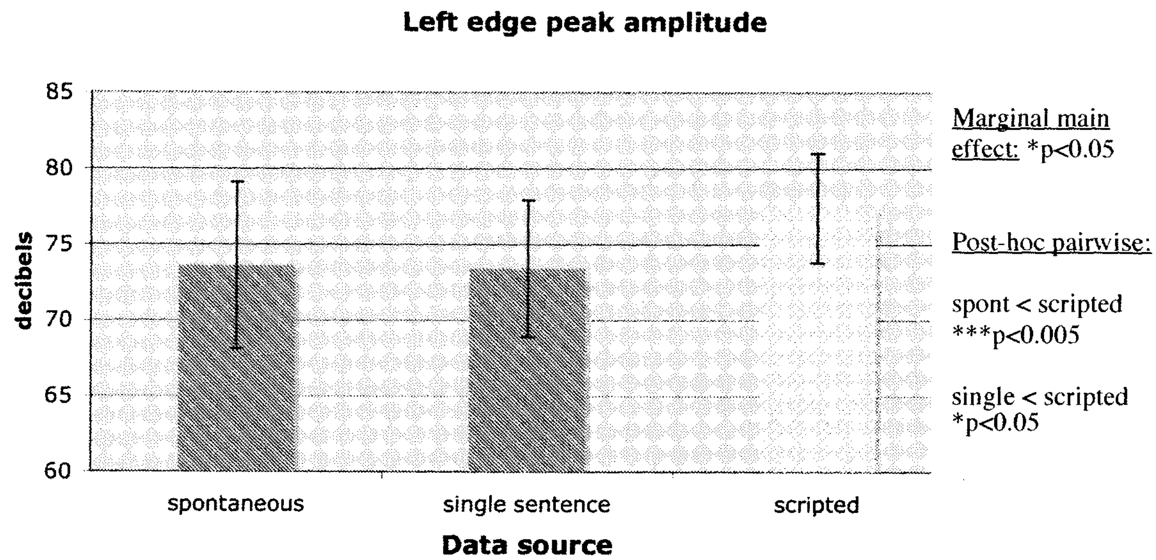

Figure 5.21 Left edge vowels are marginally louder in scripted utterances (error bars show one standard deviation from the mean)

The effects of data source: the right edge. For rightmost stresses, there was again a marginal main effect of data source for amplitude ($F(2, 91)=5.074$, $p<0.01$). Again, post-hoc comparisons showed that both spontaneous and single sentence elicitation utterances had significantly lower amplitude on rightmost stressed vowels than in scripted conversation. For spontaneous utterances, the mean difference was 4.75 db lower than scripted conversation (SD=1.10 db, $p<0.005$). Single sentence elicitations had 5.25 db lower amplitude than scripted conversation (SD=1.31 db, $p<0.005$).

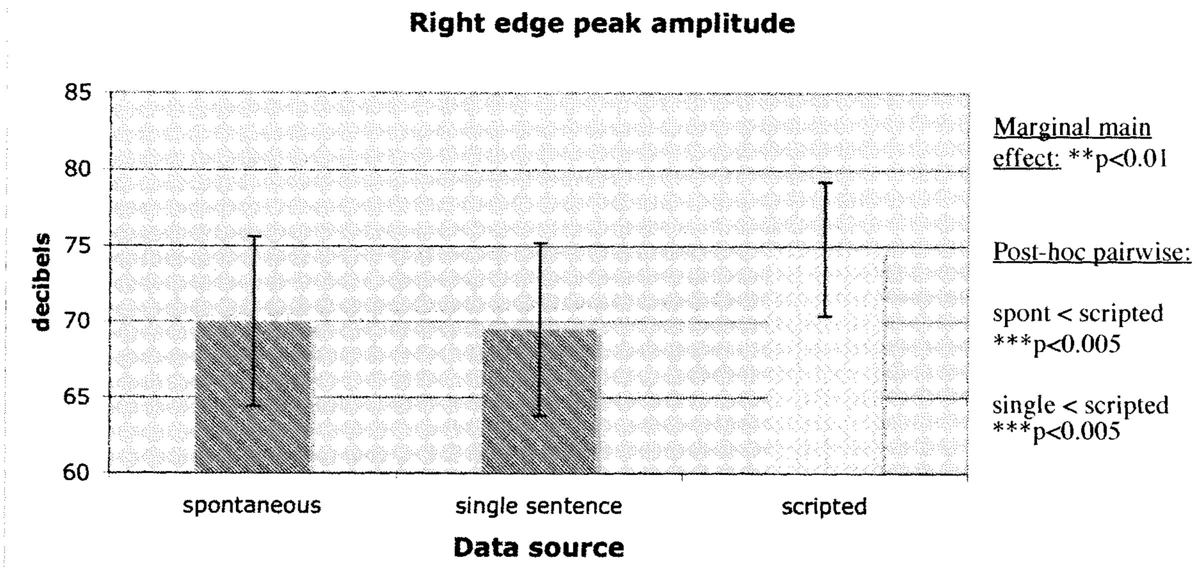

Figure 5.22 Right edge vowels are marginally louder in scripted utterances (error bars show one standard deviation from the mean)

Vowel duration showed a marginally significant effect of data source ($F(2, 91)=3.316$, $p<0.05$), with final vowels in scripted conversation sentences tending to be longer (M=164.7 ms) than those in spontaneous (M=140.2 ms) or single sentence productions (M=139.9 ms).

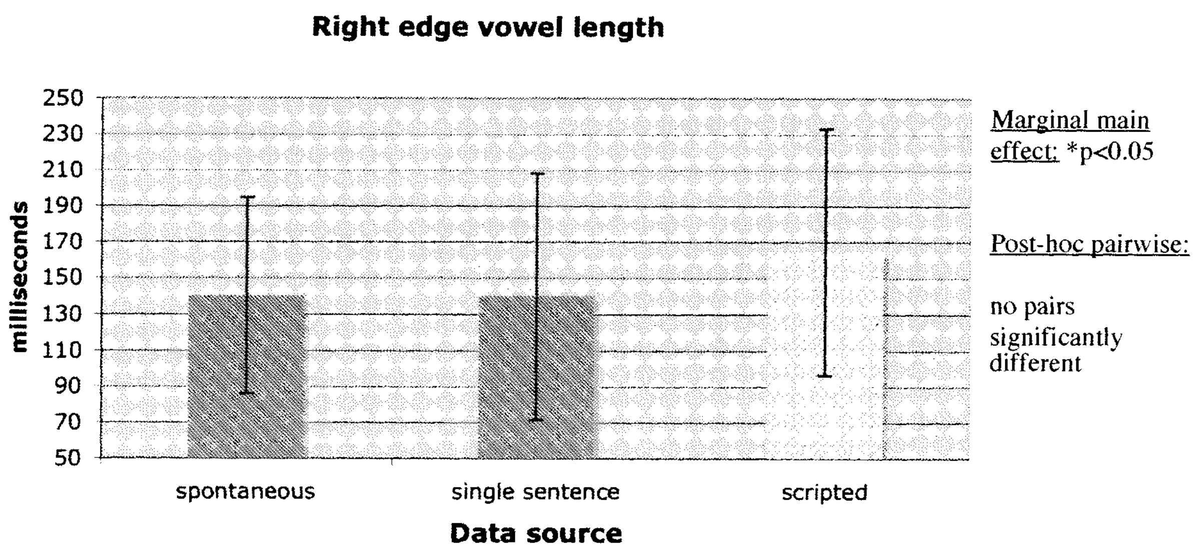

Figure 5.23 Right edge vowels are marginally longer in scripted utterances (error bars show one standard deviation from the mean)

There was no main effect of data source for F0 peaks on rightmost stressed vowels. However, the interaction of speaker and data source was significant ($F(2, 91)=6.196$, $p<0.005$). Post-hoc analysis for each speaker revealed that the source of the effect was a higher peak vowel F0 for FE in scripted conversation when compared to spontaneous conversation (mean difference=18.9 Hz, SD=5.1 Hz, $p<0.005$). PM tended to have *lower* F0 in scripted conversation sentences, but the effect was not significant.

The effects of data source: global factors. There were no significant main effects of data source on utterance speech rate, utterance F0 declination rate, or amplitude declination rate. Post-hoc pairwise comparisons of data source also failed to detect any differences for these variables.

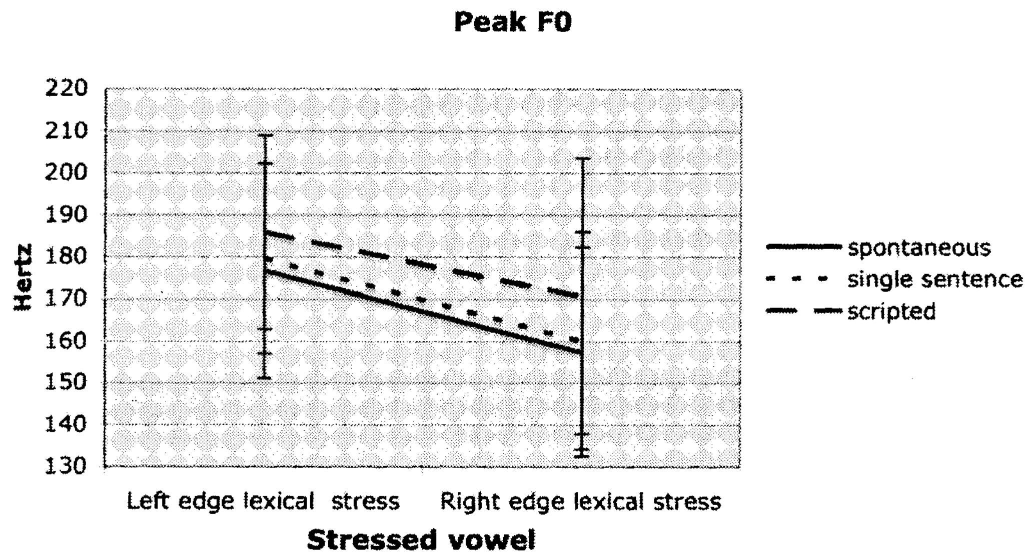

Figure 5.24 F0 declination does not differ significantly by data source (error bars show one standard deviation from the mean)

The effects of data source: summary. The primary differences in data source pit scripted conversation on the one hand against spontaneous conversation and single sentence elicitations on the other hand. Scripted conversations tend to be louder, and have longer final stressed vowels. For FE scripted conversations have a higher stressed vowel F0 than spontaneous utterances. PM's F0 means trend in exactly the opposite direction, with scripted conversation tending to have lower F0 means (though not significantly so). Sentences from spontaneous conversations and single sentence elicitations thus appear to share many acoustic characteristics.

Table 5.10 Main effects of data source: the leftmost lexical stress

Acoustic variable	**Data Source**	**Mean (SD)**	**n**	**F**	**p**	**df**
Max F0 (Hz)	spontaneous	176.7 (25.6)	54	0.998	0.373	2/94
	scripted	185.9 (23.0)	30			
	single sentence	179.6 (22.5)	22			
Max amplitude (db)	spontaneous	73.6 (5.5)	54	3.77	*0.027	2/94
	scripted	77.4 (3.6)	30			
	single sentence	73.4 (4.5)	22			
Vowel duration (ms)	spontaneous	116.2 (54.3)	54	0.878	0.419	2/94
	scripted	126.9 (38.1)	30			
	single sentence	124.4 (35.9)	22			

Table 5.11 Significant post-hoc pairwise comparisons of data source for leftmost stress (adjusted with Tukey's HSD)

Acoustic variable	**Significant pairs**	**Mean diff. (SD)**	**p**	**95% Confidence I. Lower**	**Upper**
Max F0 (Hz)	spontaneous < scripted	-9.17 (3.54)	*0.03	-17.60	-0.74
Max amp (db)	spontaneous < scripted	-3.77 (1.13)	***0.003	-6.45	-1.09
	single sent. < scripted	-3.94 (1.39)	*0.015	-7.25	-0.64
V dur. (ms)	none				

Key: SD=standard deviation, n=# of observations, p=probability, df=degrees of freedom, Confidence I. = confidence interval, *=sig. at p<0.05, **=sig. at p<0.01, ***=sig. at p<0.005 [note: *** is controlled for a family-wise error rate of 0.05]

Table 5.12 Main effects of data source: the rightmost lexical stress

Acoustic variable	Data Source	Mean (SD)	n	F	p	df
Max F0 (Hz)	spontaneous	157.4 (24.9)	49	0.843	0.434	2/91
	scripted	170.6 (32.8)	31			
	single sentence	160.1 (25.9)	23			
Max amplitude (db)	spontaneous	70.0 (5.6)	49	5.074	**0.008	2/91
	scripted	74.8 (4.4)	31			
	single sentence	69.5 (5.7)	23			
Vowel duration (ms)	spontaneous	140.2 (54.4)	49	3.316	*0.041	2/91
	scripted	164.7 (68.4)	31			
	single sentence	139.9 (68.4)	23			

Table 5.13 Significant post-hoc pairwise comparisons of data source for righmost stress (adjusted with Tukey's HSD)

Acoustic variable	Significant pairs	Mean diff. (SD)	p	95% Confidence I. Lower	95% Confidence I. Upper
Max F0 (Hz)	spontaneous < scripted	-13.21 (3.96)	***0.004	-22.65	-3.77
Max amp (db)	spontaneous < scripted	-4.75 (1.10)	***<0.001	-7.36	-2.14
	single sent. < scripted	-5.25 (1.31)	***<0.001	-8.38	-2.12
V dur. (ms)	none				

Key: SD=standard deviation, n=# of observations, p=probability, df=degrees of freedom, Confidence I. = confidence interval, *=sig. at p<0.05, **=sig. at p<0.01, ***=sig. at p<0.005 [note: *** is controlled for a family-wise error rate of 0.05]

Table 5.14 Interaction effect of data source by speaker: F0 maximum (Hz) on the rightmost stress

Acoustic variable	Data Source	Mean (SD)	n	F	p	df
Max F0	Speaker*data source interaction	...	...	6.196	***0.003	2/91
Max F0 (FE)	spontaneous	174.1 (19.1)	22			
	scripted	193.0 (7.56)	20			
	single sentence	175.6 (22.2)	13			
Max F0 (PM)	spontaneous	143.7 (20.4)	27			
	scripted	129.8 (16.9)	11			
	single sentence	139.9 (13.5)	10			

Table 5.15 Significant post-hoc pairwise comparisons of data source on F0 peak, by speaker

Acoustic variable	Significant pairs	Mean diff. (SD)	p	95% Confidence I. Lower	Upper
Max F0 (FE)	spontaneous < scripted	-18.9 (5.1)	***0.001	-31.11	-6.65

Key: SD=standard deviation, n=# of observations, p=probability, df=degrees of freedom, Confidence I. = confidence interval, *=sig. at p<0.05, **=sig. at p<0.01, ***=sig. at p<0.005 [note: *** is controlled for a family-wise error rate of 0.05]

Table 5.16 Main effects of data source: global utterance characteristics (including speaker means)

Acoustic variable	Data Source	Mean (SD)	n	F	p	df
Speech rate (syllables/sec)	spontaneous	4.00 (1.02)	49	0.27	0.764	2/91
	scripted	3.70 (0.68)	31			
	single sentence	3.93 (0.90)	23			
FE only	spontaneous	3.64 (0.74)	22			
	scripted	3.66 (0.56)	20			
	single sentence	3.96 (0.76)	13			
PM only	spontaneous	4.28 (1.14)	27			
	scripted	3.78 (0.89)	11			
	single sentence	3.89 (1.10)	10			
F0 declination (semitone/sec)	spontaneous	1.47 (1.21)	49	1.462	0.237	2/91
	scripted	1.41 (1.32)	31			
	single sentence	1.05 (0.78)	23			
FE only	spontaneous	1.34 (0.89)	22			
	scripted	0.96 (0.58)	20			
	single sentence	0.95 (0.76)	13			
PM only	spontaneous	1.58 (1.42)	27			
	scripted	2.22 (1.85)	11			
	single sentence	1.19 (0.82)	10			
Amplitude declination (db/sec)	spontaneous	1.14 (2.75)	49	0.405	0.668	2/91
	scripted	0.90 (1.52)	31			
	single sentence	1.45 (2.81)	23			
FE only	spontaneous	0.90 (2.88)	22			
	scripted	0.51 (0.89	20			
	single sentence	1.12 (2.99)	13			
PM only	spontaneous	1.34 (2.67)	27			
	scripted	1.60 (2.13)	11			
	single sentence	1.88 (2.66)	10			

5.3.5 Discussion

Apart from a single marginal post-hoc effect (FE had marginally higher F0 on left edge lexical stresses in spontaneous conversation), spontaneous utterances did not differ significantly from single sentence elicitation. This suggests that, given a sufficiently detailed context and asked about how to say a certain sentence in this conversational background (Matthewson 2004), speakers are able to deliver single sentence utterances whose intonation closely approximates the speech melody used in spontaneous conversation. For researchers who want to study aspects of intonation without collecting large samples of spontaneous conversation (or for those working with a single speaker, where such an endeavour is not possible), this is an important result. Carefully elicited sentences can form the core of an analysis of intonational properties of a language, perhaps to be checked with samples of spontaneous conversation after basic principles have been predicted.

Utterances taken from scripted conversation (role-playing dialogues), on the other hand, were found to differ primarily in being louder, having longer duration on rightmost stressed vowels, and for FE, higher F0 on stressed vowels. These results suggest that scripted role-playing conversation generates less natural-sounding intonation.

However, let us consider the finding of greater amplitude in scripted conversation utterances in more detail. Since, in the collection of data, microphone recording levels were reset for each session, and lapel microphones were attached in slightly different positions each time, it is possible that the observed amplitude difference is due to variability in recording conditions. However, since spontaneous, scripted and single sentence recordings were all carried out across many recording sessions, it is expected that this variation in recording conditions is relatively evenly distributed among the utterances comprising the data set. A second possibility is that speaker orientation is more directly oriented towards the lapel microphone during scripted conversation. Since the speakers are working from an English text printed on a piece of paper, they are spending more time looking downward in front of them (towards where the lapel microphone is attached, approximately at the sternum). This orientation in speech may lead to higher amplitude in the recordings for scripted conversation. In spontaneous utterances, or single sentence elicitations, no written material is involved, so speakers are free to look elsewhere, and speech is less directly aimed at the lapel microphone. If speaker orientation accounts for amplitude differences, then utterances generated from scripted conversation may be more similar to spontaneous conversation than the results suggest (and in line with findings by Klatt 1976, Lickley et al. 2005, for "lab speech").

Because differences in amplitude were distributed across both the left and right position, and because data from different focus types came from all three conversation sources, the differences noted here do not affect the results of the case study in section 5.2. That is, there were no interaction effects of focus type by data source detected; the differences noted between left and right in terms of data source were evenly distributed across the entire set of utterances. Moreover, there were no effects of data source on declination, so the findings in section 5.2.6 remain reflective of spontaneous conversation.

5.4 Conclusion

In this chapter, I considered whether there was still a "stress-focus" effect on narrowly focused material in left edge clefts and NPCs, as compared to the left edge in neutral focus utterances. Any such effect would be a residual "stress-focus" effect, since the primary finding in chapters 3 and 4 was that the position focus (left) diverges from the position of nuclear stress (right). However, the "stress-focus" account predicts a nuclear pitch accent on focused material at the left edge, rather than a nuclear pitch accent in the default rightmost position. In addition, I considered whether given material (in the cleft clause) was deaccented ("destress-given").

It was shown that "stress-focus" was not operative in Thompson Salish, and that "destress-given" may have been marked by reduced amplitude on given material, but not consistently. Unexpectedly, F0 cues (higher F0 peaks, greater pitch excursions, and variable timing in pitch peaks) were significantly absent as cues for marking information structure. As a result, the nuclear pitch accent is generally maintained in the rightmost position in narrow focus, left edge clefts. We began with the expected prominence relations shown in (26), repeated from (8). In (26), given material on the right is deaccented and not parsed into a p-phrase at the interface between syntax and phonology, so the nuclear stress falls on the focused object *e Monique*.

(26) Expected prominence relations in clefted foci [hypothetical]

(		X		)	i-phrase: STEP 2
(		(X)		)	recursive p-phrase: STEP 2
		(X)			p-phrase at interface: STEP 1
ċé	xeʔ	[e Moníque]$_{\text{FOC}}$	[e	wík-t-Ø-ne]$_{\text{G}}$.	
CLEFT	DEM	DET Monique	DET	see-TR-3O-1SG.TS	

"I saw [Monique]$_{\text{FOC}}$."

(literally "It is [Monique]$_{\text{FOC}}$ [that I saw]$_{\text{G}}$.")

However, the acoustic phonetic investigation in this chapter suggested that actual prominence relations are better reflected by the structure in (27). Given material is not deaccented, so nuclear stress continues to fall on the right, contrary to what "stress-focus" and "destress-given" accounts would predict.

(27) Typical prominence relations in clefted foci

(				X)	i-ph	(nuc. pitch accent)
(		X)	(	X)	p-ph	(pitch accent)
c̓é	xeʔ	[e Moníque]$_{\text{FOC}}$	[e	wík-t-Ø-ne]$_{\text{G}}$.		
CLEFT	DEM	DET Monique	DET	see-TR-3O-1SG.TS		

"I saw [Monique]$_{\text{FOC}}$."

(more literally "It is [Monique]$_{\text{FOC}}$ [that I saw]$_{\text{G}}$.")

In a second case study, I tested the effect of data source (spontaneous conversation, scripted conversation, or single sentence utterances) on sentence intonation. Findings suggest that speakers provide comparable intonation in both single sentence elicitations and spontaneous utterances. Scripted conversation, on the other hand, differs primarily in greater amplitude, and longer duration of rightmost stressed vowels.

Together, chapters 4 and 5 have illustrated a dissociation of the nuclear stress (rightmost) from the focus position (the leftmost lexical element). In the absence of a "stress-focus" motivation for cleft structures in Nɬeʔkepmxcin, we have not yet established why clefts are employed to mark focus in Thompson Salish. This is the subject of chapters 7 and 8, where I will consider possible semantic, syntactic, and additional prosodic motivations for clefts.

First, I turn to the question of prosodic phrasing in Nɬeʔkepmxcin. In examples like (6) and (27), I suggested that verb and arguments were each parsed into separate p-phrases. In chapter 6, I provide some phonetic evidence for the prosodic phrasing which I have so far been indicating.

Chapter VI: Phonetic Evidence for Prosodic Phrasing

In previous chapters, I have introduced prosodic phrasing in some of the examples I discussed. In verb-initial sentences, I claimed that a verb and its arguments are parsed into individual p-phrases. This means that both the verb and the object *Monique* in (1) carry a p-phrase pitch accent, and *Monique* also carries the nuclear pitch accent.

(1)	(			X)	i-phrase	(nuclear pitch accent)
	(X	) (		X)	p-phrase	(pitch accent)
	[Wík-t-Ø-ne	xeʔ	e	Moníque]$_{FOC}$.		
	see-TR-3O-3S	DEM	DET	Monique		
	"[I saw Monique]$_{FOC}$."					

In this chapter, I give some phonetic evidence for the prosodic phrasing in examples like (1), as well as the phrasing of clefts and nominal predicate constructions.

I will finish by looking at the role of clitics. Following Selkirk (1995b), I define a prosodic clitic as "a morphosyntactic word which is not itself a PWd" (1995b: 440). I will assume that a syntactic marking distinguishes clitics from non-clitics; whether this is a [+clitic] feature, or, as Selkirk proposes, a lack of a [lexeme] feature, is not crucial for the present purposes. By making this feature visible to the phonology, the phonological component is able to distinguish clitics from non-clitics. Clitics are problematic for theories in which syntactic units are parsed into p-phrases at the interface of syntax and phonology (Klavans 1980, 1985, Truckenbrodt 1995, 1999, Shiobara 2004, Selkirk and Kratzer 2007). This is because clitics may be parsed in a p-phrase with a different syntactic constituent. Therefore, clitics can restructure the prosodic phrasing established at the syntax-phonology interface, rendering it unrecoverable (or at least surface-opaque). This is true not only in clitic-rich languages like Salish (see Beck 1999 on Lushootseed), but also in English. The proposed solution that I adopt is to eliminate the clitic group (Selkirk 1995b), and allow clitics to be parsed recursively into p-phrases after the syntax-phonology interface.

6.1 Background: Prosodic phrasing in English and Salish

I have been assuming the prosodic hierarchy from Nespor and Vogel (1986). Use of this common model to describe prosodic phrasing allows for a cross-linguistic comparison of Nɬeʔkepmxcin with a variety of other languages.

(2) The prosodic hierarchy (Nespor and Vogel 1986, Hayes 1989)

Utterance (U)
|
Intonational Phrase (i-phrase)
|
Phonological Phrase (p-phrase)
|
Clitic Group (cl-gp)
|
Prosodic Word (PWd)
|
Foot (Ft)
|
Syllable (σ)

For the purposes of this dissertation, I am primarily concerned with phonological phrases (p-phrases) and intonational phrases (i-phrases), since this is where phrasal accents are assigned. Prosodic words are grouped into phonological phrases, which are in turn grouped into intonational phrases. Pitch accents are assigned at the level of the p-phrase, and the nuclear pitch accent is assigned at the level of the i-phrase. Thus, the prosodic heads of p-phrases and i-phrases are where phrasal stress is realized.

In many languages, including English, verb and object are typically parsed into a single p-phrase, while the subject is realized in a separate p-phrase (Chomsky 1971, Jackendoff 1972, Gussenhoven 1983, Selkirk 1995, Kahnemuyipour 2004, Selkirk and Kratzer 2007). In (3), the VP *saw Monique* is parsed into one p-phrase, while the subject *John* forms a second p-phrase. The nuclear stress is rightmost at the i-phrase level. Word-level stress is indicated by acute accent (eg. *ó*, *á*, and *í*).

(3)			
	(X)	i-phrase	(nuclear pitch accent)
	(X) (X)	p-phrase	(pitch accent)
	[Jóhn sáw <u>Moníque</u>]$_{FOC}$.		

In Nɬeʔkepmxcin, the standard transitive VSO order splits the verb and object in the surface order, when the subject is overt. Predicate and arguments are parsed into individual p-phrases. Cross-linguistically, this is not uncommon. Beck (1999) and Barthmaier (2004) make similar claims for Lushootseed Salish and Okanagan Salish, respectively. Outside the Salish language family, Hayes and Lahiri (1991, on Bengali), Schafer and Jun (2002, on Korean), and Nespor and Sandler (1999, on Israeli Sign Language), also argue for parsing of verb and arguments into individual p-phrases (see also Ishihara 2007: 147-148, ex. 17b, for such parses of some Japanese sentences).

The following example (adapted from Beck 1996: ex. 13c) illustrates. In Lushootseed Salish, verb and arguments are also parsed into p-phrases. Because Beck does not discuss the location of nuclear stress, I do not indicate the i-phrase level in the representation below. In (4), there are three PWds: *luu* 'hear,' *lux̌* 'old,' and *t̓áq̓t* 'inland.' Affixes and clitics (*tiʔiɬ, tudiʔ*) are parsed into the clitic group, and then into the p-phrase. There are three p-phrases, one for the verb 'hear,' one for the object 'an old man,' and one for the prepositional phrase 'up yonder.'

(4) Verb, argument and adjunct are in individual p-phrases in Lushootseed Salish

(X)	(	X)	(	X)	p-ph (pitch accent)
(X)	(	X)	(	X)	clitic-group
ʔu-lúu-d	tiʔiɬ	lúx̌	tudiʔ	t̓áq̓t	
PNT-hear-CAUS	DET	old	yonder	inland	

"He heard an old man up yonder [on the beach]." (from Beck 1996: 13c)

In (4), the clitic group and p-phrase happen to coincide. However, in more complex cases, Beck argues that p-phrases are built around individual Prosodic Words. He suggests that, in polysynthetic languages like those in the Salish family, rich in affixes and clitics, p-phrases are built around single prosodic words and their affixes and clitics. Beck thus claims that phonological phrases in Lushootseed are essentially equivalent to the clitic group. In Nɬeʔkepmxcin, however, we shall see that p-phrases are more closely tied to the syntax rather than the individual prosodic word: complex predicates and arguments, composed of more than one word, are parsed into single p-phrases. In section 6.2, I present some phonetic evidence to support this position. I'll return to clitics in section 6.3.

Beck (1996, 1999) identifies the following indicators of p-phrase status in Lushootseed Salish. His analysis is based on three stories recorded by Thom Hess (1993, 1995), of speaker Edward Sam.

(5) Characteristics of phonological phrases in Lushootseed Salish (Beck 1999)

a. set off by 50-100 ms pause in careful speech

b. lack phonological interaction (ie. assimilation, etc.) across p-phrase boundaries

c. contain a single phonological word with an amplitude peak plus clitics and affixes

In addition, Beck (1999) notes that intonational phrases in Lushootseed are characterized by a steady fall in F0, with a declination reset at the start of each i-phrase. This matches the general properties of declination, also found for Nɬeʔkepmxcin as noted in chapters 2 (ex. 10, figure 2.5), 4 and 5.

In Okanagan Salish, prosodic boundaries are also marked by pauses, F0 fall, and reset or partial reset of declination across phrasal boundaries (Barthmaier 2004). Barthmaier identifies "intonational units" (following Chafe 1994) in an Okanagan narrative (Mattina and DeSautel 1994: 146-152), rather than a unit in the prosodic hierarchy of Nespor and Vogel (1986); roughly, "intonational units" in his approach are equivalent to i-phrases and p-phrases in the prosodic hierarchy of (2).

I now turn to Nɬeʔkepmxcin to see if any of these phonetic and phonological indicators are able to distinguish levels of prosodic phrasing in Thompson Salish.

6.2 Prosodic phrasing in Nɬeʔkepmxcin

It turns out that the same general properties identify prosodic phrases in Nɬeʔkepmxcin. I will present the following evidence for p-phrase status in Thompson Salish:

(6) Characteristics of the p-phrase in Nɬeʔkepmxcin

a. partial F0 declination reset

b. H* pitch accent

c. L- end boundary tone

d. lack of phonological interactions across boundaries

e. pauses in slower speech

It should be pointed out that these characteristics identify different aspects of the phonological phrase. While (6c, d, e) identify the p-phrase edges, (6a, b) are more closely tied to the p-phrase head. That is, declination reset will not necessarily be apparent on functional material at p-phrase edges, but it will be apparent on p-phrase heads, which carry the phrasal accent H*. I'll return to this point at the end of section 6.3.

In transitive sentences with two overt arguments DPs, the verb, subject and object are set off in separate p-phrases. In the default wide focus example in the figure below, there is a partial declination reset within each new p-phrase. The final /t/ of the clitic *–kt* 'our' of the second p-phrase is aspirated before the determiner *e* which begins the next p-phrase, indicating a lack of phonological interaction; within the p-phrase, *–kt* does not contain an aspirated [t] when followed by other material (see figure 6.3 for an example). P-phrases are indicated by subscript 'p' and i-phrases by subscript 'i.'

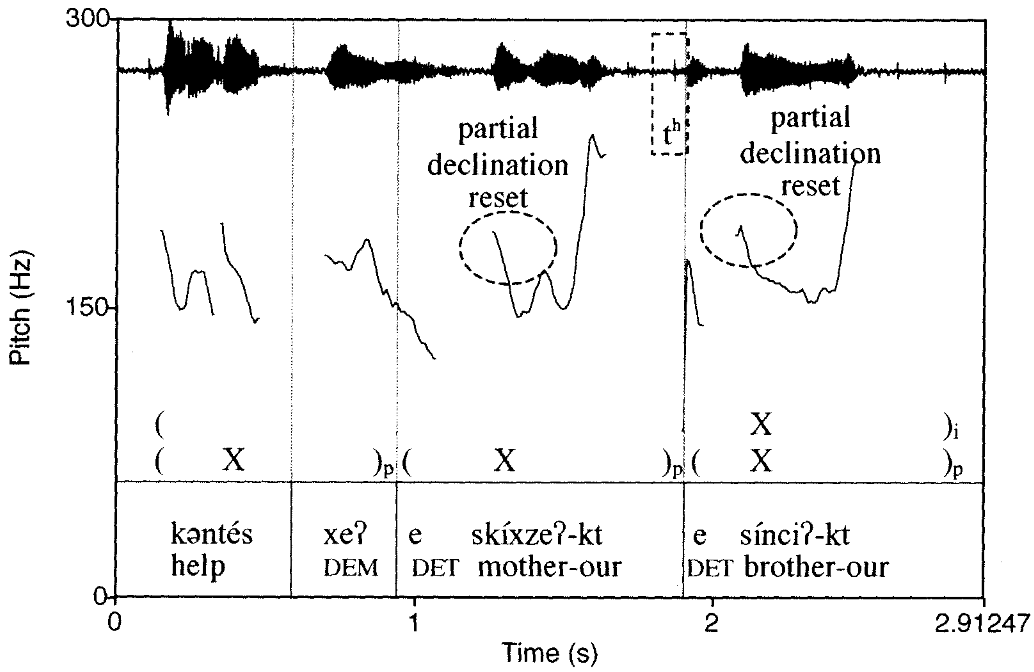

Figure 6.1 Pitch tracing and waveform: "[Our mother helped our brother]$_{FOC}$."

In the next wide focus example, there is similar partial F0 declination reset with each new p-phrase. The initial auxiliary *ʔex*, the second position clitic *xeʔ* and the verb *c̓ax̣tés* are parsed into one p-phrase. This is shown by continous voicing throughout the fricative /x/ in *ʔex* and *xeʔ*, and loss of the glottal stop before the verb *c̓ax̣tés*. The second p-phrase is preceded by a pause of circa 40 ms.

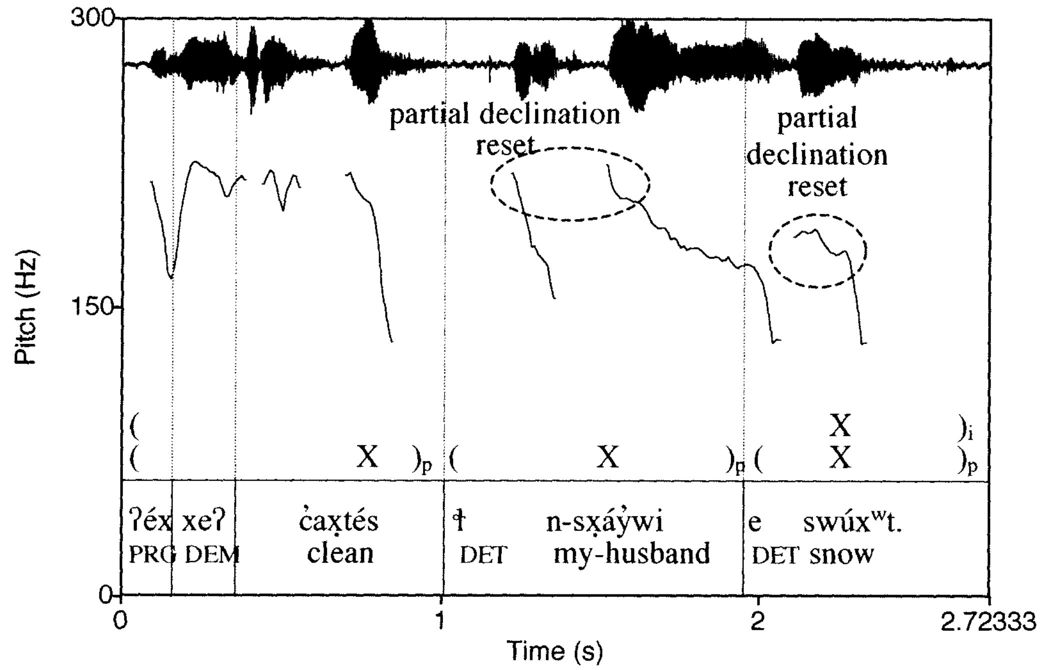

Figure 6.2 Pitch tracing and waveform: "[My husband cleaned up the snow]$_{FOC}$."

The next example also demonstrates that an auxiliary, second position clitics and verb are parsed into a single p-phrase; in this case the first p-phrase also includes the serial verb *nes* 'go.' Contrary to the example in figure 6.1, the final /t/ on the subject clitic *–kt* 'we' is not aspirated before the verb *nes* 'eat.' Declination is reset in the second p-phrase, on the oblique object *tk smúm̓tm* 'some grouse.'

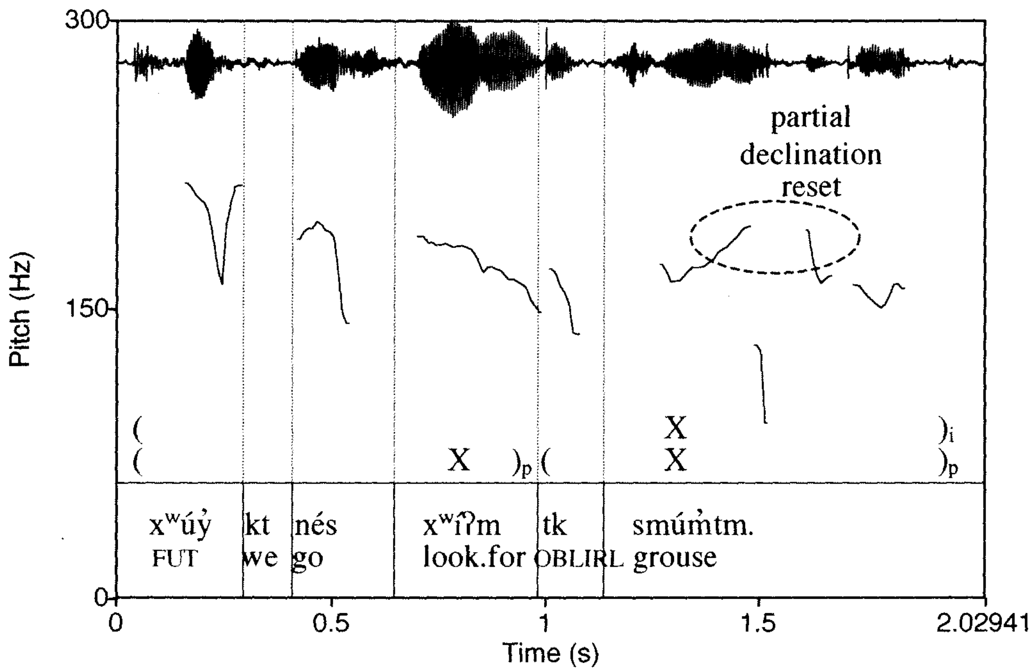

Figure 6.3 Pitch tracing and waveform:
"[We're gonna' go look for some grouse]$_{FOC}$."

In careful speech, verb and arguments may be separated by more generous pauses, as shown by the "passive" example below. The oblique arguments are separated by longer pauses (and intake of breath).

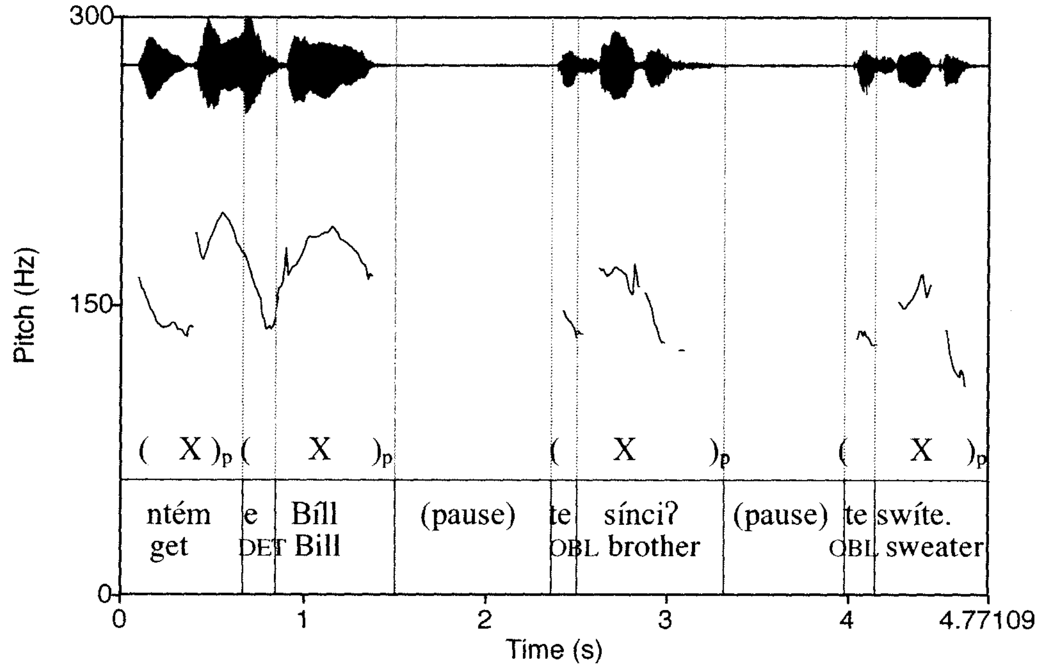

Figure 6.4 Pitch tracing and waveform:
"[Bill's younger brother gave him a sweater]$_{FOC}$."
(more literally: "Bill got from his younger brother a sweater.")

In intransitive constructions, predicates form one p-phrase, and subjects a second. In the example below, the second p-phrase *e citx^{w}s e Peter* 'Peter's houses' is marked by partial declination reset.

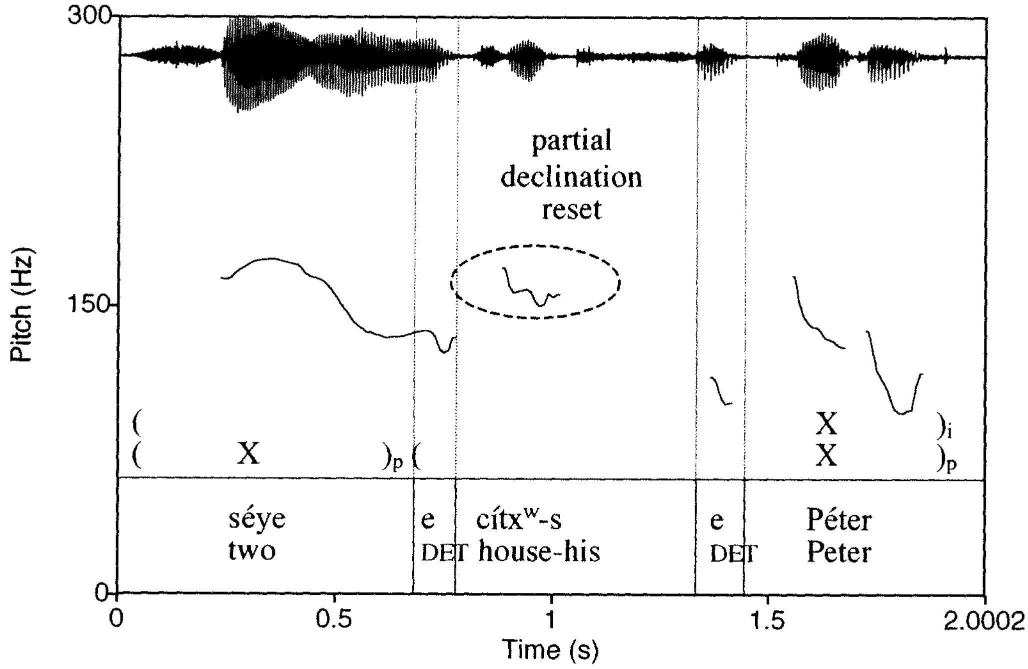

Figure 6.5 Pitch tracing and waveform: "Peter has two houses." (literally: "Peter's houses are two.")

In complex nominal predicate constructions (eg. Davis, Lai and Matthewson 1997), the complex NP forms one p-phrase and the residue clause forms a second. In the example in figure 6.6, F0 declines steadily throughout the complex nominal predicate 'one big pig,' but resets partially to a higher pitch level in the residue clause 'that he has.'

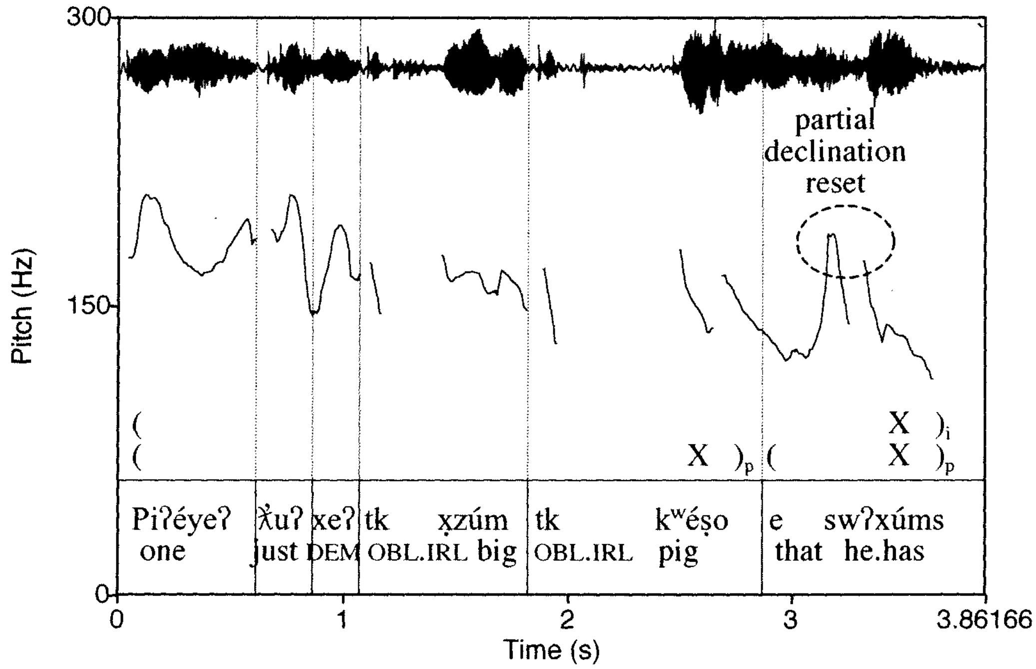

Figure 6.6 Pitch tracing and waveform: "[No.] He only has [<u>one</u>]$_{FOC}$ big pig."

