

GITKSAN MODALS¹

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This paper provides a description of the modal system of Gitksan (Tsimshianic), and places the Gitksan system within an emerging formal typology of modality. I show that Gitksan encodes distinctions both of modal strength and of modality type. It has one strong circumstantial modal (*sgi*), and two weak circumstantial modals (*da'akhlxw* and *anook*), the second of which is specialized for deontic possibility (permission). Within the epistemic domain, modal strength is not distinguished (Peterson 2010). I further argue that Gitksan modals are not inherently future-oriented, but obtain their future orientation from the overt future marker *dim*, which appears optionally with epistemic modals and obligatorily with circumstantial ones.

[KEYWORDS: Modality, tense, aspect, Tsimshianic]

1. Introduction. This paper provides a description of the modal system of Gitksan (Tsimshianic; ISO 639-3 code ‘git’), and places the Gitksan system within an emerging formal typology of modality (cf. Rullmann et al. 2008, Vander Klok 2008, Peterson 2010, Reis Silva 2009, Menzies 2010, Deal 2011, among others). The core question is how Gitksan divides up the semantic space in its modal system, and the three main sub-questions are listed in (1).

- (1a) Does Gitksan make formal distinctions based on **modal strength**? (e.g., does it lexically distinguish necessity from possibility modals)?
- (1b) Does Gitksan make formal distinctions based on **modality type**? (e.g., does it lexically distinguish epistemic from deontic modals)?
- (1c) How does Gitksan express modal-temporal interactions?

I argue that Gitksan modals encode distinctions both of modal strength, and of modality type. There is an asymmetry within the system in that the epistemic domain does not distinguish modal strength (Peterson 2010), while the circumstantial domain does. The characterization I argue for is summarized in Figure 1 (terms will be explained below).

			POSSIBILITY	(WEAK) NECESSITY
CIRCUMSTANTIAL	VERBS / PREDICATIVE	PLAIN	<i>da'akhlxw</i>	<i>sgi</i>
	PARTICLES	DEONTIC	<i>anook</i>	
EPISTEMIC	SECOND-POSITION	PLAIN	<i>ima('a)</i>	
	CLITICS	REPORTATIVE	<i>gat</i>	

FIG. 1.—The Gitksan modal system.

This proposal places the Gitksan circumstantial domain in line with languages like English or Javanese (Vander Klok 2008), in that distinctions of modal strength are encoded, and its epistemic domain in line with languages like St’át’imcets (Lillooet Salish, Rullmann et al. 2008), in that distinctions of modal strength are not encoded. Gitksan thus instantiates a ‘mixed’ system, and helps to shed light on the types of modal systems attested in human languages.

In terms of modal-temporal interactions, I argue that Gitksan modals are not inherently future-oriented (unlike English modals, according to many current analyses), but that future-orientation is expressed overtly via the future marker *dim*. This marker of futurity appears optionally with epistemic modals, and obligatorily with circumstantial ones.

In section 2 I provide background information about modals and the Gitksan language. Section 3 is devoted to epistemic modality, and section 4 to circumstantial modality. Section 5 concludes and raises some theoretical consequences of the findings.

2. Background

2.1. Modality. Modals are standardly analyzed as quantifiers over possible worlds, and at least in some languages, come in different quantificational strengths (Kratzer 1991, among many others). Different strengths of modals are illustrated in (2).

(2a)	<i>Maria must do the dishes.</i>	NECESSITY	STRONGEST
(2b)	<i>Maria should do the dishes.</i>	WEAK NECESSITY	↓
(2c)	<i>Maria may do the dishes.</i>	POSSIBILITY	WEAKEST

Modals allow different interpretations depending on which subset of possible worlds are quantified over. There is a basic division between epistemic modality, which is concerned with an individual's (usually the speaker's) knowledge or evidence, and circumstantial modality, which is concerned with facts about the world. An example illustrating the contrast is given in (3), adapted from Kratzer (1991:646).

(3a) *There might be hydrangeas growing here.* EPISTEMIC

(3b) *Hydrangeas could grow here.*² CIRCUMSTANTIAL

Kratzer points out that (3a) and (3b) are felicitous in different situations. (3b) is appropriate in a situation where the climate and the soil are such that hydrangeas would have a chance of growing here. Its truth does not depend on whether there might actually be hydrangeas growing, and it can be true even if it is impossible for there currently to be any hydrangeas here. (3a), on the other hand, expresses a claim about what might be the case in our world given all the available evidence. In contrast to (3b), (3a) is false if we know that there are no hydrangeas growing here at the utterance time. We will see below that the circumstantial / epistemic distinction is not only lexically encoded in Gitksan, it has a grammatical reflex in the presence vs. absence of obligatory future marking.