Finally, in clefts, the cleft predicate, second position clitics and the focus (head of the cleft) constitute the first p-phrase. This is unsurprising: given the standard assumption that functional elements like the cleft predicate *c̓e* and clitics do not typically bear phrasal stress, only the cleft head *e Karsten*, and not the cleft predicate, may head the first p-phrase in a cleft construction. In the subject focus example below, voicing of /x/ and loss of the glottal stop in the clitic demonstrative *xeʔ* indicate lack of an internal phrase boundary before the focus *e Karsten*. The cleft residue clause forms a second p-phrase, as indicated by the partial declination reset.

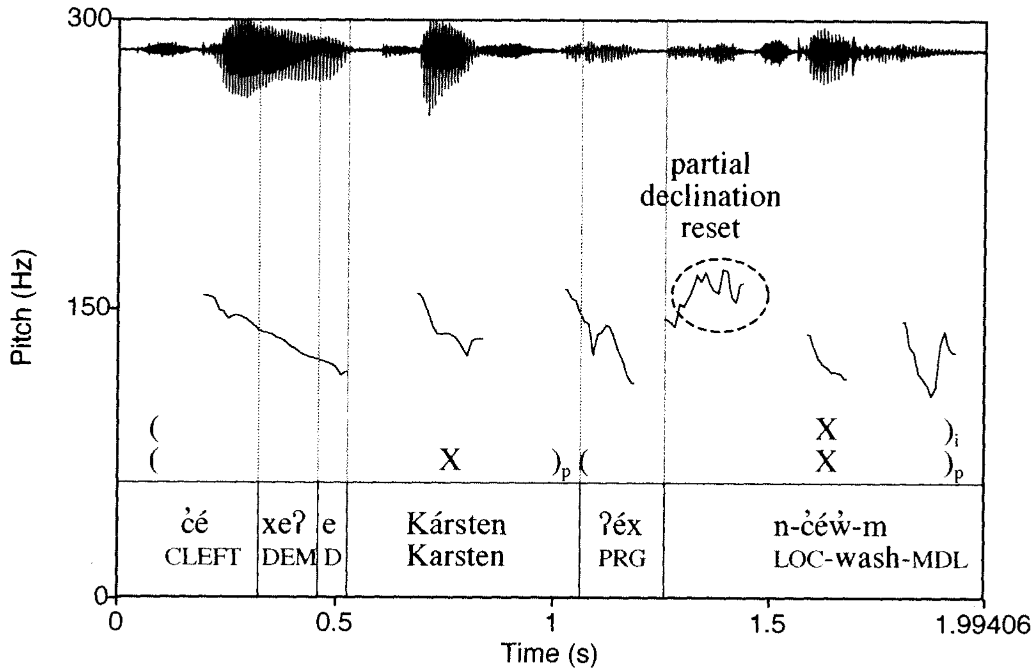

Figure 6.7 Pitch tracing and waveform:
"[No,] it was [Kársten]$_{FOC}$ that washed them."

Thus, p-phrases are grouped around predicate and argument structure. Predicates (including auxiliaries, or complex nominals) form a single p-phrase, while argument DPs are also parsed into p-phrases. P-phrase boundaries are characterized by partial F0 declination reset, lack of phonological interactions across boundaries, and pauses in slower speech.

In chapter 5, we saw phonetic evidence for H* pitch accents and L- phrasal boundary tones. Timing measurements of F0 peaks (as illustrated in figures 5.3 and 5.9) showed that pitch peaks tend to occur early in accented vowels, followed by a pitch decline to the phrase edge. Phonologically, this can be represented as H* pitch accents at the p-phrase level, and L- boundary tones at then end of p-phrases.

6.3 The problem with clitics

I have not shown the clitic group in any of the examples in section 6.2. In fact, none of these examples presented a real problem for the prosodic hierarchy, since each example was consistent with the clitic group being parsed into the p-phrase. The example from figure 6.1 will serve to illustrate:

(7)	(			X	) i-ph
	(X	)	(X)	(X	) p-ph
	(X	)	(X)	(X	) cl-gp
	[kən-t-Ø-és	xeʔ	e skíxzeʔ-kt	e <u>sínciʔ</u>-kt]$_{FOC}$	
	help-TRANS-3O-3TS	DEM	DET mother-1PL.POSS	DET brother-1PL.PS	
	"[Our mother helped our <u>brother</u>]$_{FOC}$."				

The clitics in this example are well-behaved, in that they stay together with their syntactic phrase (i.e. the determiners *e* are parsed with their NP complements), in the same clitic group and p-phrase. In fact, it is actually difficult to tell which way the determiner *e* is parsed in these examples. The pitch tracing in figure 6.1, for example, suggests that the determiners *e* are grouped with their preceding p-phrases; as does the frequent loss of this determiner's initial underlying /h/, or its reduction to [ə] or zero. However, the phonological reduction of determiners occurs even in sentence-initial positions, so it is not a good indicator of p-phrase status; and since clitics don't bear phrasal stress, we don't necessarily expect their pitch to reset to a high level, even across large pauses with breath intake (eg. *te* in figure 6.4). For simplicity's sake, then, I've parsed the determiners with their DP in the above examples; see (24) and (25) for examples where determiners are parsed the "wrong" way.

Beck (1999) gives examples in Lushootseed Salish where clitics, however, are clearly parsed with the "wrong" syntactic material. In the example below, a preposition is parsed with a preceding verb phrase, rather than with its DP complement. Instead of verb and argument being neatly parsed into individual p-phrases, the preposition of the argument is parsed in a p-phrase with the verb phrase.

(8) Clitic group boundary overrides syntactic boundary

(X	)	(	X)	p-ph
(X	)	(	X)	cl-gp
x^{w}áƙ^{w}i-s-əb-əx^{w}	[$_{PP}$ ə	tiʔiɬ	čx^{w}əlúʔ]	
fed.up-APPL-MDL-now	of	DET	whale	

"Whale got fed up [with them]."
(literally: "They were gotten fed up with by Whale.") (from Beck 1999: ex. 19)

In a model where syntactic phrases are parsed into p-phrases at the interface of syntax and phonology (eg. Truckenbrodt 1995, 1999, Shiobara 2004, Selkirk and Kratzer 2007), this is potentially problematic: the link between the phonological parse and the syntactic parse is not directly recoverable to a listener.

In this restricted model of the syntax-phonology interface, p-phrases are the crucial link between prosodic phrases and syntactic phrases. Prosodic parsing has thus been proposed to be a two step process (Legate 2003, Selkirk and Kratzer 2007). In Step 1, syntactic phrases are parsed into p-phrases at the interface of syntax and phonology. In Step 2, the remaining prosodic units (PWds, clitic-groups, i-phrases, etc.) are parsed by the phonological component alone. In an example like, (8), this would result in the clitic group parsing in Step 2 overriding the p-phrase parsing of Step 1. The PP *ə tiʔiɬ čx^{w}əlúʔ* 'by whale' is parsed into a p-phrase in Step 1; but in Step 2, the preposition *ə* is reassigned into a clitic group with the preceding verb. By the prosodic hierarchy in (2), the clitic group would then have to be parsed into another p-phrase; the only way this is achieved is by overriding the p-phrase boundaries established in Step 1.[30]

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[30] I present the two steps as applying serially, because I think it is conceptually simpler for the purposes of this dissertation. However, the two steps could in principle apply in parallel. although in Selkirk and Kratzer's (2007) model of the interface, some constraints (eg. DESTRESS-GIVEN, STRESS-FOCUS) apply only in Step 1. How this can be captured in a parallel evaluation system remains an issue for future research.

(9) Clitic group redefines p-phrase boundary established at syntax-PF interface

(X	)	(	X)	p-ph: STEP 2
(X	)	(	X)	cl-gp: STEP 2
(X)	(		X)	p-ph: STEP 1
xʷák̓ʷi-s-əb-əxʷ	[$_{PP}$ ə	tiʔiɬ	čxʷəlúʔ]	
fed.up-APPL-MDL-now	of	DET	whale	

"Whale got fed up [with them]."

(literally: "They were gotten fed up with by Whale.") (from Beck 1999: ex. 19)

The problem also surfaces in English examples. Shattuck-Hufnagel and Turk (1996: 201-203) cite a variety of studies which show that function words are often parsed into a p-phrase that splits them from their syntactic phrase. In (10), the PP *by the Children's Television Network* is split into two p-phrases.

(10) (Sesame Street)$_{\text{p-ph}}$ (is brought to you by)$_{\text{p-ph}}$ ...(the Children's Television Network)$_{\text{p-ph}}$.

(adapted from Shattuck-Hufnagel and Turk 1996: 201, ex. 16b)

Gee and Grosjean (1983) note that, in slow speech, function words often group with neighbouring PWds, even when this grouping crosses a major syntactic boundary. In (11), the subject is parsed with the verb, rather than the sentence being phrased into its two major syntactic units, subject DP and VP predicate:

(11) (He brought out)$_{\text{p-ph}}$ ... (the objections)$_{\text{p-ph}}$.

[subj] [...................predicate..................]

(adapted from Shattuck-Hufnagel and Turk 1996: 201, ex. 17)

Hayes (1989) discusses /v/-deletion as evidence for the clitic group (from Selkirk 1972; also discussed in Shattuck-Hufnagel and Turk 1996: 216). The examples below are adapted from these observations. The /v/ at the end of *save* in (12) is lost through assimilation with the [m] of the clitic *me*, indicating that the verb *save* and the indirect object *me* are parsed into the same clitic group.

(12) /v/-deletion as evidence for the clitic group

(		X)	i-phrase
(X)	(	X)	p-phrase
(X)	(X)	(X)	clitic-group
Will Júlia	sáve me	a séat?	
	[seɪ mi]		

When *save* is followed by [m] in a prosodic word, /v/-deletion does not occur because the [m] of *mom* is not in the same clitic group.

(13) /v/-deletion does not occur across clitic group boundaries

(		X)	i-phrase
(X)	(	X)	p-phrase
(X)	(X)	(X)	clitic-group
Will Júlia	sáve	móm?	
	[seɪv]		

The process of /v/-deletion can split a single syntactic phrase into two different clitic groups. In (14), the /v/ in *save* is again deleted, this time through assimilation with the [m] of *my*. The result is that the DP *my children* is parsed into two different clitic groups.

(14) /v/-deletion can split syntactic units into different phonological units

(		X)	i-phrase
(X)	(	X)	p-phrase
(X)	(X)	(X)	clitic-group
Will Júlia	sáve [$_{DP}$my	chíldren]?	
	[seɪ mə]		

In (14), both clitic groups in the VP (*save my* and *children*) are still parsed into the same p-phrase, and as such they don't pose a problem for the prosodic hierarchy in (2) if we assume that the VP is parsed into a single p-phrase at the interface of syntax and phonology:

(15) VP parsed into p-phrase at interface (Step 1)

(X) (X) (X $)_{clgp}$ clitic-group: STEP 2 (PF)

(X) (X $)_{p\text{-}ph}$ p-phrase: STEP 1 (syntax-PF)

Will Júlia $[_{VP}$ sáve $[_{DP}$ my chíldren]]?

[seɪ mə]

However, /v/-deletion also occurs when verb and object are necessarily parsed into separate p-phrases. If both verb and object are contrastively focused, then both foci must be marked by pitch accent. Because pitch accent is assigned at the level of the p-phrase, it follows that both verb and object must be in separate p-phrases (eg. Beckman 1996: 35; Ladd 1996: 79; Welby 2003: 65; Wells et al. 2004: 751).

In the next example, speaker B contrastively focuses the verbs *leave* and *save* on the one hand, and also focuses the direct objects *my children* and *my fish* on the other hand. The object DPs *my children and my fish* are parsed into two different clitic groups, and two different p-phrases. The clitic *my* joins with the preceding verb in each case, as evidenced by the /v/-deletion occurring here.

(16) A: If there were a fire in your house, who would you leave and who would you save?

(X) i-phrase

(X) (X) p-phrase

(X) (X) clitic group

B: I'd sáve $[_{DP}$ my chíldren].

[seɪ mə]

(X) i-phrase

(X) (X) p-phrase

(X) (X) clitic group

B: I'd léave $[_{DP}$ my físh].

[li: mə]

When the verbs *leave* and *save* are followed by prosodic words starting with /m/, rather than clitics, there is no /v/-deletion:

(17) A: If there were a fire in your house, who would you leave and who would you save?
B: I'd sáve móm, and I'd léave Míke.
[seɪv] [li:v]

Again assuming that the interface between syntax and phonology parses syntactic phrases into p-phrases, (16) poses the same problem as the Lushootseed Salish example in (9). At the interface (Step 1), verb and direct object are parsed into individual p-phrases; the clitic group, however, redefines the p-phrase boundary in Step 2, obscuring the connection between the syntax and phonology established in Step 1.

(18) Clitic group redefines p-phrase boundary established at syntax-PF interface

(X)(X)	p-phrase redefined: STEP 2
(X)(X)	clitic group: STEP 2 (phonological component)
(X)(X)	p-phrase: STEP 1 (syntax-PF interface)

B: I'd sáve [$_{DP}$ my chíldren].
[seɪ mə]

The problem of determiners being parsed into the "wrong" phonological phrase is fairly common on the north-west coast (eg. Beck 1999 on Lushootseed, Rigsby 1986 on Gitxsan, S. Anderson 1984 on Kwakwala, Brown and Thompson, to appear, on Upriver Halkomelem; see also S. Anderson 1993 on this phenomenon more generally). How do we solve this problem? It will not do to reposition the clitic group in the prosodic hierarchy, such that it is above the p-phrase, as (15) for example suggests. This is because more then one clitic group in cases like (12) do seem to be parsed into a single p-phrase (the VP in 12). Moreover, cases like (18) illustrate that clitics redefine the p-phrase boundary established at the interface; this means that p-phrases are not properly parsed into clitic groups either.

Selkirk (1995b) has proposed eliminating the clitic group (see also Shattuck-Hufnagel and Turk 1996: 215-216 for discussion). Instead, clitics are parsed directly into p-phrases with prosodic words. Selkirk introduces a distinction between the minor phrase and major phrase partly for this purpose; in (12), the clitic groups would be "minor phrases," and the p-phrase would correspond to a "major phrase." Because nothing in this dissertation hinges on the existence of major and minor phrases, though, I will continue to just employ p-phrase terminology for the purposes of this study.

We will have to say something more about the interface of syntax and phonology, however, to avoid the redefining of p-phrase boundaries as in (18). If syntactic phrases simply align with prosodic phrase boundaries (i.e. Selkirk and Tateishi 1991), or syntactic phases are output in their entirety into prosodic phrases (Legate 2003, Ishihara 2007, Selkirk and Kratzer 2007), we will still end up redefining p-phrase boundaries where clitics break the "wrong" way. Specifically, we will have to say that function words (i.e. clitics) do not count in Step 1, where syntactic phrases are parsed into p-phrases. That is, only the prosodic words in the syntactic phrase are parsed into a p-phrase; an interface constraint *PARSE-CLITIC can capture this generalization. Clitics are parsed recursively into another p-phrase in Step 2, by the phonological component (following Selkirk and Kratzer 2007, Ishihara 2007).[31]

(19) *PARSE-CLITIC: Do not parse clitics into p-phrases at the syntax-PF interface.

(20) Clitics are recursively parsed into p-phrases after the syntax-PF interface

	((X)	)(X	)	recursive p-phrase: STEP 2 (PF)
	(X)	(X	)	p-phrase: STEP 1 (syntax-PF interface)
B:	I'd sáve my	chíldren.		
	[seɪ mə]			

This is potentially problematic with complex DPs, for example, where clitics intervene between two or more PWds. We would have to allow clitics that are not at the edges of p-phrases to be parsed into the p-phrase in Step 1. That is, *the* is not parsed into a p-phrase since it is a clitic at the edge of the DP *the bus trip to Rurre*. On the other hand, *to* is parsed into a p-phrase at the syntax-PF interface because it is contained between two PWds (*trip ... Rurre)* that are parsed into a p-phrase at the interface. In Step 2, the determiner *the* is recursively parsed into a p-phrase with the verb, as indicated by deletion of the verb-final /d/ suffix.

---

[31] It should be noted that it is not a special stipulation just for clitics that they are recursively parsed into p-phrases in Step 2. In Selkirk and Kratzer's (2007) more detailed model of the syntax-phonology interface, only the highest syntactic phrase in each spellout domain is eligible for parsing into p-phrases. Syntactic phrases that do not meet this condition are, like clitics, parsed recursively in Step 2. Given material is also not parsed into p-phrases in Step 1, and only recursively in Step 2.

(21) A: What did Tanja enjoy or dislike about her vacation?

	(X)	((X)	)	(X)	recursive p-phrase: STEP 2 (PF)
	(X)	(X)		(X)	p-phrase: STEP 1 (interface)
B:	Tánja	háted	the	bús tríp to Rúrre.	

This example can be modelled in a constraint-based grammar where it is more important to parse *bus trip to Rurre* into a single p-phrase including the clitic *to*, than it is to leave the clitic *to* unparsed. This is due to economy reasons that mitigate against using two p-phrases where one will do (eg. *P-PHRASE constraint in Truckenbrodt 1999: 227-228), That is, *P-PHRASE outranks *PARSE-CLITIC at the interface.

In this section, I have illustrated that clitics pose problems for the prosodic hierarchy as proposed in (2) because they appear to redefine p-phrase boundaries established when syntactic phrases are parsed into p-phrases. The hierarchy in (2), on the other hand, predicts that clitic groups are parsed into p-phrases. Data from both Lushootseed Salish (Beck 1999) and English seem to suggest that prosodic phrasing is therefore not a good indicator of syntactic phrasing. The solution begins by eliminating the clitic group (Selkirk 1995b). In addition, I have suggested that an interface constraint which leaves clitics unparsed allows us to maintain the basic identification of syntactic phrases and p-phrases: only lexical items within a syntactic phrase are parsed into a p-phrase.[32] Clitics are recursively parsed into p-phrases by the phonological component after the syntax-phonology interface.

This results in structures where p-phrases are embedded within each other, but share a single head. The head identifies the head of the p-phrase that resulted from the syntax-phonology interface in Step 1. The prediction is that characteristics of p-phrase edges (pauses, assimilatory effects) will be poorer indicators of syntactic p-phrases than characteristics of the p-phrase head (declination effects). This is an issue which needs further exploration beyond the scope of the current study, but may have interesting consequences for the processing of the speech signal.

A last issue I want to address is whether we have evidence for the internal p-phrase boundary (those established in Step 1) in the case of embedded p-phrases, or whether the larger, recursive p-phrase in Step 2 obliterates the internal boundaries of any embedded p-phrase. That is, we would like to know if (22b) is a better representation than (22a):

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[32] Selkirk and Kratzer (2007), for example, further restrict the syntax–p-phrase parsing to the output of syntactic phases, rather than all lexical material.

(22) a. Recursive p-phrases preserve internal p-phrase boundaries

((	X	)	)	recursive p-phrase: STEP 2
(	X	)		p-phrase at interface: STEP 1

b. Recursive p-phrases eliminate internal p-phrase boundaries

(	X		)	recursive p-phrase: STEP 2
(	X	)		p-phrase at interface: STEP 1

Looking across the Salish language family, there is phonetic evidence that clitics often enter a much closer relationship to the prosodic word they adjoin to; in some cases, they lose segmental material to act like suffixes (Beck 1999 on Lushootseed Salish), and in other cases they attract primary stress from the lexical head (common in St'át'imcets Salish – see Roberts 1993, van Eijk 1997, Davis in prep.). This signals that, within recursive p-phrases, the phonological component is parsing the contents of these p-phrases into other prosodic constituents: prosodic words, for example. This is not controversial, but it does mean that the boundaries of embedded p-phrases are not relevant for the phonological component. This suggests that (22b) is a better representation for Salish.

The example below illustrates the relationship. There are three clitics *(n̓ xeʔ ɬ)* after the initial word, the cleft predicate *c̓e*. The 2nd position demonstrative clitic *xeʔ* loses its initial fricative /x/, while the glottal stop is confined to glottalization of the vowel.

(23) Clitics can be reduced to suffixal material

c̓é	n̓	xeʔ	ɬ	Nikól?
[c̓ə́	n̓	æ'	ɬ	nikól]
CLEFT	Q	DEM	DET	Nicole

"Is it Nicole?"

Beck (1999) has argued that reduction like this brings the clitic(s) into a suffixal relationship with the preceding prosodic word. Crucially, this entails a prosodic category (say, the PWd), below the level of the p-phrase. However, as long as this constituent is organized within a single p-phrase and does not cross p-phrase boundaries, there is no violation of the prosodic hierarchy.

(24) PWds are parsed within established p-phrases

(				X)	p-phrase
(X			)	(X)	PWd
[c̓ə́	ṅ	æ'	ɬ	nikól]	
CLEFT	Q	DEM	DET	Nicole	

"Is it Nicole?"

The problem is when the syntax-phonology interface creates a p-phrase that is smaller than an eventual PWd domain. In this case, we have to allow recursive p-phrases to eliminate internal p-phrase boundaries. Then, a PWd can be constructed within the new p-phrase boundary. In (25), the demonstrative *xeʔ* loses its initial fricative /x/ and final glottal stop, and the following determiner *he* is also reduced to [æ]. Both are thus suffixed to the verb, with syllabification between sequential [æ] vowels indicated only by slight amplitude modulation [wiktnæ.æ.æ]. Here is how the derivation proceeds: in Step 1 (the syntax-phonology interface), the verb *wiktne* and the object DP *c̣nmín t-ex c̣n-ə̣́p* are each parsed into a p-phrase. The clitics *xeʔ* and *he* are recursively parsed into a p-phrase in Step 2, by the phonological component. The recursive parse eliminates the internal p-phrase boundary established in Step 1. Since the verb and clitics are now within a single p-phrase, this allows the clitics to form a PWd with the verb in step 2. I'm assuming that the parsing of the recursive p-phrase and the parsing of the PWds, both in Step 2, happen in parallel, following an Optimality Theoretic approach to the phonological parse (eg. McCarthy and Prince 1993).

(25) Recursive p-phrases eliminate established p-phrase boundaries

(X		)	(		X)	recursive p-ph
(X		)	(X)		(X)	PWd: STEP 2
(X)			(		X)	p-phrase: STEP 1
wík-t-Ø-ne	xeʔ	he	c̣nmín	t-ex	c̣n-ə̣́p	
[wiktnæ	æ	æ	tsnmin	tɛx	tsnəp]	
see-TRANS-3O-1SG.TS	DEM	DET	bell	OBL-PROG	ring-INCH	

"I saw the bell that was ringing."

6.4 Summary

In this chapter, I have argued that, in Nɬeʔkepmxcin, the predicate, its arguments, and adjuncts are parsed into individual phonological phrases. I showed that p-phrases were identified by a lack of phonological assimilation across p-phrase boundaries, by pauses, by H* pitch accent and L– boundary tone, and by partial declination reset. In transitive constructions, the result is that verb, subject and object are parsed into individual p-phrases. In clefts, the cleft predicate and focus (the cleft head) are parsed into one p-phrase, while the residue clause forms a second. And, in nominal predicate constructions the predicate forms one p-phrase while the residue clause again is parsed into a separate p-phrase.

I concluded by looking at the role of clitics. Building on work by Selkirk (1995b) and Selkirk and Kratzer (2007), I claimed that clitics are parsed recursively into p-phrases after the syntax-phonology interface. This eliminates the need for the clitic group in the prosodic hierarchy (2), and explains why the phonological phrasing of clitics often fails to match their syntactic phrasing. Because Salish clitics can be incorporated into a constituent like the prosodic word (even attracting stress in St'át'imcets Salish for example), I argued that recursive p-phrases eliminate any embedded p-phrase boundaries. This allows the phonological component to parse material inside a p-phrase into lower level prosodic categories, like the prosodic word.

The revised prosodic hierarchy, with the clitic group removed, looks as follows:

(26) The prosodic hierarchy (revised)

Utterance (U)
|
Intonational Phrase (i-phrase)
|
Phonological Phrase (p-phrase)
|
Prosodic Word (PWd)
|
Foot (Ft)
|
Syllable (σ)

Chapter VII: Motivating Focus Structure

So far, we have seen that the information marking system of Nɬeʔkepmxcin is not captured by "stress-focus" accounts. Though Thompson Salish is a stress language with rightmost nuclear stress, focus is consistently marked at the left edge of the clause, while the nuclear stress remains rightmost. Narrow focus is marked using clefts or nominal predicate constructions (NPCs), such that the focus is associated with the predicate. As a whole, the results so far show a dissociation of focus from the nuclear pitch accent, but do not account for why clefts and NPCs are used to mark narrow focus.

In chapters 7 and 8, I motivate the use of these focus structures in Nɬeʔkepmxcin. In this chapter, I consider (and reject) some attractive reasons that might make clefts suitable for focus. First, clefts involve word order alternations, and could thus conceivably be driven by syntactic movement of the focus to a Focus Projection (eg. Bródy 1995 on Hungarian; Rizzi 1997). I show, though, that Salish foci are base generated and do not involve special movement of the focus (Kroeber 1997, 1999). Secondly, focus structures may have special semantics that make them suitable for expressing focus (Percus 1997, É. Kiss 1998, Hedberg 2000). However, we shall see that Salish focus structures lack these additional semantics (Davis et al. 2004).

Despite rejecting these two reasons for the use of focus structures in Thompson Salish, we will take a closer look at their possible syntactic structure in this chapter, following a recent analysis of clefts in English (Percus 1997, Hedberg 2000).

In absence of syntactic movement or semantic motivations for focus marking, we are left with two potential sources for the link between structure and focus. One, surprising given the structural nature of focus expression, is prosodic: Salish focus structures align the focus with the left edge of the intonational phrase. The second is syntactic: clefts ensure that the focus is always associated with the predicate (Davis 2007).

7.1 The syntactic structure of clefts: Biclausal

In chapter 3, we saw that narrow focus on subjects, objects, or quantifiers results in the use of focus structures. The focus is either contained in or equal to the predicate (1), or is contained in or equal to the DP argument of the cleft predicate (2).

(1) A: Mm. Stéʔ meɬ tk sq̓ʷíyt xʷuy̓ k eʔ-s-q̓ʷy-éw̓-m.
Mm. what CNSQ OBL.IRL fruit FUT IRL 2SG.POSS-NOM-ripe-harvest-MDL
"Mm. What kind of berries are you gonna' pick?"

B:	[sʔéy̓icqʷ]$_{FOC}$	xeʔ	xʷúy̓ ... k	s-nes-kt	s-q̓ʷyéw̓m.
	raspberry	DEM	FUT ... IRL	NOM-go-1PL.POSS	NOM-pick-MDL

"We're gonna' pick [raspberries]$_{FOC}$."

(2)	A:	ʔe	swét	meɬ	xeʔ	e	wík-t-Ø-xʷ.
		and	who	CNSQ	DEM	DET	see-TR-3O-2SG.TS

"Who do you see?"

B:	c̓é	xeʔ	[e	Suzánna]$_{FOC}$	e	wík-t-Ø-ne.
	CLEFT	DEM	DET	Suzanna	DET	see-TR-3O-1SG.TS

"I see [Suzanna]$_{FOC}$."

These focus structures employ a different word order than the default verb-initial structure, with the focused object surfacing at or near the beginning of the clause. Therefore, one potential reason that clefts are used to mark focus is that the focus undergoes movement by raising to a Focus Projection, as has been proposed for leftward focus movement in Hungarian (eg. Bródy 1995; Rizzi 1997 on Focus Projections). Such an account would still be at odds with the "stress-focus" generalization, since the Focus Projection would attract foci away from the rightmost nuclear stress position. However, the movement theory of focus would partially reconcile the data in Thompson with proposals for focus movement languages (eg. Hungarian), at least as far as the syntax is concerned, and this would be an interesting result.

Under such an analysis, cleft sentences in Nɬeʔkepmxcin would be monoclausal structures, very much like simple relative clauses in which the head NP is extracted from within the relative clause (eg. Kayne 1994). Under this analysis, in focus structures, the focus corresponds to the head of the relative clause, and is extracted from the residue clause. The focus would move to the specifier of a Focus Projection within the extended CP domain (Rizzi 1997, É. Kiss 1998); extraction of the focus would induce the special morphology found in residue argument DPs (chapter 2, section 2.2.6). An object focus example is given in the nominal predicate construction in (3), and a hypothetical derivation in (4).

(3) A: *Do you want some tea?*

B:	Téʔe.	[qʷúʔ]$_{FOC}$	x̌uʔ	e	s-ʔúqʷeʔ-kt.
	NEG.	water	just	DET	NOM-drink-1PL.POSS

"No. We'll just drink [water]$_{FOC}$."

(more literally: "No. The (thing that) we will drink is just [water]$_{FOC}$.")

(4) Single CP analysis of nominal predicate constructions (to be rejected)

[$_{CP}$ [$_{FocP}$ [$_{NP}$ qʷúʔ]$_k$	ƛ̓uʔ	[e	s-<u>ʔúqʷeʔ</u>-kt	t_k]]].
water	just	DET	NOM-drink-1PL.POSS	t_k

For clefts, the cleft predicate in (2B) could be regarded as an overt focus particle in the head of the Focus Projection (note that this suggests a partially right-branching tree, since *e Suzanna* would be in a right-branching specifier of the Focus Phrase).

(5) Single CP analysis of clefts (to be rejected)

[$_{CP}$ [$_{FocP}$ c̓é	xeʔ	[e	Suzánna]$_m$	[e	<u>wík̓</u>-t-Ø-ne	t_m]]].
CLEFT	DEM	DET	Suzanna	DET	see-TR-3O-1SG.TS	t_m

Although subordinated verbs in cleft clauses are marked with subordinating morphology, like nominalization *s-...-kt* in (3), just as in relative clauses, it is not the case that the focus is extracted from cleft clauses. Clefts are in fact biclausal, a fact that has been argued for in detail by Kroeber (1997, 1999) and Davis et al. (2004).

Kroeber (1997: 388-389, 1999) noted that focus structures, when embedded, take clause-typing morphology on the focus, while the verb in the residue clause retains its own clause-typing morphology. This fact indicates there are two clauses present in focus structures. The embedded examples below parallel ones noted by Kroeber (1997: 388, 404, 1999: 265). In the nominal predicate construction in (6), both the modifier *piʔéyeʔ* 'one' in the NPC and the embedded verb *wʔxúm* 'have' are marked with nominalization *s–* and possessive clause inflection *–s*. In addition, both are introduced by complementizers/determiners. Again, this suggests that we are dealing with two CPs here.

(6)

ʔéx	xeʔ	qeʔním-Ø-Ø-ne	[$_{CP1}$ k	s-piʔéyeʔ-s
PROG	DEM	hear-TR-3O-1SG.TS	COMP	NOM-one[RED]-3.POSS
ƛ̓uʔ	tk	mós̩mos̩	[$_{CP2}$ k	s-wʔx-úm-s
just	OBL.IRL	cow	COMP	NOM-PROG-MDL-3.PS
xeʔ	e	Tóm]].		
DEM	DET	Tom		

"I heard that Tom only has one cow."
(more literally "I heard that the (thing that) Tom has is only one cow.")

The facts are similar for embedded clefts. In (7), B is discussing what happened after a dog ran away. After the conjunction 'and,' the cleft predicate *c̓e* carries subordinating nominalization morphology *s-...-s*, while the verb in the cleft clause bears the subject extraction morphology *–emus*.

(7) B: píʔp x̌əm̓ xeʔ ʔe [$_{CP1}$ s-c̓é-s ɬ: ... April
lose-INCH PERF DEM and NOM-CLEFT-3.POSS DET ... April
ɬ skíxzeʔ-s [$_{CP2}$ e wʔex-s-t-émus]].
DET mother-3.POSS DET PROG-CAUS-TR-SUBJ.EXTR
"He was lost and April's mother is taking care of him."
(literally: "He was lost and it's April's mother that is taking care of him.")

In addition, the determiner introducing the residue clause in focus structures is the 'specific' determiner *e* or the 'irrealis' *k* (terms from Kroeber 1997). Headed relative clauses, however, are always introduced by an oblique marker *t* (Kroeber 1997: 392 calls *t* 'attributive' in these cases). In example (8), the oblique marker *t* and complementizer *ɬ* combine to introduce the relative clause. Oblique *t* does not surface in focus structures to introduce the residue clause (9), a fact which is unexpected if these are derived in the same way as relative clauses.

(8) RELATIVE CLAUSE
Cwúm kn xeʔ te kápi **t-ɬ** s-téw=cn-me-s
make-MDL 1SG DEM OBL coffee **OBL-COMP** NOM-buy=mouth-MDL-3.POSS
ɬ n-smʔém ɬ <u>spiʔx̣áwt</u>.
DET 1SG.PS-wife DET day
"I made the coffee that my wife bought <u>yesterday</u>."

(9) FOCUS STRUCTURES
[Kápi]$_{FOC}$ xeʔ **(*t)** e n-s-cw-úm
coffee DEM **(*OBL)** DET 1SG.POSS-NOM-make-MDL
ɬ qíɬ-t wn ɬ <u>snwénwen</u>.
COMP awake-IM 1SG.CONJ DET morning
"I made [<u>coffee</u>]$_{FOC}$ when I got up this morning."

Thus, focus structures are biclausal, with the focus generated *in situ* and not moved from within the residue clause. The focus (including the cleft predicate in introduced clefts) acts as the matrix predicate of the clause, while the verb embedded in the residue is truly subordinated. This analysis is in line with a recent revival of the "extraposition" analysis of English clefts (Jespersen 1927, Percus 1997, Hedberg 2000; see the latter for a historical discussion of cleft analyses). Under this analysis, English clefts are also biclausal, and verbs in residue clauses are subordinated.

I conclude that syntactic movement of the focus to a Focus Projection to satisfy a [+FOC] feature is not the motivation for clefts in Nɬeʔkepmxcin.

7.2 The semantics of clefts

A second hypothesis for the motivation of structural focus marking is semantic. Clefts in English have special semantics, and it may be that the semantics provided by Salish focus structures are similarly suited to the expression of focus. Again, such a hypothesis would fail to reconcile the structural observations with "stress-focus" accounts, since focus structures base generate foci at the left edge, and not the rightmost nuclear stress position. However, a semantic motivation for clefts would offer some common ground between focus marking in Salish and other clefting languages, like English.

As we shall see, however, clefts in Thompson Salish lack the special semantics associated with English cleft structures (Davis et al. 2004 on St'át'imcets and Straits Salish). The structural focus employed by speakers of Nɬeʔkepmxcin resembles clefts in English. As in English, Thompson clefts are composed of a cleft predicate, a cleft head, and a cleft clause or residue clause. There is no element corresponding to *it*, however.

(10)	Cleft predicate		Cleft head		Cleft clause/residue clause
	It	*is*	*[α]$_{FOC}$*		*that has the property Π*
	It	*is*	*[<u>Monique</u>]$_{FOC}$*		*that I saw.*

c̓é	xeʔ	[e	Moníque]$_{FOC}$	e	<u>wík-t-Ø-ne</u>.
CLEFT	DEM	DET	Monique	DET	see-TR-3O-1SG.TS

"I saw [<u>Monique</u>]$_{FOC}$."
(literally "It is [<u>Monique</u>]$_{FOC}$ that I saw.")

In nominal predicate constructions, there is no cleft predicate, since the bare NP serves as the matrix predicate as well as the focus. However, NPCs have a residue just like true clefts. I am making the comparison between NPCs and English clefts because, as we shall see, the semantics of English clefts is derived from the determiner introducing the residue; since the residue in the NPC appears identical to the residue of clefts (in resembling a clausal DP argument), we expect to find the same semantics.

(11) Cleft predicate | Cleft head | Cleft clause/residue clause

It is | *[α]$_{FOC}$* | *that has the property Π*

water | | *that we will drink*

[qʷúʔ]$_{FOC}$ ƛ̓uʔ e s-ʔúqʷeʔ-kt.
water just DET NOM-drink-1PL.POSS
"We'll just drink [water]$_{FOC}$."

In English, such structural focus has specific semantic properties: the clefted focus constituent is interpreted exhaustively, and is presupposed to exist (Percus 1997, É. Kiss 1998, Hedberg 2000, etc.). In the following section I will show, following Davis et al. (2004), that these properties do not hold of either clefts or NPCs in Nɬeʔkepmxcin.

In fact, the results are unsurprising given the findings of chapter 3, namely that clefts are used to express narrow presentational focus as well as contrastive focus. Unless all narrow focus in Nɬeʔkepmxcin were exhaustive and presupposed existence (and it is difficult to imagine a human language whose speakers could communicate effectively given such restrictions), we would anticipate Thompson clefts to lack these presuppositions.

7.2.1 No exhaustivity effects

English clefts are interpreted exhaustively (Halvorsen 1978, Horn 1981, Percus 1997: 340-1, É. Kiss 1998: 245, Hedberg 2000: 904, Davis et al. 2004: 107). For Percus, the exhaustivity effect is a presupposition. The cleft head picks out the only individual that satisfies the predicate in the residue clause of the cleft. As a result, clefts are incompatible with adverbs like *even* or *also*, which presuppose that more than one individual satisifies the predicate.

(12) It is [α]$_{FOC}$ that has the property Π
presupposes $\forall x\ \Pi(x) \rightarrow x=\alpha$ (only α has the property Π) (Percus 1997: 340)

(13) a. ?? It was even [John]$_{FOC}$ who saw Mary.
b. ?? It was also [John]$_{FOC}$ who saw Mary. (Percus 1997: 341, ft. 9)

A further result is that this presupposition of exhaustivity cannot be cancelled.

(14) It was [<u>Bill</u>]$_{FOC}$ who played the bagpipes.
?? In fact, it was [Bill and <u>Janice</u>]$_{FOC}$. (Davis et al. 2004: 107, ex. 15)

However, Büring (p.c.) points out that the exhaustivity effect is an entailment, rather than a presupposition. This is because *It was John who called* presupposes, under Percus's model, that "everyone who called was John," or "no one other than John called." However, intuitively, the sentence presupposes nothing about John. Büring also points out that Percus predicts that *It wasn't John who called* must presuppose that "everyone who called is John," which is clearly not the correct interpretation. Thus, exhaustivity is an entailment, not a presupposition, of cleft structures.

However, focus structures in Salish do not have such an entailment of exhaustivity. This was shown for St'át'imcets and Straits Salish by Davis et al. (2004). I present data to the same effect from Nɬeʔkepmxcin here. Both clefts and nominal predicate constructions regularly take the second position clitics *ʔeɬ x̣̌uʔ*, meaning 'also.' I begin with clefts. In (15), the consultant clefts *grizzly* in the second line (note that the residue clause *that I saw* is elided here). If Thompson clefts were exhaustive, we would expect only the grizzly in (15) to have been seen (only the cleft head would have the property of being seen). Then, (15) could only have the interpretation that the grizzly is simultaneously a coyote (see the literal English translation using an English cleft), which is not the reading we find.

(15)

Wík-t-Ø-ne	xeʔ	e	snk̓yáp	u	ciʔ	u ɬe ...	máwntn.
see-TR-3O-1SG.TS	DEM	DET	coyote	to	there	to DET ...	mountain.

ʔeɬ	ʔe	ʔéɬ	x̌uʔ	e	səxʷsúxʷ.
And	CLEFT	and	even	DET	grizzly.

"I saw a coyote in the mountains, and a grizzly too."
(literally ?? "I saw a coyote in the mountains, and it was also a grizzly." [that I saw])

Similarly, (16) would mean that Thursday is simultaneously yesterday (Friday, since this sentence was spoken on a Saturday), again impossible.

(16)

ɬ	n-snúk̓ʷeʔ	ɬ	Tóny,	ʔéx	xeʔ	cwú-m	ekʷu		
DET	1SG.POSS-friend	DET	Tony,	PROG	DEM	work-MDL	EVID		
en	ɬ	musésq̓t,	ʔeɬ	ʔé	ekʷu	ʔeɬ	ƛ̓uʔ	ɬ	spiʔx̣áwt.
in	DET	Thursday,	and	CLEFT	EVID	and	even	DET	day

"Tony, my friend, worked on Thursday, and yesterday too."
(lit. ?? "Tony, my friend, worked on Thursday, and it was also yesterday [Friday].")

Moreover, clefts can occur immediately following discourse that establishes non-exhaustivity – that is, clefts are used to overtly deny any exhaustivity effect.

(17) A: *First the red apples got burned. What got burned after that?*

B:

ʔe	ékʷu	ʔeɬ	ƛ̓uʔ	e	s-kʷlóʔ	te	éplṣ
CLEFT	EVID	and	even	DET	STAT-green	OBL	apple
e	ʕʷy-ép.						
DET	burn-INCH						

"The green apples got burned."
(lit. ?? "It was also the green apples that got burned.")

(18) A: *Peter went fishing. Did anyone else go fishing?*

B:

c̓é	ekʷu	ʔeɬ	ƛ̓uʔ	xeʔ	e	Jóhn.
CLEFT	EVID	and	even	DEM	DET	John

"John did too." (cf. ?? "It was also John [that went fishing].")

Sometimes *ʔeɬ ƛ̓uʔ* gets an 'even' interpretation:

(19) A: *Did everyone eat the food?*

B:

heʔáy,	c̓é	ʔeɬ	ƛ̓uʔ	e	sq̓áqx̣a	xeʔ		
yes,	CLEFT	and	even	DET	dog	DEM		
e	kən-t-éy-Ø-s			e	Hérmann.	ɬaʔx̣áns	xeʔ te	smíyc.
DET	help-TR-?-3O-3TS			DET	Hermann.	eat	DEM OBL	meat

"Yes, even Hermann the dog helped. He ate some meat."
(literally ?? "Yes, it was even Hermann the dog that helped. He ate some meat.")

Nominal predicate constructions are also not exhaustive. Example (20) gives a common list form answer - using multiple NPCs. If NPCs were exhaustive, they could only have the bizarre interpretation that the squash is simultaneously beets and moose stew, not the reading we get.

(20) A: *What did you make for dinner?*

B: səqʷési e n-s-cw-úm, ʔeɬ ... píts̩,
squash DET 1SG.POSS-NOM-make-MDL, and ... beets,
ʔeɬ *moose stéw* e n-s-kʷúkʷ, ɬ sʕáp.
and moose stew DET 1SG.POSS-NOM-cook, DET evening
"I made squash, beets, and moose stew [for dinner]."
(literally ?? "The (thing that) I made was squash, and ... it was beets, and what I cooked was moose stew, for dinner.")

7.2.2 Corroboration from narratives

Egesdal (1984: 108, ex. 6.1e) provides the following lines from the narrative 'The Belly-Spit-on One' *p̓əc̓k̓ʷénekətm*: "At the beginning of this legend the main character, a girl who has just begun to menstruate, tells her mother to make some articles of clothing for her." Each line uses a nominal predicate construction to introduce each item of clothing. It follows that the interpretation of each item to be made is not exhaustive, since each subsequent item would overtly deny any exhaustivity effect. In English, the interpretation would be that the blankets are simultaneously blankets, clasps, and belts, which is not the interpretation here.

(21) Nominal predicate constructions are not exhaustive
[$_{NP}$ mús tk síc̓m] Ø xʷúy̓ cu-xí-t-sm-xʷ
four OBL.IRL blanket DET FUT make-APPL-TR-1SG.O-2SG.TS
"You're going to make me four blankets."
(literally: "The (thing that) you're going to make me is four blankets.")

[$_{NP}$ mús tk x̣əp̓ayékstn] Ø xʷúy̓ cu-xí-t-sm-xʷ
four OBL.IRL clasp DET FUT make-APPL-TR-1SG.O-2SG.TS
"You're going to make me four clasps."
(literally: ?? "The (thing that) you're going to make me is four clasps."

[$_{NP}$ mús tk sk̓ị́l̓] Ø xʷúy̓ cu-xí-t-sm-xʷ
four OBL.IRL belt DET FUT make-APPL-TR-1SG.O-2SG.TS
"You're going to make me four belts."
(literally: ?? "The (thing that) you're going to make me is four belts."
(adapted from Egesdal 1984:108, ex. 6.1e; stress marks are Egesdal's)

In the traditional narrative *The Man Who Went to the Moon* (Thompson & Thompson 1992), the speaker describes the items that the main character sees laid out in a moon-house: stone hammers, arrowheads, bows and arrows. After listing these items, the speaker concludes with the nominal predicate construction in (22) to list the final item, fish spears. Again, it follows that the interpretation of the things that are lying there is not exhaustive, since the context clearly indicates that it is not just fish spears which are laid there in the house.

(22) Nominal predicate constructions are not exhaustive

They say he saw all kinds of things there – there were stone hammers there, there were arrowheads there, bows and arrows and other such things.

[$_{NP}$ mníp] ekʷu nèʔ e ɬəqʷ-ɬqʷ=áw̓s.
fish.spear EVID there DET AUG-put.on.top=middle
"There were fish spears laid there."
(literally: ?? "The (things that) were laid there were fish spears.")
(Thompson and Thompson 1992: 211, line 123)

In a second moon-house, other items are laid out. In the following example, a nominal predicate is used in the first line to indicate that awls are laying there. The second line (on the next page) denies exhaustivity by indicating that, in fact, all sorts of things are laying there. This would be unexpected if NPCs had an entailment of exhaustivity.