Within circumstantial modality, there are different sub-types; I outline these in the rest of this section. Many slightly different classifications have been proposed; the choices made here are not intended to be theoretically significant, but merely to ensure coverage of the major types of modality.

Pure circumstantial readings are those which rely only on relevant facts about the world. An example of a possibility pure circumstantial modal is the hydrangea case in (3a). A necessity pure circumstantial modal is illustrated in (4), adapted from Kratzer (1991).

(4) *Jockl has to sneeze (in view of the present state of his nose, etc.).*

Impersonal modality also belongs in this category. The impersonal modal in (5) does not talk about properties intrinsic to the subject of the sentence; in this, it differs from an *ability* modal, as in (6).

(5) *Six people can fit in this car.*

(6) *Roland can walk.*

Priority modals are those which impose an ordering on the worlds being quantified over, based on how closely the worlds conform to such things as the rules, someone's goals, or someone's desires (Portner 2009). The modal then quantifies only over the most highly-ranked worlds (the worlds in which as many as possible of the rules, goals or desires are met). For example, *deontic* priority modals deal with rules or requirements. Deontic possibility is permission, as in (7); deontic necessity is obligation, as in (8). (8) states that in all the worlds which are highly-ranked according to the rules (i.e., in which the actual-world rules are obeyed), you go to bed.

(7) *You may/can eat a cookie.*

(8) *You have to/must/should go to bed.*

Priority modality which relates to an agent's goals is *teleological*. An example is given in (9).

(9) *To get to Whistler, you can/should/have to take Highway 99.*

Bouletic modality relates to an agent's desires or wishes, as shown in (10).

(10) *You should try this chocolate.* (Portner 2009:135)

Circumstantial modals can be used to make claims about what might or should have happened at some time subsequent to a certain past time. Condoravdi (2002) calls these *counterfactual* readings; examples are given in (11).

(11a) *At that stage, they still could have won the game.* (Condoravdi 2002)

(11b) *Given the score at half-time, they should have won.*

Finally, some authors have a separate category for *quantificational* modals (e.g., Brennan 1993, Portner 2009); these appear to impart quantificational force to an indefinite noun phrase. (12a) means that some spiders are dangerous, while (12b) (at least for some speakers of English) means that all spiders are dangerous.

(12a) *A spider can be dangerous.*

(12b) *A spider will be dangerous.* (Portner 2009:136)

2.2. Modal-temporal interactions. In this section I introduce two terms from Condoravdi (2002), which will be relevant when we talk about modal-temporal interactions in Gitksan. The first is *temporal perspective (T.P.)*, and is the time at which the worlds the modal quantifies over are calculated. For an epistemic modal, this is the time at which the speaker obtains the relevant evidence, or has the relevant knowledge. In (13), we have a present temporal perspective, because the evidence (the light's being on) holds at the utterance time.

(13) *She must be in her office, her light is on.* PRESENT T.P.

For a circumstantial modal, the temporal perspective is the time of the relevant facts. (11a) above has a past temporal perspective: based on the facts at a certain past time, it was possible for them still to win. The sentence can be true even if at the utterance time, it is no longer possible for them to win (e.g., because they have already lost).

The second relevant term is *temporal orientation (T.O.)*; this refers to the relation between the temporal perspective and the time of the described event. In (13), we have a present temporal orientation, because the time of the event (her being in her office) coincides with the temporal perspective (the light's being on). In (11a) the temporal orientation is future, because the time of the described event (their winning) follows the temporal perspective (the time at which it was possible for them to subsequently win). We will see below that temporal orientation is overtly encoded on Gitksan modals.³

2.3. Cross-linguistic variation in modal systems. Recent cross-linguistic research has revealed differences in the way the modal semantic space is lexically divided. In languages like English or German, modal auxiliaries tend to encode primarily modal strength, leaving modality type largely up to context (cf. Kratzer 1991). For example, we see in (14) that the English modal *must* allows both epistemic and deontic interpretations.