(23) Nominal predicate constructions are not exhaustive

ʔe [$_{NP}$ sx̣ʷʔúɬ] ekʷu téʔe he ʔes-cíx̣ʷ.
and awl EVID there DET STAT-lie
"It is said that awls were lying there."
(literally: "The (things that) were lying there were awls.")

tékm	ekʷu	tèʔe	he	ʔes-cíx̣ʷ	us.
all	EVID	there	DET	STAT-lie	3.CONJ

"All sorts of things (are said to have been) lying there."

(Thompson and Thompson 1992: 205, lines 63-64)

I conclude that neither nominal predicate constructions nor introduced clefts in Nɬeʔkepmxcin are interpreted exhaustively.

7.2.3 No presupposition of existence

English clefts also carry an existential presupposition (Soames 1982, Percus 1997, Hedberg 2000, Davis et al. 2004), namely that there exists some individual to satisfy the predicate of the residue clause. Percus formalizes the presupposition as follows:

(24) In a cleft of the form *It is* $[\alpha]_{FOC}$ *that has the property* Π,
there is a presupposition that $\exists x\ \Pi(x)$
(there exists some individual that has the property Π). (Percus 1997: 339)

As a result, Davis et al. (2004: 113-4, ex. 26) note that English clefts are not normally acceptable constructions for introducing a character at the start of a story.

(25) ?? Once upon a time, it was a little girl who lived with her grandmother.

In St'át'imcets and Straits Salish, however, focus structures are employed in just such a manner, both in narrative contexts and at the start of a conversation. This is true in Thompson Salish as well. The story *nʔik̓ʔik̓ńincút* 'Push-Back-Sides-of-his-Hair,' as told by Annie York to Laurence Thompson in 1975, begins with a cleft of the locative *neʔe*. The auxiliary *ʔex* is in the residue clause, introduced by the complementizer *k* and marked with subordinating nominalization morphology *s-...-s*. The character in the story apparently gets his name because he is "always brushing the sides of his head with his hands" (Thompson and Egesdal 1993: 286, ft. 2).

(26) ʔe wkʷu neʔe k s-ʔéx-s,

CLEFT EVID there IRL NOM-PROG-3.POSS,

n-ʔiḱ-ʔiḱ=ṅi-n-cút

LOC-AUG-press.straight=ear-DRV-REFL

"It was said that he lived there, Push-Back-Sides-of-his-Hair."

(more literally: "It was there that he lived, Push-Back-Sides-of-his-Hair.")

(adapted from Thompson and Egesdal 1993:286)

In the focus-oriented framework of this dissertation, we can say that answers to wide focus questions (*What happened?*) should be unacceptable if Salish focus structures have existential presuppositions. This is because, if all the information in the answer is new information, nothing can be presupposed to exist. The unacceptability of clefts in this context in English is due to the existential presupposition of the residue clause not being satisfied. This is shown in the dialogues below when A questions the existence of a cleftee with the property of the residue clause (27). The unclefted answer, on the other hand, is acceptable since no existential presuppositions are violated (28).

(27) A: What happened?

B: ?? It was a little dog that an eagle ate.

A: Huh? An eagle ate something?

(28) A: What happened?

B: An eagle ate a little dog.

In Nɬeʔkepmxcin, however, wide focus questions can be answered using focus structures. In (29), B answers the question using the complex bare nominal predicate *xʷʔit (ekʷu xeʔ) tk seytknmx* 'many people' or 'everybody'. Compare the unacceptable "literal" English translation: if Nɬeʔkepmxcin NPCs carried an existential presupposition, we would expect listeners to challenge the speaker (*What?! I didn't know anybody was in town!*), but this does not happen.

(29) A: *What was going on yesterday?*

B:	xʷʔít	ekʷu	xeʔ	tk	séytknmx
	many	EVID	DEM	OBL.IRL	people
	k	ʔex	n	ɬ	téwn.
	IRL	be	in	DET	town

"Everybody was in town."
(literally ?? "The (ones that) were in town were lots of people.")

7.2.4 Corroboration from narratives

I have not found any cases in my corpus of conversational recordings of clefts used in a wide focus context. There are some examples, however, in traditional narratives (including 26). In *The Man Who Went to the Moon* (Thompson & Thompson 1992), the speaker employs clefts lacking existential presuppositions. In this story, a Nɬeʔkepmx man travels to the moon, where he acquires numerous innovative items to take back to earth. In the next example, two old moon people have just handed the protagonist a bow and arrow. Even though there has been no prior mention that something is to be used for hunting, or given to the protagonist, the old people twice use the cleft predicate *c̓e* when they tell him:

(30)

c̓e	xéʔ	e	qʷez-t-Ø-és	e	x	q̓áq̓y̓-m̓.
CLEFT	DEM	DET	use-TR-3O-3TS	DET	PROG	shoot[DIM]-MDL

"This here is to use for hunting."
(literally "It is <u>this</u> that is to be used for hunting.")

c̓e	s-xéʔe	he	xʷuy̓	eʔwí -nɬəɬ.
CLEFT	NOM-DEM	DET	FUT	2SG.EMPH-EMPH

"This here is going to be yours."
(literally "It is <u>this</u> that is going to be yours.")

(adapted from Thompson & Thompson 1992:216, lines 189-190)

Were there a violation of existential presuppositions, we might expect a confused protagonist to respond, "What? Someone's going hunting? What? Something is going to be mine?" However, no such exchange occurs.

Later, the protagonist becomes lonely for his relatives back on earth. The old people tell him he can go home soon. Then the narrator announces:

(31)

ʔe	xéʔ	ek^{w}u	néʔe	ɬ	qəɬ-qəɬmín	Ø	sy-ə́m....
CLEFT	DEM	EVID	there	DET	AUG-old.person	DET	twist.fibre-MDL.

"They say that the old people there were twisting fibres...."
(more literally "It was the old people there that were twisting fibres....")
(adapted from Thompson & Thompson 1992: 218, lines 210-211)

In this case, though there has been no prior mention of anyone twisting fibre or making ropes, the narrator uses an introduced cleft *ʔe*.[33] Only later do we find out that the old people send him home to earth by lowering him on a long rope that they have made.

Thus, clefts also appear to lack an existential presupposition. Nevertheless, clefts seem to be disfavoured in this wide focus situation, at least in conversational speech. We can capture this fact by assigning clefts a weak implicature of existence, that is cancellable (Davis et al. 2004).

In this section, I have demonstrated that an alternative explanation for the use of clefts and nominal predicate constructions in focus contexts, namely that they provide a special semantics like English clefts, does not hold (Davis et al. 2004 on St'át'imcets and Straits Salish).

7.2.5 Determiners: The source of the difference between English and Salish clefts?

The source of the meaning differences noted between Salish and English clefts receives a natural explanation in terms of a recently revived extraposition analysis of clefts (Jespersen 1927, Percus 1997; Hedberg 2000: 907-909, and references therein). Under this view, English cleft clauses form part of a discontinuous definite description. The cleft clause is right-extraposed from a determiner phrase headed by *the*.

(32) Cleft clauses are discontinuous definite descriptions (Hedberg 2000: 898, 906)
It was John who ate my cookie.

D

D CP
the *who ate my cookie*

[33] We have to assume that the determiner introducing the cleft residue clause is unpronounced in this case, a phenomena that has been reported elsewhere for other speakers (see footnote 12, section 2.2.7).

The semantics associated with English clefts (a presupposition of existence, and an exhaustive interpretation) are exactly those of the definite determiner *the*. Since Salish determiners have different semantics (in particular, lacking exhaustivity and existence effects; see Matthewson 1996 for St'át'imcets, Gillon 2006 for Squamish), Salish clefts are not expected to have the same interpretation as English clefts.

Under this analysis, the *it* in a cleft like *It is John that ate my cookie* is a particular spellout of *the*, and the semantics of English clefts no longer has to be stipulated. A rough derivation is illustrated below (see Percus 1997: 338, Hedberg 2000, for more details).

(33) step 1: [The Ø [who ate my cookie]] [is John].
step 2: [The Ø t_k] [is John] [who ate my cookie]$_k$

extraposition of cleft clause

spell-out: It is John who ate my cookie.

The structure proposed by Percus in (33) posits a null NP, such that the spelout of *the* Ø is *it*. Hedberg, in contrast, proposes the following tree structure (adapted from Hedberg 2000:913, ex. 35). The determiner selects for a bare CP in Hedberg's analysis. The CP *who ate my cookie* has been extraposed from the subject DP *It*, and adjoins to the lower DP *John*. It is not clear how such downward movement occurs, or at which point in the derivation. Still, the structure gets the surface order and the semantics right.

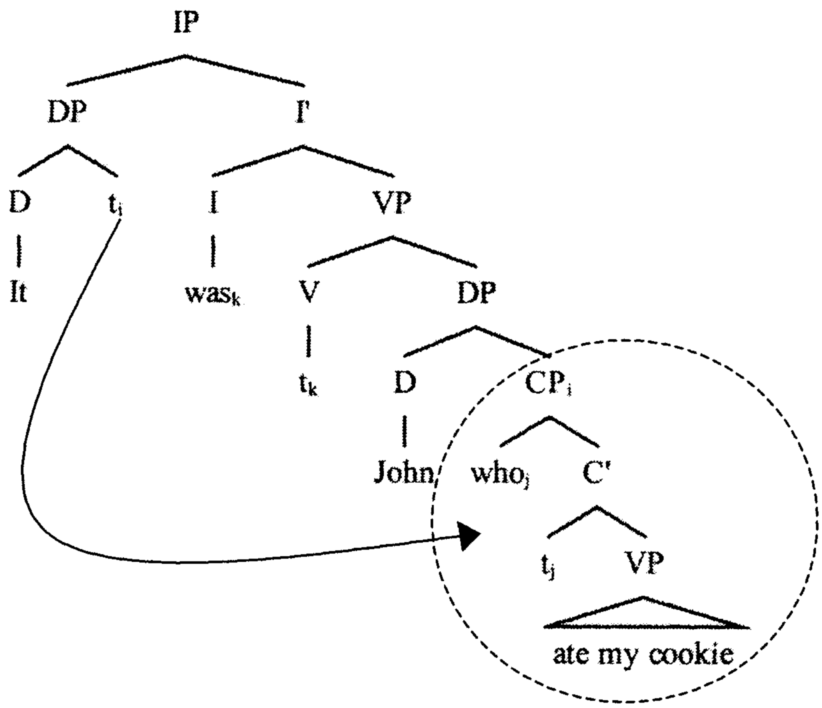

Figure 7.1 A syntax for the extraposition of English clefts (Hedberg 2000: 913)[34]

Thus, it is the determiner associated with the residue clause that is the source of the presuppositions of English clefts. In Nɬeʔkepmxcin, the residue of both clefts and of nominal predicate constructions is introduced by a determiner, either *e* or *k*.

Determiners are therefore involved in a similar way in both languages – linked with the residue clause. Thus, the extraposition analysis of English clefts seems to offer a plausible explanation for the semantic differences in focus structures in the two languages. Since Salish determiners lack exhaustivity and a presupposition of existence, it follows from the extraposition analysis (Percus 1997. Hedberg 2000) that the semantics of focus structures also lack these presuppositions. While a discussion of the semantics of Nɬeʔkepmxcin determiners is beyond the scope of this dissertation, see Matthewson (1996, on St'át'imcets) and Gillon (2006, on Squamish) for detailed treatments of determiner semantics elsewhere in the language family.

However, I will now argue that, despite the appeal of the analysis linking cleft semantics to determiner semantics, determiners are not the source of cleft semantics in Thompson River Salish. To get there, I first examine the special syntax of focus structures in some more detail.

[34] Tree diagrams are drawn in TreeForm (Derrick 2006).

7.2.6 What makes focus structures special?

The next question is what exactly the structure of the residue in Thompson Salish focus structures looks like. Recall that Kroeber (1999) noted that focus structures in Salish languages do not require specially stipulated constructions. This is because headless relative clauses can act as arguments in standard verb-initial sentences, so we would expect both nominal predicates and cleft predicates to take residue clauses as subjects (see section 2.2.7). Thus, we do not require the machinery proposed by Hedberg (figure 7.1) to deal with Salish clefts.

However, there is also some evidence that Salish clefts and NPCs are different from standard verb-argument structures. I will review four pieces of evidence: (i) focus structures do not bear transitivity marking, (ii) clefts have rigid post-predicative word order, (iii) residue clauses are not introduced by the full range of determiners, and (iv) residue clauses do not have overt NP heads. In this section, I examine (i) to (iii); I will look at point (iv) after providing a basic syntax for focus structures in section 7.2.7.

Firstly, neither nominal predicates nor cleft predicates bear any (in)transitivity marking (Kroeber 1997, 1999). Whereas verbal roots take intransitive suffixes like the middle marker *–m* or the transitive suffix *–t*, no transitivity suffixes ever appear on bare nominal predicates or introduced clefts (Thompson and Thompson 1992). In addition, the cleft predicate is the only transitive predicate that does not carry subject and object agreement suffixes (Kroeber 1999). Assuming that transitivity and subject/object agreement inflection is assigned in higher syntactic nodes (*v*P, AgrOP, AgrSP), then cleft predicates do not raise out of VP; and nominal predicates do not raise out of NP.

(34) Focus construction predicates do not carry transitivity or agreement suffixes

NOMINAL PREDICATE CONSTRUCTION

a. *sqáqx̣a-m(e)	e	pún-m-Ø-ne.
dog-MDL	DET	find-REL-3O-1SG.TS

intended "What I found was a dog."

CLEFT

b. *c̓é-t-Ø-(e)s	e	Moníque	e	wík-t-Ø-ne.
CLEFT-TR-3O-3TS	DET	Monique	DET	see-TR-3O-1SG.TS

intended: "It was Monique that I saw."

Secondly, clefts have a rigid post-predicative word order, unlike standard transitive sentences. Assuming, as Kroeber (1997) does, that the residue clause is the syntactic subject of the cleft predicate, then clefts are also the only transitive construction in Thompson Salish which employ a VOS word order; the standard VSO order, with the cleft clause preceding the cleft head, is unattested.

(35) Clefts are VOS word order

a. grammatical: VOS clefts

c̓é	xeʔ	[e	Moníque]$_{FOC}$	[e	wík-t-Ø-ne].
CLEFT	DEM	DET	Monique	DET	see-TR-3O-1SG.TS

"I saw [Monique]$_{FOC}$."

(more literally "It is [Monique]$_{FOC}$ that I saw.")

b. ungrammatical: *VSO clefts

*c̓é	xeʔ	[e	wík-t-Ø-ne]	[e	Moníque]$_{FOC}$
CLEFT	DEM	DET	see-TR-3O-1SG.TS	DET	Monique

intended "I saw [Monique]$_{FOC}$." / "It was [Monique]$_{FOC}$ that I saw."

Thirdly, unlike English clefts, there is no overt element corresponding to a relative pronoun like *who* (see figure 7.1) in Nɬeʔkepmxcin cleft residue clauses. This is apparent because cleft clauses are always introduced by the matrix determiners *e* or *k*, and never by the oblique marker and clause-internal determiner combination found in relative clauses (*t-e* or *t-k*). This is the same pattern found in headless relative clause DPs elsewhere. If there were an overt relative pronoun type element, we would expect this to surface as *te, tk,* or *(t)ɬ*, but such a structure is ungrammatical in cleft clauses. Absence of *ɬ* here is especially telling, since it indicates that the determiner introducing residue clauses does not begin as an argument DP of the subordinated verb, as relative pronouns *(t)ɬ* do in relative clauses (see the discussion on the formation of relative clauses in chapter 2, section 2.2.5, for more background).

(36) Cleft clauses are not introduced by a determiner from inside the residue clause

*c̓é	ɬ	Ross	[$_{CP}$ t-e$_i$	(/t-k | /t-ɬ)	[pínt-e-t-Ø-mus	t_i]]
CLEFT	DET	Ross	OBL	(/OBL.IRL | /OBL.DET)	paint-DRV-TR-3O-SUBJ.EXTR	t_i

In locative focus structures, we would expect to find a preposition introducing the residue, since headless relative clauses are marked this way (eg. *n* in 37a). However, locative focus structures do not generally contain a residue introduced by a preposition (Kroeber 1997: 403; - though his 45d is an exception). For example, the residue *k ʕ^{w}oẏt us* in (37b) is introduced by the irrealis determiner *k*, but not by any preposition. Another example is shown in (c); both the question and the answer have locative residue clauses that lack an initial preposition (see also (14B) in section 3.3.3).

(37) a. Headless locative relative clauses are introduced by the clause-internal prepostion

cu-t-Ø-és [$_{DP}$ **nɬ**$_i$ x^{w}úẏ un míceʔq t_i]
fix-TRANS-3O-3TS in.DET$_i$ FUT 1SG.CONJ sit t_i
"S/he fixed what I was going to sit in." (Kroeber 1997: 397)

b. Locative residues in focus structures lack an initial preposition from inside the residue clause

A: *Which way did she sleep?*
B: [ne sx̣íc̓k̓n̓-s]$_{FOC}$ ek^{w}u ƛ̓uʔ [$_{DP}$ (*n) k <u>ʕ^{w}óẏ-t</u> us]
in.DET back-3SG.POSS EVID PERS (*in) IRL sleep-IM 3.CONJ
"She slept [on her <u>back</u>]$_{FOC}$."
(more literally: "The (way) she slept was [on her <u>back</u>]$_{FOC}$.")

c. Locative residues in focus structures lack an initial preposition from inside the residue clause

A: Mm, wuhén̓ xeʔe [$_{DP}$ (*u) k nes-nés us ə].
Mm, where DEM (*to) IRL AUG-go 3.CONJ uh
"Mm, where did she go?"

B: wéʔ we ntéwmns e ... uh ... e x^{w}eʔpít-s,
there to.DET store-3SG.POSS DET ... uh ... DET clothes-3SG.POSS,
wéʔ nke xeʔ [$_{DP}$ (*u) k nés us].
there EVID DEM (*to) IRL go 3.CONJ
"There to the ... clothing store, I guess that's where she went."

Thus, there is a limited range of determiners which introduce the residue clause. The matrix determiners *e* and *k* are used, but the 'remote' determiner *ɬ* is not employed, nor are prepositions in locative focus structures. Absence of *ɬ* is the same pattern observed for complementizers elsewhere in the language (Kroeber 1997: 381), suggesting that the determiner in cleft residue clauses is perhaps vacuous. Interestingly, residue clauses in

St'át'imcets clefts are only sometimes introduced with a determiner; the preferred structure employs a bare CP residue (Davis et al. 2004). The same absence of determiners in residue clauses characterizes clefts in Straits Salish and other Central Salish languages (Shank 2003 for discussion; Kroeber 1999). These facts led Davis et al. (2004) to determine that the residue in clefts was a bare CP, while the residue in nominal predicate constructions was a headless relative clause DP.

In Thompson Salish, clefts and nominal predicate constructions share a more parallel distribution in this regard. The residue in both types of focus constructions is introduced by a determiner. In some cases, the determiner is null, in particular in the presence of an auxiliary, but this happens in both clefts (eg. 31) and NPCs (eg. 21). And, surprisingly, I find a similar absence of the determiner ɬ introducing clausal DP subjects in NPCs. Since headless relative clauses introduced by ɬ are common as arguments of other predicates (verbs), this fact is surprising. This may have to do with both being narrow focus structures in the data in my corpus; on the other hand, it may simply be a gap in the data. I was unable to find any predicate constructions with a ɬ determiner introducing the residue in my corpus, in Kroeber (1997), and in Thompson and Thompson (1992).

To summarize, focus structures are special. They bear no (in)transitivite morphology, and clefts have a rigid post-predicative word order. Residue clauses differ from headless relative clauses, in that they are not introduced by the remote determiner ɬ. In addition, again unlike headless relative clauses, locative focus structures do not usually have a preposition introducing the residue.

7.2.7 Tree diagrams for focus structures

The next step is to provide a syntactic structure for these focus structures. I will not come to definite conclusions in the next several sections, but hope to explicate the problems in greater detail and make several plausible proposals.

In nominal predicates, the subject clause is already to the right of the predicate. Because this is the standard predicate-initial order found elsewhere in the language, we do not have to postulate any special derivation like Hedberg's analysis of English clefts. The simplest structure thus has a bare predicate NP with a relative clause DP subject. I will assume that the subject originates inside the predicate phrase (Wiltschko 2002b on all intransitive subjects originating inside VP in Upriver Halkomelem), and moves to the specifier of the Tense Phrase (Matthewson 2006 on the obligatory presence of tense). No additional movement is required.

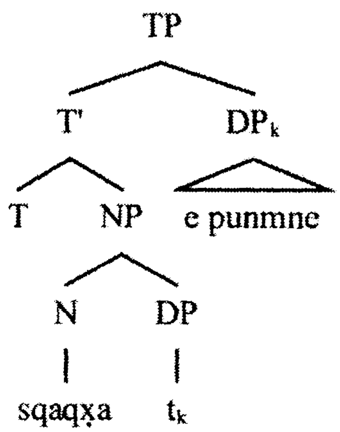

Figure 7.2 Tree for nominal predicate construction

The structure neatly splits the clause into a focus and a background, following the Structured Meaning Approach to focus semantics (von Stechow 1990, Krifka 1992; also Jackendoff's 1972 'presup' – see sections 1.3.2 and 2.2.7 for discussion).

(38)

[sqáqx̣a]$_{FOC}$	xeʔ	e	p<u>ún</u>-m-Ø-Ø-ne.
dog	DEM	DET	find-REL-TR-3O-1SG.TS
FOCUS		BACKGROUND	
dog		λx. I found x	

"I found a [<u>dog</u>]$_{FOC}$."

(more literally "The (thing that) I found was a [<u>dog</u>]$_{FOC}$.")

In clefts, there is an internal argument of the cleft predicate: the head of the cleft (the focus). Since cleft predicates bear no transitive suffix *–t*, they do not raise out of VP. The subject is again a clausal DP introduced by a determiner. Again the clause is split into focus and background.

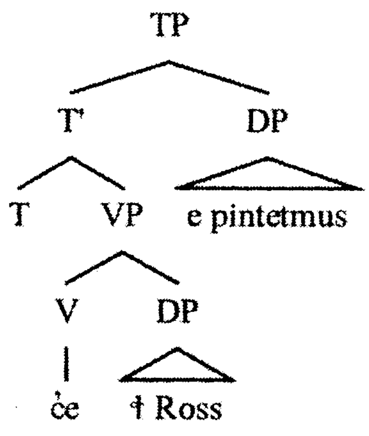

Figure 7.3 Tree for cleft construction

(39)

c̓é	[ɬ	Róss]$_{FOC}$	e	pínt-ə-t-Ø-mus.
CLEFT	DET	Ross	DET	paint-REL-TR-3O-1SG.TS
	FOCUS		BACKGROUND	
	Ross		λx. x painted it	

"It was [Ross]$_{FOC}$ that painted it."

The analysis has the advantages that there is no downward movement of the residue clause; nor any transformation of the determiner into another element, the way *the* is proposed to surface as *it* in English clefts. In Salish clefts, the subject position is occupied by the entire DP residue.

(40) Spellout rules in English and Nɬeʔkepmxcin clefts

a. English: [the Ø [$_{CP}$ t_k]] → it

b. Nɬeʔkepmxcin: no special rule required

7.2.8 What makes focus structures special, part 2: No overt nominals in residue clauses

The DP subjects in figures 7.2 and 7.3 contain no overt noun, just a determiner and a CP. The question thus arises whether there is a null nominal head in these structures or not. The same problem arises in English clefts, so I will begin by laying out the problem there.

Hedberg (2000) proposes that, in English clefts, determiners select for a bare CP argument (32, figure 7.1). On the other hand, Percus (1997) proposes that there is a null (Ø) nominal head of the extraposed cleft clause. Neither position is entirely satisfactory.

If we allow determiners in cleft structures to select a bare CP, this is problematic since determiners don't select for bare CPs elsewhere in English (though see Kayne's 1994 raising analysis of relative clauses, Borsley 1997 and Bianchi 2000 for debate; also Sauerland 2003).

(41) English determiners select for NP, not CP

a. I saw [$_{DP}$ the [$_{NP}$ man]].

b. *I saw [$_{DP}$ the [$_{CP}$ (that) you know]].

On the other hand, English clefts don't surface with overt nominal heads either, which is unexpected under Percus's account. This is true even if we allow for the nominal head to extrapose to the right. Thus, Percus would have to stipulate that English allows headless relative clauses only in the case of cleft structures; in fact, they would be required to be headless in clefts.

(42) English cleft clauses cannot contain an overt nominal head

a. *It/The [$_{NP}$ man t_k] was John [$_{CP}$ that ate my cookie]$_k$.

b. *It t_m was John [$_{NP}$ man [$_{CP}$ that ate my cookie]]$_m$.

In Nɬeʔkepmxcin, a similar problem emerges. Another factor that sets clefts apart from other predicate-argument structures in the language is the internal structure of the subject DP containing the residue clause. Since headless relative clauses are attested elsewhere in Salish, we would not need to propose, as Hedberg does for English, that determiners in residue clauses select for a bare CP. We could assume that the determiner selects a null NP head. This makes the subject DP a headless relative clause, and the determiner selects for a noun phrase like elsewhere in the language.

If this analysis is correct, we would expect to find that overt nominal heads are possible in residue clause DPs. Rather unexpectedy, this is not the case.

Davis et al. (2004) found that nominal predicate constructions and clefts diverged in this respect. In St'át'imcets and Straits Salish, overt nominal heads were possible in NPCs, but not in clefts. The authors concluded that residue clauses in NPCs are headed relative clauses with a null head, while the residue in clefts is a bare CP subject. The CP is only sometimes introduced by a determiner, but Davis et al. (2004) apparently assume that this is fronted from within the cleft clause, like the complementizer *who* in English figure 1 (though note that this is just the sort of structure we don't find in Thompson focus structures – see (36, 37b, 37c) and preceding discussion).

(43) St'át'imcets and Straits Salish:

Nominal predicate residue clauses are full, headed relative clauses

a. xʷənítem [DP kʷsə [NP sɬéniʔ] [CP leŋ-n-ən]]
white.person DET woman see-NCTR-1SG.TS
"The girl that I saw was a white person." (Straits; Davis et al. 2004:102)

b. qeɬmə́mən̓ šməɬmúɬač [DP nəɬ [NP šxʷápməx]-a [CP qʷal̓qʷəl̓él̓t-š-an]]
old.person woman[AUG] DET.PL Shuswap-DET speak-CAUS-1SG.TS
"The Shuswaps that I spoke to were old women."
(St'át'imcets; Davis et al. 2004:103)

(44) St'át'imcets and Straits Salish:

Introduced cleft residue clauses do not allow overt nominal heads

a. *niɬ kʷsə xʷənítəm [kʷsə sɬéniʔ leŋ-n-ən]
CLEFT DET white.person DET woman see-NCTR-1SG.TS
intended: "It was a white person – the girl that I saw."
(Straits; Davis et al. 2004:103)

b. *niɬ ʔi qeɬmə́mən̓-a šməɬmúɬač
CLEFT DET.PL old.person-DET woman[AUG]
[nəɬ šxʷápməx-a qʷal̓qʷə́l̓t-š-an]
[DET.PL Shuswap-DET speak-CAUS-1SG.TS]
"It was the old women who were the Shuswaps that I spoke to."
(St'át'imcets; Davis et al. 2004:104)

In Thompson Salish, the facts come out somewhat differently: neither bare nominal constructions nor introduced clefts in focus contexts appear to allow overt nominal heads in their residue clauses. This is surprising: we have seen that bare nominals can act as predicates independently, and take another noun as their subject (see (5) in section 2.2.2). Even cleft predicates allow two NP arguments. Example (45a) comes from Paul Kroeber, and employs the "only" cleft predicate *cukʷ*; (45b, c, d) employ the standard cleft predicate *c̓e*. Interestingly, the DPs *Chris* in (45b), and *father* and *brother* in (45d) are introduced by the remote determiner *ɬ*, which we do not find introducing clausal residue DPs in typical clefts.

(45) Nłeʔkepmxcin: Clefts allow two NP arguments

a. cukʷ ƛ̓uʔ ł Alice e n-snúk̓ʷeʔ.
only just DET Alice DET 1SG.POSS-friend
"Only Alice is my friend." (Kroeber 1997:389)

b. c̓é ṅ xeʔ [DP k eʔ-snúk̓ʷeʔ] [DP ł Kriṣ].
CLEFT Q DEM IRL 2SG.POSS-friend DET Chris
"Is Chris your friend?"

c. Heʔáy, c̓é xeʔ [DP e épḷṣ].
Yes, CLEFT DEM DET apple
"Yes, that's an apple."

d. c̓é xeʔ [DP ł n-sqáczeʔ],
CLEFT DEM DET 1SG.POSS-father,
ʔeł c̓é xeʔ [DP ł n-sínciʔ].
and CLEFT DEM DET 1SG.POSS-younger.brother
"This is my father, and this is my brother."

Although clefts can thus take overt DP arguments, consultants routinely reject narrow focus sentences with an overt nominal head in the residue clause. Instead, the attempted overt head is produced inside a complex nominal. This is evident from the morphology employed. In the attempted (a) examples, a determiner *e* introduces the nominal head while the oblique marker *te* introduces the following relative clause. However, the (b) sentences which are actually produced employ *tk* to introduce the second NP; *tk* is used inside complex nominals, and not to introduce clausal arguments in focus constructions. It follows that the second nominal is not an overt head in the residue clause.

(46) Nłeʔkepmxcin: Cleft residue clauses lack an overt nominal head

a. *c̓e xeʔ e heléw̓ [e spzupzúʔ t-e$_k$ wʔéx n-xʷál-ix t$_k$].
CLEFT DEM DET eagle [DET bird OBL-DET PROG LOC-fly-AUT t$_k$]
intended: "The birds that are flying are the eagles."

b. c̓e xeʔ [e heléw̓ tk spzupzúʔ] [e wʔéx nxʷálix].
CLEFT DEM [DET eagle OBL.IRL bird] [DET PROG LOC-fly-AUT]
"The eagles are the birds that are flying."
(more literally: "It is the eagle birds that are flying.")

(47) Nɬeʔkepmxcin: Nominal predicate residue clauses lack an overt nominal head

a. *sx̣íq xeʔ [e spzúʔ t-e$_k$ wʔex n-qáy-ix t_k].
duck DEM [DET bird OBL-DET PROG LOC-swim-AUT t_k]
intended: "The birds that are swimming are ducks."

b. [sx̣íq xeʔ tk spzúʔ] [e wʔex n-qáy-ix].
[duck DEM OBL.IRL bird] [DET PROG LOC-swim-AUT]
"The ducks are the birds that are swimming."
(more literally: "The (thing that) is swimming are the duck birds.")

We therefore have the same dilemma noted for English clefts. If residue clauses in Salish focus constructions are headless relative clauses, then it is unexplained why these residue clauses do not surface with an overt nominal head. We would require a special rule stating that residue clause DPs may not have overt nominal heads. On the other hand, if residue clauses consist of a determiner selecting for a bare CP, then it is unexplained why determiners don't generally select for bare CPs, but only in the case of residue clauses in focus constructions. But because residue clauses exclude both the determiner *ɬ*, and fronted prepositions, there is some motivation for treating them differently than headless relative clauses. The problem is not with overt nominal heads per se, but with overt heads in clausal residue DPs.

Thus, we have two possible structures for NPCs and clefts in Thompson Salish. Under the Percus-style analysis, residue clauses are DPs taking an NP complement, but the NP head is null (figures 7.4 and 7.5).

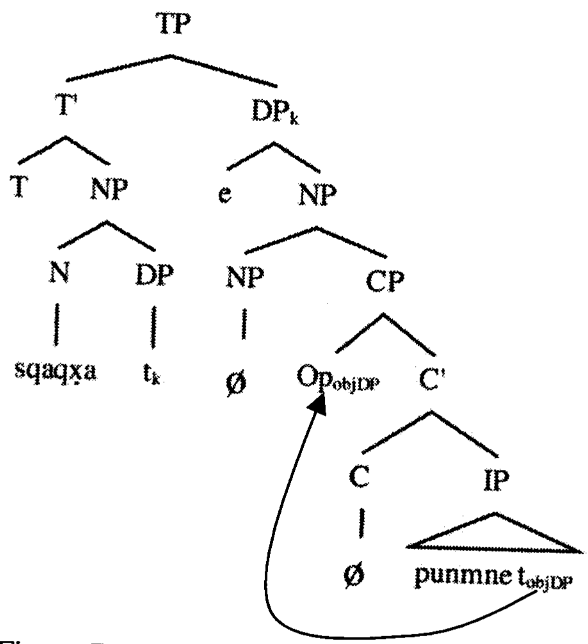

Figure 7.4 Residue clauses as DP subjects (headless relative clauses): NPC

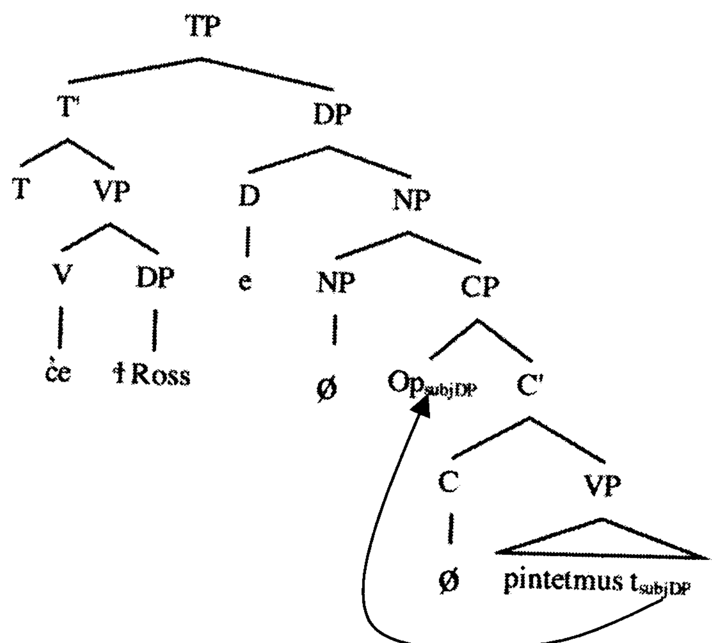

Figure 7.5 Residue clauses as DP subjects (headless relative clauses): cleft

Under a Hedberg-style approach, residue clauses are DPs that select for a bare CP complement (figures 7.6 and 7.7).

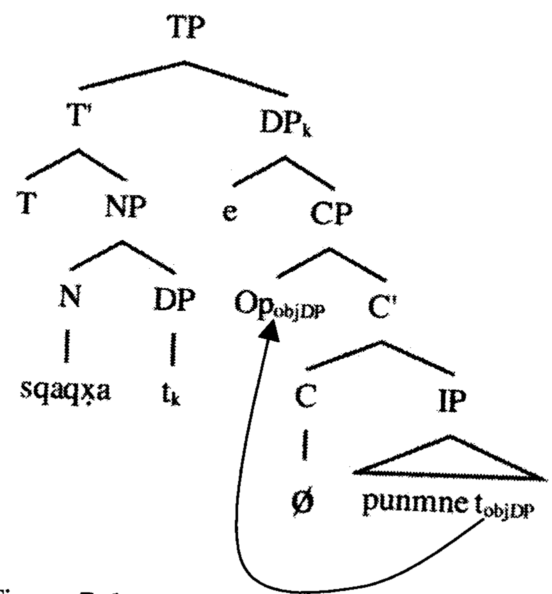

Figure 7.6 Residue clauses as DPs with bare CP complement: NPC

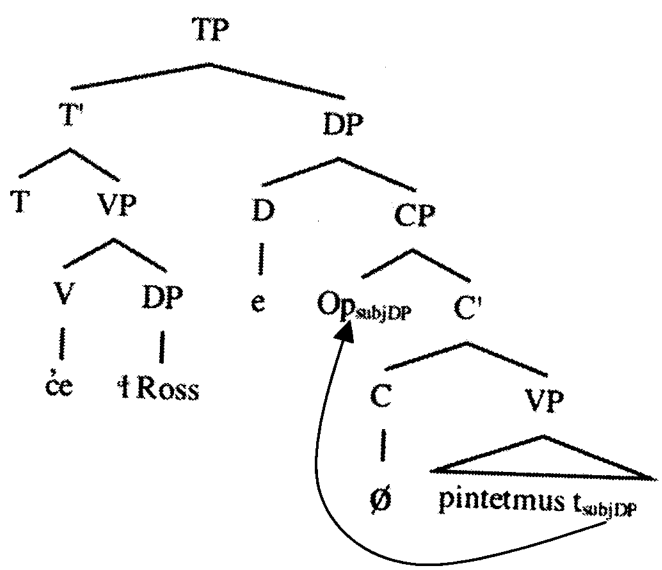

Figure 7.7 Residue clauses as DPs with bare CP complement: cleft

Each approach has unwanted stipulations. I do not have a solution to this dilemma, though in the next section I motivate the structures a bit more based on their semantic composition; I suggest that figure 7.7 is a better representation for clefts. In the meantime, it is interesting to note the parallels with English clefts: residue clauses in both languages are linked with an initial determiner, despite the different semantics of focus constructions in the two languages. And in both languages, cleft clauses disallow overt nominal heads, though determiners elsewhere select for NP complements.

7.2.9 A semantics for the cleft predicate

In this section, I motivate a denotation for the cleft predicate. Based on the evidence presented in the previous sections, I will assume that determiners are vacuous in cleft residue clauses. Thus, the syntax of cleft structures will include a determiner in the residue; but the semantics will exploit the parallel between determiners and complementizers in cleft residue clauses, treating the latter as CPs rather than DPs.

The problem that will arise is in treating the semantics of nominal predicate constructions. In the previous sections, we saw that the syntax of their residue clauses is parallel to clefts: neither takes the full range of determiners (ƚ being notably absent), and neither takes an overt NP head. However, the semantic composition of NPCs suggests an alternative analysis, one in which determiners introducing residue clauses are not vacuous. I have no solution to this dilemma at present, but simply lay out the problem in some detail here.

Let us begin with cleft structures.

(48) c̓é [$_{DP}$ ƚ Róss]$_{FOC}$ [$_{DP}$ e <u>pínt</u>-ə-t-Ø-mus].
CLEFT DET Ross DET find-REL-TR-3O-1SG.TS
"It was [<u>Ross</u>]$_{FOC}$ that painted it."

Since there are, on the surface of things, two DP arguments, it is tempting to treat the cleft predicate as a simple equational structure, such that *Ross* is equal to 'the one that painted it.'

(49) An equational denotation for the cleft predicate (to be rejected)
$\lambda x.\ \lambda y.\ x=y$ [of semantic type: <e, <e,t>>]
where x and y are from the Domain of entities (D_e)

The problem is that, since clefts are not interpreted exhaustively, we cannot equate two individuals of type e (Shank 2003 for discussion, who also rejected this analysis of the Straits Salish cleft predicate *niɬ*).

Instead, I will exploit the observation that cleft clauses do not behave the same as a typical headless relative clause DP argument. They are not introduced by the full range of determiners, the absence of *ɬ* thus patterning with complementizers rather than Ds. They also do not have an overt nominal head, suggesting we are dealing with bare CPs. Thus, I will treat the determiner as vacuous here; semantically, we have then a CP with relativization movement (which induces the morphology found on the verbs). Under the standard analysis, movement inside relative clauses turns the CP into a predicate of type <e,t> (Heim and Kratzer 1998: 96; see section 2.2.5 and 2.2.6 for discussion). Thus, in (48), *e pintetmus* is of type <e,t>, by virtue of clause internal movement of the null pronominal subject – this movement induces the special *–mus* morphology here.

This leaves us with the following denotation for the cleft predicate (Rullmann, p.c.):

(50) A predicative denotation for the cleft predicate
$\lambda x.\ \lambda P.\ P(x)$ [of semantic type: $<e, <<e,t>, t>>$]
where x is from D_e and P from the domain of predicates ($D_{<e,t>}$)

implicature: there exists some x such that $P(x)=1$

A similar treatment was provided by Shank (2003) for the cleft predicate in Straits Salish. Since other entities can also satisfy the predicate P, this analysis captures the fact that the interpretation of clefts does not presuppose exhaustivity. In (48), the cleft predicate thus takes the DP *ɬ Ross* as its first argument, and the residue clause *e pintetmus* as its second, type <e,t> argument. Moreover, unlike the extraposition analysis of English clefts, the implicature of existence has its source in the cleft predicate itself (whereas in English the presupposition of existence is due to the semantics of *the/it*). This rather different approach suggests that the cross-linguistic semantics of clefts do not have a unified source.

A further desirable outcome of this analysis is that it accounts for the absence of quantified DPs as the focus of clefts (see 3.3.8). Under the standard Generalized Quantifier analysis (eg. Barwise and Cooper 1981, Bach 1989), quantified DPs are of type <<e,t>, t>. Since the cleft predicate selects for an argument of type e, quantified DPs cannot appear in cleft constructions.

If we treat the residue in quantified predicate constructions as also containing a vacuous determiner, then the semantic composition of quantified nominal predicate focus constructions will follow. The quantified NP, of type <<e.t>, t>, will take the residue of type <e,t> as its argument.

(51) A: *Who did you see there?*

<<e.t>, t> <e,t>

B: [$_{NP}$ xʷʔít tk séytknmx]$_{FOC}$ [$_{DP}$ e wík-t-Ø-ne].

many OBL.IRL people DET see-TR-3O-1SG.TS

"I saw lots of people."

(more literally: "The (ones that) I saw were many people.")

The analysis runs into difficulties in accounting for the semantic composition of nominal predicate constructions. We saw in the previous sections that the residue clauses in NPCs pattern with clefts in terms of their morphology. Therefore, it would be ideal to given the residues in both focus structures the same semantic treatment. However, since bare nominals are, by hypothesis, of type <e,t>, they are unable to combine with a clausal subject of type <e,t>. Thus, we have a type mismatch. It is obviously undesirable to suggest that nominal predicates are ambiguous, and of type <<e,t>, t> just in the case of focus structures.

The alternative is to not treat the determiner as vacuous, in the case of nominal predicate constructions. In this case, following Matthewson (1996, 1999), the determiner selects an entity from the set denoted by the relative clause. This choice function analysis was also considered by Shank (2003: 225). Again, it is attractive because the entity is existentially quantified, capturing the lack of exhaustivity in these constructions. The analysis also better fits standard nominal predicate constructions, where the NP predicate (eg. *sqaqx̣a* in 52) is by hypothesis of type <e,t> and selects for a type e argument (eg. *e Hermann* in chapter 2, ex. (36); *e punmne* below).

(52) <e,t> e

[sqáqx̣a]$_{FOC}$ [$_{DP}$ e pún-m-Ø-Ø-ne].

dog DET find-REL-TR-3O-1SG.TS

"I found a [dog]$_{FOC}$."

However, such an approach fails to explain the morphological and syntactic parallels between residue clauses in clefts and NPCs.

In sum, residue clauses in focus structures, though introduced by determiners, share some properties with bare relativized CPs: they are introduced by just those determiners which also surface as complementizers (*e* and *k*), and they lack an overt NP. The cleft semantics in (50) exploits this parallel by treating the determiner as vacuous, and the residue as type <e,t>. This analysis suggests figure 7.7 is along the right lines in terms of the structure of clefts and their residue, and captures the distribution of quantified NPs, which are not focused by using cleft constructions. However, in standard nominal predicate constructions (52), it would be desirable to treat the residue as type e, though an exact denotation will have to await further research. I will set these issues aside for now.

7.2.10 Semantics of clefts: Summary

In this section, I have shown that Nɬeʔkepmxcin focus structures lack the special semantics that motivate the use of clefts for contrastive focus contexts in English (É. Kiss 1998 on English and Hungarian, Percus 1997 and Hedberg 2000 on English, Davis et al. 2004 on St'át'imcets and Straits Salish). The extraposition analysis of clefts (Jespersen 1927, Percus 1997, Hedberg 2000, and others) is an attractive account for the meaning differences between clefts in the two languages, since the meaning of their determiners differs (see also Shank 2003, Davis et al. 2004). However, I ended up treating the determiners in cleft structures as vacuous, and located the semantics of clefts (an implicature of existence) in the denotation of the cleft predicate.

Determiners are involved in similar ways in English clefts and Salish focus constructions, although they surface in different linear positions. In both languages, determiners introduce the cleft clause; in English, this determiner surfaces as *it*, and in Nɬeʔkepmxcin it surfaces unchanged, as *e* or *k*. This is true in the residue clauses of both nominal predicate constructions and in clefts. In English, the determiner surfaces at the left edge, in the subject position, while the remainder of the cleft clause is extraposed to the right; in Nɬeʔkepmxcin, the determiner is not separated from its residue, as both surface at the right.

However, we saw that Salish focus residue DPs often pattern with complementizer phrases rather than headless relative clauses. This is because they are not introduced by the determiner *ɬ*, nor are locative residue clauses introduced by a preposition; and residue clauses do not surface with overt nominal heads. I used these facts to motivate a denotation for the cleft predicate (λx. λP. P(x)).

In the absence of a straightforward semantic motivation for the use of clefts to express focus in Thompson Salish, I turn next to phonology.

7.3 Prosodic motivation: A PF discourse constraint

Because Nɬeʔkepmxcin uses a structural focus system, and does not mark focus constituents with the dominant pitch accent, stress-focus theories fail to account for focus marking in Thompson River Salish. However, that does not mean we have to abandon the idea that focus is marked prosodically. In chapters 2 and 3, I introduced some observations on the surface ordering of predicates and foci in Nɬeʔkepmxcin, namely that both are oriented toward the left edge of the clause.

(53) PREDICATE-LEFT:
Align the matrix predicate with the left edge of an intonational phrase.[35]

(54) FOCUS-LEFT: The focus is leftmost in the intonational phrase. [first attempt]

The constraint FOCUS-LEFT suggests the possibility that focus *is* marked prosodically in Nɬeʔkepmxcin. We saw that structural focus in Hungarian can be motivated by prosodic considerations (Szendröi 2003): in Hungarian, structural focus moves exactly to the position of the nuclear stress (leftmost), thus satisfying the stress-focus correspondence.

In Nɬeʔkepmxcin, focus is not aligned with prosodic heads. Rather, FOCUS-LEFT suggests that focus seeks out prosodic phrase edges (see Krifka 1998 on FOCUS-RIGHT in German).

Focus constructions, both clefts and nominal predicate constructions, optimally satisfy both undominated PREDICATE-LEFT, and the discourse-prosodic constraint FOCUS-LEFT. Let's see how this would work.

This is most obvious in nominal predicate constructions, since the focus is both the leftmost element in the clause and the matrix predicate. Consider example (55B). Using matrix VSO order (55B') satisfies PREDICATE-LEFT since the verb 'use' is left-aligned. However, the VSO structure violates FOCUS-LEFT (56b). Another option simply fronts the focused DP *e q^wuʔ*, but this violates PREDICATE-LEFT (56c). Thus, the NPC candidate in (56a) is optimal.

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[35] While this formulation of PREDICATE-LEFT suggests a phonological constraint that is driving the syntactic derivation, I am not committed to such a representation. The results for the present purposes would be the same, as far as I can tell, if PREDICATE-LEFT were part of the syntactic generator, so that non-predicate-initial structures were not generated by the syntax at all.

(55) A: *Don't you use milk?*

B: [qʷúʔ]FOC ƛ̓uʔ e qʷəz-t-Ø-<u>éne</u>.
water just DET use-TR-3O-1SG.TS
"I just use [<u>water</u>]FOC."
(more literally: "The (thing that) I use is just [<u>water</u>]FOC.")

B': # qʷəz-t-Ø-éne ƛ̓uʔ [e <u>qʷúʔ</u>]FOC.
use-TR-3O-1SG.TS just DET water
intended: "I just use [<u>water</u>]FOC."

(56)

		PREDICATE-LEFT	FOCUS-LEFT
a.	☞ [qʷúʔ]FOC ƛ̓uʔ e qʷəzténe		
b.	qʷəzténe ƛ̓uʔ e [<u>qʷúʔ</u>]FOC.		*!
c.	[e <u>qʷúʔ</u>]FOC ƛ̓uʔ qʷəzténe.	*!	

In clefts, a cleft predicate precedes the contrastively focused DP (58B). These cases thus seem to violate FOCUS-LEFT, at least as formulated in (54), since the focus is not the leftmost element in the clause. However, in clefts, the functional cleft predicate, second position clitics and the focus (head of the cleft) constitute the first phonological phrase, as shown in chapter 6. This is unsurprising: given the standard assumption that functional elements like the cleft predicate *c̓e* and clitics do not typically bear phrasal stress, only the cleft head *Ross*, and not the cleft predicate, may head the first p-phrase in (58B). If FOCUS-LEFT is evaluated at the level of the phonological phrase containing the focus (Truckenbrodt 1999), then introduced clefts also satisfy FOCUS-LEFT.

(57) FOCUS-LEFT: [revised]
The p-phrase containing the focus is leftmost in the intonational phrase.

Because DPs cannot be predicates in Nɬeʔkepmxcin, they require a functional cleft predicate at the left edge to satisfy PREDICATE-LEFT when clefted. Strictly DP initial clefts are therefore ungrammatical (58B'), and are ruled out by PREDICATE-LEFT (59b). Leaving the contrastive focus in matrix VSO order (58B") incurs a violation of FOCUS-LEFT (59c). The winning candidate is thus the introduced cleft in (59a).

(58) A: qeʔní-m-Ø-ne k ṣ-c̓é-s ɬ Fréd
hear-REL-3O-1SG.TS COMP NOM-CLEFT-3SG.POSS DET Fred
k píntəṭ-Ø-mus.
IRL paint-DRV-TR-3O-SUBJ.EXTR
"I heard it was Fred that painted it."

B: téʔə. c̓é [ɬ Róss]$_{\text{FOC}}$ e pínt-ə-t-Ø-mus.
no, CLEFT DET Ross DET paint-DRV-TR-3O-SUBJ.EXTR
"No, it was [Ross]$_{\text{FOC}}$ that painted it."

B': * téʔə. [ɬ Róss]$_{\text{FOC}}$ e pínt-ə-t-Ø-mus.
no, DET Ross DET paint-DRV-TR-3O-SUBJ.EXTR
intended "No, it was [Ross]$_{\text{FOC}}$ that painted it."

B'': # téʔə. pín-t-Ø-es xeʔ [ɬ Róss]$_{\text{FOC}}$ e cítxʷ.
no. paint-TR-3O-3TS DEM DET Ross DET house
intended "No, [Ross]$_{\text{FOC}}$ painted the house."

(59)

	PREDICATE-LEFT	FOCUS-LEFT
a. ☞ ( )$_{\text{p-phrase}}$ ( )$_{\text{p-phrase}}$ c̓é [ɬ Róss]$_{\text{FOC}}$ e píntətmus.		
b. ( )$_{\text{p-phrase}}$ ( )$_{\text{p-phrase}}$ [ɬ Róss]$_{\text{FOC}}$ e píntətmus.	*!	
c. ( )$_{\text{p-ph}}$ ( )$_{\text{p-ph}}$ ( )$_{\text{p-ph}}$ pínt-es xeʔ [ɬ Róss]$_{\text{FOC}}$ e cítxʷ.		*!

It is perhaps surprising that structural focus like in Nɬeʔkepmxcin should have a prosodic motivation (but see Szendröi 2003 on Hungarian). However, this account is further supported by the marking of contrastive verb focus. Because verbs are initial in the standard word order, contrastively focused verbs like *tʕʷiyx* 'run' below satisfy the constraints PREDICATE-LEFT and FOCUS-LEFT without being clefted; no restructuring of the clause is required.

(60)	Teté?	k	s-xʷesít-s	e	<u>ƛ̓u?sqáyxʷ</u>.	[<u>tʕʷ-íyx</u>]$_{\text{FOC}}$	xe?ə.
	NEG	IRL	NOM-walk-3.POSS.	DET	man	run-AUT	DEM

"The man didn't walk. He [<u>ran</u>]$_{\text{FOC}}$."

In chapter 8, I will reconcile FOCUS-LEFT with a more explicitly formulated "stress-focus" constraint for languages like English.

7.4 Purely syntactic focus marking: the predicate and the focus

The interaction of the constraints PREDICATE-LEFT and FOCUS-LEFT suggests another motivation for the use of structural focus marking: focus may be marked strictly syntactically, by being associated with the predicate. We saw in section 3.4.2 that focus projection can be characterized syntactically as projection from the predicate phrase (PredP), while narrow focus can be restricted to the PredP or any constituent of the PredP. Under this syntactic account, if there is any prosodic reflex of focus marking, like alignment with the left edge as suggested by FOCUS-LEFT, then it is simply a reflex of linearization at spell-out. Since PREDICATE-LEFT is undominated, the focus will be linearized in the first p-phrase so long as it is equal to or contained in the predicate.

Thus, there are two possible competing motivations for focus structures in Thompson Salish. The first is prosodic, in that focus aligns to the left edge of the clause. The second is purely syntactic, in that focus is associated with the predicate phrase. I'll explore these two hypotheses in more detail in the next chapter, and introduce some data that may help us decide between the two.

7.5 Summary

In this chapter, I have explored possible motivations for the use of nominal predicate constructions and clefts to express focus in Thompson Salish. I argued that the motivation cannot be syntactic, since there is no evidence that foci move to a syntactic Focus Projection; indeed, foci are generated *in situ*. Because Nɬe?kepmxcin focus structures lack a presupposition of existence and an exhaustivity effect, unlike English clefts, the primary motivation for NPCs and clefts in Thompson focus is not semantic either.

I suggested that we might account for the use of structural focus through a discourse prosodic requirement: NPCs and clefts satisfy a constraint that the focus be in the leftmost p-phrase in the clause. On the other hand, both types of constructions have the result that narrow focus is either equal to or a part of the predicate phrase. suggesting that focus may be marked strictly syntactically. I explore these latter two ideas in more detail in the next chapter, and try to reconcile them with "stress-focus" accounts of discourse marking in languages like English.

Chapter VIII: Rethinking the Stress-Focus Correspondence

Focus is marked structurally in Thompson River Salish. However, the use of nominal predicate constructions or clefts for focus is not motivated by special semantics of these constructions, or by movement of the focus to a Focus Projection. Instead, the p-phrase containing the focus aligns to the left edge of the clause (FOCUS-LEFT). The matrix predicate is also in the leftmost p-phrase, suggesting a close syntactic relationship between the predicate and the focus (Davis 2007).

In this chapter, I reconcile the FOCUS-LEFT observation with the common "stress-focus" accounts of languages like English, German and Hungarian. Ideally, we would like to say something to unify approaches to the marking of focused information across various languages.

I formalize both STRESS-FOCUS and FOCUS-LEFT in terms of the Generalized Alignment framework of Optimality Theory (McCarthy and Prince 1993). This more explicit formulation of these constraints gives us a unified prosodic account of how focus may be marked in stress languages like English and German, stress languages like Nɬeʔkepmxcin, and tone languages like Chichewa and Xhosa.

I will finish by comparing the prosodic account with a purely syntactic view of focus marking: focus is associated with the matrix predicate. I introduce more data to try to decide between the two hypotheses. In fact, because of the interface nature of a discourse notion like focus, both syntax and phonology can have a role to play: focus can be marked both syntactically and prosodically. For listeners trying to reconstruct the focus, focus is necessarily marked prosodically since it is packaged in the speaker's speech signal – this is the insight of focus projection accounts (eg. Selkirk 1995, Büring 2003, 2006). Thus, since all syntactic derivations necessarily have a linear output in the phonology, a syntactic notion like focus will at minimum have a linearized reflex in the prosody. Psycholinguistic research suggests that prosodic parsing is used by listeners from a very early point in sentence comprehension to help establish the syntactic parsing of a sentence (eg. Fodor 1998, Kjelgaard and Speer 1999, Callan et al. 2004b). Therefore, we would expect a syntactic notion like focus to be marked prosodically for optimally efficient recovery. I claim that additional data on focus marking in Thompson Salish suggests that focus structures are linearized for optimal prosodic recovery (FOCUS-LEFT) rather than syntactic recovery (predicate = focus).

8.1 A review of prosodic phrasing in Thompson River Salish

In chapter 6, I gave evidence for prosodic phrasing in Thompson Salish. I review the basic findings here. The role of phonological phrases (p-phrases) is especially important. I describe prosodic phrasing in Nɬeʔkepmxcin in terms of the prosodic hierarchy developed by Nespor and Vogel (1986). However, I motivated abandoning the clitic group.

(1) The prosodic hierarchy (revised)

Utterance
|
Intonational Phrase (i-phrase)
|
Phonological Phrase (p-phrase)
|
Prosodic Word (PWd)
|
Foot (Ft, Φ)
|
Syllable (σ)

In Nɬeʔkepmxcin, p-phrases are grouped around predicate and argument structure. Predicates (including auxiliaries, or complex nominal predicates) form a single p-phrase, while argument DPs are also parsed into p-phrases. P-phrase boundaries are characterized by partial F0 declination reset, lack of phonological interactions across boundaries, and pauses in slower speech.

8.2 Rethinking "stress-focus" in Generalized Alignment terms

I will concentrate on a particular instance of the stress-focus idea, namely the optimality theoretic discourse constraint proposed by Féry and Samek-Lodovici (2006: 135-136):

(2) STRESS-FOCUS:
A focused phrase has the highest prosodic prominence in its focus domain.

What exactly does "stress" mean here? "Stress" is not a primitive, but rather the manifestation of a particular prosodic category, namely prosodic heads. Therefore it is profitable to recast the constraint in (2) in terms of Generalized Alignment (McCarthy and Prince 1993).

(3) *Generalized Alignment* (McCarthy and Prince 1993)
Where Cat_1, Cat_2 are prosodic, morphological, or syntactic categories and $Edge_1$, $Edge_2 \in$ {Right, Left}:
ALIGN(Cat_1, $Edge_1$; Cat_2, $Edge_2$) $\Leftrightarrow$ For each Cat_1 there is a Cat_2 such that $Edge_1$ of Cat_1 and $Edge_2$ of Cat_2 coincide.

The intuition is that when we say "stress-focus," what we mean is "align the focus (a syntactic category) with a prosodic head (a prosodic category)" (see Truckenbrodt 1999:248, for a focus alignment constraint for Chichewa, a tone language; Gussenhoven 2004:182 for a similar constraint for Basque corrective focus; Pierrehumbert and Beckman 1988 on focus alignment to "major phrase" edges in Japanese). In English, focus carries both the phonological phrase head, and the intonational phrase head; this is why focus bears the primary sentential stress in English. Thus, I propose the two constraints in (4), to subsume STRESS-FOCUS.

(4) Recasting STRESS-FOCUS in Generalized Alignment
a. English: ALIGN(FOC, R; PHEAD, R)
"Align the right edge of the focus with the right edge of a phonological phrase head."
b. English: ALIGN(FOC, R; IHEAD, R)
"Align the right edge of the focus with the right edge of an intonational phrase head."

The above account suggests that the other primary constraint regulating discourse marking in languages like English, DESTRESS-GIVEN, could be recast as an anti-alignment constraint in the Generalized Alignment framework (eg. Buckley 1998: ft. 2, on anti-alignment constraints).

(5) DESTRESS-GIVEN: A given phrase is prosodically non-prominent.
(Féry and Samek-Lodovici 2006:135-6)

(6) Recasting DESTRESS-GIVEN in Generalized Alignment (PHEAD version)[36]
*ALIGN(GIVEN, R; PHEAD, R)
"Do not align given material with a phonological phrase head."

I'm not going to explore givenness and anti-alignment further here, so I will continue to refer to DESTRESS-GIVEN for the purposes of this chapter.

8.2.1 Focus alignment in English: An example

Let's look at an English example to see how these constraints would work. Consider the contrastive focus example below, inspired by "farmer" sentences in Féry and Samek-Lodovici (2006:137-8, originally from Rooth 1992).

(7) A: I heard that a Bulgarian farmer was talking to Bill.
B: No, an [<u>Américan</u>]$_{FOC}$ farmer was talking to Bill.

In (7), the nuclear stress falls on the contrastive focus *American.* In the current terms, *American* is aligned with both the prosodic phrase head, and the intonational phrase head. The second prosodic phrase *was talking to Bill* is deaccented to satisfy DESTRESS-GIVEN; this is achieved by not parsing given material into p-phrases at all, thus rendering it unable to bear phrasal accent (Selkirk and Kratzer 2007)..[37] Given material is marked with a subscript 'G.'

(8) Parsing of given material [first attempt]

```
     (      X                                    )     i-phrase
     (      X             )                            p-phrase
No,  an [Américan]FOC fármerG    [was tálking to Bíll]G.
```

[36] Assuming that intonational phrase heads are only realized on prosodic phrase heads (eg. Nespor and Vogel 1986), (6) is all we have to say about DESTRESS-GIVEN; that is, we do not in addition need an IHEAD version of this constraint.

[37] Another possible way to satisfy DESTRESS-GIVEN would result in a p-phrase that lacks a prosodic head. I'm going to make the standard assumption that such a structure is ruled out because all prosodic categories from the foot up require a head.

One problem with (8) is that *was talking to Bill* is not parsed into a p-phrase at all. I have been working with the idea of a two-step parsing process into p-phrases. Step 1 is the interface of syntactic phrases with phonological phrases (Truckenbrodt 1995, 1999, Legate 2003, Selkirk and Kratzer 2007); in English, given material is not eligible for parsing into p-phrases in Step 1. However, the phonological component parses given material recursively into p-phrases in Step 2. The surface result is still as desired: since the recursive p-phrase and the embedded p-phrase share a single head (on *American*), given material does not carry phrasal accent. However, all material has been parsed into a p-phrase. In the example below, I show the phonological derivation from bottom to top.

(9)	(	X		)	i-phrase: STEP 2
	((	X	)	)	recursive p-ph: STEP 2
	(	X	)		p-ph at interface: STEP 1
	An	[<u>Américan</u>]$_{FOC}$	fármer$_G$	[was tálking to Bíll]$_G$.	

This prosodic structure differs from the neutral wide focus condition (10), where default phrasal stress falls on the rightmost positioned *farmer* in the first p-phrase, and on rightmost *Bill* in the second p-phrase. Intonational phrase stress falls rightmost as well, on *Bill.*

(10)	(			X)	i-phrase
	(	X)	(	X)	p-phrase
	[An American	fármer	was talking to	<u>Bíll</u>]$_{FOC}$.	

The tableau below shows how the two focus alignment constraints derive the correct "stress-focus" facts for the contrastive focus. Candidate (11b) violates both alignment constraints, and so is eliminated. Candidate (11c) does satisfy alignment of focus with the p-phrase head, but not with the i-phrase head,[38] so it too is eliminated.

---

[38] Candidates (b) and (c) also violate DESTRESS-GIVEN, or *ALIGN(GIVEN, R; PHEAD, R) (not shown on the tableau), since in (b) the given DP *farmer* carries phrasal stress, and in (c) the given DP *Bill* carries prosodic phrase stress.

(11)

	ALIGN (FOC,R;PHD,R)	ALIGN (FOC,R;IHD,R)
a. ☞(X)i ((X))p No, an [Américan]$_{FOC}$ fármer was tálking to Bíll.		
b. (X)i ((X))p No, an [Américan]$_{FOC}$ fármer was tálking to Bíll.	*!	*[39]
c. (X)i (X)(X)p No, an [Américan]$_{FOC}$ fármer was tálking to Bíll.		*!

The next section explores the typological consequences of a Generalized Alignment view of "stress-focus," using Nɬeʔkepmxcin as an example.

8.2.2 Nɬeʔkepmxcin: Clefts as alignment of focus with prosodic phrase edges

Given the Generalized Alignment schema, we now expect Focus (a syntactic category) to align with prosodic categories other than prosodic heads.

In Nɬeʔkepmxcin, the focus aligns with the left edge of the clause – the left edge of the intonational phrase. Previously, this was formulated as FOCUS-LEFT, but now we can recast this constraint in the Generalized Alignment format. The important point to note about the constraint in (13) is that, unlike the English discourse-prosodic constraints, it makes no reference to the location of prosodic heads ("stress"). Default stress location is governed by separate prosodics constraints in (14) (Féry and Samek-Lodovici 2006:134, adapted from McCarthy and Prince 1993, Truckenbrodt 1999). Thus, focus marking in Nɬeʔkepmxcin cares about prosodic edges, not prosodic heads.

(12) FOCUS-LEFT:

The p-phrase containing the focus is leftmost in an intonational phrase.

[39] While I have both p-head and i-head versions of these constraints, it is not clear that we need both for this model, since i-heads are necessarily built on p-heads. The i-head constraint alone derives the correct result in this case.

(13) Nɬeʔkepmxcin: ALIGN(P[FOC], L; I, L) [revised]
"Align the left edge of the focus-marked p-phrase with the left edge of an intonational phrase."

(14) a. "HP:" Align the right boundary of every p-phrase with its head.
ALIGN(P-PH, R; PHEAD, R)
b. "HI:" Align the right boundary of every i-phrase with its head.
ALIGN(I-PH, R; IHEAD, R)

The phrasing for an object focus in a nominal predicate construction is shown in (15), based on the findings in chapter 6. Note that second position clitics like *x̌uʔ* do not receive word-level stress and therefore cannot bear higher-level phrasal stress. The focus *qʷúʔ* 'water' is marked with a p-phrase pitch accent, but the nuclear pitch accent falls on the given material in the residue clause *e s-ʔúqʷeʔ-kt* 'that we will drink.'

(15)					
(X)	(			X)	i-phrase
(X)	(X	)	(	X)	p-phrase
Téʔe.	[qʷúʔ]FOC	x̌uʔ	e	s-<u>ʔúqʷeʔ</u>-kt.	
NEG.	water	just	DET	NOM-drink-1PL.POSS	

"No. We'll just drink [<u>water</u>]FOC."
(more literally: "No. The (thing that) we will drink is just [<u>water</u>]FOC.")

Example (16) shows the phrasing for an introduced cleft. The focus *Ross* carries the p-phrase pitch accent in the first p-phrase, but the nuclear pitch accent falls on the given verb *pintətmus* 'that painted it' in the residue clause.

(16)						
(X)	(				X)	i-phrase
(X)	(		X)	(	X)	p-phrase
Téʔə.	c̓é	[ɬ	Róss]FOC	e	<u>pínt-ə-t-Ø-mus</u>.	
no,	CLEFT	DET	Ross	DET	paint-DRV-TR-3O-SUBJ.EXTR	

"No, it was [<u>Ross</u>]FOC that painted it."

The tableau below considers several alternative candidates for the marking of focus, where the winning candidate is the nominal predicate construction in (15). This tableau also includes the constraints HP and HI which regulate the default marking of stress. However, DESTRESS-GIVEN is not operative in the Thompson grammar (or, is outranked by other constraints), and so does not figure in the tableau (unlike English). Candidate (17b) aligns the focus with the left edge of the intonational phrase, but also has the leftmost focus bearing the intonational phrase stress. This configuration violates HI, which requires rightmost nuclear stress. Candidate (17c), the non-clefted form employing standard verb-initial order, has the focused object DP at the right edge of the intonational phrase, violating ALIGN(P[FOC],L;I,L). Thus, candidate (17a), the NPC with primary sentential stress rightmost, is the optimal choice. HP is satisfied in all cases since the p-phrase accent surfaces on the only prosodic word stress within each p-phrase.

(17)

	ALIGN (P[FOC],L;I,L)	HP	HI
a. ☞ (X)i (X)(X)p Téʔe. [qʷúʔ]$_{\text{FOC}}$ ƛ̓uʔ e s-ʔúqʷeʔ-kt.			
b. (X)i (X)(X)p Téʔe. [qʷúʔ]$_{\text{FOC}}$ ƛ̓uʔ e s-ʔúqʷeʔ-kt.			*!
c. (X)i (X)(X)p Téʔe. ʔúqʷeʔ kt ƛ̓uʔ e [qʷúʔ]$_{\text{FOC}}$.	*!		

The next tableau considers focus marked with the cleft in (16), next to several other logically possible candidates. Candidate (18b) fails because it makes the leftmost cleft predicate *c̓e* and not *ɬ Ross* the head of the first P-phrase, thus violating HP. In candidate (18c), the intonational phrase stress is leftmost rather than rightmost, incurring a fatal violation of HI. Finally, candidate (18d) uses standard VSO order, but does not align the focused subject *ɬ Ross* with the left edge of the I-phrase.

(18)

	ALIGN (P[FOC],L;I,L)	HP	HI
a. ☞ (X)i (X)(X)p Téʔə. c̓é [ɬ Róss]$_{\text{FOC}}$ e pínt-ə-t-Ø-mus.			
b. (X)i (X)(X)p Téʔə. c̓é [ɬ Róss]$_{\text{FOC}}$ e pínt-ə-t-Ø-mus.		*!	
c. (X)i (X)(X)p Téʔə. c̓é [ɬ Róss]$_{\text{FOC}}$ e pínt-ə-t-Ø-mus.			*!
d. (X) i-ph (X)(X) (X) p-ph Téʔe. pínt-es xeʔ [ɬ Róss]$_{\text{FOC}}$ e cítx^{w}.	*!		

It is worth noting again in regards to (18) that the constraint ALIGN(P[FOC],L;I,L) is evaluated at the level of the phonological phrase. That is, the *phonological phrase* containing the focus must be left-aligned with the intonational phrase. This is understandable in terms of Truckenbrodt's (1999) correspondence between syntactic and phonological phrases. Roughly, every lexical XP is "wrapped" in a single phonological phrase (WRAP-XP). Thus, the syntactic phrase containing the focus *ɬ Ross* in (16) is exported as a phonological phrase at the interface between syntax and phonology. At the point where discourse phonological constraints of the types under discussion are evaluated, the phonological component assesses phonological phrases, not syntactic phrases. Thus, candidate (18a) incurs no violations of ALIGN(P[FOC],L;I,L) even though the focus *Ross* is not the leftmost word; rather, the focus is contained in the leftmost phonological phrase, and thus satisfies ALIGN(P[FOC],L;I,L).

From this perspective, p-phrases that contain a syntactic focus inherit that focus marking at the PF interface. The phonological component can no longer detect the exact location of a syntactic focus that comprises only a portion of a p-phrase.

This observation is also important for cases where a narrow focus is embedded inside a complex noun phrase (19B). In this case, the contrastive focus *npuytn* 'bed' is not strictly left-aligned with the clause. This is because, like in English, heads of nominal predicates cannot be nouns that "strand" their preceding modifiers (20). Thus, the entire NP *ʔestiptept xeʔtk npuytn* 'a black bed' is the predicate in (19B), and not just the noun *npuytn* 'bed.'

(19) A: *Peter found a black fridge. What else did Peter find?*

B: ʔestíptept xeʔ tk [npúytn]$_{FOC}$ e s-púp̓n-s weʔ
black DEM OBL.IRL bed COMP NOM-find[DIM]-3.PS there
e <u>Péter</u>.
DET Peter
"Peter found a black [<u>bed</u>]$_{FOC}$ there."
(literally "It was a black [<u>bed</u>]$_{FOC}$ that Peter found there.")

(20) a. *The black ___ that Peter found there was a [<u>bed</u>]$_{FOC}$.
b. *[npúytn]$_{FOC}$ xeʔ e s-púp̓n-s weʔ e Péter tk ʔestíptept (tk) ____.

However, the complex NP *ʔestiptept xeʔ tk npuytn* is "wrapped" into a single phonological phrase: declination is steady throughout, but resets partially for the later p-phrases, indicated by the F0 peak on *Peter* (once again, a given, unfocused constituent bearing the nuclear stress).

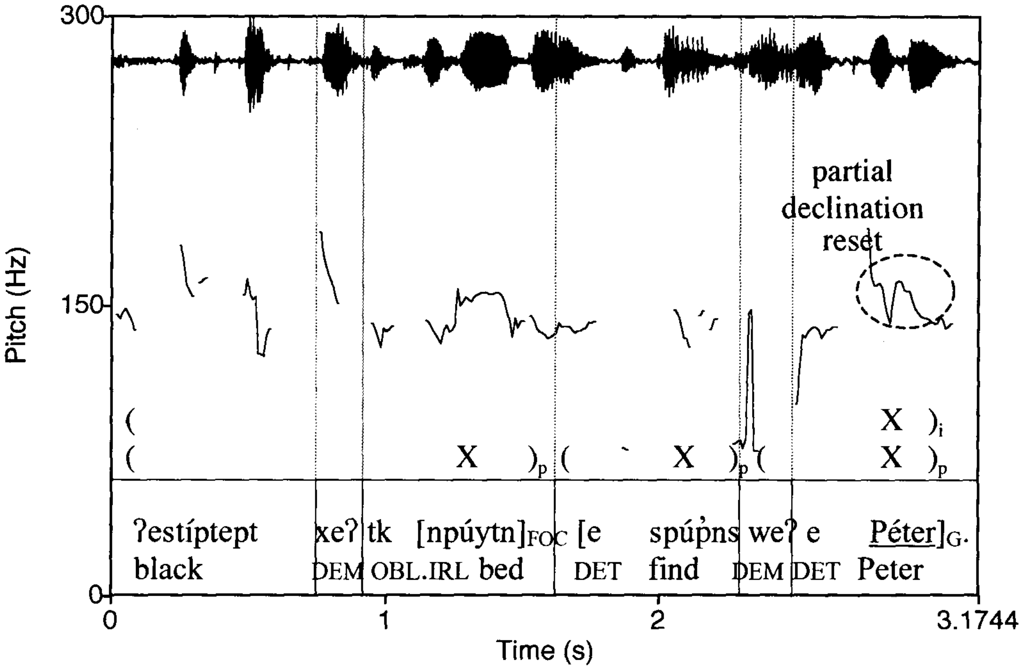

Figure 8.1 Pitch tracing, waveform and phrasing for (19B): "[Peter found a black]$_G$ [<u>bed</u>]$_{FOC}$ there."

The constraint ALIGN(P[FOC],L;I,L) will still be satisfied, since the p-phrase containing the focus is left-aligned in the clause (21a). Following Truckenbrodt (1999), the constraint *P-PHRASE mitigates against multiple phonological phrases inside lexical NPs (21b). Another constraint, NONRECURSIVITY, prevents embedding of phonological phrases within one another (21c), even though this structure would still satisfy ALIGN(P[FOC],L;I,L). With these constraints, candidate (a) will always win, regardless of the ranking, since it incurs only a subset of the violations incurred by the other two candidates.

(21)

	ALIGN (P[FOC], L; I,L)	NON -REC	*P-PH
a. ☞ (X)i (X) (X)(X)p ʔestíptept xeʔ tk [npúytn]$_{FOC}$ e s-púp̓n-s weʔ e Péter.			***
b. (X)i (X)(X) (X)(X)p ʔestíptept xeʔ tk [npúytn]$_{FOC}$ e s-púp̓n-s weʔ e Péter.	*		*** *!
c. (X)i ((X)(X)) (X)(X)p ʔestíptept xeʔ tk [npúytn]$_{FOC}$ e s-púp̓n-s weʔ e Péter.		*	*** *!

The prediction made for a language like Nɬeʔkepmxcin, which does not mark information structure with phrasal accent, is that there will be no distinction between focus on 'bed' and focus on 'black' in the example in (21a). This is illustrated by an earlier example (see figure 6.6), where a narrow contrastive focus is on the leftmost modifier 'one' in the clefted noun phrase 'one big pig.' Similarly, this structure is indistinguishable from narrow focus on either the adjective 'big' or the noun 'pig,' since the prosodic phrase head will fall rightmost on the noun *k^weṣó* 'pig' to satisfy HP in each case (22).

(22)

(								X	) i-ph
(						X)(		X	) p-ph
[Piʔéyeʔ]$_{\text{FOC}}$	ƛ̓uʔ	xeʔ	tk	x̣zúm	tk	kʷéṣo	e	s-wʔxúm-s.	
One[AUG]	just	DEM	OBL.IRL	big	OBL.IRL	pig	COMP	NOM-have-3SG.PS	

"He only has [one]$_{\text{FOC}}$ big pig."
(more literally "The (thing that) he has is only [one]$_{\text{FOC}}$ big pig.")

In this section I have given a prosodic account for the structural focus system of Nɬeʔkepmxcin. Under this account, clefts or NPCs are used to mark focus because they supply the phonological component with a structure that enables the focus to be left aligned in the intonational phrase, while at the same time maintaining a predicate-initial syntactic structure (PREDICATE-LEFT is undominated in the language). The crucial discourse-phonological constraint aligns the p-phrase containing the focus with the left edge of the i-phrase. Separate constraints, independently proposed (eg. Truckenbrodt 1999), regulate the location of prosodic heads, or phrasal stress (HP and HI). DESTRESS-GIVEN is not operative.

The Generalized Alignment account of focus marking has unified the facts about "stress-focus" languages like English, where focus aligns with prosodic heads, and "edge-focus" language like Nɬeʔkepmxcin, where focus aligns with the i-phrase edge. Both kinds of focus marking are expected, since the category FOCUS should be able to align with different prosodic categories. Further support for the hypothesis comes from focus marking in two tone languages, Chichewa and Xhosa.

8.2.3 Focus in two tone languages (Truckenbrodt 1999, Downing 2003)

The present account unifies the approach to the cross-linguistic marking of focus. I briefly present evidence from tone languages in which focus is also sensitive to prosodic phrase edges.

Chichewa and Xhosa are two Bantu tone languages (Kanerva 1990, Truckenbrodt 1999 on Chichewa, Downing 2003 on both). A focused element is always followed by a prosodic phrase boundary. In Chichewa, for example, verb and object(s) in wide focus sentences are parsed into a single prosodic phrase; this is evident because the rightmost word *rock* in (23a) undergoes penultimate lengthening, and retracts its final high tone (/mwalá/ → [mwáála]). Crucially, similar prosodic effects are not realized on the verb or direct object. However, when the object (23b) or verb (23c) are in narrow focus, a p-phrase boundary is inserted after the focus. This is shown by penultimate lengthening and high tone retraction of the narrow focus. The examples below are adapted from Kanerva (1990: 98) and Truckenbrodt (1999: 245-247).

(23) Focus and prosodic phrasing in Chichewa

a. A: *What happened?* [wide focus]

B: [V	NP	[P	NP	] $]_{FOC}$
(anaményá	nyu^{m}bá	^{n}dí	mwáála)$_{p\text{-}ph}$	
he-hit	house	with	rock	

"[He hit the house with a <u>rock</u>]$_{FOC}$."

b. A: *What did he hit with the rock?* [narrow object focus]

B: [V	NP$_{FOC}$	[P	NP	]]
(anaményá	nyúú^{m}ba)$_{p\text{-}ph}$	(^{n}dí	mwáála)$_{p\text{-}ph}$	
he-hit	house	with	rock	

"He hit the [<u>house</u>]$_{FOC}$ with a rock."

c. A: *What did they do in Mavuto's house?* [narrow verb focus]

B: [V$_{FOC}$	NP]
(anagóona)$_{p\text{-}ph}$	(mnyumbá yá mávúuto)$_{p\text{-}ph}$
they-slept	in-house of Mavuto

"They [<u>slept</u>]$_{FOC}$ in the house of Mavuto."

Similar facts obtain in Xhosa: VPs are parsed as single p-phrases in the neutral case. Again, this is evident because there is a single instance of phrase-final vowel lengthening in (24); but when the verb is narrowly focused in (25), it is followed by an additional prosodic phrase boundary. Examples are adapted from Downing (2003), based on data in Jokweni (1995).

(24) Xhosa verb + object NP(s) are parsed as single p-phrase (Jokweni 1995: 47, 72)

(a) [V	NP	NP $]_{FOC}$
(ba-ník'	ú-mam'	úkuu-tya)$_{p\text{-}ph}$
They.are.giving	mother	food.

"[They are giving mother <u>food</u>]$_{FOC}$."

(b) [V NP]$_{FOC}$

(ba-lím' úm-bóóna)$_{p\text{-}ph}$

They.cultivate maize.

"[They cultivate maize]$_{FOC}$."

(25) Xhosa narrow verb focus: verb is parsed in own p-phrase

(Jokweni 1995: 65, fig. (6b); 94, fig. (39b))

(a) [V$_{FOC}$ NP]

(bá-zaku-liima)$_{p\text{-}ph}$ (nge-zááandla)$_{p\text{-}ph}$

They.are.going.to.plow by hand.

"They are going to [plow]$_{FOC}$ by hand."

(cf. *bá-zaku-lima nge-zááandla* '[They are going to plow by hand]$_{FOC}$.')

(b) [V$_{FOC}$ NP]

(ba-yá-zaam')$_{p\text{-}ph}$ (ukú-lim' úmbóóna)$_{p\text{-}ph}$

They.try to.cultivate maize.

"They [try]$_{FOC}$ to cultivate maize."

Truckenbrodt (1999: 248) accounts for these facts with a constraint aligning the focus to the right edge of the p-phrase:

(26) ALIGN-FOC = ALIGN(FOC, R; P, R)

"Each focused constituent is right-aligned with a p-boundary."

(Truckenbrodt 1999: 248)

Downing (2003) thus notes that, within the clause, the focus is not prosodically distinguished from non-focused material, which is similarly right-aligned with a p-phrase; but, comparison with default wide focus phrasing makes clear which constituent has been focused. Whereas the default focus structure contains a single p-phrase, narrow focus structures contain more. Downing takes this as support for the notion that prosodic phrasing is the universal marker of focus (Ladd 1996, Downing 2003), rather than local "stress-focus" effects. Interestingly, further research by Downing et al. (2007) suggests that focused p-phrases containing high tones are also marked by higher pitch than non-focus phrasing. Chichewa may thus prove to be a language where focus targets both prosodic edges and heads.

While focus alignment constraints like the one in (26) have therefore been proposed before (see also Gussenhoven 2004:182 on Basque corrective focus; Pierrehumbert and Beckman 1988 on Japanese), they have not been reconciled with focus marking in languages like English, where "stress-focus" approaches have dominated. The Generalized Alignment approach to focus advocated in the present study makes specific predictions. By reformulating "stress-focus" in a more principled and explicit manner, we predict that focus can align with different prosodic categories. This has a significant advantage in that it unifies the marking of focus across typologically diverse languages. The "stress-focus" system of languages like English, the apparent structural focus system of Thompson Salish, and the prosodic phrase sensitive system of tone languages like Chichewa are all captured by the same theoretical mechanism.

8.2.4 Limits of the system: Eligible prosodic categories

In this section, we have seen four prosodic categories with which focus may align. In "stress-focus" systems like English, where the focus bears the primary sentential stress, focus aligns with p-phrase heads and i-phrase heads. In Nɬeʔkepmxcin, focus aligns with the i-phrase edge. Finally, focus aligns with the p-phrase edge in Chichewa and Xhosa.

It is worthwhile considering what prosodic categories are eligible targets for focus alignment. Obviously, an unconstrained system is undesirable. So far, only elements of p-phrases and i-phrases have been targets of alignment (heads and edges). This can be understood in terms of Truckenbrodt's (1995, 1999) hypothesis that XPs are wrapped into phonological phrases at the interface of syntax and phonology (see also Shiobara 2003, Selkirk and Kratzer 2007). If we adopt this view, we can delimit the potential targets for focus alignment. Under this "XP to p-phrase" correspondence account, focus can target aspects of the phonological phrase (its prosodic head, or its phrase edges). Since phonological phrases are independently parsed into and aligned with intonational phrases by the phonological component, we can also allow targeting of elements of the intonational phrase (again, its prosodic head or its phrase edges). Prosodic categories below the level of the p-phrase (such as syllables, onsets, codas, or individual segements) are not predicted to be eligible targets for alignment with focus. Thus, the prosodic realization of focus is quite tightly constrained to p-phrase and i-phrase edges and heads.

Whether other prosodic categories will also need to be included is a matter for further research. One possibility is that we will have to define different types of prosodic heads, in the form of different pitch accent tunes. For example, Gussenhoven (2004: 86) reports that in European Portuguese, contrastive (corrective) focus employs a H*+L pitch accent, while presentational focus is marked by H+L*; while in Nêhiyawêwin (Plains Cree), a L* pitch accent is perceived as most prominent (Edwards 1954, Muehlbauer 2005). Cross-linguisticially, there are multiple categories which count as phonologically prominent (eg. Beckman 1997, 1998, on positional faithfulness, Fougeron and Keating 1997 on articulatory strengthening), and the present approach anticipates an interaction between focus marking and prominent phonological categories of different types (eg. consonant strengthening in Warlpiri focus – Butcher and Harrington 2003, 2003b, Beth Rogers, p.c.); however, these prominences can in principle be captured as alignment to prosodic phrase edges, where many of these strengthening effects are found (eg. Beckman 1998).

8.3 Rethinking "stress-focus" in English

In section 8.2, I distinguished the marking of focus (via an alignment constraint) from the marking of phrasal accent (via the separate constraints HP and HI). Since phrasal stress requires independently needed constraints to regulate the location of p-heads and i-heads, this raises the question of whether we also need our focus constraint to refer to prosodic heads as well in a classic "stress-focus" system. There is a certain amount of redundancy here, which I will try to eliminate in this section. To be sure, there is some evidence that "stress-focus" languages need to be able to align focus with different types of prosodic heads (Gussenhoven 2004: 86, Selkirk 2005). However, since "stress-focus" fails to account for Nɬeʔkepmxcin focus marking, I wish to explore in this section to what extent the edge-alignment account proposed for Thompson Salish can also capture focus marking in languages like English.

8.3.1 Some phonological background

The following are basic observations about prosodic categories (feet, words, p-phrases, i-phrases), based on non-linear phonology (eg. Hayes 1981, 1995, Selkirk 1984, 1995):

(27) a. Prosodic categories have edges (left, or right).
b. Prosodic categories have heads.
c. Heads are either at the left or right edge.

In section 8.2, I argued that in Thompson Salish, focus aligns with edges, not heads. I recast the "stress-focus" constraint for languages like English in terms of alignment of focus with prosodic heads. There is a certain amount of redundancy here, however. Since prosodic heads are by definition at either the left or right edge, can't we just align focus with prosodic edges and let prosody determine where stress will fall? This gives us a more constrained interface condition: focus aligns only with prosodic edges. In languages like Thompson Salish, focus and prosodic heads are aligned with different edges; focus is left, while prosodic heads (the nuclear stress) are right. In languages like English, focus and prosodic heads are aligned with the same prosodic edges (both right).

This gives us the following constraints regulating focus marking in English. These constraints are edge-oriented.

(28) a. English: ALIGN(FOC, R; P, R)
"Align the focus with the right edge of a phonological phrase." [to be dropped]
b. English: ALIGN(P-PH[FOC], R; I, R)
"Align the p-phrase containing the focus with the right edge of an i-phrase."

Since post-focal information is deaccented in English (DESTRESS-GIVEN), we will not need to appeal to the constraint in (28a) at all for the present purposes; I will return to this point in a moment.

Independently, HP and HI regulate the rightmost location of phrasal accent in English (eg. Féry and Samek-Lodovici 2006). These constraints are head-oriented.

(29) a. HP: Align the right boundary of every P-phrase with its head.
ALIGN(P-PH, R; PHEAD, R)
b. HI: Align the right boundary of every I-phrase with its head.
ALIGN(I-PH, R; IHEAD, R)

On first glance, this proposal captures object focus well enough. The focused object *a peach* below is right aligned with a p-phrase and an i-phrase. Independently, the nuclear pitch accent surfaces on the rightmost PWd, in the rightmost p-phrase, at the right edge of the i-phrase.

(30) A: What did Frank squash? [object focus question]

(X) i-phrase [nuclear pitch accent]
(X)(X) p-phrase [pitch accent]
B: Fránk squáshed [a <u>péach</u>]$_{FOC}$.

However, the edge-alignment account appears to fail when the narrow focus falls on a constituent that is not rightmost in English. In these cases, neither focus nor the nuclear stress are rightmost in the clause. This appears to violate HP and HI, which regulate the default location of nuclear stress in English.

(31) a. A: What did Frank do with the peach?
B: Frank [<u>squashed</u>]$_{FOC}$ the peach. [verb focus]

b. A: Who squashed a peach?
B: [<u>Frank</u>]$_{FOC}$ squashed a peach. [subject focus]

In this section, I will map out how to handle this problem. The proposal is that in the narrow verb or subject focus cases above, focus and the prosodic head (nuclear stress) are in fact both optimally right-aligned in the intonational phrase. To the right of the nuclear stress we find only given material, old information from the previous discourse. Another interface constraint, DESTRESS-GIVEN, prevents this given material from being parsed into a phonological phrase at the interface between syntax and PF (Selkirk and Kratzer 2007). Thus, the focus is the rightmost constituent eligible for bearing phrasal stress, and is the rightmost constituent in a p-phrase. This, in turn, means that we do not need the alignment constraint in (28a); focus aligns to i-phrase edges, while alignment to the p-phrase edge falls out from the application of DESTRESS-GIVEN.[40]

In the previous section, I suggested that recasting "stress-focus" in Generalized Alignment terms gave us a more principled constraint on the regulation of focus marking. In the same spirit, in this section I will spell out the properties of prosodic categories more explicitly, to illustrate focus marking in English in edge-alignment terms. I begin by looking at some properties of "lower-level" prosodic categories (feet and words). Feet (Φ) are either left or right headed; "middle-headed" feet are not possible.

(32) Feet are left- or right-headed

a. (X) Left-headed Φ
σ σ σ

[40] On the other hand, if we allow for the constraint in (28a), we do not need the constraint DESTRESS-GIVEN, perhaps an even more desirable result; this is an option I pursue a little bit further in section 8.5.

b. (X) Right-headed Φ
σ σ σ

c. * (X) Middle-headed Φ [not possible]
σ σ σ

Prosodic words are either left or right-headed. "Middle-headed" words are not possible.

(33) Prosodic words are left- or right-headed

a. (X) Left-headed PWd
Φ Φ Φ

b. (X) Right-headed PWd
Φ Φ Φ

c. * (X) Middle-headed PWd [not possible]
Φ Φ Φ

Assuming higher level prosodic categories share these characteristics, we have the principle below:

(34) P-phrases and i-phrases are either left or right-headed.
"Middle-headed" p-phrases and i-phrases are not possible.