(14a) *Michl must be the murderer. (In view of what is known about the crime.)*

EPISTEMIC

(Kratzer 1991:643)

(14b) *Jockl must go to jail. (In view of what the law provides.)*

DEONTIC

(Kratzer 1991:640)

In terms of modal strength, *must* is always a necessity modal, and lexically contrasts with possibility modals such as *may*, *might* or *can*. Thus, (15a) means something very different (and weaker) than (14a), and similarly for (15b) vs. (14b).

(15a) *Michl may be the murderer. (In view of what is known about the crime.)* EPISTEMIC

(15b) *Jockl may go to jail. (In view of what the law provides.)* DEONTIC

In some languages, the modal system makes different divisions. In St'át'imcets, for example, all modals are lexically specified for modality type, but are unspecified for strength (Matthewson et al. 2007, Rullmann et al. 2008, Davis et al. 2009). For example, the modal *k'a* can only have epistemic readings, while a contrasting modal *ka* allows only deontic or counterfactual

interpretations. Both of these are felicitous in strong, necessity-type contexts as well as in weak, possibility-type contexts (thus translating any of English *must*, *should*, *might* or *may*).

There seems to be a typological split between languages like English or German, where the modals fundamentally ‘care about’ modal strength, and languages like St’át’imcets, where the modals never encode modal strength. This leads Rullmann et al. (2008) to present the following preliminary classification of modal systems:

	SELECTIVE MODAL TYPE	UNSELECTIVE MODAL TYPE
SELECTIVE MODAL STRENGTH	?	English
UNSELECTIVE MODAL STRENGTH	St’át’imcets	?

FIG. 2.—Preliminary classification of modal systems.

Figure 2 is simplified because not all languages fit neatly into one cell. Even within English or German, there are cases where modality type is lexically specified. For example, Kratzer (1991:650) observes that in German, the modal *darf* allows only deontic or teleological interpretations, while *wird* allows only epistemic ones.⁴ However, there are still many modals in English or German which are unspecified for modality type, including *must*, *may*, *can*, *could*, *should* and German *müssen* or *können*.⁵

Subsequent research has filled in the top left cell in Figure 2; Vander Klok (2008) argues that Javanese modals encode both modal strength and modality type. The Javanese system is summarized in Figure 3.

	NECESSITY	POSSIBILITY
DEONTIC	<i>kudu</i>	<i>ento, olèh</i>
EPISTEMIC	<i>mesthi</i>	<i>mudahan</i>

FIG. 3.—Javanese modals (Vander Klok 2008).

Similarly, Reis Silva (2009, in prep.) argues that Blackfoot (Algonquian) encodes both modal strength and modality type. I will argue that Gitksan has a mixed system, in which modality type is lexically encoded, but modal strength is encoded only for certain modality types.⁶

2.4. Background on Gitksan and methodology. Gitksan is a Tsimshianic language spoken in north-western British Columbia, Canada. According to Peterson (2010), there are approximately 400 speakers remaining. Gitksan is very closely related to the neighbouring Nisga’a, and there has been debate over the years about whether they are actually two dialects of the same language. Here I follow Rigsby (1986:25) in considering them separate languages, which together can be classified as ‘Interior Tsimshianic’. However given their closely related status, I will occasionally provide comparative information from Nisga’a where relevant. For detailed discussions of the grammatical properties of Gitksan and Nisga’a, see Rigsby (1986) and Tarpent (1989) respectively.

The Gitksan data presented in this paper are from the author’s fieldwork unless otherwise noted, and were primarily collected using standard semantic elicitation techniques (cf. Matthewson 2004). Elicitation tasks typically involve explaining a discourse context, and then asking for Gitksan sentences, or judgments on the acceptability of sentences, in those discourse

contexts. Speakers are almost never asked to give translations of out-of-the-blue English sentences. Some data were also elicited using the storyboard methodology. This methodology utilizes series of pictures which prompt the speaker to tell a story in their own words, and which are designed to elicit certain constructions or lexical items in context. The speakers are not prompted in English during storyboard elicitations, but tell the story entirely in Gitksan. The data below are annotated according to whether the consultant volunteered the Gitksan sentence (VF, for ‘volunteered form’), or whether they judged it as acceptable when given by the researcher.

Two speakers were consulted for this research, both of whom are involved in a long-term research project investigating the phonetics, phonology, morphology, syntax and semantics of Gitksan. With the consultants’ permission I give a brief description of their linguistic background here. Barbara Sennott (BS) comes from the village of Ansbayaxw (Kispiox). She refers to her language as Gitxsanimx, and it was the only language spoken in her home. Barbara has continued to use Gitxsanimx in daily life, all her life, and has been teaching the language to adults and children for the past 40 years. Vincent Gogag (VG) comes from Gitanyow (Kitwancool). Vincent spoke only Gitksan until the age of eight, and as he never attended residential school, he continued using Gitksan as his primary language throughout his childhood and adolescence. Vincent has used Gitksan on a daily basis with family and friends throughout his life. In spite of speaking different dialects and never having met before beginning this research, both consultants separately give extremely similar modality data. Any relevant differences in their speech are noted below.⁷

Data are presented in the orthography developed by Hindle and Rigsby (1973); see Appendix A for details. Morpho-phonological changes sometimes obscure the base form of morphemes; one of the most ubiquitous of these is the voicing of (non-glottalized) stops and

affricates before a vowel (Hoard 1978, Rigsby 1986:133, Rigsby and Ingram 1990, Brown 2008:§4.3). The orthography represents the surface pronunciation in such cases. A few lexical items are pronounced differently by my consultants than the spelling in the available literature; these are listed in Appendix B.

There are variations in glossing conventions for Gitksan in the literature. For example, Rigsby (1986) glosses the =*hl* enclitic as CNN ‘connective’, Hunt (1993) glosses it as CN ‘connective’, and Peterson (2010) glosses it as CND ‘common noun determiner’; Tarpent (1989) glosses the Nisga’a equivalent as NC, ‘non-determinate connective’. When citing data from other sources, I have in some cases altered glosses for consistency with those used here.

Gitksan has two clausal orders, termed ‘independent’ and ‘dependent’ by Rigsby (1986) and Hunt (1993). The differences between the two are primarily morphosyntactic, involving differing word orders and connective marking (Rigsby 1986:272).⁸ Dependent clauses are typically introduced by elements such as aspectual auxiliaries, negation, or certain complementizers; see Rigsby (1986:273-274) for a list of dependent-clause environments, and Rigsby (1986:251ff), Tarpent (1989:224ff, 1991) and Hunt (1993:ch. 4) for discussion of clausal orders in Gitksan and Nisga’a. All the generalizations made in this paper hold for both orders.

I turn now to some relevant features of Gitksan in the areas of tense and modality. First, Gitksan does not overtly distinguish past vs. present tense (Jóhannsdóttir and Matthewson 2007). This is illustrated in (16) for eventive and stative predicates.^{9,10}

- (16a) *bax=t* *Yoko*
 run=DM *Yoko*
 ‘Yoko ran’ / ‘Yoko is running.’ (Jóhannsdóttir and Matthewson 2007)

- (16b) *siipxw=t James (k'yoots)*
 sick=DM James (yesterday)
 'James was sick (yesterday)' / 'James is sick.' (VF BS)

For future time reference, overt marking is required. As shown in (17-19), the marker *dim* is necessary and sufficient for a future interpretation, with both eventive and stative predicates. This accords with Rigsby's (1986:279) description of *dim* as a future marker.¹¹

- (17) **(dim) limx=t James t'aahlakw*
 *(FUT) sing=DM James tomorrow
 'James will sing tomorrow.' (accepted BS)

- (18) **(dim) ha'w=t James t'aahlakw*
 *(FUT) go.home=DM James tomorrow
 'James will go home tomorrow.' (VF VG)

Consultant's comment: "If it's for future, then there's ... no getting around that *dim*."

- (19) **(dim) siipxw=t James t'aahlakw*
 *(FUT) sick=DM James tomorrow
 'James will be sick tomorrow.' (VF BS)

Dim is even required for futurates (planned future events), which in English do not require overt

future marking:

(20) *(*dim*) *sil* *ga-baga=hl* Canucks=*hl* Oilers *t'aahlakw*

*(**FUT**) COMIT PL-try=CN Canucks=CN Oilers tomorrow

'The Canucks play the Oilers tomorrow.'

(VF BS)

I assume a phonologically null non-future tense morpheme in Gitksan (following Jóhannsdóttir and Matthewson 2007). This non-future tense morpheme is there in past or present-tense sentences such as (16a,b), restricting the temporal reference to non-future. In cases of future time reference, the null tense co-occurs with *dim*, exactly as proposed by Abusch (1985) for English WOLL, the element which surfaces either as *will* or *would*, depending on whether it combines with present or past tense.