(35) p-phrases are either left or right-headed

a. (X $)_{\text{p-ph}}$ Left-headed p-phrase
(X $)_{\text{PWd}}$ (X $)_{\text{PWd}}$ (X $)_{\text{PWd}}$

b. (X $)_{\text{p-ph}}$ Right-headed p-phrase
(X $)_{\text{PWd}}$ (X $)_{\text{PWd}}$ (X $)_{\text{PWd}}$

c. * (X $)_{\text{p-ph}}$ Middle-headed p-phrase
(X $)_{\text{PWd}}$ (X $)_{\text{PWd}}$ (X $)_{\text{PWd}}$ [not possible]

(36) i-phrases are either left or right-headed

a. (X)$_{\text{i-ph}}$ Left-headed i-phrase
(X)$_{\text{p-ph}}$ (X)$_{\text{p-ph}}$ (X)$_{\text{p-ph}}$

b. (X)$_{\text{i-ph}}$ Right-headed i-phrase
(X)$_{\text{p-ph}}$ (X)$_{\text{p-ph}}$ (X)$_{\text{p-ph}}$

c. * (X)$_{\text{i-ph}}$ Middle-headed i-phrase
(X)$_{\text{p-ph}}$ (X)$_{\text{p-ph}}$ (X)$_{\text{p-ph}}$ [not possible]

The prediction here is that any structure that seems to look like (36c), such as (31a), will actually have to have DESTRESS-GIVEN operative, so that the rightmost given material is not parsed into a p-phrase at the interface. It can be parsed recursively (Selkirk and Kratzer 2007), in which case the single p-phrase head will serve as head to both nested p-phrases (37a). The result: an in situ focus language like English *must* employ DESTRESS-GIVEN if narrow focus on verbs, for example, is to be distinguished from narrow object or VP focus.[41] This is because (37b), in which the given *peach* is not deaccented, is not a licit structure (it is "middle-headed").

(37) Material after focused p-phrase is not parsed into p-phrase, by DESTRESS-GIVEN

a. (X) i-phrase: STEP 2
(X) ((X)) recursive p-phrase" STEP 2
(X) (X) p-phrase at interface: STEP 1
Jóhn [squáshed]$_{\text{FOC}}$ [a péach]$_{\text{G}}$

b. * (X) Middle-headed i-phrase
(X) (X) (X) [not possible]
Jóhn [squáshed]$_{\text{FOC}}$ [a péach]$_{\text{G}}$

I already suggested in section 1.5 that, not only is a structure like (37b) ill-formed phonologically, but acoustic phonetic research suggests that given material truly lacks phrasal pitch accent in cases like this (Halliday 1967b, Vanderslice and Ladefoged 1972,

[41] An alternative would be to introduce a p-phrase boundary after the focused verb, but maintain rightmost nuclear stress. It appears that Chichewa and Xhosa are systems of this type (section 8.2.3).

Beckman and Edwards 1994, Sluijter and van Heuven 1996a, 1996b, Astruc and Prieto 2006).

To these observations I add the fact that prosodic heads in any given prosodic category are built upon the heads of the prosodic category that they dominate. Thus, word stress falls on the head foot of the word, and in turn falls on the head syllable within that foot. Similarly, i-phrase accent falls on a p-phrase accent, which in turn falls on a word stress within that p-phrase.

The prosodic hierarchy, by now familiar, is given again below (as revised in section 6.3):

(38) The prosodic hierarchy (revised)

Utterance (U)
|
Intonational Phrase (i-phrase)
|
Phonological Phrase (p-phrase)
|
Prosodic Word (PWd)
|
Foot (Ft, Φ)
|
Syllable (σ)

Many of the principles introduced in this section are captured in the Strict Layer Hypothesis (Selkirk 1984, 1995b, Samek-Lodovici 2005). I adopt the following constraints; HEADEDNESS is modified from Selkirk's version.

(39) Conditions on prosodic structures:

a. HEADEDNESS (HD):
Each prosodic constituent has one and only one head, (at the left or right edge). (see McCarthy 2003: 111 on "End Rule" constraints, and edgemostness)[42]

[42] The "left or right edge" effect here falls out from the constraints regulating the marking of phrasal accent (nuclear stress). HP and HI (see 14, 29).

b. LAYEREDNESS (LAYER): no prosodic constituent is dominated by a constituent lower in the prosodic hierarchy.
Example: A syllable (σ) does not dominate a foot (Φ).

c. EXHAUSTIVITY (EXH): no prosodic constituent immediately dominates a constituent that is not immediately below it on the prosodic hierarchy.
Example: A PWd does not immediately dominate a syllable (σ).

d. NONRECURSIVITY (NONREC): No prosodic constituent dominates a constituent of equal rank in the prosodic hierarchy.
Example: No foot (Φ) dominates another foot (Φ).

Selkirk (1995b) notes that while HEADEDNESS and LAYEREDNESS appear to be universally undominated, EXHAUSTIVITY and NONRECURSIVITY are sometimes violated.

8.3.2 An edge-alignment account for English

The problem for an edge-alignment account of focus marking in languages like English is that neither the focus nor the nuclear stress are necessarily on the rightmost word. We can state the problem graphically: in the narrow verb focus case below, the nuclear pitch accent falls on the focused verb, *squashed.* In representation (b), HP is violated because the p-phrase accent does not fall on the rightmost P-Wd *peach.* ALIGN(FOC,R;P,R) is also violated since another prosodic word *(peach)* intervenes between the focus *squashed* and the right edge of the p-phrase. Representation (c), where each word is parsed into its own p-phrase, violates HI since the nuclear pitch accent falls on the central p-phrase, an impossible configuration by HEADEDNESS. Moreover, the p-phrase containing the focus is not right-aligned at the level of the i-phrase either.

(40) a. A: What did Frank do with the peach? [verb focus]

	(X)	i-phrase
	(X) (X)	p-phrase
b. B:	Fránk$_G$ [squáshed]$_{FOC}$ the péach$_G$.	[violates: HP]
	(X)	i-phrase
	(X) (X) (X)	p-phrase
c. B:	Fránk$_G$ [squáshed]$_{FOC}$ the péach$_G$.	[violates: HI, ALIGN(P[FOC],R;I,R), HEADEDNESS]

If the edge-alignment account is to account for focus marking in English, the burden of explaining the shift in nuclear accent location in narrow focus cases will have to fall to another constraint; the focus alignment constraints will not suffice.

A solution is suggested in Selkirk and Kratzer (2007). The authors propose that the interface between syntax and PF is such that the contents of syntactic phases are exported to the phonology to be parsed as p-phrases (Selkirk and Kratzer use the terms "major" and "minor" phrase; see also Truckenbrodt 1999). Certain discourse constraints regulate which portions of the syntax are exported as p-phrases; in particular, Selkirk and Kratzer suggest that DESTRESS-GIVEN prevents given material from being parsed into a p-phrase at the interface. This accounts for the fact that given material lacks phrasal accent: prosodic words which are not parsed into p-phrases are not eligible to receive phrasal stress, since phrasal stress is assigned at the p-phrase and i-phrase level.

Selkirk and Kratzer (2007) suggest that material that is not parsed into a p-phrase at the interface between syntax and phonology is recursively parsed into a nested p-phrase by the phonological component, in Step 2 below. Such a representation still satisfies ALIGN(P-PH[FOC],R;I,R) because the focus is contained in a p-phrase that is right-aligned with the i-phrase. HI is also satisfied, since the i-phrase accent falls on the rightmost p-phrase accent. HEADEDNESS of both p-phrases containing the focus is satisfied, in this case by a single p-phrase head. The cost of this structure is a violation of NONRECURSIVITY.

(41) a. A: What did Frank do with the peach? [verb focus]

(		X		)	i-phrase: STEP 2
(	(	X	)	)	recursive p-phrase: STEP 2
	(	X	)		p-phrase at interface: STEP 1

b. B: Fránk$_{G}$ [squáshed]$_{FOC}$ the péach$_{G}$.

DESTRESS-GIVEN is therefore satisfied by the representation in (41b), since no given material carries phrasal accent. The apparent alignment of stress and focus falls out from this edge-alignment approach.[43]

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[43] As Büring (p.c.) points out, the observation that deaccenting of given material is primarily a post-focal phenomenon is not captured in this interface model. The model predicts equal deaccenting of *Frank* in (41), yet it is commonly observed across many languages that pre-focal material is not routinely deaccented. In terms of Selkirk and

The interface constraint ALIGN(P-PH[FOC],R;I,R) requires that the syntactic category of focus ($_{FOC}$) is marked on the p-phrase containing the focus at the point of interface between syntax and phonology. It may seem undesirable to mark information like "Focus" in the phonological component (though all "stress-focus" accounts make this implicit assumption). So far, I've been treating the focus as a syntactic category, following Selkirk (1995) and others, where the focus is the highest f(ocus)-marked node in the structure. This would violate the strong hypothesis below:

(42) Indirect Reference Hypothesis (Inkelas 1989)
Phonological rules refer to only phonological constituent structure.

This rule is appealed to by Truckenbrodt (1999:221), for example, in his XP to p-phrase mapping condition:

(43) XP-to-P Mapping Condition:
Mapping constraints relate XPs to phonological phrases, but do not relate XPs to other prosodic entities.

After the interface in (41b), phonology should be blind to syntactic information. Truckenbrodt goes on to note that "the Indirect Reference Hypothesis does not allow phonological rules (or, by plausible extension, constraints) that refer to syntactic structure directly" (1999:221). However, it is not clear that focus is a syntactic category in the sense proposed here. It is clear that focus is also a semantic and discourse notion – a truly interface phenomenon, and as such we might expect focus-marking to be information that is transferred from syntax to phonology at the interface between syntactic XPs and p-phrases (eg. Reinhart 2006).

On the other hand, it may be that the Indirect Reference Hypothesis is too strong. German et al. (2006:165), for example, propose the constraint *ACCPREP to account for the resistance of certain grammatical categories (prepositions, in this case) to bearing phrasal accent.

Kratzer's phase-based interface model (2007), we would have to stipulate that DESTRESS-GIVEN ceases to apply once the focus has been exported as a syntactic phase. Thus, after the focused verb in (41) has been spelled out in the *v*P phase, the subject *Frank* is free to carry phrasal stress in the subsequent CP spellout phase.

(44) *ACCPREP: Do not accent prepositions.

Selkirk (1995a) proposes a series of constraints that align the syntactic category of "lexeme" (to distinguish lexical from functional items) with prosodic edges; we need such a basic distinction to account for why clitics and other functional categories are not parsed as prosodic words.

This is a matter that requires further research, so I set the issue aside for now.

8.3.3 Focus marking as edge-alignment: Summary

In this section, I have attempted to extend the edge-alignment account of focus-marking to the "stress-focus" system of English. Since independent constraints regulate the location of prosodic heads, it is conceptually attractive to reduce the marking of focus to alignment with p-phrase and i-phrase edges, and not to phrasal heads. The nuclear stress will still surface on the focus in an in-situ focus marking system like English if DESTRESS-GIVEN is operative. DESTRESS-GIVEN prevents given material from being parsed into a p-phrase at the interface of syntax and phonology, and thus ineligible to bear a p-phrase or (by transitivity) an i-phrase accent. This analysis is implemented in a model where syntactic phrases are exported as phonological phrases at the interface of syntax and phonology. In a second step, the phonological component "completes" prosodic parsing after the interface (Truckenbrodt 1999, Selkirk and Kratzer 2007). In principle, this process could be completed in parallel, but I have presented it as a serial model for the sake of clarity.

The Generalized Alignment account of focus in section 8.2 does not predict that only prosodic edges would be relevant categories for focus alignment. However, this is the most restricted hypothesis we can make, to account for the data presented in section 8.2 for Thompson Salish and Chichewa, and for English in section 8.3.

(45) Focus marking: Universal restriction (strong hypothesis)
Focus aligns with prosodic phrase edges.

The account in sections 8.2 and 8.3 has preserved the insight of "stress-focus" accounts that focus is marked prosodically. However, I have appealed to the Generalized Alignment framework (McCarthy and Prince 1993), which gives us a more principled account of the marking of focus to well-established phonological categories (eg. heads, rather than "stress"). The Generalized Alignment approach also makes clear predictions about focus and how we expect it to be marked across languages: we anticipate alignment to prosodic categories other than phrase heads. The result is a unified theory of focus marking in languages as diverse as Nɬeʔkepmxcin, English and Chichewa. In the end, I suggested that prosodic phrase edges rather than heads are the universal thread in focus marking.

In the next section, I consider a final possible motivation for using clefts and nominal predicate constructions in Thompson focus contexts: syntax.

8.4 Prosodic versus syntactic motivation for clefts (Focus = Predicate)

At the end of chapter 7, I suggested two competing hypotheses for why narrow focus is marked using clefts. Under the first account, examined in detail in the previous sections, clefts satisfy a prosodic condition aligning the focus with the left edge of the intonational phrase. Conceptually, this is appealing because it maintains the insight of "stress-focus" accounts in languages like English, namely that focus is marked prosodically.

The second account, suggested by Davis (2007), proposes that focus marking in Salish is a strictly syntactic phenomenon: focus is associated with the predicate phrase, and has no special prosodic reflex. Conceptually, this is also an attractive option, since in this case, we need nothing in the way of interface constraints like STRESS-FOCUS, DESTRESS-GIVEN, or their Generalized Alignment versions as proposed in sections 8.2 and 8.3.

Because both accounts also stipulate that the predicate is the leftmost element in the clause (PREDICATE-LEFT[44]), the surface result is the same. The focus is leftmost, and is associated with the predicate (see also the discussion of focus projection in section 3.4.2).

(46) Prosodic hypothesis (Nɬeʔkepmxcin)
   a. The focus aligns with the left edge of the clause.
   b. The predicate is always leftmost.
   [result: focus is associated with the predicate]

(47) Syntactic hypothesis (Nɬeʔkepmxcin)
   a. The focus is associated with the predicate.
   b. The predicate is always leftmost.
   [result: focus aligns with the left edge of the clause]

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[44] PREDICATE-LEFT could be a phonological or interface constraint driving the syntactic derivation, as suggested by my formulation, though nothing hinges on this assumption. The constraint could also be a part of the syntactic generator, such that derivations violating PREDICATE-LEFT are not ever generated.

In this section, I review evidence which may decide in favour of one or the other hypothesis.

Before I begin, it is worth noting the different functions of prosodic focus marking and syntactic focus projection in a language like English. A speaker presumably knows what the focus of his or her sentence is. The discourse phonological constraints like ALIGN(P[FOC], L; I, L) serve to provide the listener with this information.[45] In Selkirk's (1995) system of focus projection, listeners are able to recover what the focus of a sentence is, or could be, based on the prosody of the speaker. Under the account of section 8.2, speakers of Thompson Salish left-align the focus in the clause. Listeners are able to recover what the focus or its source of projection are based on what is in the leftmost p-phrase.

Under a syntactic hypothesis of focus marking for Salish, prosody plays a much more indirect role. Prosody merely identifies the edge of the predicate (the matrix predicate is leftmost in the intonational phrase). Listeners, knowing that focus is part of or projects from the predicate, can go on to reconstruct the focus of the sentence.

8.4.1 Additional evidence: Null foci and focused clitics

The findings of this dissertation, namely that focus is not marked by association with phrasal accent, make a number of predictions which can be illustrated with further data.

First, if phrasal accent is not relevant for the marking of focus, then it should be possible to cleft null pronouns as the focus. It should also be possible to focus unstressed material like clitics, unstressed suffixes, and unstressed roots, without inducing stress shift. Both the syntactic and the prosodic account of Thompson focus marking predict this result, since for neither account is there a relationship between focus and stress.

I suggested in chapter 3 that the sentence below was an example of a clefted null focus. The null pronoun head of the cleft can be thought of as a situational deictic like 'here' or 'now.'

(48)	[ʔé	ƛ̓uʔ	Ø	e	s-cúkʷ-s	e	s-<u>cw-úm</u>-s]$_{FOC}$.
	CLEFT	PERS	Ø	COMP	NOM-finish-3SG.POSS	COMP	NOM-work-MDL-3SG.POSS

"He's [finished <u>work</u> now]$_{FOC}$."

[45] A listener who has been paying attention to the discourse will also be able to calculate what is focused and given (eg. Schwarzschild 1999) to a large degree, but nonetheless discourse information like focus and givenness is marked prosodically.

Another case is shown in (49). B informs A that 'April's mother' is now taking care of 'Hermann the dog.' A replies with a yes/no question in the form of a cleft; the head of the cleft refers to 'April's mother,' yet is null; there is not any demonstrative that could possibly be referring to 'April's mother' in this example (Shank 2003 also reports that personal pronouns can be the heads of clefts in Straits Salish). That the focus falls on a null element is predicted to be acceptable, since stress and focus are not linked.

(49) A: ké? k s-ẏé-s ƛ̓u? ɬ e?-sqáqx̣a ɬ Hérmann.
is.it.case COMP NOM-good-3.POSS PERS DET 2SG.POSS-dog DET Hermann.
Tém ń k s-pi?-íp-s?
lack Q IRL NOM-lose-OC-3.POSS
"Is your dog Hermann still ok? He didn't get lost?"

B: pí?p ƛ̓əm̓ xe? ?e s-c̓é-s [ɬ: ... April
lose-INCH PERF DEM and NOM-CLEFT-3.POSS DET ... April
ɬ skíxze?-s$]_{w}$ e w?ex-s-t-émus.
DET mother-3.POSS COMP PROG-CAUS-TR-SUBJ.EXTR
"He was lost and [April's mother$]_{w}$ is taking care of him."
(literally: "He was lost and it's April's mother that is taking care of him.")

A: óo, c̓é m̓ ń ekʷu $[Ø_{w}]_{FOC}$ Ø ?ex-s-t-émus <u>c?éyɬ</u>?
oh, CLEFT EMPH Q EVID $[3SG_{w}]_{FOC}$ COMP PROG-CAUS-TR-SUBJ.EXTR now
"Oh, is [<u>she</u>$_{w}]_{FOC}$ taking care of him now?"
(literally: "Oh, is it $[Ø_{w}]_{FOC}$ that is taking care of him now?")

In other cases, it is unclear if the focus is a null pronoun or the demonstrative *xe?(e).* That is because *xe?(e)* can generally double overt arguments, though it more likely is some sort of situational deictic (see Thompson and Thompson 1992; and section 2.2.1), and the focus really is a null 3rd person pronoun. In any case, *xe?(e)* is a second-position clitic and does not bear phrasal or word-level stress in these examples.

In the first example, the relevant focus pair compares the 'priest' with the 'policeman' (the verbs are also contrastive here, but I will ignore them for the purpose of this example). The second line is of interest here: while 'policeman' is overtly expressed in its own intonational phrase, in the leftmost contrastive topic position, the actual focus position in the head of the cleft is either null ($Ø_{m}$), or the unstressed demonstrative *xe?(e).* The ubiquitous demonstrative and second position clitic *xe?* may be co-referent with 'the policeman,' though the demonstrative isn't typically used to refer to people. In English, we would expect phrasal stress on the pronoun *he*, but the pronoun is null in Salish. Since phrasal stress is not relevant for focus marking, this is not a problem in Nɬeʔkempxcin.

(50) nplít xeʔ tk x̣̌uʔsqáyxʷ e qʷin-t-Ø-éne.
priest DEM OBL.IRL man COMP talk.to-TR-3O-1SG.TS
"That was the priest I was talkin' to."
k̓ém̓eɬ e pəlísmen$_m$, c̓é xeʔ [Ø$_m$]$_{FOC}$ e w̓ík-t-Ø-ne.
but DET policemen$_m$, CLEFT DEM [3SG$_m$]$_{FOC}$ COMP see-TR-3O-1SG.TS
"But the policeman is the one I saw."
(literally, "But the policeman$_m$, it was Ø$_m$ that I saw."; c.f. "It was <u>he</u>$_m$ that I saw.")

The next example follows a similar pattern. In (51), 'my mother' is introduced as the clefted subject focus of the first clause, and is also the clefted subject focus of the second clause. However, in the second clause, this focus is either null (as indicated), or possibly marked by the unstressed demonstrative *xeʔ(e)*. Where English would employ a stressed pronoun *her*, Thompson Salish simply has a null pronoun in the focus position.

(51) ó, c̓é xeʔ [ɬ n-skíxzeʔ$_m$]$_{FOC}$ e q̓ʷy-éw̓-m
oh, CLEFT DEM DET 1SG.POSS-mother$_m$ COMP ripe-harvest-MDL
te sq̓ʷíyt, ʔeɬ c̓é xeʔ [Ø$_m$]$_{FOC}$
OBL fruit, and CLEFT DEM 3SG$_m$
e s-txʷ-úp-s te méx̣̌qiy tuxʷ e ntéwmn.
COMP NOM-buy-INCH-3SG.POSS OBL mushroom from DET store
"It was [my <u>mother</u>$_m$]$_{FOC}$ that picked the fruit, and it was [<u>her</u>$_m$]$_{FOC}$ that bought the mushrooms at the store."
(literally: "... and it was [Ø$_m$]$_{FOC}$ that bought the mushrooms at the store."

A final example is provided in the statement below, which follows discussion about visiting friends for dinner; the friends are going to cook salmon and trout. The food is focused here, but once again null since it has already been discussed. Again, even if the demonstrative *xeʔ* is taken as the head of the cleft rather than a null element, it is a second position clitic and does not bare phrasal accent.

(52) ʔé ekʷu xeʔ $[\varnothing]_{FOC}$ Ø xʷúỷ kt ɬaʔx̣áns
CLEFT EVID DEM 3PL COMP FUT 1PL eat
tk ṣ-ʕáp e nés wn uciʔe <u>míl̓t</u>.
OBL.IRL NOM-evening COMP go 1SG.CONJ to.there visit
"[<u>That</u>'s]$_{FOC}$ what we're going to eat this evening when I go over for a visit."
(literally: "It is $[\varnothing]_{FOC}$ that we're going to eat....")

Thus, clefting null foci or unstressed demonstratives is quite possible in Thompson Salish. Under a "stress-focus" account, such structures might be surprising, but if nuclear stress is not relevant for marking focus in Nɬeʔkepmxcin, it is predicted to be possible.

Interestingly, English too is claimed to have focus on empty categories. Empty subjects of imperatives or infinitivals can be the focus (or part of the focus) associated with focus particles like *too* or *either* (Heim 1992, Krifka 1998, Rullmann 2003). Since these subjects are null, they cannot bear stress. The examples below are adapted from Rullmann (2003: 381).

(53) a. Laura, please come to my party on the weekend.
$[\varnothing_{2SG}]_{FOC}$ please come <u>too</u>.

b. A: So Laura promised you to come. What did Eric promise you?
B: He promised me [to Ø come]$_{FOC}$ <u>too</u>.

(54) a. Graham, please don't come to my party on the weekend.
$[\varnothing_{2SG}]_{FOC}$ please don't come <u>either</u>.

b. A: So, you're begging Graham not to come to your party.
What are you begging of me?
B: I'm begging you [not to Ø come]$_{FOC}$ <u>either</u>.

Féry and Samek-Lodovici (2006) suggest that focus particles like *too* may surface obligatorily to bear the nuclear stress in cases where focal stress would otherwise fall on all given material. Presumably such an account may be extended to these cases of empty category foci: since nuclear stress can obviously not fall on a null element, the focus particle associated with the focus bears the nuclear stress instead. This situation is quite different from Thompson Salish, where, though focus particles (like emphatic *m̓* in 49) may surface in the second position clitic position, they do not take on phrasal accent (or word-level stress, for that matter). Thus, the divergence of stress and focus is maintained in a striking fashion.

I'll conclude this section by noting that focus can also fall on an unstressed lexical suffix, or an unstressed root. This is unexpected in a "stress-focus" account, but predicted by the previous findings for Nɬeʔkepmxcin. In (55), speaker A inquires if B has injured her toes. 'Toes' is expressed with a reduplicated stressed root for 'appendage' *lix̣–,* while the unstressed lexical suffix *=xn* expresses that we are talking about appendages of the foot (toes). Speaker B replies that it is her fingers that are hurt; the stressed root *lix̣–* is unchanged, and the unstressed lexical suffix *=kst* indicate that appendages of the hand (fingers) are at issue. Everything is given but *=kst*, which constitutes a narrow constrastive focus. Yet, stress does not shift onto this suffix. In fact, [=kst] does not even contain any vowels or resonants that could host a phonological head.

(55)	A:	x̣áni-s-t-Ø-x^w	ṅ	xeʔ	ɬ	eʔ-ləx̣-líx̣=xn.
		hurt-CAUS-TR-3O-2SG.TS	Q	DEM	DET	2SG.POSS-RED-appendage=foot
		"Did you hurt your toes?"				

B: c̓é xeʔ e n-ləx̣-líx̣=[kst]$_{\text{FOC}}$
CLEFT DEM DET 1SG.POSS-RED-appendage=hand
e x̣áni-s-t-Ø-ne.
DET hurt-CAUS-TR-3O-1SG.TS
"It was my [fingers]$_{\text{FOC}}$ that I hurt."

The reverse pattern is shown in (56), repeated from (35B) in chapter 3. In this case, focus falls on the unstressed root *keʔɬ–* 'three,' but stress is not shifted from the stress-bearing suffix *=eyus* 'pants.'

(56)	[Keʔɬ]$_{\text{FOC}}$=éyus	tk	sqéyus	e	s-tx^w-úp-s.
	Three=pants	OBL.IRL	pants	COMP	NOM-buy-INCH-3SG.POSS

"She bought [three]$_{\text{FOC}}$ pairs of pants."
(more literally: "The (thing that) she bought was [three]$_{\text{FOC}}$ pants.")

The data in this sub-section support the general finding that stress and focus diverge in Nɬeʔkepmxcin, but do not help us decide between a syntactic or edge-oriented prosodic account of focus marking in Thompson Salish.

8.4.2 CP focus expressed via clefts or nominal predicate constructions

A second prediction that follows from the prosodic account of focus marking in Thompson is as follows. If the left edge is relevant for focus marking, then it should be possible to mark CP focus (which necessarily spans the entire utterance) using both default word order *or* clefts/NPCs. In either type of syntactic structure, the CP spans the entire clause from left to right.

We have seen results to this effect in chapter 3 (table 3.2), where the corpus study of focus marking determined that CP focus was occasionally marked using nominal predicate constructions. While only a single case of VP or verb focus was realized using a cleft or NPC structure, nearly 10% of CP focus cases were expressed this way. Under the view that it is the left edge that is relevant for focus marking, this result is not unexpected: we expect clefts and NPCs to be able to express CP focus. The fact that it is not more than 10% of cases may be due in part to the fact that clefts and NPCs are biclausal, and so reasons of economy will preclude their use when a monoclausal VSO alternative is available.

However, the ability to use clefts or NPCs to express wide CP focus is also expected under the syntactic view of focus marking. In chapter 3, examples (51b) and (52b) showed how wide CP focus can be projected from the predicate/focus in NPCs and introduced clefts. Since predicates are at the left edge in both structures, this result is expected if focus is associated with the predicate rather than with a prosodic position.

8.4.3 Association with focus

In English, focus particles like *only* or *even* associate with a prosodically prominent focus (eg. Jackendoff 1972). Focus particles like *only* or *even* in St'át'imcets Salish act as clause-initial cleft predicates. This is true in Nɬeʔkepmxcin as well. Davis (2007) observes that this pan-Salish syntactic phenomenon can be understood as stemming from the fact that focus surfaces at the left edge of the clause, the predicate position.

Davis (2007) observes that, in English, focus particles like *only* may surface in a variety of positions in the clause, to associate with the intonationally marked focus. The focus particle must scope over the focus (eg. Rooth 1985, Krifka 2007).

(57)	a.	Only [<u>John</u>]$_{FOC}$ saw Bill.	[narrow subject focus]
	b.	John only [<u>saw</u>]$_{FOC}$ Bill.	[narrow verb focus]
	c.	John only [saw <u>Bill</u>]$_{FOC}$.	[VP focus]
	d.	John only saw [<u>Bill</u>]$_{FOC}$.	[narrow object focus]
	e.	John saw only [<u>Bill</u>]$_{FOC}$.	[narrow object focus]

In Nɬeʔkepmxcin, like in St'át'imcets, a special cleft predicate *cukʷ*, meaning 'finish,' plus the second position clitic *ƛ̓uʔ*, is typically used to express 'only.' Davis suggests that the use of 'only' as a predicate follows from a syntactic account of focus, where focus is associated with the predicate. In the first example below, the focused DP *Karsten* is the VP internal argument of the predicate *cukʷ*. Because the focus particle is the predicate, a very tight syntactic association between the focus particle and focus is maintained in this configuration. Under a syntactic account of focus marking, where the focus is associated with the predicate, such a structure is expected. If we consider the focus particle/predicate *cukʷ* 'only' as part of the focus as well (since it is new information), then the configuration is optimal, since the focus is coextensive with the VP predicate. If *cukʷ* is not considered part of the focus (as marked below), then the configuration still accords with the generalization that the focus can be a subconstituent of the predicate, since in this case *e Karsten* is the DP complement inside VP.

Since these cases involve focus particles, they fall under what Krifka (2007) calls denotation focus; that is, the truth conditions of the utterance depend on the proper interpretation of the focus. For a Thompson Salish listener, interpreting the focus depends on its falling in the initial p-phrase. I will assume that *cukʷ* has similar truth conditions to English 'only,' though this is a matter for further investigation. Roughly, then, the structure below means that Karsten is the unique individual who helped to clean up. (Contrast this with an ordinary *c̓e* cleft, which would simply mean that Karsten helped to clean up; that is, the focus does not affect the truth conditions of the utterance, it merely introduces alternatives.)

(58)

téʔə,	[$_{VP}$ cúkʷ	ƛ̓uʔ	[$_{DP}$ e	Kársten]$_{FOC}$]	e	kən-t-sém-s		xeʔ
NEG,	only	just	DET	Karsten	DET	help-TR-1SG.O-3.TS		DEM
ɬ	c̓ax̣-t-Ø-ém		us	ɬ	cúkʷ=cin	us	e	<u>séytknmx</u>.
DET	clean-TR-3O-IDF.TS		3CONJ	COMP	finish=mouth	3CONJ	DET	people

"No, only [<u>Karsten</u>]$_{FOC}$ helped me to clean up when the people finished eating."

The next example is similar. Speakers are discussing someone's overly ambitious plans to get a lot of chores done; only one of the chores was completed, however. In this case, the focus is the VP 'only chopped wood.' Like in the previous example, the focus is the argument of the predicate *cukʷ*,[46] in a tight syntactic configuration with the focus particle.

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[46] This case has several syntactic points of interest. First, it contradicts the generalization that verbs are not clefted (**It was only chopping wood that she did).* The verb

(59) [$_{VP}$ cúkʷ ekʷu x̌uʔ [$_{DP}$ e séq̓-m-s]$_{FOC}$], te súypm,
only EVID just DET NOM.chop-MDL-3SG.POSS, OBL.DET wood,
ʔe s-qʔáz-s, ʔe s ...
and NOM-tire[INCH]-3SG.POSS, and NOM ...
"But she only [chopped wood]$_{FOC}$. Then she got tired and ..."

The question is whether the use of predicates to express focus particle meanings is unexpected under the edge-oriented prosodic account of focus marking. It is clear from the English data (57) that the focus particle cannot surface just anywhere in the linear order, as one might expect if the associated focus is easily picked out prosodically. In fact, *only* still surfaces in a close surface configuration with a stressed focus. The same is true of Salish focus predicates like *cukʷ*: they surface at the left edge, the relevant prosodic position for focus under the prosodic hypothesis. So far, then, the data don't provide strong support for either the syntactic or the prosodic hypothesis.

However, focus particle meanings are expressed in another way as well. Sometimes just the second position clitic *x̌uʔ* is used to express the 'only' interpretation. In this case, the usual predicate is employed, and not a special focus particle predicate like *cukʷ*. In the next example, a narrow verb focus case, the speaker is talking about Bob's plans to pick, peel and bake some apples; Bob only gets partway through his chores, though.

(60) [q̓ʷy̓ew̓-m]$_{FOC}$ meɬ x̌uʔ xeʔ cʔéyɬ te épḷṣ.
pick-MDL CNSQ just DEM now OBL apple
"But he only [picked]$_{FOC}$ the apples today."

The focus particle *x̌uʔ* can also be used to express VP focus. In the next example, the speaker expresses that Tom didn't get to do all the things he planned that day; he only got to work on his car because it took a long time. The focus particle surfaces in the same second position.

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phrase also appears to be the only argument of the cleft predicate *cukʷ* in this case – there is no apparent other null pronoun or demonstrative that could be acting as second argument here. The entire verb phrase is nominalized (indicated by the morphology on the verb), even though there is nothing that has been 'extracted' from inside the verb phrase. I'll leave the finer internal structures of *cukʷ* clefts for future research.

(61) [cu-t-és ƛ̓uʔ ɬ káh-s]$_{FOC}$.
fix-TR-3O-3TS just DET car-3SG.POSS
"But he only got to [work on his car]$_{FOC}$."

This configuration where second position clitics are associated with the focus is employed for other standard focus particles meanings. The second position clitics *ʔeɬ* and *ƛ̓uʔ* together express the focus particle meaning 'even' or 'too.' The following examples are repeated from chapter 7.

(62) A: *Peter went fishing. Did anyone else go fishing?*
B: c̓é ekʷu ʔeɬ ƛ̓uʔ xeʔ [e Jóhn]$_{FOC}$.
CLEFT EVID and even DEM DET John
"[John]$_{FOC}$ did too."

(63) A: *Did everyone eat the food?*
B: heʔáy, c̓é ʔeɬ ƛ̓uʔ [e sqáqx̣a t_h]$_{FOC}$ xeʔ
yes, CLEFT and even DET dog t_h DEM
e kən-t-éy-Ø-s [e Hérmann]$_{h,\ FOC}$. ɬaʔx̣áns xeʔ te smíyc.
COMP help-TR-?-3O-3TS DET Hermann. eat DEM OBL meat
"Yes, even [Hermann the dog]$_{FOC}$ helped. He ate some meat."

Second position clitics are syntactically high in the clause, corresponding to projections in the extended CP domain (eg. Rizzi 1997, Cinque 1999; Thompson and Thompson 1992:138-139; Davis, to appear, on St'á'timcets 2nd position clitics; Davis 2000, Wiltschko 2002 on Salish subject clitics generated in C°). Assuming that the Salish verb does not raise beyond its extended projections into the TP or CP domain (Davis, to appear), then there is no close syntactic relationship between the predicate and second position focus particles: verbs are below TP, while clitics are in the CP domain. This is not as we would expect under a syntactic account of focus marking, where focus particles seek out the predicate syntactically (as *cukʷ* did in our previous examples).

However, as clitics, 2nd position focus particles are positioned prosodically, after the first prosodic word. Since the focus and focus particles both prosodically seek out the left edge of the clause, this suggests that a prosodic account of focus marking is on the right track rather than a syntactic one. Both the focus and the associated focus particles are in the leftmost p-phrase.

Some further examples are shown below. In the subject focus case, both the focus *Fiona* and the second position clitic focus particles *ʔeɬ x̌uʔ* are in the leftmost p-phrase.

(64)

(c̓é	ʔeɬ	x̌uʔ	[ɬ	Fióna]$_{FOC}$)$_{p\text{-}phrase}$	e	kəncéms
CLEFT	ACCM	just	DET	Fiona	DET	help-TR-1SG.O-3TS

ɬ	c̓ax̣téne	us	ə	n-cítxʷ.
COMP	clean-TR-3O-1SG.TS	3CONJ	DET	1SG.POSS-house

"Only [Fiona]$_{FOC}$ helped me clean my house."

In the next example, the focus is the reflexive 'myself.' However, in Thompson, this is expressed through the reflexive suffix *–sut* and the first person subject clitic *kn*. The focus *–sut* 'self' is in the same leftmost p-phrase as the focus particle 'just.' However, it is not clear that there is a close syntactic relationship between the focus *–sut* and the focus particle *x̌uʔ*, even though there is a close prosodic association.

(65) A: *Do you cook for your visitors?*

B:

Kʷukʷ-xi-t-[sút]$_{FOC}$	kn	x̌uʔ.
cook-APPL-TR-REFL	1SG	just.

"I just cook for [myself]$_{FOC}$." (literally: "I just self-cook.")

I conclude then, that association with focus suggests a prosodic rather than syntactic expression of focus. Focus particles and the focus are both in the first p-phrase, but not always both in the predicate phrase.

8.4.4 Extraposition from complex nominal predicates

In chapter 3 (section 3.3.8), we saw that extraposition from heavy NPs was possible from complex nominal predicates. The surface result was that the complex NP predicate had elements at both the left and right edge of the clause. This can result in configurations where the non-focused portion of the complex NP predicate is not in the leftmost p-phrase, but rather is rightmost. Thus, the FOCUS-LEFT generalization is optimally satisfied, since the focus and the first p-phrase are co-extensive. The result is more rapid identification of the focus by the listener. Under a syntactic account where the focus is associated with the predicate, a listener would still have to restrict the focus to just a portion of the complex NP predicate, whether it is split in the surface order or not. Thus, these cases suggest that prosody is manipulated to better isolate the focus prosodically rather than syntactically.

(66) (X) i-phrase
(X) (X) (X) p-phrase
[ƛ̓áq̓mekst]FOC t_p e n-s-x̣ʷóx̣ʷ-st [tk stq̓óls]$_p$.
six t_p COMP 1SG.POSS-NOM-want-REFL [OBL.IRL potato]$_p$
"I want [six]FOC potatoes."
(literally: "It is [six]FOC t_p that I want potatoes$_p$.")

It should be pointed out, however, that these configurations are optional. Complex NP predicates where the focus comprises only a portion of the predicate can also be expressed without rightward extraposition. Another example is shown below.

(67) A: *Her husband said that she got five pairs of shoes.*

(X) i-phrase
(X) (X) p-phrase
B: [Mús]FOC ƛ̓u? xe? tk síɬc̓u? e s-txʷ-úp-s.
four just DEM OBL.IRL shoes DET NOM-buy-INCH-3SG.POSS
"She only bought [four]FOC pairs of shoes."

What is not clear is if, when the focus is the entire complex predicate, a split NP configuration is still possible. I have only one such case in my data corpus (63B). Interestingly, there is another marginal case where the speaker B was apparently about to produce a split NP predicate (*síɬc̓u? e s-kʷn-ém-s te* ... – in the dashed box) for an object focus answer. However, she corrected herself (shown in the solid box) to produce the entire focused NP *e síɬc̓u? te ?escéqʷ* 'red shoes' in the leftmost p-phrase. This suggests that the requirement that focus be in the leftmost p-phrase outranks the constraints which allow rightward extraposition from heavy NPs.

(68) A: c̓iy thén̓ xe? tk xʷé?pit k s--, ...
similar which DEM OBL.IRL clothes IRL NOM--, ...
k s-txʷ-úp-s e ... Péter.
IRL NOM-buy-INCH-3.POSS DET ... Peter
"What clothes did Peter buy?"

B: ó, qemút ekʷu k s-kʷn-ém-s,
oh, hat EVID IRL NOM-get-MDL-3.POSS,
ʔeɬ síɬc̓uʔ t_r e s-kʷn-ém-s [te ...]$_r$ ⇐ split NP begun;
and shoes t_r DET NOM-get-MDL-3.POSS [OBL ...]$_r$ but corrected ⇓
uh ([síɬc̓uʔ te ʔes-céqʷ]$_{FOC}$)$_{p\text{-}phrase}$ ([e s-kʷn-ém-s]$_G$)$_{p\text{-}phrase}$.
uh shoes OBL STAT-red DET NOM-get-MDL-3.POSS
"Oh, he got a hat, and he got shoes ... he got red shoes."

A second strategy ensuring that the focus and the first p-phrase are coextensive is also employed. This is simply to not pronounce the unfocused portions of the complex NP predicate. In the following example, speaker B omits 'pigs' in her reply. Thus, the focus *sesy̓e* 'two' is the only overt lexical item in the first p-phrase (it is followed by three 2nd position clitics). The given material *k swʔxums* 'that he has' is parsed in the second p-phrase.

(69) A: *My daughter told me that Peter has four pigs.*
B: ([Sésy̓e]$_{FOC}$ ekʷu ƛ̓uʔ xeʔ)$_{p\text{-}phrase}$ ([k s-wʔx-úm-s]$_G$)$_{p\text{-}phrase}$.
two[DIM] EVID just DEM IRL NOM-PROG-MDL-3SG.POSS
"He only has [two]$_{FOC}$ (pigs)."

8.4.5 Predicate-argument flexibility (Davis 2007)

Davis remarks that a well-noted characteristic of the Salish languages is their predicate-argument flexibility (eg. Kinkade 1983, Jelinek and Demers 1994). As we have seen in Nɬeʔkepmxcin, any noun, verb or adjective can serve as the main predicate of the clause. With the addition of a determiner, any one of these can serve as an argument of the predicate. Davis argues that this is best understood as a natural consequence of syntactic focus marking. If the focus is associated with the predicate, then any syntactic category must be able to be predicative. In order to be given, any syntactic category must be able to be expressed as an argument (that is, removed from the predicate).

Davis cites Benner (2006:14) who has made similar observations about the lack of intonationally-marked focus in Sencóthen, a Central Salish language spoken on Southern Vancouver Island:

> ...a common strategy when one wants to emphasize something in Sencóthen is simply to make it the predicate. Based on the available data, it would seem that this syntactic strategy often reduces the need for prosodic strategies such as contrastive stress.

We can state the syntactic hypothesis about focus and its relation to predicate-argument flexibility as follows:

(70) Predicate-argument flexibility (syntactic hypothesis)
1. Focus is associated with the predicate.
⇒ Any syntactic category must be able to form the predicate.

However, there is an independent requirement that clauses are predicate-initial. As I showed in chapter 2, matrix predicates are always leftmost in their intonational phrase. I described this with the constraint PREDICATE-LEFT. I will assume that this is an independent result provided by the syntactic derivation. Given this independent requirement, the prosodic hypothesis about focus marking can lead us to the same result of predicate-argument flexibility.

(71) Predicate-argument flexibility (prosodic hypothesis)
1. The focus is associated with the leftmost p-phrase.
2. The predicate is in the leftmost p-phrase. [independent syntactic requirement]
⇒ Any syntactic category must be able to form the predicate (in order to be leftmost).

8.4.6 Narrow object focus is not expressed using verb-object word order

Given the predicate- and phrase-initial status of focus in Thompson Salish, both the syntactic and prosodic hypothesis are compatible with predicate-argument flexibility. However, there is one further piece of evidence to support the prosodic hypothesis here. As we have seen, the focus may be restricted to a portion of the predicate phrase (section 3.4.2): for example, the focus may comprise just one word of a complex nominal predicate, as in the reply by speaker B below (see also 66, 67). The focus is *keʔkɬes* 'three,' but the complex NP predicate is *keʔkɬes xeʔ tk smiyc* 'three deer.' Note that the 'oblique' gloss does not mean that the noun *smiyc* 'deer' is in an oblique relationship with its modifier 'three.'

(72) A:

Qeʔním-Ø-Ø-ne		xeʔ	e	Máry	ʔeɬ	e	Jáne
hear-TR-3O-1SG.TS		DEM	DET	Mary	and	DET	Jane
k	s-x^{w}es-x^{w}esít-s			ek^{w}u	u ciʔ		u ɬe tmíx^{w}.
IRL	NOM-AUG-walk-3POSS			EVID	to there		to DET land

"I heard that Mary and Jane went for a walk in the forest."

wik-t-íyxs	ekʷu	e	pi?éye?	te	smíyc.
see-TR-3O-3PL.TS	EVID	DET	one[DIM]	OBL	deer

"I heard they saw one deer."

B:	Teté?e.	[Ke?kɬés]$_{FOC}$	xe?	tk	smíyc	e	s-wik-tíyxs.
	NEG.	Three[DIM]	DEM	OBL.IRL	deer	DET	NOM-see-TR-3O-3PL.TS

"No. They saw [three]$_{FOC}$ deer."

Thus, the focus is contained in the predicate phrase *ke?kɬes xe? tk smiyc* 'three deer,' but is not equal to the predicate head. This means that the syntactic hypothesis has been weakened from its strongest form, where focus always projects from the predicate head. The principles of focus projection established in section 3.4.2 are repeated here:

(73) a. Restricted vertical focus projection (Salish)
The predicate phrase can project focus. {PredP, TP, CP}

b. Narrow focus (Salish)
Focus may be restricted to the predicate phrase or any subconstituent of the predicate phrase.

If we extend the syntactic generalization in (73b), however, we would expect narrow object focus to be marked with standard verb-object word order. That is because the narrowly focused object would be contained in the predicate VP. However, we saw that narrow object focus is expressed using nominal predicate constructions or clefts. These facts are not accounted for by the syntactic account of focus marking where the focus is associated with the predicate: if focus can be restricted to just one constituent of the predicate, then why can object focus not be expressed using V-O order? We would have to appeal to the special status of focus structures; that is, the narrow focus can be restricted to a portion of the predicate phrase in focus structures, but not in standard verb-initial forms.[47]

On the other hand, the facts receive a natural explanation through the prosodic account: verb-initial structures are not employed to express narrow focus on the object because these would result in a configuration where the focus is not in the leftmost p-phrase.

[47] This could be the result of an independent syntactic requirement which, like in English, prevents the "stranding" of non-focused portions of a complex NP in the residue clause (see (20) in section 8.2.2 for example, and (38) in section 3.3.8).

This is because verb and object are parsed into separate p-phrases. Thus, nominal predicate constructions or clefts are employed instead.

(74) Verb-initial order for object focus (hypothetical): focus is not in leftmost p-phrase

A: *What did they see?*

B: #(wik-t-íyxs	ek^{w}u)$_{\text{p-phrase}}$	([e	piʔéyeʔ	te	smíyc]$_{\text{FOC}}$)$_{\text{p-phrase}}$.
see-TR-3O-3PL.TS	EVID	DET	one[DIM]	OBL	deer

"They saw [one deer]$_{\text{FOC}}$."

8.4.7 The case of auxiliaries

In cases of verb or VP focus, an unfocused auxiliary may precede the verb. In the following example, the speaker disputes the activity of an eagle seen in the distance. In A's final sentence (highlighted in the box), the verb *nx^{w}alix* 'fly' is contrastively focused, yet is preceded by the auxiliary *ʔex*. Thus it is not leftmost in the clause, as the initial prosodic generalization FOCUS-LEFT might suggest. However, the contrastive focus is exactly equal to the predicate *nx^{w}alix*. In this case, the syntactic hypothesis of focus marking ensures optimal identification of the focus.

(75)

A: Keʔ	k	s-wík-t-Ø-x^{w}	u ciʔ	e	heléw̓.
is.it.case	IRL	NOM-see-TR-3O-2SG.TS	to there	DET	eagle

"Do you see the eagle over there?"

B: Heʔáy.	Heʔáy.	Wík-t-Ø-ne	u	ciʔe.
Yes.	Yes.	see-TR-3O-1SG.TS	to	there.

ʔéx	neʔ	ʔes-míceʔq	ne	syép.
PROG	there	STAT-sit	in.DET	tree

"Yes. Yes. I see it there. It's sitting in the tree."

A: Tetéʔ	neʔ	k-e-s-míceʔq-s.
NEG	there	IRL-PROG-NOM-sit-3.POSS.

"It's not sitting."

(ʔéx	xeʔ	[n-x^{w}ál-ix]$_{\text{FOC}}$)$_{\text{p-phrase}}$.
PROG	DEM	LOC-fly-AUT.

"It's [flying]$_{\text{FOC}}$."

However, the focused verb is still contained in the leftmost p-phrase, since auxiliaries and second position clitics are parsed in the same p-phrase as the following verb. Thus, the data is also accounted for by the prosodic hypothesis as formulated in the constraint ALIGN(P-PHRASE[FOC], L; I-PHRASE, L), though by an additional mechanism (parsing the auxiliary in the same p-phrase with the verb). It is possible to order the verb before the auxiliary, but far less common. On balance, then, evidence from initial unfocused auxiliaries supports the syntactic hypothesis of focus marking.

8.4.8 Focused DPs are not simply moved leftward

The constraint ALIGN(P-PH[FOC], L; I-PHRASE, L) does not stipulate any association of the focus and the predicate. Thus, it does not prevent a focus structure like (76) in which a narrowly focused DP ('Ross') is simply moved to the left edge of the clause (like Hungarian – see section 1.3.3 for discussion). As long as it is in the leftmost p-phrase in the i-phrase, ALIGN(P-PH[FOC], L; I, L) is satisfied.

(76)		(X)	(			X	)	i-phrase
		(X)	(	X)	(	X	)	p-phrase
	*	téʔə.	[ɬ	Róss$_r$]$_{FOC}$	e	<u>pínt-ə-t-Ø-mus</u>		t$_r$.
		no,	DET	Ross$_r$	DET	paint-DRV-TR-3O-SUBJ.EXTR		t$_r$

intended "No, it was [<u>Ross</u>]$_{FOC}$ that painted it."

Ruling out structures like (76) is achieved by appealing to the fact that the syntactic derivation always produces predicate-initial structures (PREDICATE-LEFT). The syntactic account of focus marking does not need to appeal to the constraint PREDICATE-LEFT, since it stipulates that the focus and predicate phrase are associated. On the other hand, a complete account of the syntax of Thompson River Salish <u>does</u> need to account for the verb-initial structure of Nɬeʔkepmxcin independently – by appealing to PREDICATE-LEFT, for example. Thus, the absence of prosodic focus structures like (76) does not favour either account of focus marking.

8.4.9 Summary

In this section, I compared further data to try to evaluate the prosodic hypothesis versus the syntactic hypothesis of focus marking in Nɬeʔkepmxcin. On balance, I suggested that the data supports the view that focus is marked in a way that ensures optimal prosodic recovery of the focus. This is in line with psycholinguistic work that suggests that intonational parsing happens more rapidly than syntactic parsing, and is used to identify syntactic phrasing (Kjelgaard and Speer 1999; Jun 2003, and references on p. 220; Fodor's

1998 Implicit Prosody Hypothesis on silent reading; Callan et al. 2004b on listeners internally simulating the speech act of speakers). Research in language acquisition has also shown that 5 year-olds are able to use prosodic phrasing to correctly interpret syntactic parsing in structures with potential ambiguities (eg. Beach et al. 1996), while preschoolers can use prosodic cues to identify narrow foci (Hornby and Hass 1970 on 3-6 year olds; Wells et al. 2004 on 5-13 year olds).

Kjelgaard and Speer suggest that prosodic parsing is more straighforward because it is easier to identify p-phrases and i-phrases than it is syntactic information. P-phrases and i-phrases have only edges and heads, and are parsed directly into each other; moreover, there are only two categories to identify. Syntactic parsing is much more complex, involving the identification of many syntactic categories, movement, and traces. Moreover, signal information that demarcates phrase edges and heads can be recovered not just from the acoustic signal, but also from the visual signal (eg. Vatikiotis-Bateson 1988): acoustic parameters like F0 (Yehia et al. 2002), duration (Vatikiotis-Bateson 1988, Fletcher and Bateson 1989), and amplitude (Vatikiotis-Bateson 1988, Vatikiotis-Bateson and Kelso 1993) have visual reflexes in facial and head movement. In addition, neurolinguistic processing research provides some support for the view that p-phrase and i-phrase processing is different: evidence suggests that linguistic prosody over small domains (words or less) may be controlled by the left hemisphere; but processing of larger units (eg. p-phrases and i-phrases), appears to span both hemispheres (Baum and Pell 1999).

The results of this section are summarized in the table below. It shows which data follow straightforwardly from each hypothesis.

Table 8.1 Syntactic versus prosodic focus marking: Additional evidence

	Data	Syntactic hypothesis	Prosodic hypothesis
1.	Null foci	√	√
	Focused clitics	√	√
2.	Clefts and NPCs used for CP focus	√	√
3.	Association with focus		
	a. Focus particle predicates	√	√
	b. 2nd position clitic focus particles	X	√
4.	Extraposition from complex NP predicates	X	√
5.	Predicate-argument flexibility	√	√
6.	Object focus not expressed using V-O order	X	√
7.	Unfocused auxiliaries are leftmost	√	X
8.	Focused DPs are not simply moved leftward	X	X

8.5 On the relationship between focal accenting and given deaccenting

So far I have been treating the accenting (or other prosodic marking) of focus and the deaccenting of given information as two independent parameters. In section 1.5 (ex. 51) I took the view (following Schwarzschild 1999, Féry and Samek-Lodivici 2006, Selkirk and Kratzer 2007) that we need both focus and givenness, since we can have items that are both focused and given at the same time. But it is tempting to explore a link between the prosodic marking of these two categories, since (in English, at least) they appear to mirror each other.

From the typologies explored in the languages in this dissertation (section 1.3) there emerge some broad generalizations. Languages where focus aligns with the edges of utterances (left in Salish, right in Romance) are languages where DESTRESS-GIVEN is not operative. And, languages where in situ focal accenting is possible (eg. Germanic, Hungarian) are languages where DESTRESS-GIVEN is in operation.

There are two ways that I would like to think about this relationship.

Under the first approach, there simply is no deaccenting of given information in Salish or Romance. That is, DESTRESS-GIVEN is not a constraint or is an extremely low ranked constraint in these language types. On the other hand, in languages where focused material can be marked in situ, like English, DESTRESS-GIVEN is required. This is because, if focused material receives the most prominent accent, then post-focal given material must not be parsed into a p-phrase or it will violate a basic phonological constraint against middle-headed prosodic categories (see section 1.5, ex. 51, and section 8.3.1 for discussion). Thus, DESTRESS-GIVEN is highly ranked, and prevents ill-formed middle-headed p-phrases and i-phrases from occurring. This is a functional way of thinking about the role of DESTRESS-GIVEN and its role in the type of focus marking that we see in different languages.

But, we have seen that the constraints HP and HI (see (14), (29)), which require the boundaries of p-phrases and i-phrases to align with their heads, already prevent ill-formed middle-headed prosodic phrases (77a for p-phrases, 77b for i-phrases). The role of DESTRESS-GIVEN may turn out to be superfluous, then. Under this view, focus aligns with phrasal edges; where alignment is rightward, as in English, post-focal information will not be parsed into a p-phrase at the syntax-PF interface in order to satisfy HP, but only into a recursive p-phrase after the interface (77f).

Eliminating DESTRESS-GIVEN in favour of ALIGN(FOC, R; P, R) has, as far as I can see, several desirable consequences:

(i) it accounts for the fact that the deaccenting of given information is above all post-focal in languages with rightward accent alignment;
(ii) it accounts for the observation that, where given information is also focused, focus-marking trumps givenness marking (eg. Schwarzschild 1999, Féry and Samek-Lodovici 2006), a fact which falls out if there is no DESTRESS-GIVEN; and
(iii) it eliminates the problem of assigning a syntactic 'G' feature to given material that is a non-constituent (see (42) in chapter 1 and subsequent discussion), at least from the perspective of PF, since phonology does not need to refer to given material in a DESTRESS-GIVEN constraint.

In order for this to work, however, we need to allow focus to align both to p-phrase and i-phrase edges. Alignment to p-phrase edges prevents the default nuclear stress on the object in cases of narrow verb focus (77e), a duty which would otherwise fall to DESTRESS-GIVEN. All of candidates 77(c), (d) and (e) are eliminated by DESTRESS-GIVEN, but also by ALIGN(FOC, R; P, R), thus rendering DESTRESS-GIVEN unnecessary (where shown in the shaded boxes). The optimal candidate (77f) has given material parsed recursively in a second p-phrase. Violations of both ALIGN(FOC, R; P, R) and HP eliminate candidate (77a), which contains a single middle-headed p-phrase. And candidate (77b)

(77) Narrow verb focus in English

	ALIGN (P[FOC],R;I,R)	ALIGN (FOC,R;P,R)	DESTRESS -GIVEN	HP	HI
a. (X) i (X) p Fránk$_G$ [squáshed]$_{FOC}$ the péach$_G$.		*!		*	
b. (X) i (X) (X)(X) p Fránk$_G$ [squáshed]$_{FOC}$ the péach$_G$.	*!		**		*
c. (X) i (X)(X) p Fránk$_G$ [squáshed]$_{FOC}$ the péach$_G$.		*!	*	*	
d. (X) i (X)(X) p Fránk$_G$ [squáshed]$_{FOC}$ the péach$_G$.		*!	**		*
e. (X) i (X)(X) p Fránk$_G$ [squáshed]$_{FOC}$ the péach$_G$.		*!	**		
f. (X) i ((X)) p ☞ Fránk$_G$ [squáshed]$_{FOC}$ the péach$_G$.				*	

Thus, we have the possibility of eliminating DESTRESS-GIVEN entirely, but this idea needs more work; in chapter 9, I show for example that we can account for the differences between English and Salish by reranking DESTRESS-GIVEN below the nuclear stress constraints HP and HI.

The second approach to the relationship between givenness marking and focus marking is more in line with the proposals of this chapter, namely that we rethink STRESS-FOCUS in Generalized Alignment terms. Thus, there are various prosodic categories with which focus can align. In this case, DESTRESS-GIVEN is best thought of as an anti-alignment constraint (eg. Buckley 1998: ft. 2, on anti-alignment constraints). So, while focus aligns with a prominent prosodic category, given material anti-aligns from this same prominent category. It follows that given material too can be anti-aligned with various prosodic categories. Thus, DESTRESS-GIVEN is but one possibility, and turns out to be a language-specific constraint. In fact, the phrasing of the constraint from Féry and Samek-Lodovici

(2006) as "prosodically non-prominent" suggests a more general analysis, where what counts as prosodically non-prominent can vary from language to language, even if the name of the constraint overemphasizes the role of "stress." The anti-alignment version of DESTRESS-GIVEN is repeated below from section 8.2.

(78) DESTRESS-GIVEN: A given phrase is prosodically non-prominent.
(Féry and Samek-Lodovici 2006:135-6)

(79) Recasting DESTRESS-GIVEN in Generalized Alignment terms
*ALIGN(GIVEN, R; PHEAD, R)
"Do not align given material with a phonological phrase head."

Again thinking about the focus typologies laid out in section 1.3, we now see the following pattern (Pulleyblank, p.c.). In languages where focus aligns with prosodic phrase heads (eg. classic "stress-focus" languages like Germanic and Hungarian), given material is anti-aligned with prosodic phrase heads. In languages where focus aligns with i-phrase edges (rightmost in Romance, leftmost in Salish), given material anti-aligns from this i-phrase edge; for example, we saw that given material is typically in the right edge residue clause in Thompson River Salish clefts and nominal predicate constructions. Therefore, focus and givenness are aligned or anti-aligned to the same prosodic category, whichever prosodic category a particular language chooses to mark as prominent.

The constraint below captures the marking of given information in Thompson River Salish.

(80) Prosodic marking of given information in Nɬeʔkepmxcin
* ALIGN(P[GIVEN], L; I, L)
"Do not left-align a p-phrase containing given material with an i-phrase."[48]

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[48] We have seen examples where both focused and given material appear in the initial p-phrase, for example when only one portion of a complex nominal is focused (eg. 19). In these cases, we can either say that the focus alignment constraint outranks the givenness anti-alignment constraint; or that independent syntactic constraints prevent a derivation where portions of complex nominals are "stranded" in the residue clause (20). On the other hand, we saw that split nominal predicates typically serve to get unfocused material out of the initial p-phrase (section 8.4.4), exactly as we would expect a constraint like (80) to do.

To be sure, (80) is a rough initial attempt at capturing the state of affairs, and this is an area for future work. It is not clear whether anti-alignment is the best way to capture the resistance of given material to aligning in the strong phonological position. It is also not at all clear how we can refer to a syntactic category GIVEN when, as Schwarzschild (1999) and others have pointed out, given material can be a syntactic non-constituent. However, this is a general problem and not particular to the present study.

The general observation then, is this: whichever phonological category counts as prominent for marking focus in a language, given material is removed from this same prominent category. Given material avoids phrasal heads ("stress") in English, and it avoids the left edge in Thompson Salish. Thus, there is a link between the marking of focus and givenness, in that both align or anti-align to the same prosodic category.[49]

I won't explore various anti-alignment constraints any further right now, and will continue to just refer to DESTRESS-GIVEN for the purposes of chapter 9.

8.6 Summary

I have compared two hypotheses to account for focus marking in Nɬeʔkepmxcin. Under a prosodic hypothesis, focus constructions are employed because they enable the focus to be in the leftmost p-phrase in the matrix i-phrase. Under a syntactic account of focus marking, focus structures in Thompson enable the focus to be associated with the predicate phase.

The prosodic account falls out from a Generalized Alignment approach to focus marking, and unifies focus expression in "stress-focus" languages like English, "structural" focus languages like Nɬeʔkepmxcin, and "edge-focus" languages like Chichewa. Under this approach, focus can align to different prosodic categories at the interface of syntax and phonology: p-phrase and i-phrase heads (eg. English, German), or phrasal edges (Nɬeʔkepmxcin, Chichewa). I also showed that, while "stress-focus" approaches fail to account for focus marking in Nɬeʔkepmxcin, a strictly edge-alignment account does quite well in capturing the basic facts for English: the apparent "stress-focus" correspondence falls

[49] The cases of Chichewa and Xhosa discussed in 8.2.3 present problems for this observation, since both in situ focus and given material are marked by a p-phrase boundary. That is, given material does not anti-align from a p-phrase boundary. This may have to do with the fact the these languages align focus with the p-phrase rather than the i-phrase; or it may turn out that there is a "stress-focus" effect in addition to a p-phrase effect (Downing et al. 2007).

out from the interaction of two other set of constraints (HP and HI on the one hand, which regulate default phrasal stress, and DESTRESS-GIVEN on the other hand).

The second hypothesis pursued was that focus in Salish is marked syntactically, by making it the predicate. I argued that neither the prosodic nor syntactic account of focus marking necessarily precludes the other, because any syntactic marking of focus necessarily has a prosodic reflex, at least in linearization. However, evidence suggests that focus marking is optimized for efficient prosodic recovery rather than syntactic recovery. This is consistent with processing accounts in which prosodic information is parsed more rapidly than syntactic information and used as an aid to identify the latter (eg. Kjelgaard and Speer 1999).

I concluded by observing that, across languages, focus and givenness align and anti-align respectively from the same prominent phonological category. Thus, it is somewhat misleading to say that DESTRESS-GIVEN is not operative in Thompson River Salish, since DESTRESS-GIVEN is a language-specific constraint. If focus is not marked by "stress," we don't expect DESTRESS-GIVEN to matter. On the other hand, givenness *is* marked, by not appearing in the leftmost p-phrase. Thus, Thompson River Salish can potentially be modeled as having a constraint which anti-aligns given material from the leftmost p-phrase.

Chapter IX: Conclusion

In this dissertation, I have examined the linguistic interfaces and how they relate to information structure in Nɬeʔkepmxcin. Although Nɬeʔkepmxcin is a stress language, focus is not marked according to the Stress-Focus Correspondence (Reinhart 1995, and many others), nor is given information marked according to the "destress-given" generalization (eg. Schwarzschild 1999, Féry and Samek-Lodovici 2006). Focus structures (clefts and nominal predicates) are employed to mark narrow focus. Acoustic phonetic analysis confirm that stress and focus diverge. While the nuclear stress is rightmost in Thompson River Salish, the focus consistently surfaces at the left edge of the clause. Because focus structures are used for both presentational and contrastive focus, it follows that they lack the special semantics associated with clefts in English. Finally, by recasting "stress-focus" in a Generalized Alignment framework, we can account for Thompson Salish focus marking prosodically: the p-phrase containing the focus is left-aligned with an intonational phrase.

This study makes significant contributions in the theoretical, methodological and empirical realm. It is the most comprehensive account of the interaction of prosodic marking and focus in any Salish language to date. This is achieved by detailed examination of syntactic, semantic, phonological and phonetic properties of Nɬeʔkepmxcin discourse. The use of thorough phonetic analysis to support theoretical claims about focus structures, as well as a widely used phonological model (the prosodic hierarchy – Nespor and Vogel 1986), enables straightforward comparison of Nɬeʔkepmxcin with better known languages.

Methodologically, I have developed quasi-experimental techniques for eliciting conversations and conversational data, for use in fieldwork on endangered languages. The relationship with language consultants in this situation is special: unlike typical experimental contexts in languages with many speakers, where experimenters typically have no prior relationship with language speakers, the relationship between fieldworker and language consultants is a close one. Language recording sessions are many, and frequent, and language consultants also play the role of language teacher and, indeed, friend. However, I have shown that controlled experimentation is not just possible but productive in this context. In chapter 5, I showed that single sentence elicitation techniques are also a good substitute for natural conversation in terms of consultants' ability to produce natural sounding utterances.

Empirically, I have produced much new data in the form of conversations. Examples are given in the appendices, and will provide a useful tool for researchers and, hopefully, educators as well. These represent an important contribution as previous research on both Nɬeʔkepmxcin and many other Amerindian languages was often based on traditional stories told by single speakers. The shift to conversational texts with more than one speaker represents the addition of an important new speech mode to the body of research. Indeed, the most common and everyday use of language is primarily simple conversational exchanges of the type examined in this study.

The theoretical findings of this dissertation are as follows. There are two ways to create narrow focus structures: by clefting the focused constituent, or by making it the matrix predicate (typically a nominal predicate construction, NPC). Both clefts and NPCs structure the focus at the left edge of the clause. Crucially, narrow focus structures are not created by syntactic movement (eg. Bródy 1995 on Hungarian), nor does their existence fall out from special focus-suited semantics of these cleft structures (eg. Percus 1997, Hedberg 2000 on English clefts).

Instead, two generalizations emerge from the marking of both wide and narrow focus in Nɬeʔkepmxcin. First is a syntactic generalization (chapter 3): the focus is always associated with the predicate. Second is a prosodic generalization: the focus is always associated with the leftmost p-phrase. In both cases, the focus can be equal to, or be a subconstituent of, the predicate phrase or leftmost p-phrase. In addition, focus can project from this constituent. I suggested that focus is optimally marked for rapid phonological identification of the initial p-phrase, rather than the predicate. This has the advantage of reconciling focus marking in Nɬeʔkepmxcin with the basic observation of "stress-focus" accounts, namely that focus is marked prosodically.

Cross-linguistically, I unified the approach to focus marking in systems as diverse as English, German, Portuguese, Hungarian, Nɬeʔkepmxcin, and Chichewa. Under a Generalized Alignment approach, "stress-focus" is recast as an alignment of focus with a prosodic category. In classic "stress-focus" systems, this is alignment to prosodic heads (eg. pitch accents). In edge-based systems, focus aligns either with p-phrase edges (eg. Chichewa – Truckenbrodt 1999, Downing 2003) or i-phrase edges (eg. Nɬeʔkepmxcin), rather than with heads. This allows for the observed dissociation between prosodic heads and focus.

I restricted the marking of focus even further by applying the edge-alignment account to English, with some success. Under this model, there is one category which focus aligns with: prosodic phrase edges. The marking of prosodic heads (pitch accents) is regulated independently by constraints on default stress (HP, HI), and by DESTRESS-GIVEN which prevents stress from falling on old information. It is not clear that the edge alignment account will suffice, in light of evidence that different types of pitch accents (prosodic heads) are employed to mark focus (Gussenhoven 2004 on Portuguese, Selkirk 2005 more generally).

Thus, the cross-linguistic parameters of focus marking are as follows:

(1) Parameters for focus marking

1. Alignment with p-phrase edge — a. Left; b. Right

2. Alignment with i-phrase edge — a. Left; b. Right

For the present purposes, I will assume that a language aligns focus either with the i-phrase (Romance, Salish, Germanic), or with the p-phrase (Chichewa, Xhosa, Korean) (but see the discussion in section 8.5). Alignment to an i-phrase is modelled as alignment of the p-phrase containing the focus to an i-phrase.

The additional parameters which account for surface variation are:

(2) Parameters accounting for surface variation in focus marking

1. Default phrasal head assignment (HP, HI): Left or Right
2. DESTRESS-GIVEN (or its anti-alignment version, *ALIGN(GIVEN, R; PHEAD, R)

The diagram and table in (3) indicate how these parameters play out in various focus systems cross-linguistically. Where there are gaps (indicated by [?]), I was unable to determine the value of that parameter for the language in question; this represents an area for future research.

(3) Focus marking cross-linguistically [new proposal]

Focus Marking — Prosodic, Edge-oriented | Additional Parameters

Prosodic, Edge-oriented	Focus Alignment		DESTRESS-GIVEN	NUCLEAR STRESS
	p-phrase	i-phrase		
English	--	Right	√	Right
German	--	Right	√	Right
Hungarian[51]	--	Left	√	Left
Romance	--	Right	X	Right
Nɬeʔkepmxcin	--	Left	X	Right
Chichewa	Right	--	X [?][50]	Right [?]
Korean[52]	Left	--	√	[?]

English and German are both languages with righmost nuclear stress. Focus and nuclear stress both align to the right edge of the intonational-phrase (i-phrase). DESTRESS-GIVEN results in lack of accent on post-focal given information; this is achieved by not parsing given material into a p-phrase at the syntax-PF interface (eg. Selkirk and Kratzer 2007).

In Hungarian, focus aligns with the left edge of p-phrases and i-phrases, the same location as nuclear stress (Szendröi 2003). For Romance (eg. Portuguese), these parameters all target the right edge. And in Nɬeʔkepmxcin, focus is left-aligned in the i-phrase, while nuclear stress is right-aligned. While Hungarian employs DESTRESS-GIVEN, Portuguese (eg. Cruz-Ferreira 1998; Ladd 1996 on Romance languages in general) and Thompson River Salish do not.

In Chichewa, focus aligns with the edge of a p-phrase, but not an i-phrase (Kanerva 1990, Truckenbrodt 1999, Downing 2003 on Chichewa). Focus in Korean also aligns with a p-phrase (Jun 2003). It is not clear to me whether DESTRESS-GIVEN is operative in these

[50] The analysis of Chichewa proposed in Truckenbrodt (1999) and Downing (2003) suggests that given material is not differentiated by reduction of accent; a recent study by Downing et al. (2007) suggests that focused p-phrases containing high tones are also marked by higher pitch. This opens the possibility that DESTRESS-GIVEN is operative.

[51] Generalizations for Hungarian are taken from Szendröi (2003: 44).

[52] Generalizations for Korean are taken from Jun (2003: 239-241).

languages; this is a matter for further study (see Downing et al. 2007 on Chichewa; Jun 2003 on "dephrasing" in Korean).

At this point, it is also useful to consider where there are gaps, cross-linguistically, in the system proposed above. That is, what language types are predicted to exist in terms of the marking of discourse information? For the present purposes, I will just consider languages where focus is aligned at the i-phrase level. This gives us three parameters: focus alignment direction (left, or right), DESTRESS-GIVEN (active, or non-active), and location of nuclear stress (left, or right). The parameters combine to give eight possible configurations.

Table 9.1 Predicted typology and gaps: Focus and i-phrase alignment

	Focus alignment (ALIGN(P[FOC], L/R; I, L/R))	DESTRESS-GIVEN	Nuclear Stress (eg. HP, HI)	Example language
1.	R	√	R	English, German
2.	R	X	R	Romance
3.	L	√	R	(English clefts)
4.	L	X	R	Nɬeʔkepmxcin
5.	L	√	L	Hungarian
6.	L	X	L	?
7.	R	√	L	?
8.	R	X	L	?

The gaps at the bottom of the table (6-8) are predicted to exist under the present account, but I do not know of any languages which neatly fit into these typological slots. This may be due to the fact that the languages for whom both nuclear stress and discourse-marking strategies have been more intensively examined tend to have rightmost nuclear stress (Hungarian being a notable exception). System 3 is a partial gap; while English clefts can typify leftward focus like this to some extent, they are also partly captured by system 1. This is because with the application of DESTRESS-GIVEN in system 3 with a leftmost focus, we lose the distinction between 1 and 3 in terms of focal alignment: if post-focal information is deaccented, then focus will be aligned both to the right and to the left in system 3. This was shown in section 8.3 for in situ focus in English.

Another useful way to think about the predictions of these three parameters is in terms of constraint rankings in Optimality Theory. From this perspective, the parameter concerning whether DESTRESS-GIVEN is active or non-active is reduced to the constraint's being high-ranked, or low-ranked. In a system like Nɬeʔkepmxcin, DESTRESS-GIVEN is ranked below the focus alignment constraint ALIGN(P[FOC], L; I, L) and also below the constraints HP and HI regulating nuclear stress marking. In English, DESTRESS-GIVEN outranks the constraints HP and HI (see also the tableau in (77) in chapter 8); however, the focus marking constraint continues to outrank DESTRESS-GIVEN, since when an item is both focused and given, it will still be marked with focal prominence (see example (51) in chapter 1, for discussion). In Nɬeʔkepmxcin, too, given information that is a narrow focus is still marked by clefting (see example (80) in chapter 8, and discussion in the following footnote). These results suggest a universal ranking of focus marking constraints above givenness marking constraints (7).

(4) Constraint rankings: Nɬeʔkepmxcin
ALIGN(P[FOC], L; I, L), HP, HI >> DESTRESS-GIVEN

(5) Constraint rankings: English
ALIGN(P[FOC], L; I, L) >> DESTRESS-GIVEN >> HP, HI

(6) Universal constraint ranking: Focus marking outranks givenness marking
ALIGN(P[FOC], L; I, L) >> DESTRESS-GIVEN

Selkirk and Kratzer (2007) have conceived of discourse marking constraints like DESTRESS-GIVEN and STRESS-FOCUS as interface constraints; to what extent they are rankable with, and interact with, purely phonological constraints like HP and HI remains to be explored. Additional variation in how different languages realize focus marking can fall to additional, independent constraints in either syntax or phonology (eg. PREDICATE-LEFT in Thompson River Salish; or a strong syntactic [+Focus] feature and Focus Phrase in Hungarian). However, the above rankings offer a preliminary look at ranking variation and typology.

I hope to have shown that the study of the interfaces has proven very fruitful in accounting for the motivation of focus marking in Nɬeʔkepmxcin. Syntactic observations were reconciled with acoustic phonetic measurements, semantic investigation, and phonological analysis. Similar application to other languages is bound to prove fruitful also. I trust that the issues raised in this study will prove rich ground for future research by myself and others. The prosodic realization of the discourse notions of focus and givenness; the cues to prosodic phrasing; the phonetic correlates of nuclear stress; and the structure and semantics of clefts — in each area I have attempted, successfully I hope, to provide detailed analysis that can serve as a model and make predictions for further investigation.

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Appendices

Appendix A1: Scripted conversation – "Going to the grocery store"

The following is an example of a scripted conversation from the corpus of recordings upon which this dissertation is based. It is titled "Going to the grocery store." FE plays the customer, and PM plays the clerk. First is the scripted English dialogue, which was presented to each speaker. Second is the Nɬeʔkepmxcin version. Each line is numbered, and presented in three lines: Nɬeʔkepmxcin, gloss, and English translation. Above each line I show a waveform and pitch tracing; the dashed lines indicate morpheme boundaries.

Going to the grocery store

[FE enters the store. PM is the clerk.]

FE: Hello.

PM: Hello, how are you!

FE: Do you have any onions?

PM: Yes, how many would you like?

FE: 2 please. Do you have any eggs?

PM: Yes, how many?

FE: I'll take 6. Do you have potatoes?

PM: Yes, how many potatoes for you?

FE: 10 please. Where is the milk and cheese?

PM: It's in the back of the store, in the fridge.

FE: OK, I'll get some milk and cheese. ....
How much will it cost?

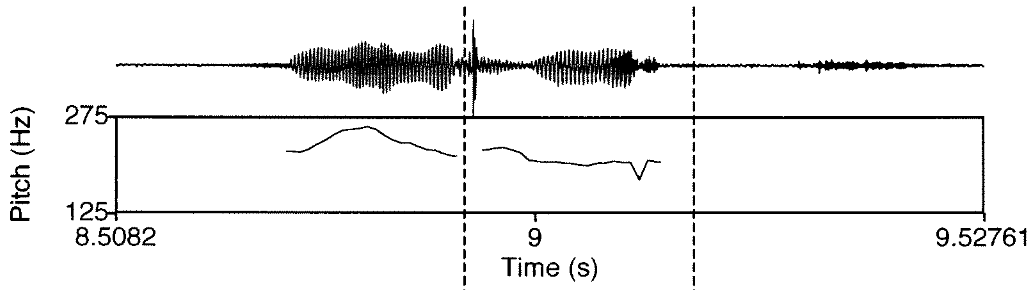
PM: That will be $10.

FE: Wow, groceries sure are expensive!

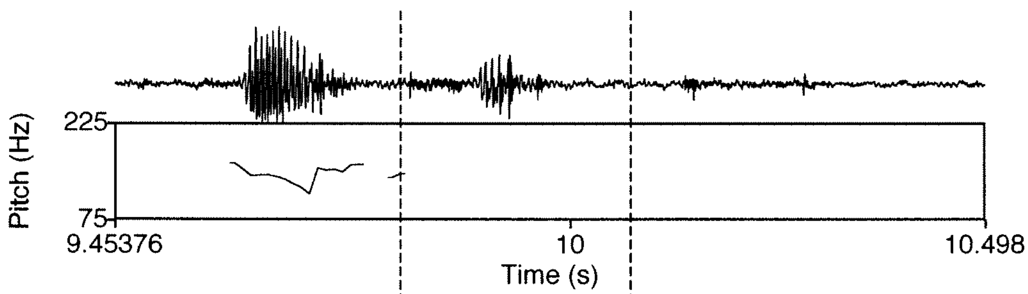
PM: Yes, you're right.

FE: See you later!

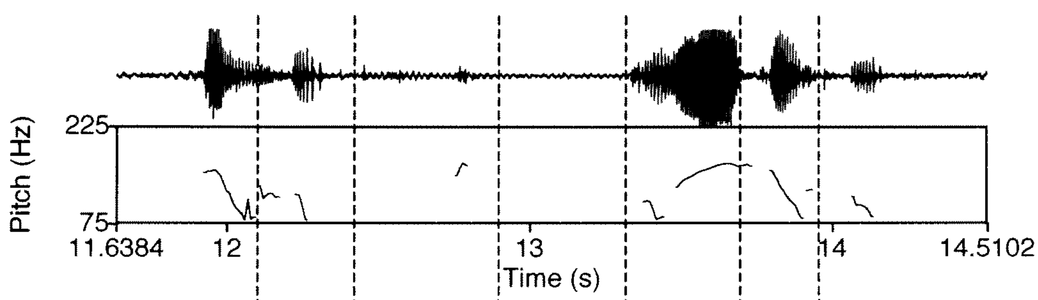
Nɬeʔkepmxcin dialogue: "Going to the grocery store" [F&P021 March 16-06]



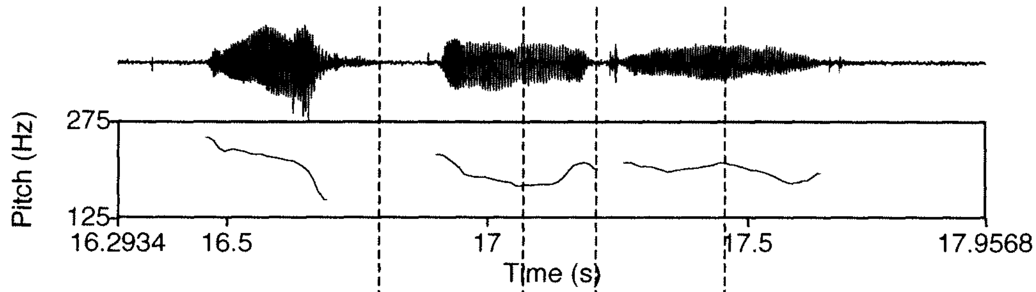
(1) FE: hén̓ | ƛ̓eʔ | kʷ.
which | there | 2SG
"Hello."



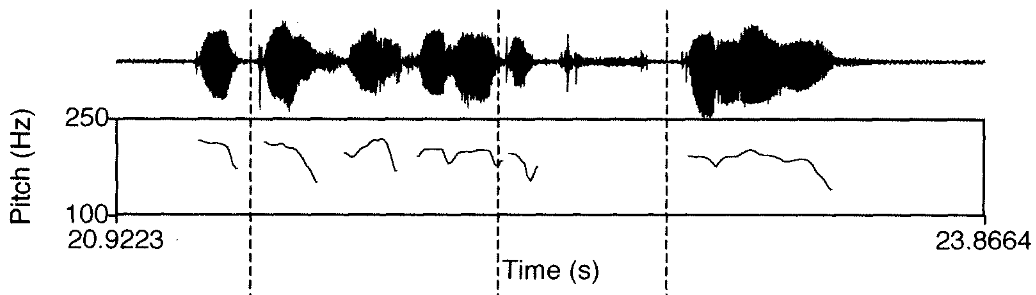
(2) PM: hén̓ | ɬeʔ | kʷ.
which | there | 2SG
"Hello."



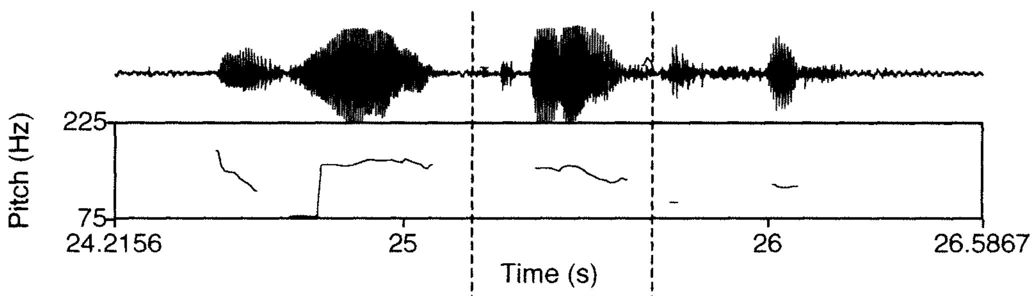
(3) PM: hén̓ | ɬeʔ | kʷ. | (pause) | y̓é | kʷ n̓ | ƛ̓uʔ.
which | there | 2SG. | | good | 2SG Q | PERS
"Hello. Hello, how are you?"



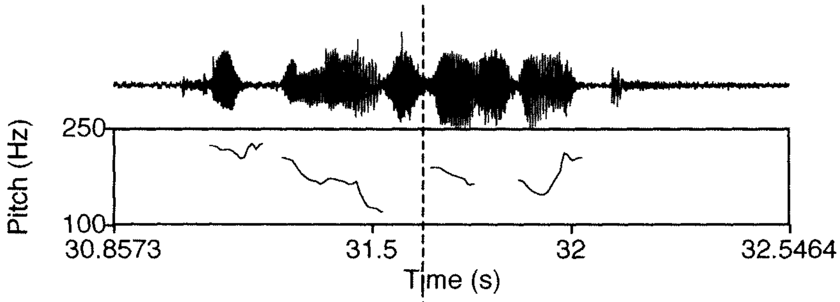
(4) FE: w?éx | kn | i? | ƛ̓u? | ẏé .
PROG | 1SG | | still | PERS good
"I'm fine."



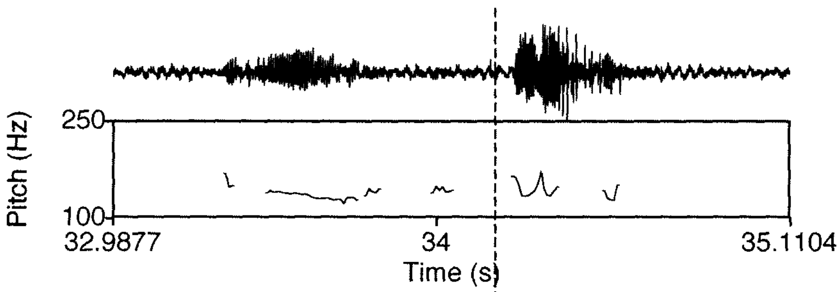
(5) ké? | k e?-s-w?xúm | tək^h: | q^wléwe?
is.it.case | IRL 2PS-NOM-have | OBL.IRL | onion
"Do you have any onions?"



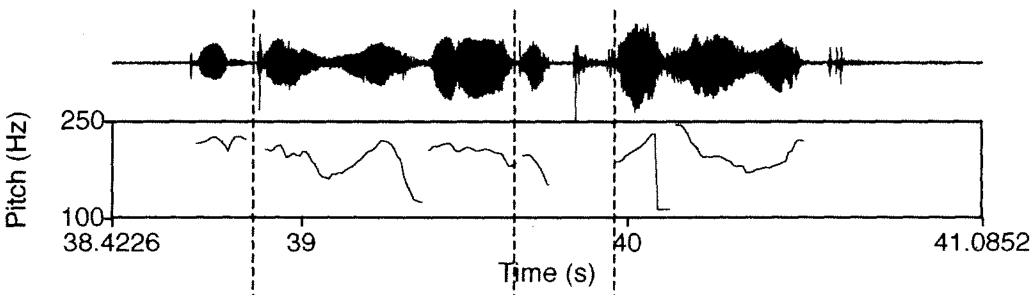
(6) PM: he?áy, | k^wínex | k e?-s-x̣^wóx̣^w-t.
yes, | how.many | IRL 2SG.PS-NOM-want-IM
"Yes, how many do you want?"



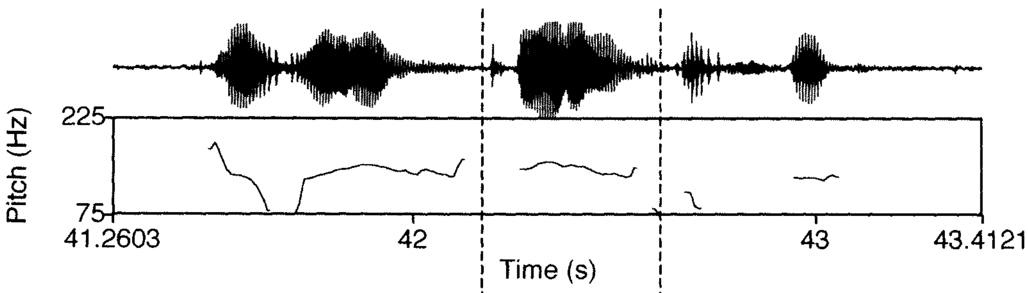
(7) FE: ƛ̓àq̓mes =úseʔ.
six =small.round.thing
"Six [onions]."



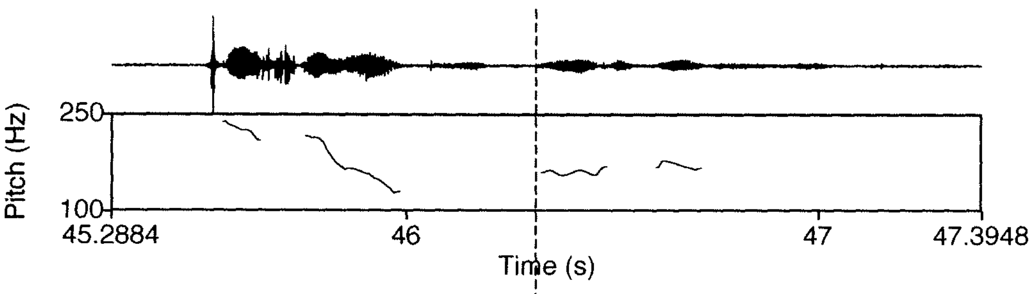
(8) PM: Hm-mm. húm̓eɬ.
Hm-mm. ok.
"Hm-mm. Allright."



(9) FE: kéʔ k eʔ-s-wʔx-úm tk heʔúseʔ.
is.it.case IRL 2.PS-NOM-have OBL.IRL egg
"Do you got any eggs?"

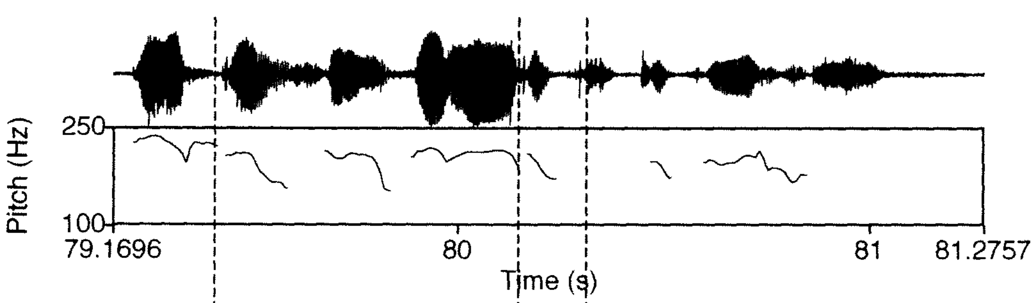


(10) PM: heʔáy, | kʷínex | k eʔ-s-x̣ʷóx̣ʷ-t.
yes, | how.many | IRL 2SG.PS-nom-want-IM
"Yes, how many do you want?"

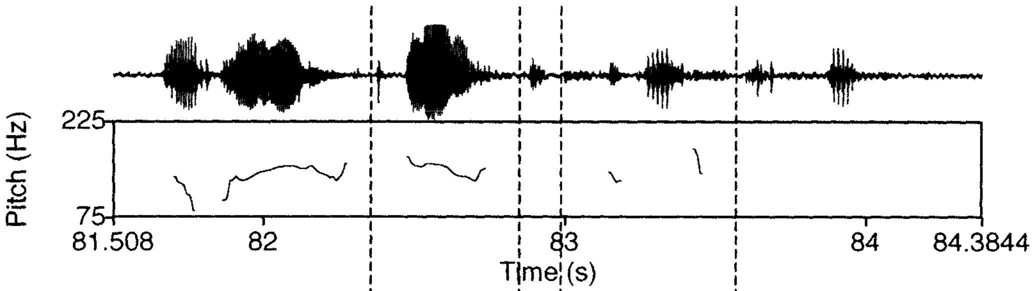


(11) FE: ƛ̓áq̓mekst | e n-s-x̣ʷóx̣ʷ-st.
six | DET 1SG.PS-NOM-want-REFL
"I want six eggs."

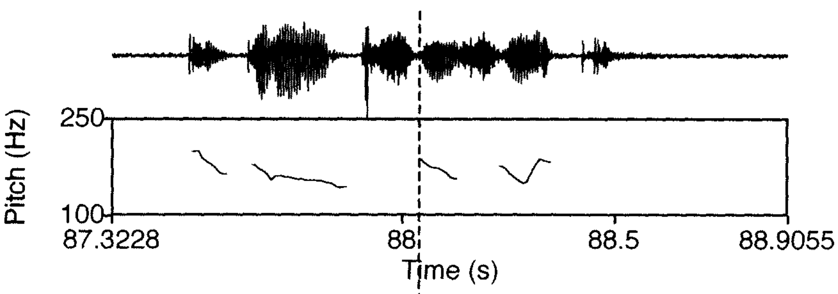
[brief pause as FE finds her place in the dialogue]



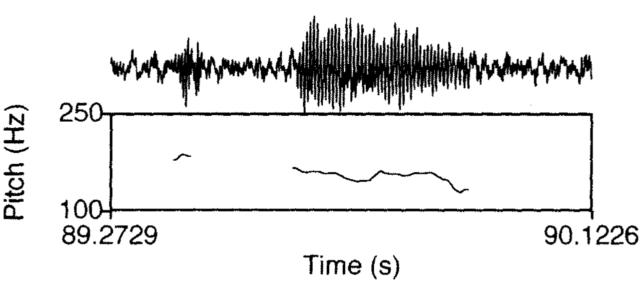
(12) FE: kéʔ | k eʔ-swʔx-úm̓ | tk | ṣtq́óḷṣ.
is.it.case | IRL 2PS-NOM-PRG-MDL | OBL.IRL | potato
"Do you have potatoes?"