Previous research on Gitksan and Nisga'a has identified the enclitics *ima('a)* and *gat* as epistemic modals (although not necessarily assigning them those labels).¹² Tarpent (1989:497) describes Nisga'a *ima('a)* as a 'dubitative' marker, an evidential which expresses that 'the speaker thinks that what he says could be true on the basis of what he knows or can infer, but does not want to commit himself as he could be proved wrong.' Tarpent (1984:359) translates *ima('a)* as 'probably', and states that it 'indicates a truth value based on inference, and therefore subject to confirmation.' Tarpent's (1984:362) description of reportative *gat* is that 'the speaker disclaims responsibility for the truth of the utterance ... because he is only reporting information originating with others.' In formal research on Gitksan, Peterson (2010) provides an analysis of both *ima('a)* and *gat* as epistemic modals with an evidential component. Section 3 is devoted to an examination of these elements, and draws heavily on Peterson's work.

There has been almost no discussion of circumstantial modality in Gitksan; an exception is a brief discussion in Davis et al. (2010). I discuss circumstantial modals in detail in Section 4.

3. Epistemic modality in Gitksan. As noted above, Peterson (2010) analyzes *ima('a)* and *gat* as epistemic modals with an evidential component. In this section I deal with each in turn, and then discuss modal-temporal interactions.

3.1. *Ima('a)*. The epistemic modal *ima('a)* is a second-position enclitic. Typical examples of its use are given in (21-24). In (21), ‘a speaker is claiming that, in some possible world consistent with what they know about August, or their experience with picking berries, the berries are ripe’ (Peterson 2010:2):

(21) *mugw=ima=hl maa'y*
 ripe=EPIS=CN berries

‘The berries might be ripe.’ (Peterson 2010:2)

(22) Context: You hear pattering, and you’re not entirely sure what it is.

yugw=imaa/ima'=hl wis
 IMPF=EPIS=CN rain

‘It might be raining.’ (VFs BS, VG)

(23) Context: What’s that noise?¹³

(23a) *limx=imaa/ima'=t Bob*

sing=EPIS=DM Bob

‘Bob might be singing.’

(accepted BS, VF VG)

(23b) *yugw=imaa/ima’=hl limx-s* Bob

IMPF=EPIS=CN sing-PN Bob

‘Bob might be singing.’

(VFs BS, VG)

(24) *yugw=imaa=hlama-’mas-t* *gan* *wil=hl ts’aa* *’magalu=hl ii’wxwt loo-t¹⁴*

IMPF=EPIS=CN good-grow-3SG.II SUBORD do=CN suddenly crazy.PL=CN man.PL OBL-3S.II

‘Maybe she is pretty, that’s why the men are crazy for her.’

(VF BS)

Peterson provides evidence that *ima(’a)* is only interpretable as epistemic; he contrasts it with the verb *da’akhlxw*, which is a circumstantial possibility modal (Peterson 2010:158). The contrast is shown in (25), which is adapted from Kratzer’s (1991) hydrangea example in (3) above. This context is the circumstantial one; you have no reason to believe huckleberries might actually be growing here, you are merely reasoning based on the landscape. We see that *ima(’a)* is infelicitous, and *da’akhlxw* is used.

(25) Context: You’re up in the Suskwa and notice a burnt patch of forest. You know that huckleberries typically take seed in burnt alpine areas.

(25a) *da’akhlxw=hl dim* *limxs=hl* *maa’y go’osun*

CIRC=CN FUT grow.PL=CN berries LOC.here

‘Berries might/can/are able to grow here.’

(25b) #lim_xs=**ima**=hl maa'y go'osun
 grow.PL=**EPIS**=CN berries LOC.here

‘Berries might be growing here.’

(Peterson 2010:158)

According to Peterson, *ima('a)* encodes an evidential requirement, namely that ‘The speaker came to believe a sentence by means of **inference** (whether that inference is based on perceived evidence, general facts, or previous experience with similar situations)’ (Peterson 2010:25). The range of evidence types allowed by *ima('a)* is very broad, and I will not discuss evidentiality further in this paper (although see footnote 18).

Peterson also argues that *ima('a)* has variable modal strength: it can function as anything from a possibility to a necessity modal. Initial evidence for this comes from the wide range of English translations offered for *ima('a)*, as shown in (26). As Peterson observes (2010:161), the context here ‘is simple enough that both *must* and *might* are felicitous translations in English: depending on a speaker’s previous experiences with John and his rod and tackle box, John might be fishing, or he must be fishing.’