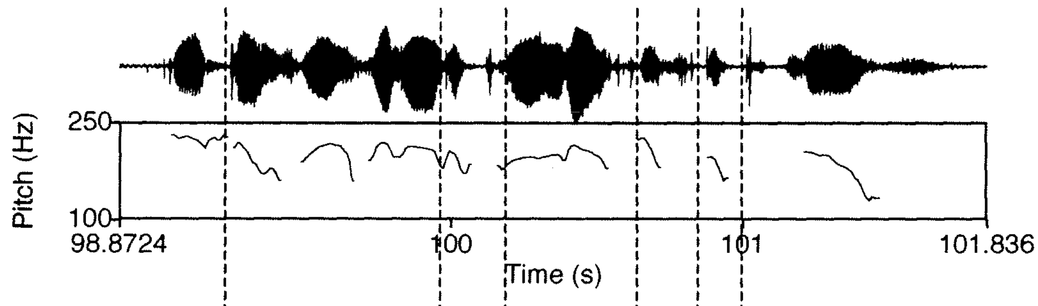
(13) PM: he?áy, kʷínex tk ṣtqóḷṣ k e?-s-x̣ʷóx̣ʷ-t.
yes, how.many OB potato IRL 2PS-NOM-want-IM
"Yes, how many potatoes do you want?"



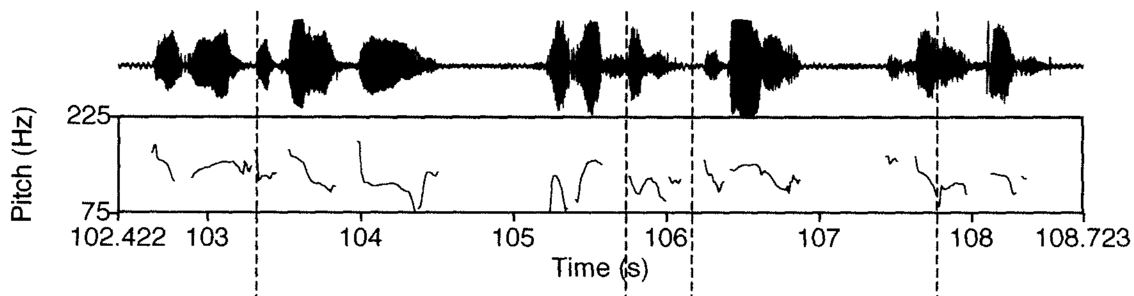
(14) FE: ?ùpneks =úse? ....
ten =small.round.thing ....
"Ten potatoes ...."



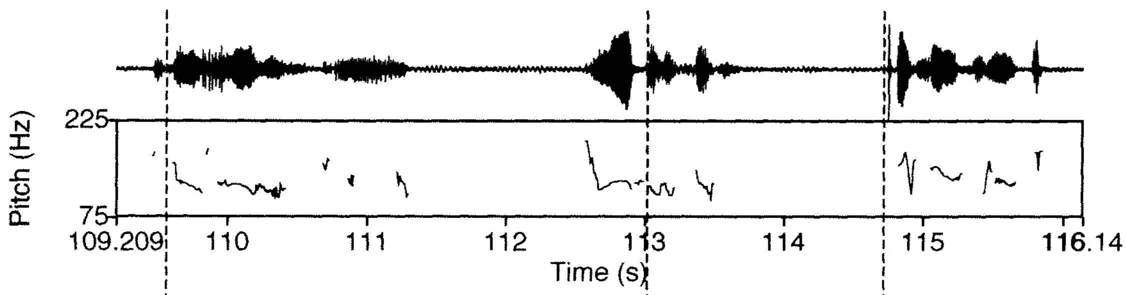
(15) PM: Mm-mm. [intonation of *he?áy* 'yes']



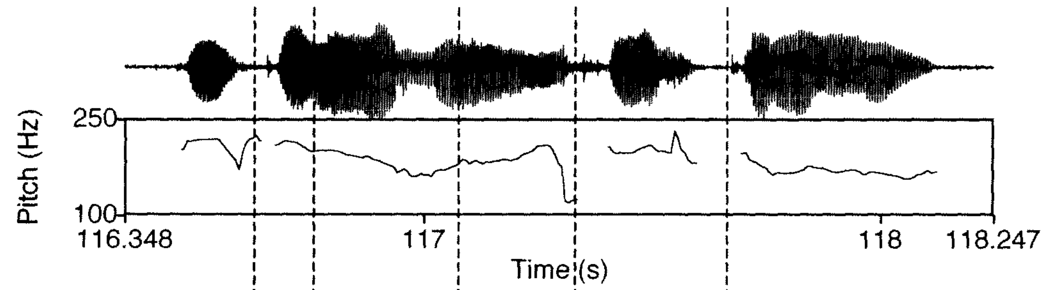
(16) FE: kéʔ k eʔ-s-wʔx-úm tk mílk ʔeɬ tk cíž.
is.it.case IRL 2PS-NM-have OBL milk and OB cheese
"Do you have any milk and cheese?"



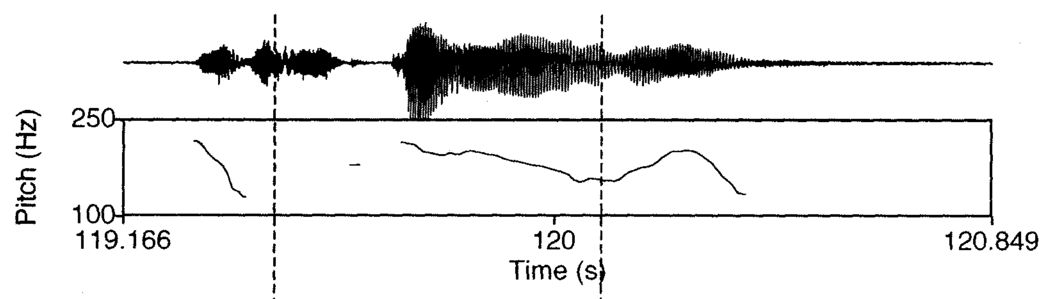
(17) PM: heʔáy, u cíʔ u ɬe: swewít-s te ntéwmn u cíʔ ne *fridge* ...
yes, to there to DET back-3PS OBL store to DEM in.DET *fridge* ...
"Yes, there in the back of the store in the fridge ..."



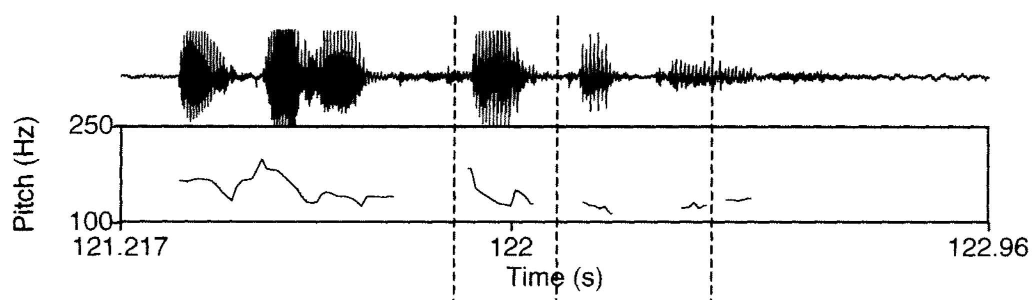
(18) u cíʔe wʔéx us e s - uh - e mílk ʔeɬ e *fridge*.... e *cheese, I mean. Ha!*
to DEM PRG 3CNJ D S- uh - D milk and det *fridge*. ... D *cheese, I mean. Ha*
"... back there is the - uh - milk and fridge. Cheese, I mean."



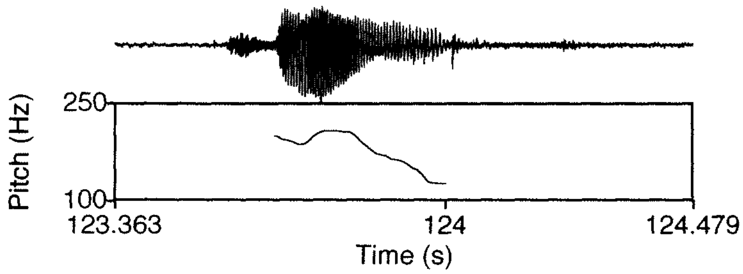
(19) FE: xʷúẏ kn meɬ wiʔ xeʔ kʷn-ə́m.
FUT 1SG CNSQ yet DEM get-MDL.
"I'll get some."



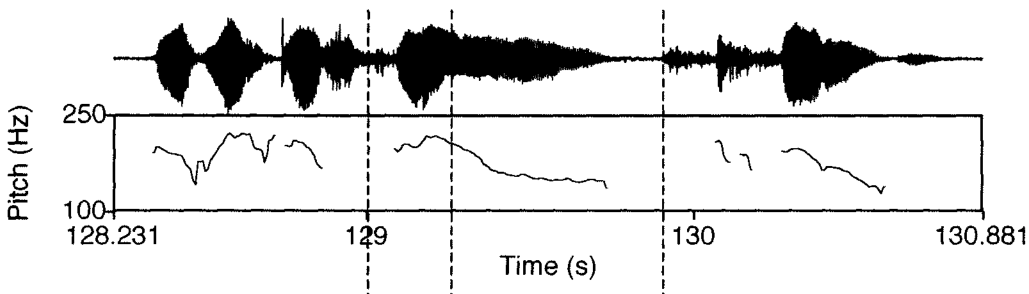
(20) ʔeṣ- c̓kén-m xéʔə.
and.NOM- how.much-MDL DEM
"How much is it?"



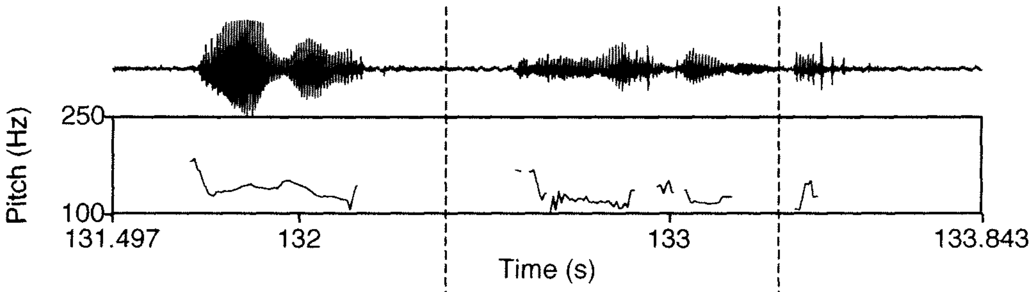
(21) PM: ʔúpnekst xeʔ tékm us.
ten DEM all 3CONJ
"It's $10 for all of it."



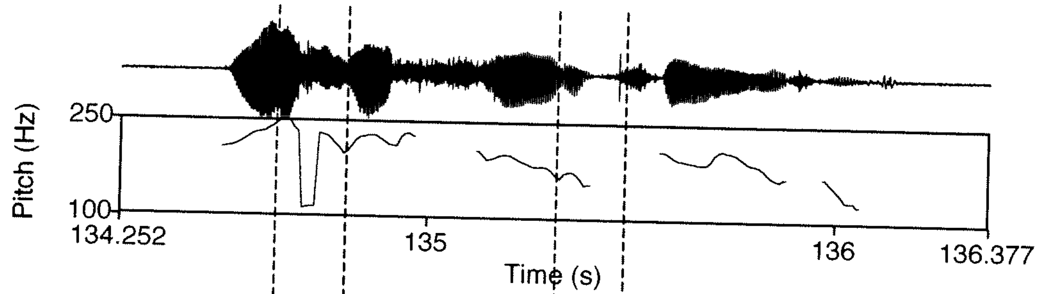
(22) FE: húm̓eɬ.
ok.
"Ok."



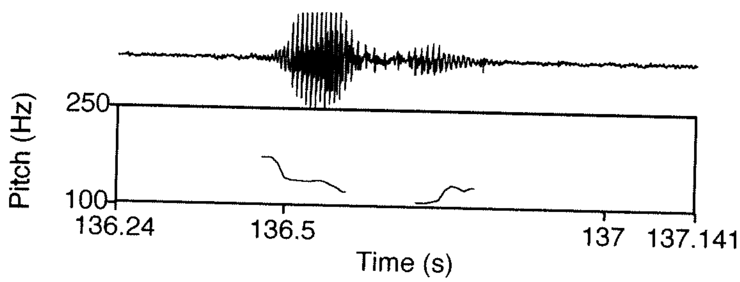
(23) nxʷíʔtus | xeʔ | ə: | sɬaʔx̣áns.
expensive | DEM | DET | NOM-eat
"Food is sure expensive."



(24) PM: néxʷ-m̓ | nxʷíʔtus | xeʔ.
very-MDL | expensive | DEM
"Yes, it is expensive."



(25) FE: xʷúẏ | xeʔ | wík-t-s-n | tk | snén̓seʔ.
FUT | DEM | see-TR-2O-1TS | OBL | later
"I'll see you later."



(26) PM: húm̓eɬ.
ok
"Alright."

[END "Going to the grocery store" dialogue]

Appendix A2: Scripted conversation – "Going to the clothing store"

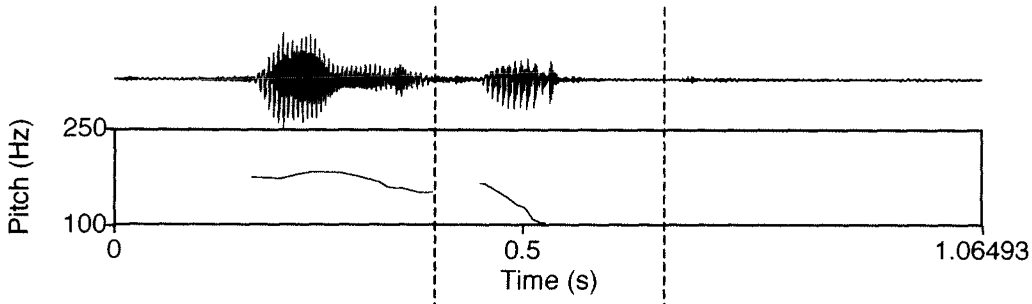
The following is another example of a scripted conversation from the corpus of recordings upon which this dissertation is based. It is titled "Going to the clothing store." FE plays the clerk, and PM plays a customer looking for a sweater. First is the scripted dialogue, which was presented to each speaker. Second is the Nɬeʔkepmxcin version. Each line is numbered, and presented in three lines: Nɬeʔkepmxcin, gloss, ȧnd English translation. Above each line I show a waveform and pitch tracing; the dashed lines indicate morpheme boundaries.

Going to the clothing store

[PM is looking for a sweater. FE is the clerk.]

Patricia:	Hello.
Flora:	Hi, can I help you?
Patricia:	I'm looking for something to wear.
	Do you have any sweaters?
Flora:	Yes, our sweaters are over here.
	What colour would you like?
Patricia:	I would like a red one.
Flora:	How about this one?
Patricia:	That one looks nice!
Flora:	Do you want to try it on?
Patricia:	OK. ...
	What do you think?
Flora:	Oh, that looks really good.
Patricia:	OK, I'll take it!

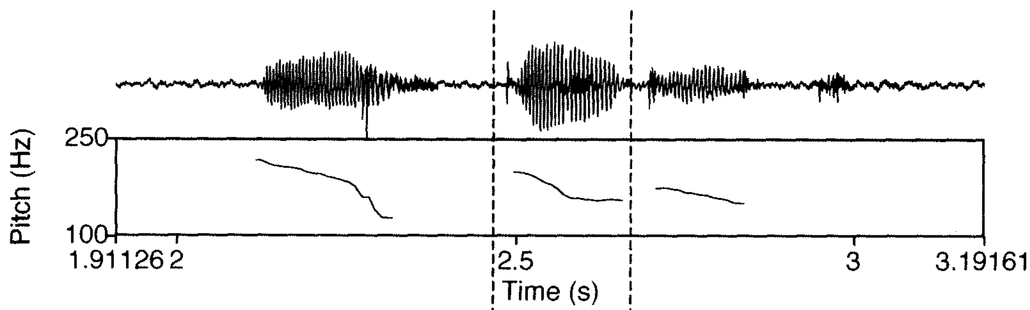
Nɬeʔkepmxcin dialogue: "Going to the clothing store" [F&P050 Apr 6-06]



(1) PM: hén̓ | ɬeʔ | k^w

which | DEM | 2SG

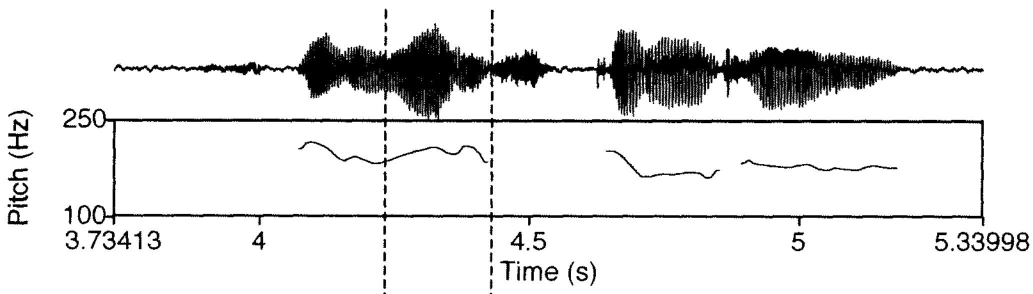
"Hello/How are you."



(2) FE: wʔéx | kn | ƛ̓uʔ.

PROG | 1SG | PERS

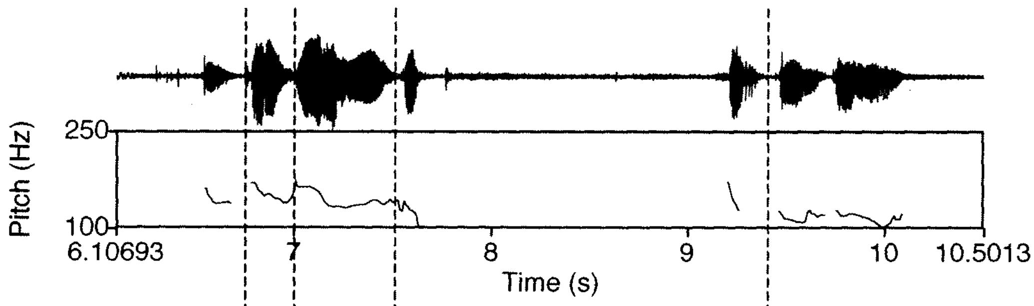
"I'm fine."



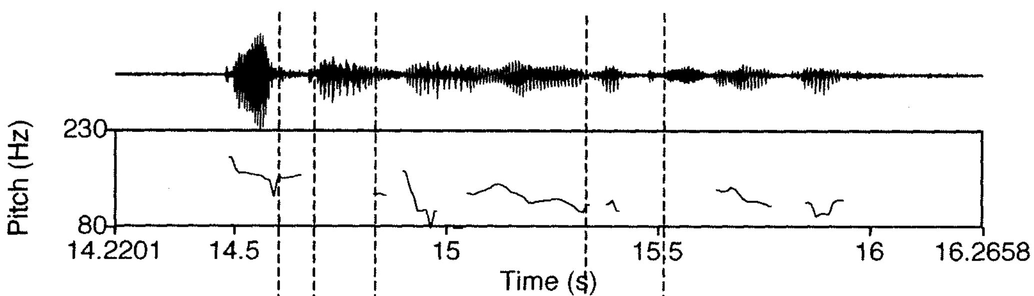
(3) steʔ | wíỷ Ø | s- kən-t-sí-n

what | FUT IRL | NOM- help-TR-2SG.O-1SG.TS

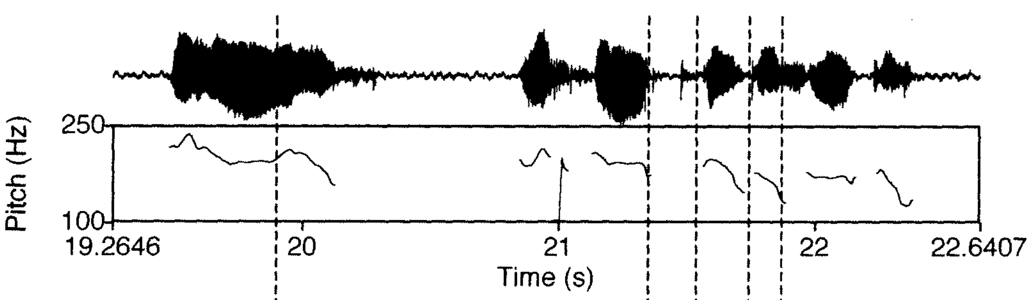
"Can I help you?"



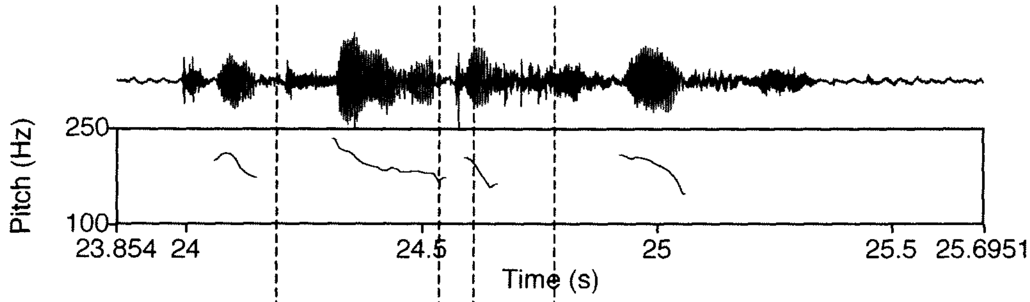
(4) PM: ʔex kn xʷíʔm tk (breath) xʷuỷ qʷəz-t-Ø-éne.
PRG 1SG look.for OBL.IRL FUT use-TR-3O-1SG.TS
"I'm lookin' for something to wear."



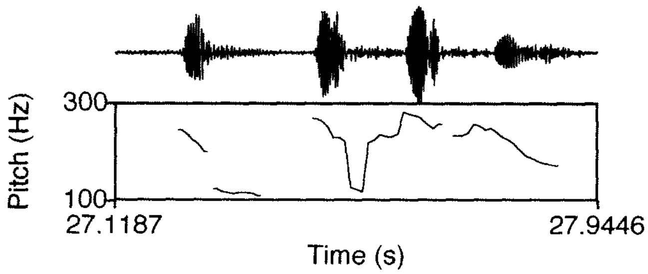
(5) kéʔ k eʔ- s-wʔx- úm tk swíte.
is.it.case IRL 2PS- NOM-PRG-MDL OBL sweater
"Do you have any sweaters?"



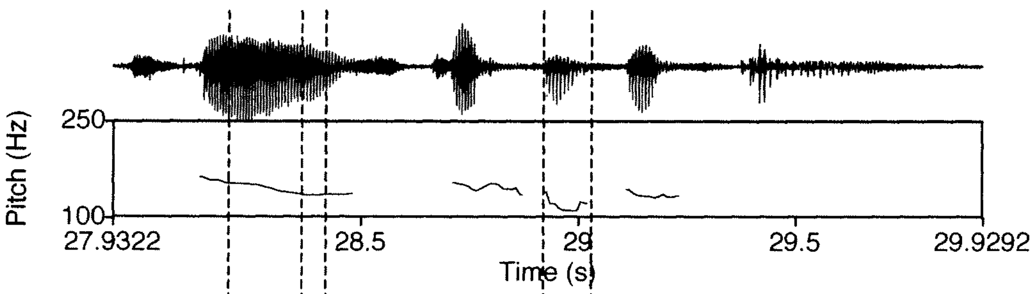
(6) FE: heʔáay, wʔéx ... wʔx-úm kt keʔ te swíte.
yes, PROG ... PROG-MDL 1PL DEM OBL sweater
"Yes, we have sweaters."



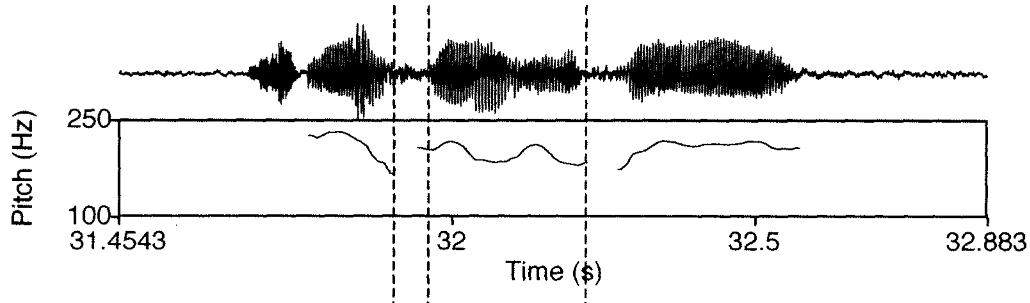
(7) c̓iy | t-hén̓ | k | eʔ- | s-x̣ʷóx̣ʷ-st
similar | LOC-which | IRL | 2SG.PS- | NOM-want-REFL
"What kind do you want?"



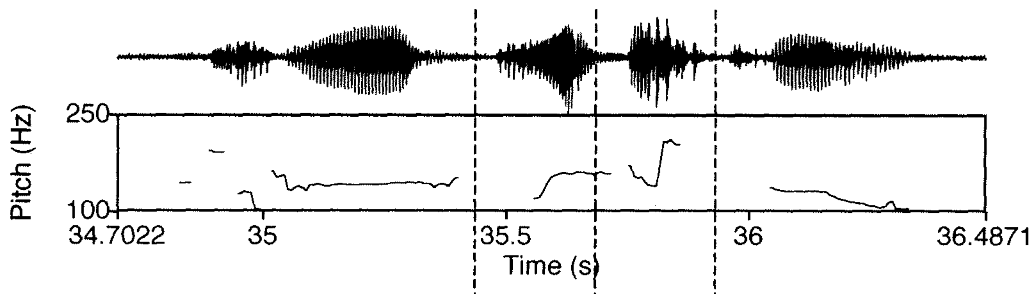
(8) [laughter]



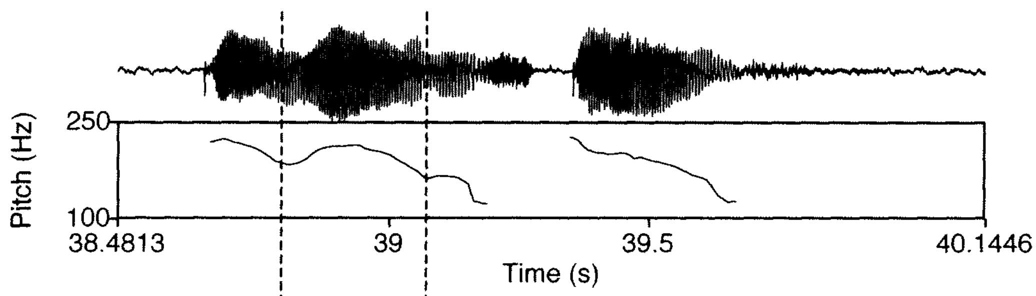
(9) PM:c̓é | xeʔ | e | ʔes-céqʷ | e | x̣ʷóx̣ʷ-st-m-Ø-ne.
CLEFT | DEM | D | STAT-red | DET | want-REFL-REL-3O-1SG.TS
"I want a red one."



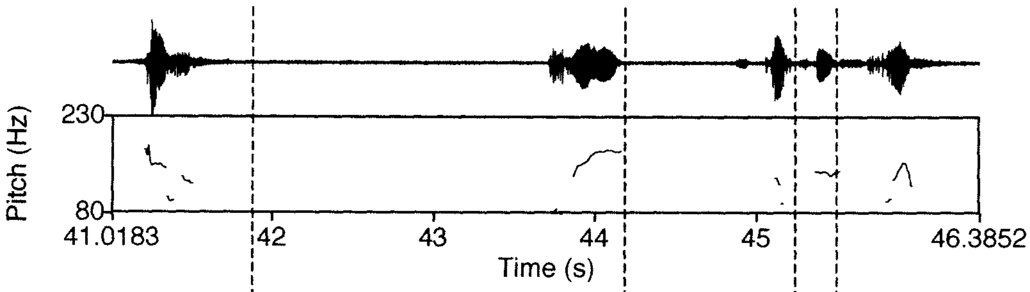
(10) FE: c̓é | x | n̓ | xéʔ.
CLEFT | ? | Q | DEM
"How about this one?"



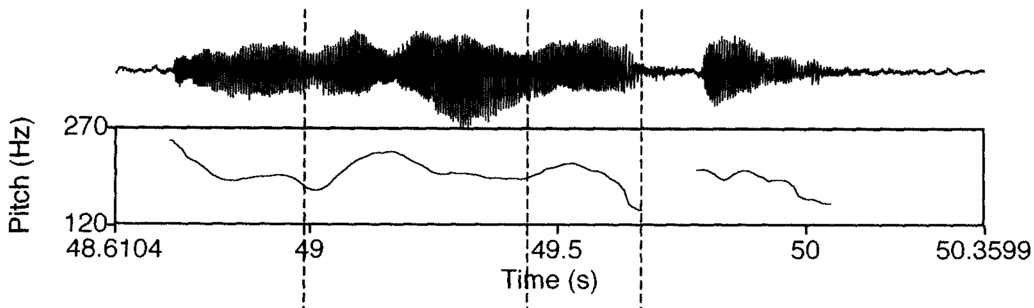
(11) PM: heʔáy, | y̓é | xeʔ | c̓íye.
yes, | good | DEM | similar.
"Yes, that one's nice."



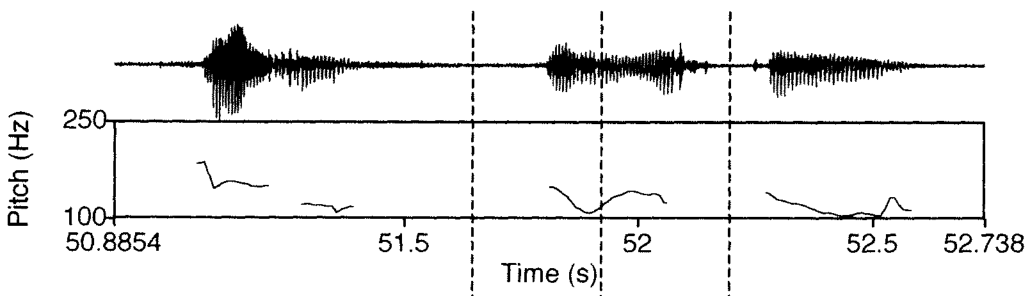
(12) FE: keʔ | Ø xʷúy̓ | mstén-n-Øxʷ.
is.it.case | COMP FUT | try-TR-3O-2SG.TS
"Will you try it on?"



(13) PM: húm̓eɬ. (breath) heʔáy, (breath) ckéʔ č̓iy k s-y̓é-s.
ok. yes, is.it,case similar IRL NOM-good-3SG.POSS
"Ok. Yes, is it nice?"



(14) FE: óo, heʔáay, y̓é xéʔə.
oh, yes, good DEM
"Oh, yes, it's nice."



(15) PM: húm̓eɬ. xʷúy̓ xeʔ kʷén-Ø-Ø-ne.
ok. FUT DEM take-TR-3O-1SG.TS
"Ok. I'll take it."

[END dialogue: "Going to the clothing store"]

Appendix B: Spontaneous dialogue – "Visitors and babysitting"

The following is an example of a spontaneous conversation. The two speakers are discussing FE's recent visitors, her babysitting duties, and whether she has plans to get salmon this season. Each line is numbered, and presented in three lines: Nɬeʔkepmxcin, gloss, and English translation. Acute accents indicate word-level stress. Where the speakers switch to speaking in English, this is shown by marking their English speech in *italics*.

(1) PM: Húm̓eɬ. Flóra, qeʔním-Ø-Øne k s-ƛ̓ʔék-s
Ok. Flora, hear-TR-3O-1SG.TS IRL NOM-arrive-3SG.POSS
k snuk̓ʷnúk̓ʷeʔ-s eʔ-sx̣áy̓wi.
IRL friend[AUG]-3SG.POSS DET.2SG.POSS-husband
"OK, Flora, I heard your husband's friends were here."

(2) FE: Heʔáy, ƛ̓ʔék xeʔ tu ɬ ƛ̓íxʷeɬ te tmíxʷ,
Yes, arrive DEM from DET different OBL land,
snuk̓ʷnúk̓ʷeʔ-s.
friend[AUG]-3SG.POSS
"Yes, they (his friends) came from a different country."

(3) PM: tuw-hén̓ meɬ xeʔ tk tmíxʷ e ƛ̓ʔék us.
from-which CNSQ DEM OBL.IRL land DET arrive 3CONJ.
"What country did they come from?"

(4) FE: Tu ɬ Gérmany xéʔə ... e ƛ̓ʔék us
from DET Germany DEM ... DET arrive 3CONJ
e snuk̓ʷnúk̓ʷeʔ-s te se-séye.
DET friend[AUG]-3SG.POSS OBL AUG-two
"They came from Germany, the two friends."

(5) PM: Mm. ʔéx n̓ meɬ ƛ̓uʔ nʔéye.
Mm. PROG Q CNSQ PERS here.
"Mm. Are they still here?"

(6) FE: Nwéń ƛ̓əḿ ṕént wiʔ
already PERF return indeed
"They already went back."

(7) PM: Stéʔ meɬ xeʔ k ṣ-zéy-tn-s t-ʔéye.
what CNSQ DEM IRL NOM-do-INSTR-3SG.POSS LOC-here
"What were they doing over here?"

(8) FE: ʔéx ƛ̓uʔ xèʔ teʔ x^{w}es-x^{w}esít, k̓^{w}éń-Ø-Ø-es e tmíx^{w}.
PROG PERS DEM DEM AUG-travel, look.at-TR-3O-3TS DET land
"They were just traveling, sightseeing."

(9) PM: Mm. Piʔ-stéʔ meɬ heʔwí Ø x^{w}uʔ ux^{w}
Mm. point.in.time-what CNSQ 2SG.EMPH DET FUT 2SG.CONJ
nés ... x^{w}uʔ x^{w}es-x^{w}esít.
go ... FUT AUG-travel
"Mm. When are you going to be traveling [to your place near Lillooet]?"

(10) FE: Tetéʔ k n-s-x^{w}es-x^{w}esít. ʔéx kn ʔes-ʔém=it.
NEG IRL 1SG.POSS-NOM-AUG-travel. PROG 1SG STAT-guard=agent
"I don't travel, I babysit."

(11) PM: Mmm.

(12) FE: ɬ n-ʔímc.
DET 1SG.POSS-grandchild
"My great grand-daughter."

(13) PM: kéʔ k s-qeʔním-n-Ø-x^{w} e ċíy us
what IRL NOM-hear-TR-3O-2SG.TS DET similar 3CONJ
t-héń x^{w}uẏ zéy-tn-s e tmíx^{w}.
LOC-which FUT do-INSTR-3SG.POSS DET land
"Did you hear what's gonna' happen to the weather?"

(14) FE: tetéʔ k-ex n-s-qeʔním e stéʔ us xʷuỷ
NEG IRL-PROG 1SG.POSS-NOM-hear DET what 3CONJ FUT
k ṣ-zéy-tn-s e tmíxʷ.
IRL NOM-do-INSTR-3SG.POSS DET land
"I didn't hear what's gonna' happen to the weather."

(15) PM: kéʔ k s-wíx-s ... k s-wík-t-Ø-xʷ
what IRL NOM-see-3.POSS ... IRL NOM-see-TR-3O-2SG.TS
u ciʔ k smíyc, ɬ eʔ-tmíxʷ weʔwí.
to there IRL deer, DET 2SG.POSS-land 2SG.EMPH
"Did you see any deer up there on your land/property?"

(16) FE: wʔéx xeʔe ɬ-ex ut ciʔ ɬ kíyeʔ us,
PROG DEM DET-PROG 1PL.CONJ there DET precede 3CONJ,
wíkn.
see-TR-3O-1SG.TS [?]
"When we were there before,"

(17) wík-t-Ø-m xeʔ ə sésỷe te smíyc.
see-TR-3O-IDF.TS DEM DET two[DIM] OBL deer
"We seen two deer."

(18) PM: xúʔ kʷ ṅ meɬ kʷṅwéɬ- ... xʷíʔ-m tk sqyéytn.
FUT 2SG Q CNSQ grasp.NCM- ... look.for-MDL OBL.IRL salmon
"Are you gonna' look for some salmon?"

(19) FE: xʷúỷ kn xeʔ e ṣ: ... nés ʔe s: ...
FUT 1SG DEM DET s ;̣ ... go and NOM ...
ʔex us kʷiṅwéɬn ɬ snúk̓ʷeʔ-kt.
PROG 3CONJ grasp.NCM DET friend-1PL.POSS
"I'll be going when our friends are catching the fish."

(20) PM: xʷúʔ kʷ nkə xeʔ k̓éx̣-m tk sqyéytn.
FUT 2SG EVID DEM dry-MDL OBL.IRL salmon
"Are you going to be drying fish?"

(21)	FE:	n-xʷúỷ	kt	xéʔə ...	e	xʷʔít	us	k	sqyéytn.
		LOC-FUT	1PL	DEM ...	DET	much	3CONJ	IRL	salmon

"Yes we are... if there's lots of salmon."

(22)	PM:	xʷúʔ	kʷ	xeʔ	çált-m.
		FUT	2SG	DEM	salt-MDL

"Are you going to be salting some?"

(23) FE: *I've never tried saltfish.*

(24) PM: *It's really good.*

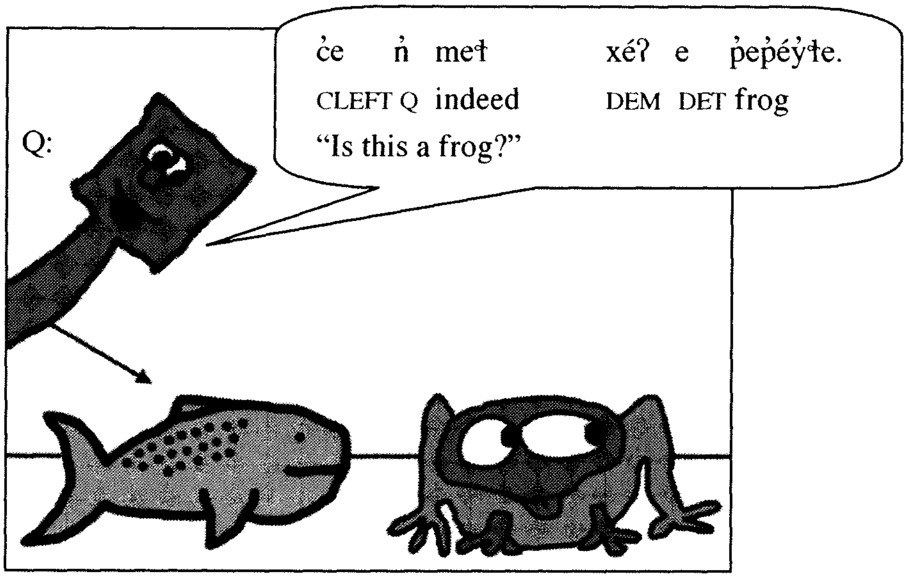
(25) FE: *I know, I've eaten it but I've never tried to make any.*

[END dialogue "visitors and babysitting"]

Appendix C1: Spontaneous conversation – Responding to questions about a multimedia display – newness vs. contrast

Another methodology that was employed to generate spontaneous responses from speakers was to present multimedia material on a computer, and have consultants answer questions about it. In the examples in this appendix, questions were asked by computer characters, and it was the consultants' job to "help these guys learn Nɬeʔkepmxcin." Consultants were free to respond as they wished. In the examples below, Q indicates a question asked by the computer character, while A or B is the response provided by the speaker(s). The examples in this section are part of the activity aimed at eliciting new information versus contrastive focus sequences described in section 3.5. The slides and dialogue shown here are a sample from throughout the task, and thus do not form a continuous speech event from one slide to the next.

(1) Contrastive focus condition: Two items on screen



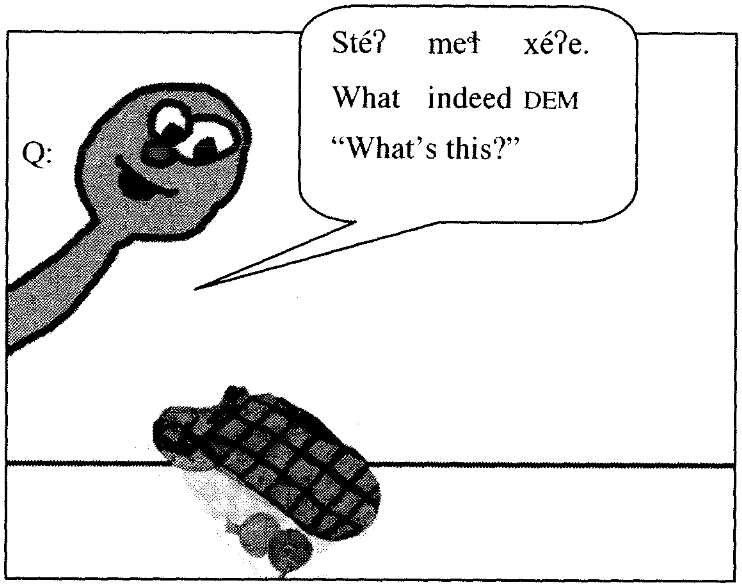
B: Tetéʔe.	c̓é	xeʔ	e	sqyéytn.
No.	CLEFT	DEM	DET	salmon

"No. That's a salmon."

e	n	ciʔ	e	péyeʔ,	ʔé	xeʔ	e	p̓ep̓éy̓ɬe.
DET	to	there	DET	one,	CLEFT	that	DET	frog

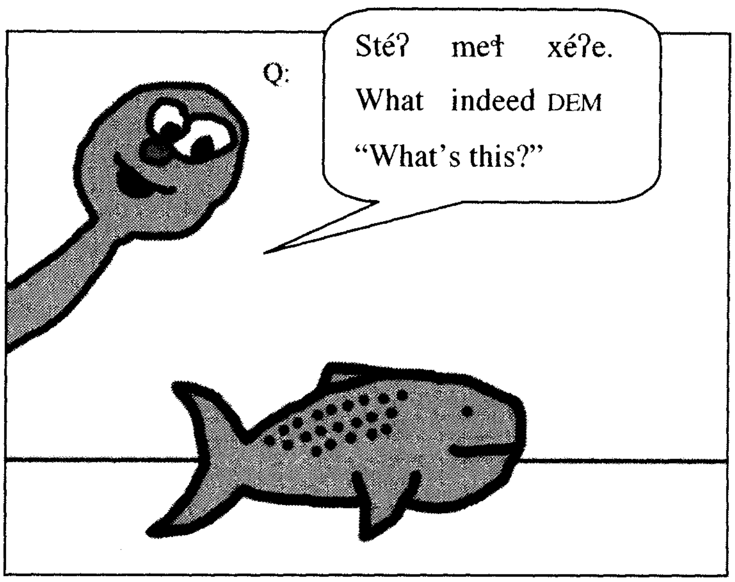
"That other one there, that's a frog."

(2) New information focus condition: Single item on screen



B: Smíyc xéʔe.
meat DEM
"That's a steak."

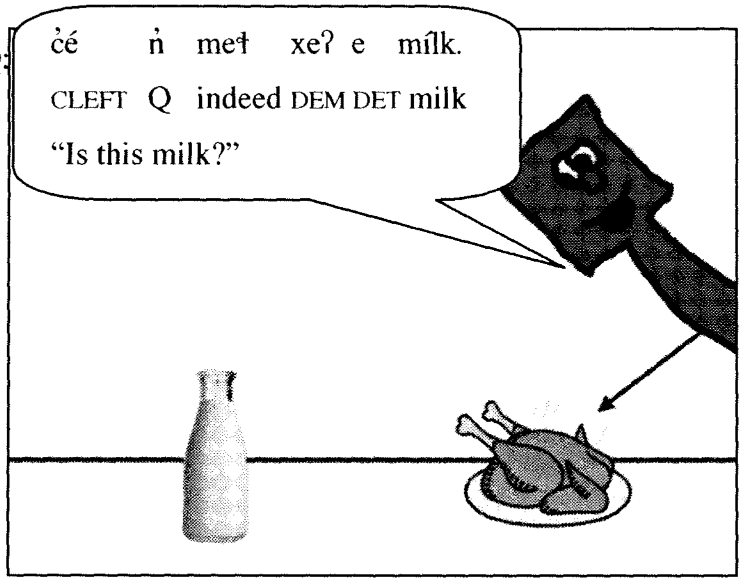
(3) New information focus condition



B: c̓é xeʔ e sqyéytn.
CLEFT DEM DET salmon
"That's a salmon."

(4) Contrastive focus condition

Q:

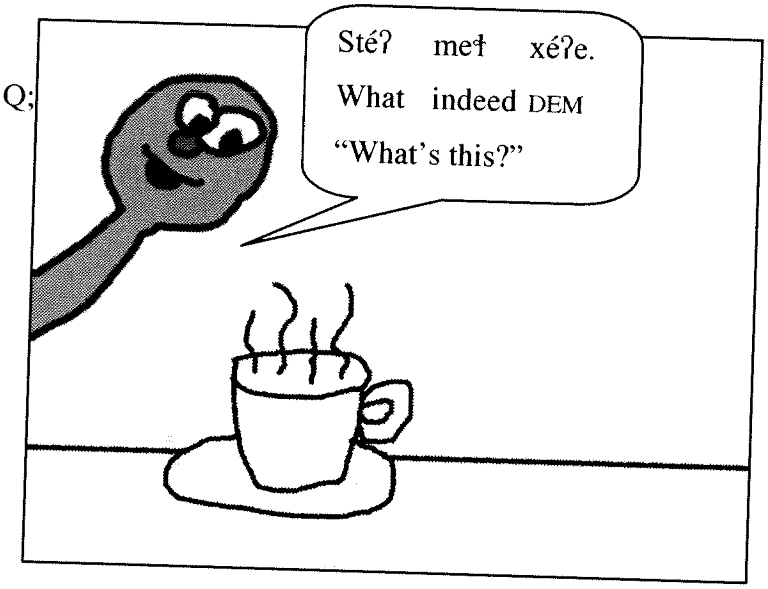


A: Téʔe, čé xʔé e cíkn.
NEG, CLEFT DEM DET cikn
"No, that's a chicken."

k̓éṁeɬ čé xeʔ e mílk.
but CLEFT DEM DET milk
"But that's the milk."

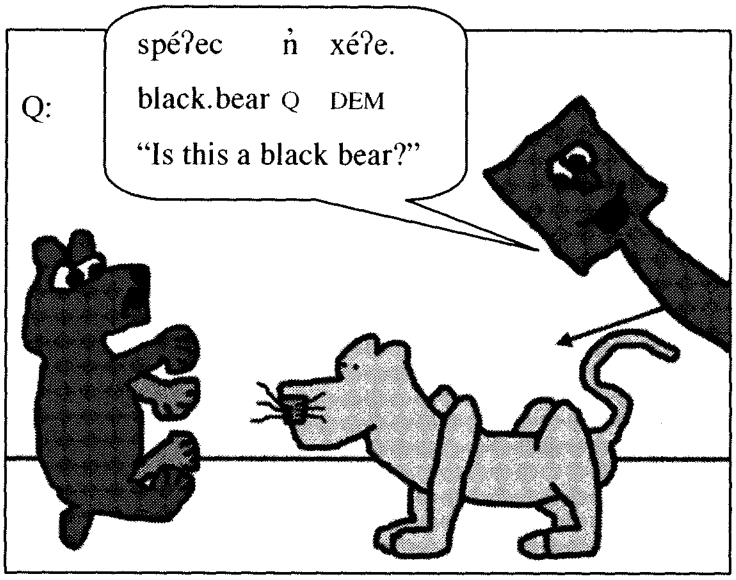
(5) New information condition

Q;



A: tíy xé?e. e kápi us nke.
tea DEM. COMP coffee 3CONJ EVID
"That's tea. Or it might be coffee (I guess)."

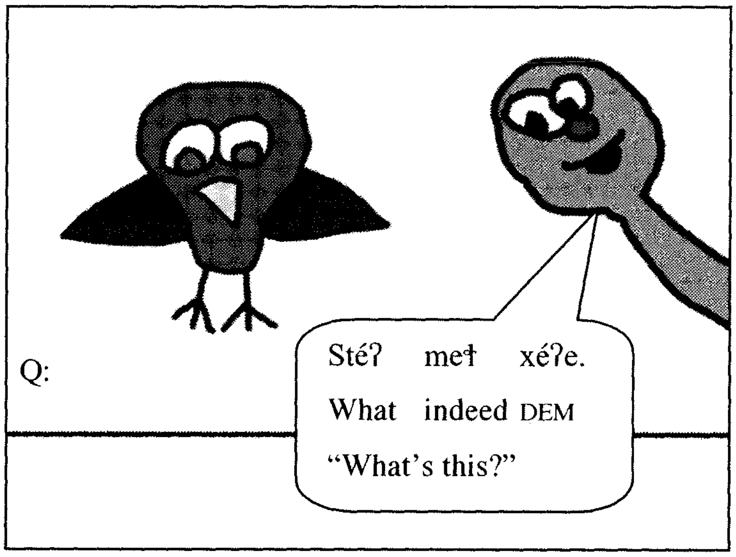
(6) Contrastive focus condition



A: téʔe. smúweʔ xéʔe. ʔeɬ ʔé neʔ e spéʔec e,
No. cougar DEM. and CLEFT there DET bear DET,
"No. That's a cougar. And that there is a bear,"

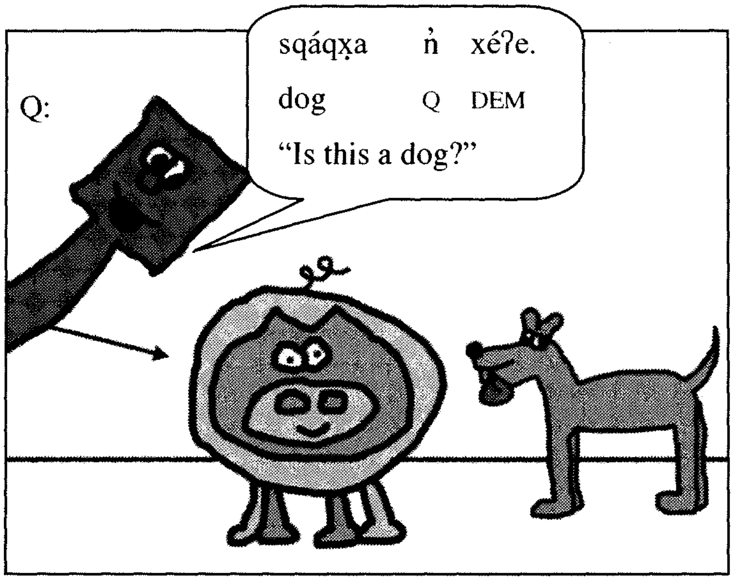
páq^{w}uʔ-s-Ø-es e smúweʔ.
fear-CAUS-3O-3TS DET cougar
"it's scared of the cougar."

(7) New information condition



A: spzúẓuʔ xéʔe e n-xʷál-ix.
bird[DIM] DEM DET LOC-fly-AUT
"It's a little bird that's flyng."

(8) Contrastive focus condition



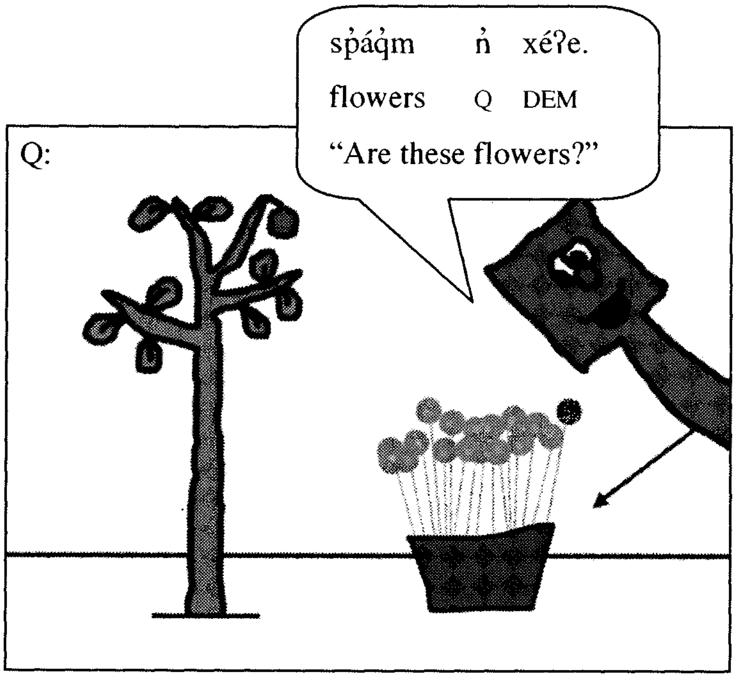
A: stéʔ meɬ xéʔe. [*unsure what image represents*]
what indeed DEM
"What's this?"

B: kʷéṣo xéʔe.
pig DEM
"It's a pig."

A: kʷéṣo ṅ xéʔeʔ kʷéṣo xéʔe ʔeɬ: ...
pig Q DEM? pig DEM and ...
"It's a pig? That's a pig and ..."

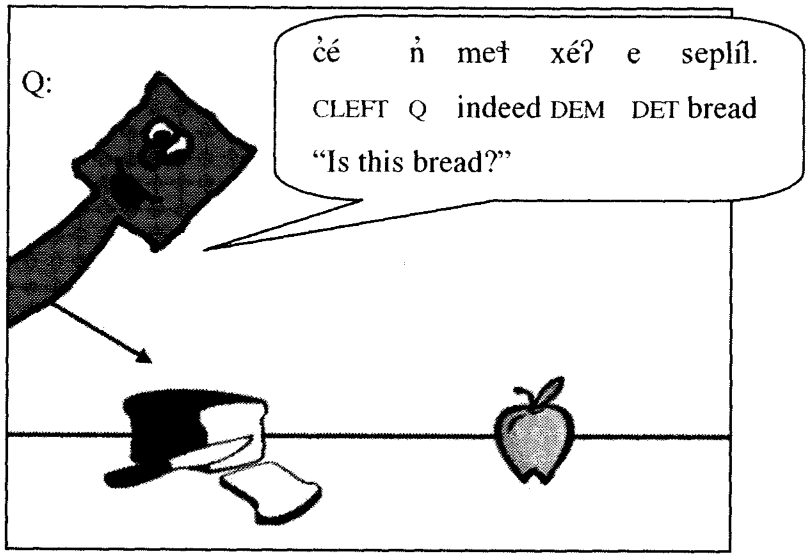
ʔeɬ e sqáqx̣a neʔ e wʔex-mín-t-mus.
and DET dog there DET PROG-REL-TR-SUBJ.EXTR
. "... and the dog is there by it."

(9) Affirmation condition



A: Heʔáy, sp̓áq̓m xéʔe. ʔeɬ u ciʔ e péyeʔ, syép xéʔe.
Yes, flower DEM. And to there DET one, tree DEM
"Yes, those are flowers. And the other one there, that's a tree."

(10) Affirmation condition



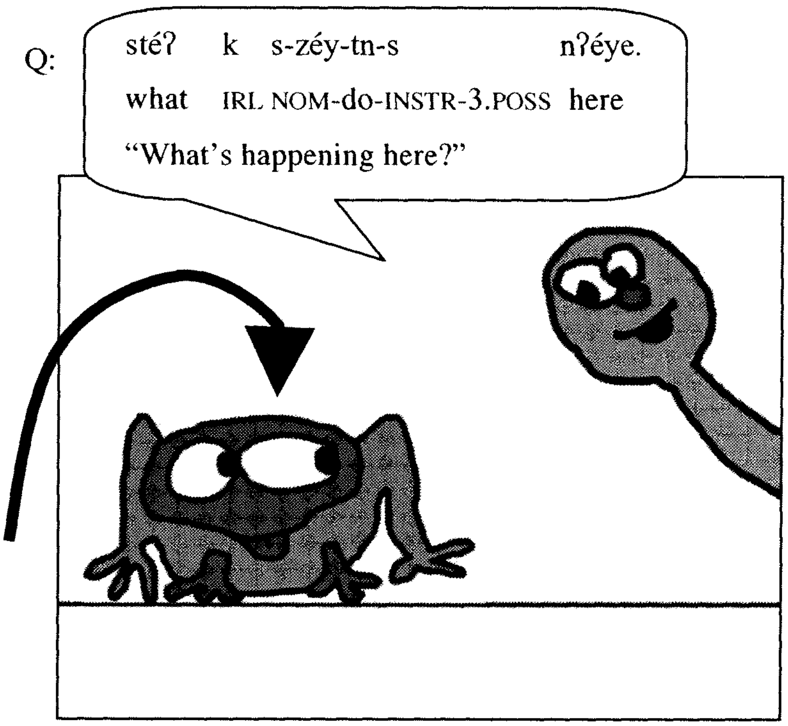
A: Heʔáy, seplíl xeʔe. k̓ém̓əɬ ... épl xeʔ u ciʔ e péyeʔ.
yes, bread DEM. but ... apple DEM to there DET one
"Yes, that's bread. But ... that other one there is an apple."

Appendix C2: Spontaneous conversation – Responding to questions about a multimedia display – frog sequence 1

The examples in this section of the appendix employed the same methodology as in appendix 3a, but the aim for these particular displays was to have consultants describe an event. Again, these media presentations generated spontaneous responses from speakers about what was happening in the display. Questions were asked by computer characters, and it was the consultants' job to "help these guys learn Nɬeʔkepmxcin." Consultants were free to respond as they wished. In the examples below, Q indicates a question asked by the computer character, while A or B is the response provided by the speaker(s). Italics indicate English speech. The three slides and dialogue shown here are a continuous speech event.

(1) Frog sequence: Animation 1 (frog jumping onto screen)

Q:



A: p̓ep̓éy̓ɬe xéʔe. [*misunderstanding the question*]
frog DEM
"That's a frog."

ó, stéʔ k széytns nʔéye?
oh, what IRL NOM-do-INSTR-3.POSS here?
"Oh, what's happening here?" [continued on next page]

ó, stéʔ k széytns nʔéye.
what irl nom-do-instr-3.poss here.
"Oh, what's happening here."

B:	q̓áz-ix	xeʔ	néʔe.
	jump-AUT	DEM	there
	"It's jumping there."		

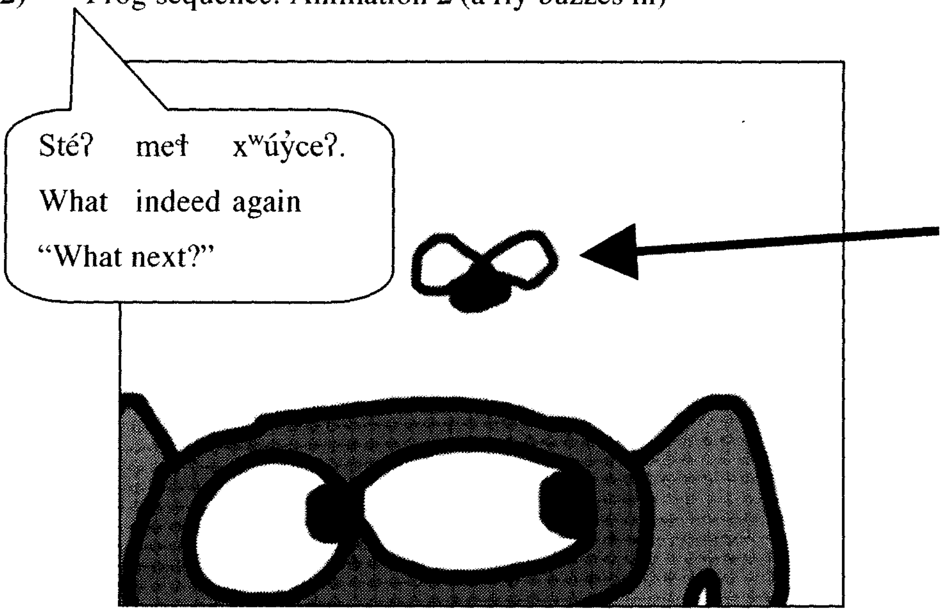
A:	q̓azaʔáq̓ẓ̓-ix	néʔe.	q̓azaʔq̓áq̓ẓ̓ix	néʔe.
	jump[RPT][RED.DIM]-AUT	there.	jump[RPT][RED.DIM]-AUT	there.
	"It's jumping there. It's jumping there."			

B:	e	p̓ep̓éy̓ɬe.
	DET	frog
	"The frog."	

A:	e	p̓ep̓éy̓ɬe.	[laugh]
	DET	frog	
	"The frog."		

B:	ʔes-qʷíƛ̓	téye.
	STAT-smile	INTERJECTION
	"Hey, it's smiling."	

(2) Frog sequence: Animation 2 (a fly buzzes in)

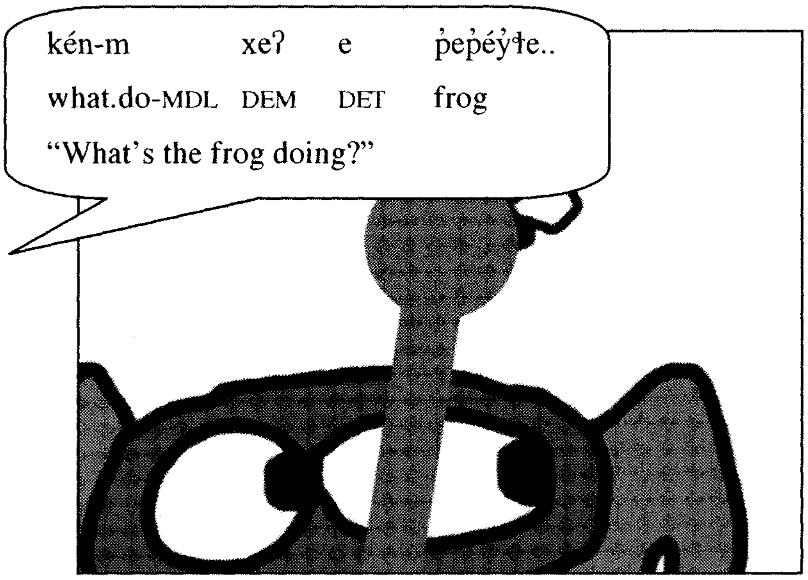


A:	ó, kíc-e-t-Ø-m	xeʔ	te	mə̣́ze,	e	p̓ep̓éy̓ɬe.
	oh, arrive-DRV-TR-3O-IDF.TS	DEM	OBL	fly,	DET	frog

"A fly arrived at the frog."
(more literally "The frog got arrived at by a fly."

B: Mm-hm.

(3) Frog sequence: Animation 3 (the frog eats the fly)



A: n-xeʔ e ʔúpi-Ø-Ø-s e m-mə́c̓e. *No--*
LOC-DEM DET eat-TR-3O-3TS DET bee. *No--*
"Is it going to eat the ... bee? No--"

B: mə́ze.
fly
"Fly."

A: e mə́ze. mə́ze.
DET fly. fly
"The fly. Fly."

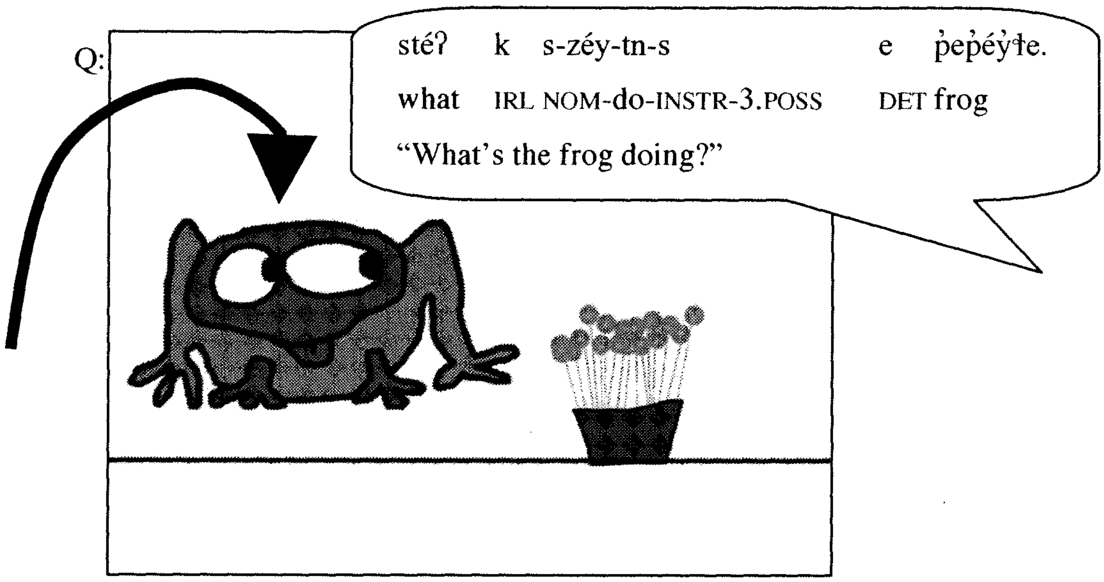
[END frog sequence 1]

Appendix C3: Spontaneous conversation – Responding to questions about a multimedia display – frog sequence 2

The examples in this section of the appendix employed the same methodology as in appendix 3b, but for a different sequence of events. Again, these media presentations generated spontaneous responses from speakers about what was happening in the display. Questions were asked by computer characters, and it was the consultants' job to "help these guys learn Nɬeʔkepmxcin." Consultants were free to respond as they wished. In the examples below, Q indicates a question asked by the computer character, while A or B is the response provided by the speaker(s). Italics indicate English speech. The six slides and dialogue shown here form a continuous speech event.

(1) Frog sequence 2: Animation 1 (frog jumping onto screen)

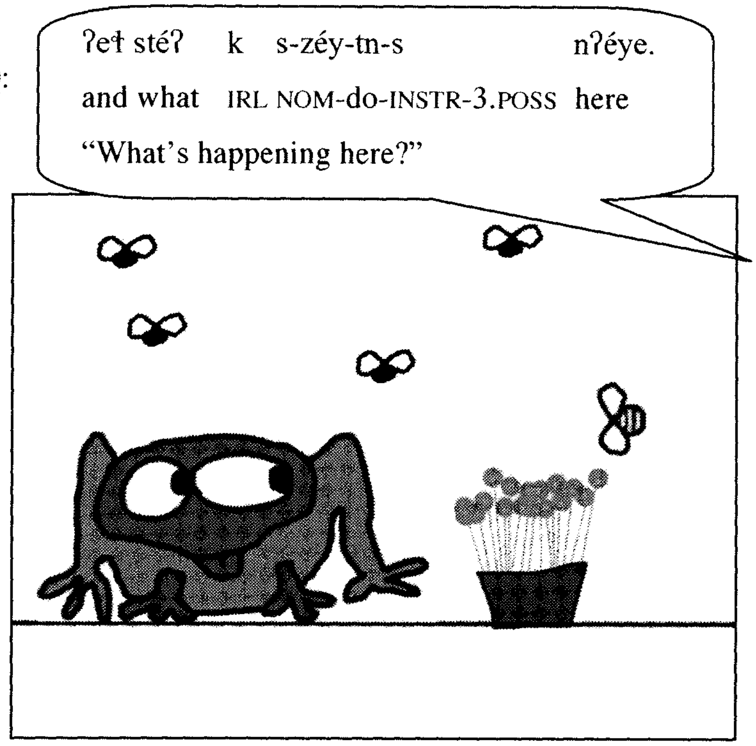
Q:



A: ʔex xeʔ qáy-ix e s:... ṗeṗéy̓ɬe.
PROG DEM jump-AUT DET NOM... frog
"The frog is jumping."

(2) Frog sequence 2: Animation 2 (flies and a bee arrive)

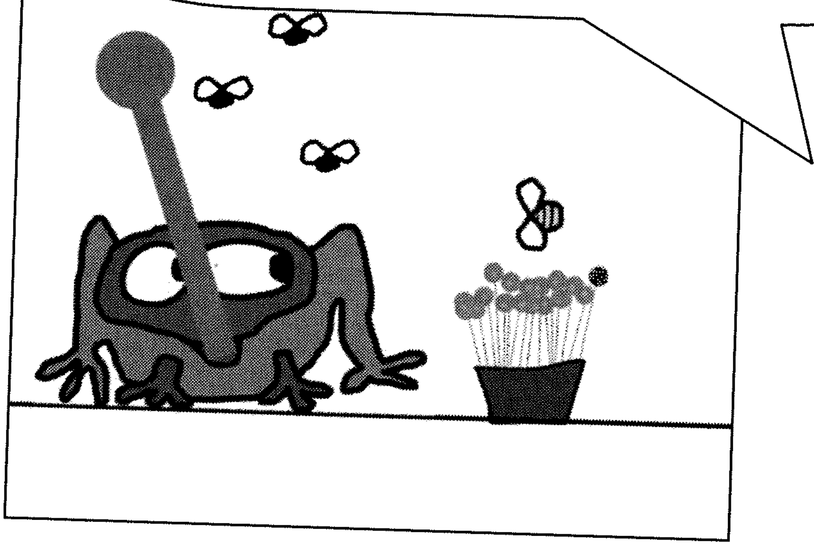
Q:



A: ʔes-k̓ʷéń-s-t-Ø-s e mə̣́ze. ʔeɬ e mə̣́c̓e.
STAT-look.at-CAUS-TR-3O-3TS DET fly. And DET bee.
"It's looking at the flies. And the bee."

(3) Frog sequence 2: Animation 3 (the frog eats a fly)

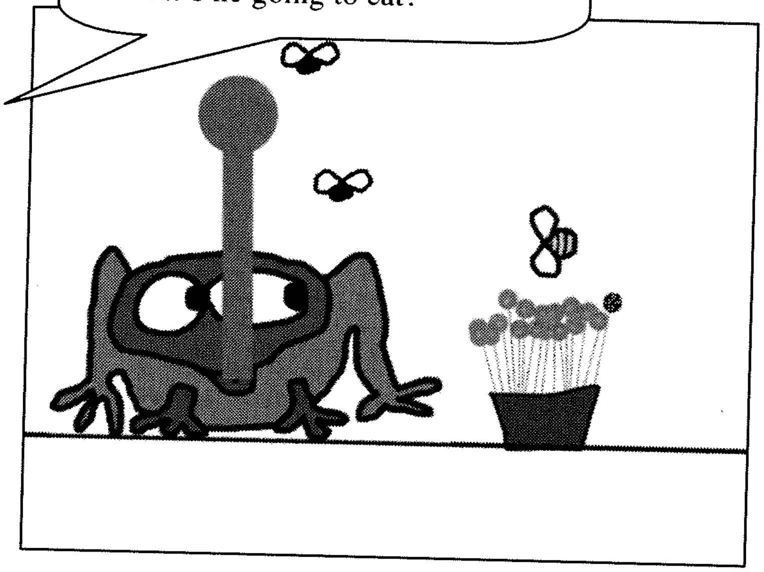
Q: sté? xʷuẏ k s-zéy-tn-s e p̓ep̓éẏɬe.
what FUT IRL NOM-do-INSTR-3.POSS DET frog
"What's happening here?"



A: xʷúẏ xe? ?úpi-Ø-Ø-s e mə́ze, e p̓ep̓éẏɬe.
FUT DEM eat-TR-3O-3TS DET fly, DET frog
"It's going to eat a fly, the frog."

(4) Frog sequence 2: Animation 4 (the frog eats another fly)

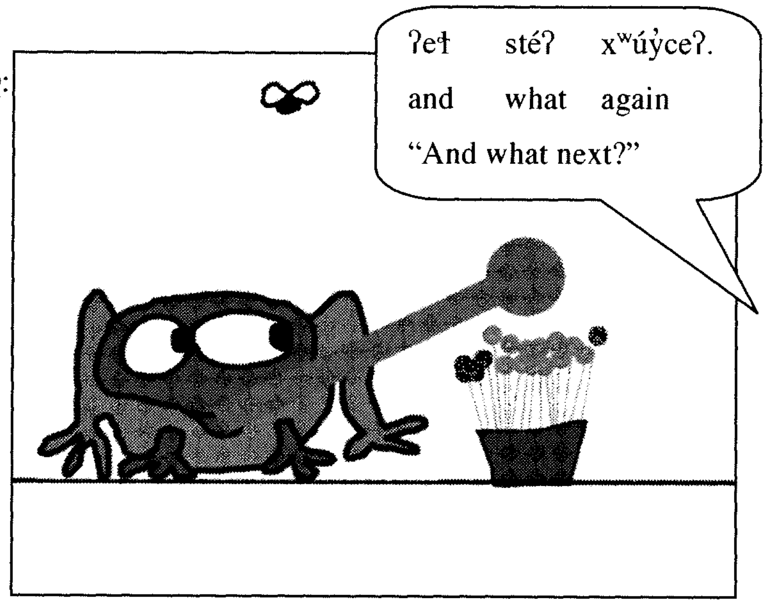
Q: stéʔ xʷuy̓ k s-ɬaʔx̣áns-c.
what FUT IRL NOM-eat-3.POSS
"What's he going to eat?"



A: uh, mə̣́ze xeʔ xʷúy̓ s-ɬaʔx̣áns-c e ... p̓ep̓éy̓ɬe.
uh, fly DEM FUT NOM-eat-3POSS DET ... frog
"A fly is what the frog is going to eat."

(5) Frog sequence 2: Animation 5 (the frog eats the bee)

Q:



A:

ʔé	ʔeɬ	ƛ̓uʔ	xuʔ	e	s-ʔíɬxʷ	te	mə̣́ze
CLEFT	ACCM	PERS	DEM	DET	NOM-other	OBL	fly
xʷuy̓	ʔúpi-Ø-Ø-s.						
FUT	eat-TR-3O-3TS						

"It's gonna' eat another fly."

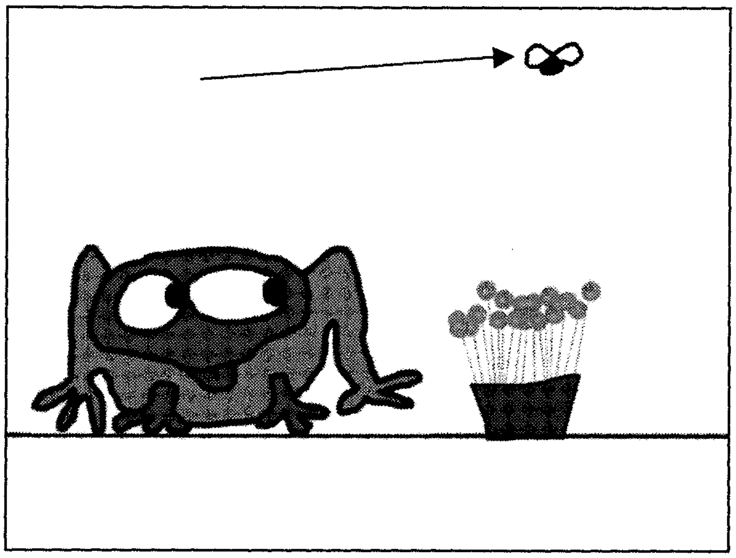
ó!	mə̣́c̓e,	ʔúpi-Ø-Ø-s	ƛ̓əm̓	e	mə̣́c̓e.	[laugh]
oh!	bee,	eat-TR-3O-3TS	PERF	DET	bee	

"Oh! A bee, it ate the bee!" [laugh]

ʔúpi-Ø-Ø-s	ƛ̓əm̓	k̓ʷén̓	meɬ ...
eat-TR-3O-3TS	PERF	see	CNSQ

"It ate it, see."

(6) Frog sequence 2: Animation 6 (the last fly gets away)



A: ɬx̣ʷ-óp	ƛ̓əm̓	s-piʔéyeʔ,	mə̣́ze.
get.away-INCH	PERF	NOM-one[RED],	fly.

"The other one got away, the fly."

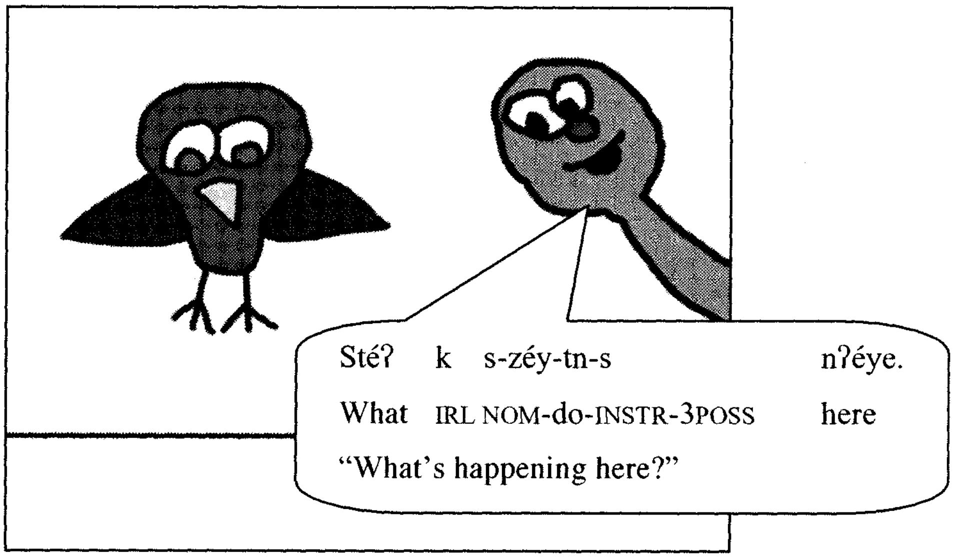
[END frog sequence 2]

Appendix C4: Spontaneous conversation – Responding to questions about a multimedia display – bear sequence

The examples in this section of the appendix employed the same methodology as in appendices 3b and 3c, but again for a different sequence of events. The media presentations generated spontaneous responses from speakers about what was happening in the display. Questions were asked by computer characters, and it was the consultants' job to "help these guys learn Nɬeʔkepmxcin." Consultants were free to respond as they wished. In the examples below, Q indicates a question asked by the computer character, while A or B is the response provided by the speaker(s). Italics indicate English speech. The slides and dialogue shown here form a continuous speech event.

(1) Bear sequence: Animation 1 (A bird flies on screen)

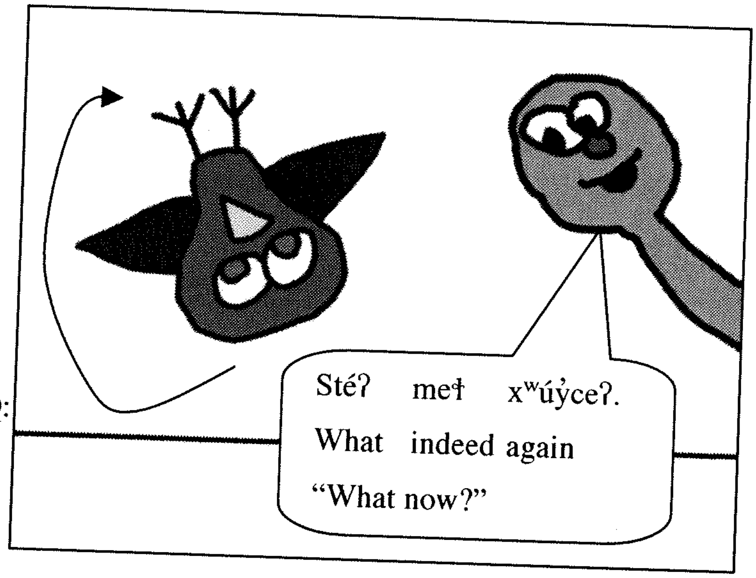
Q:



A: ʔé neʔ e n-xʷál-ix e spzúżuʔ.
CLEFT there DET LOC-fly-aut DET one[DIM].
"There's a bird flying."

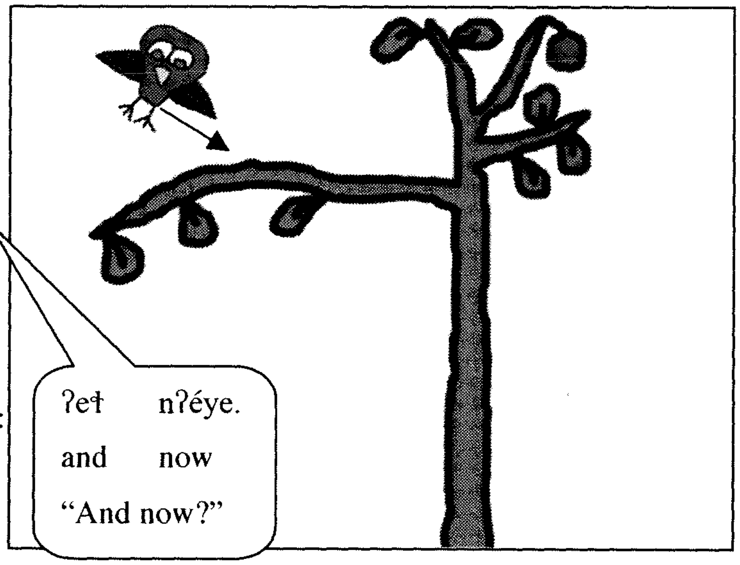
(2) Bear sequence: Animation 2 (bird spins)

Q:



A: səlk-íyx xe? e spzúżu?.
turn-AUT DEM DET bird[DIM]
"The little bird is turning."

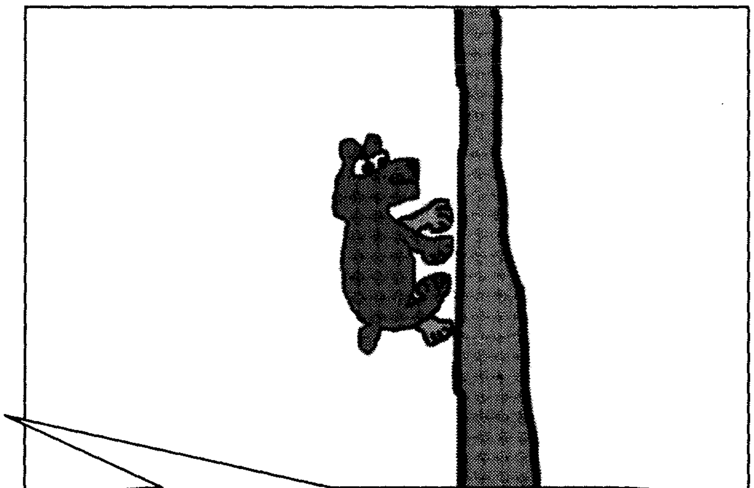
(3) Bear sequence: Animation 3 (bird lands on tree)



Q: ʔeɬ nʔéye.
and now
“And now?”

A: míceʔq neʔ ne syép e spzúżuʔ.
sit there in.DET tree DET bird[DIM]
“The little bird is sitting in the tree there.”

(4) Bear sequence: Animation 4 (bear starts climbing tree)



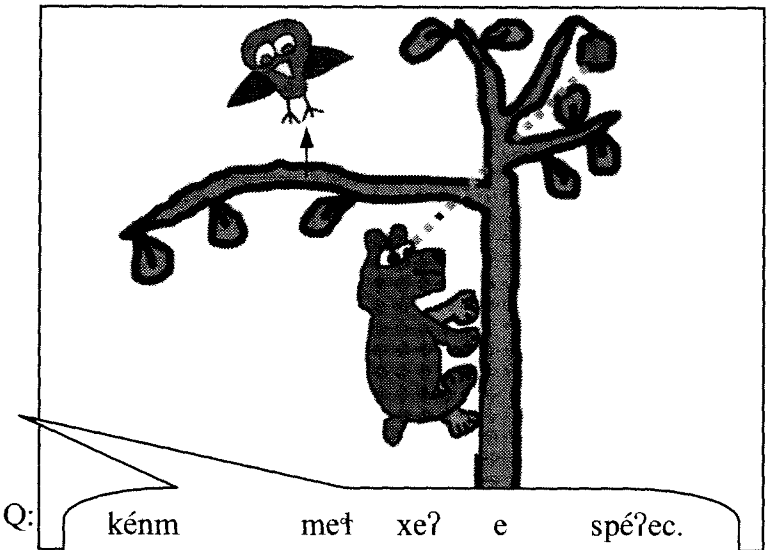
Q: Stéʔ xʷúẏ k s-zéy-tn-s e spéʔec.
what FUT IRL NOM-do-INSTR-3PS DET bear
"What is the bear going to do?"

A: ɬk̓íw-ix xeʔ e spéʔec.
climb-AUT DEM DET black.bear.
"The bear is climbing."

ó! Neʔ ʔes-téɬ-ix ʔe s-xʷúẏ-s ɬk̓íw-ix.
Oh! There STAT-stand-AUT and NOM-FUT-3.POSS climb-AUT.
"Oh! It's standing there and it's going to climb."

ɬk̓íw-ix xeʔ ʔéyɬ e spéʔec.
climb-AUT DEM now DET black.bear.
"The bear is climbing now."

(5) Bear sequence: Animation 5 (bear eyes fruit, bird flies away)



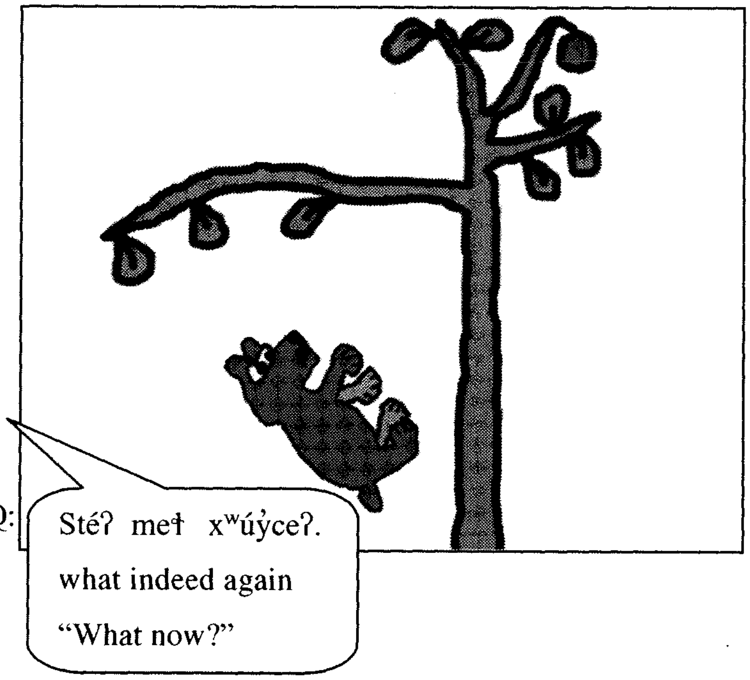
Q: kénm met xeʔ e spéʔec.
what.do-MDL indeed DEM DET bear
"What is the bear doing?"

A: ʔex nʔéy x̣̌uʔ xeʔ ɬk̓íw-ix. xʷúy̓ xeʔ kʷén-Ø-Ø-s e sq̓ʷíyt.
PROG now PERS DEM climb-AUT. FUT DEM get-TR-3O-3TS DET fruit.
"It's still climbing now. It's gonna' get the fruit."

Q: Stéʔ k s-zéy-tn-s nʔéye.
what IRL NOM-do-INSTR-3.POSS now
"What's happening now?"

A: n-xʷál-ix x̌əm̓ e spzúẓuʔ.
LOC-fly-AUT PERF DET bird[DIM]
"The little bird flew away."

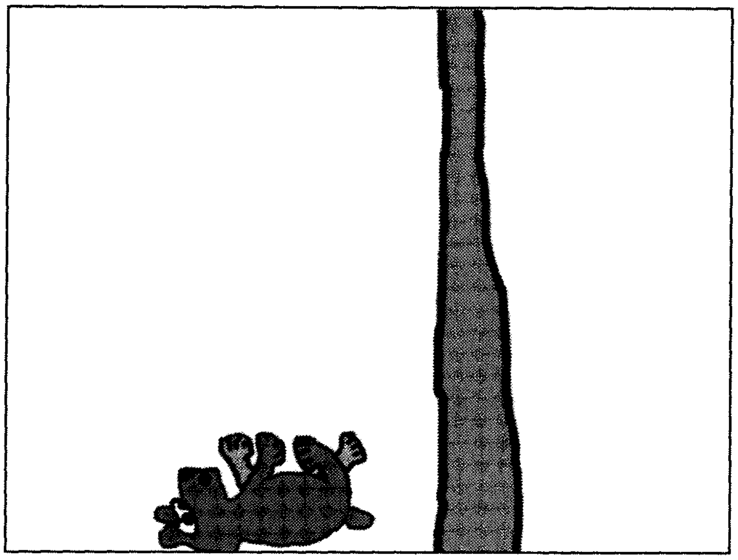
(6) Bear sequence: Animation 6 (bear falls out of tree)



Q:

A: kʷís	ƛ̓əm̓	ɬe	spéʔec.
fall	PERF	DET	black.bear

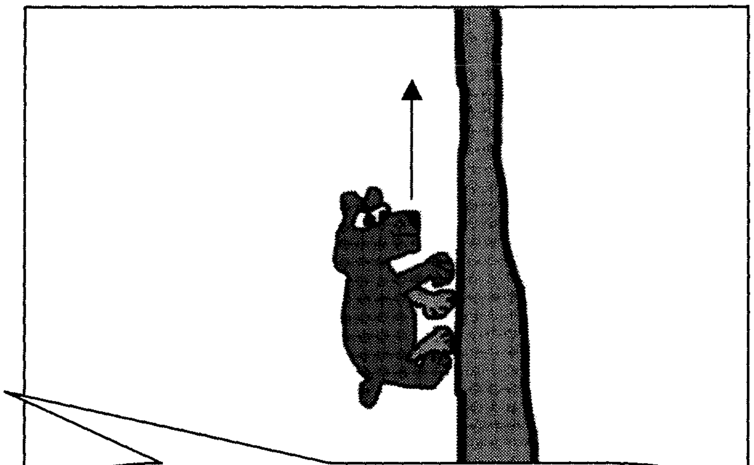
“The bear fell.”



A: kʷís	xeʔ	ne	tmíxʷ	e	spéʔec.
fall	DEM	in.DET	land	DET	black.bear

“The bear fell to the ground.”

(7) Bear sequence: Animation 7 (bear climbs again)



Q: Stéʔ xʷúy̓ k s-zéy-tn-s e spéʔec.
what FUT IRL NOM-do-INSTR-3PS DET bear
"What is the bear gonna' do?"

A: xʷúy̓ xeʔ ɬk̓íw-ix xʷúy̓ceʔ e: ... spéʔec.
FUT DEM climb-AUT again DET ... black.bear.
"The bear is gonna' climb again."

ɬk̓íw-ix xeʔ ʔéyɬ e spéʔec.
climb-AUT DEM now DET black.bear.
"The bear is climbing now."

(8) Bear sequence: Animation 8 (bear falls again)

Q:

A: kʷís xeʔ e spéʔec.
fall DEM DET black.bear
"The bear is falling."

[END bear sequence]