(26) Context: You’re wondering where your friend is. You notice his rod and tackle box are not in their usual place.

yugw=**ima**=hl dim ixw¹⁵-t
 IMPF=**EPIS**=CN FUT fish.with.line-3

‘He might be going fishing.’ / ‘He must be going fishing.’ / ‘He’s probably going fishing.’ / ‘He’s likely going fishing.’ / ‘He could be going fishing.’ / ‘Maybe/perhaps

he's going fishing.'

(Peterson 2010:161)

Peterson argues that the default interpretation of *ima('a)* is weak (as in (21-24)), but it is also acceptable in contexts which support or even require a necessity modal in English. The acceptability of *ima('a)* in cases which in English allow either possibility or necessity modals is confirmed in my own fieldwork. This is shown in (27-29).

- (27) Context: You're on the streets of Vancouver on the night of the Canucks game and you hear excited hollering coming from every house.

yugw=ima'=hl xsdaa-dii

IMPF=EPIS=CN win-3PL.II

'They're probably winning.'

(VF VG)

- (28) Context: There was a bad can of fish; everyone at the dinner got sick (context adapted from Peterson 2010:162).

yugw=ima'=hl nee=dii am=hl hon=hl gup-dii

IMPF=EPIS=CN NEG=CNTR good=CN fish=CN eat-3PL.II

'The fish they ate must've been bad.'

(accepted BS, VG)

- (29) Context: Joe left the meeting looking really green in the face and sweaty. Someone asks you why he left.

yugw=imaa=hl siipxw-t

IMPF=EPIS=CN sick-3SG.II

‘He must have been sick.’

(accepted BS)

In terms of a formal analysis, Peterson argues that *ima('a)* introduces an existential quantifier over worlds; thus, it is technically a possibility modal. However its readings can be semantically strengthened in context via an ordering source (an extra restriction on the set of worlds quantified over; Kratzer 1981). The data so far are all compatible with Peterson’s analysis, but they are also compatible with an alternative analysis proposed by Deal (2011) for the Nez Perce (non-epistemic) modal *o'qa*. Like *ima('a)*, *o'qa* can be used in contexts where English would use either a possibility or a necessity modal. Deal argues that *o'qa* is *purely* a possibility modal; its readings are never semantically strengthened, and it never truly expresses a necessity claim. The two analyses, while similar in many respects, make different predictions for downward-entailing contexts. For example, if the modal appears in the scope of negation, Peterson’s analysis predicts that we will obtain both ‘not possible’ and ‘not necessary’ interpretations, while Deal’s predicts that we obtain only ‘not possible’ interpretations (see Deal 2011 for further explanation).

Collection of the data which would distinguish these two analyses is hampered in Gitksan by syntactic and pragmatic factors. The prototypical downward-entailing context, negation, cannot be used as a diagnostic because unlike Nez Perce *o'qa*, Gitksan *ima('a)* does not unambiguously scope under negation. As shown in (30), a negated *ima('a)*-sentence allows a ‘possibly not’ reading. This interpretation is predicted by both Deal’s and Peterson’s analyses if we assume, as seems probable, that *ima('a)* is simply scoping above the negation.

- (30) Context: You thought your friend was fishing. But you see his rod and tackle box are still at his house. You really don’t know if he’s fishing or not.

yugw=imaa=hl *da'awhl* *ixwt* *oo* *ligi* *nee=yimaa=dii* *ixwt*
 IMPF=EPIS=CN then fish or INDEF NEG=EPIS=CNTR fish
 'Maybe he's fishing, maybe he's not fishing.' (VF BS)

Similar problems obtain with other downward-entailing constructions. It is difficult to embed *ima('a)* in the antecedent of a conditional, something which is not unexpected for an epistemic modal (cf. Papafragou 2006, among many others). And while it is marginally possible to embed *ima('a)* in the restriction of a universal quantifier, it is very difficult to distinguish the two potential readings (e.g., 'all the food which *might* be rotten' vs. 'all the food which *must* be rotten'). I remain agnostic here between Peterson's and Deal's formal analyses, while adopting what is common to both, namely that *ima('a)* introduces an existential quantifier over worlds.

In the next sub-section we turn to a second epistemic modal, which is specialized for a particular kind of evidence, namely reports.

3.2. *Gat*. The reportative *gat* is a second-position enclitic. It is felicitous when the speaker has obtained the relevant information via a report from a third person. Examples are given in (31-32).

(31) *'maj-i-(t)=gat=hl* *ha-'nii-goyp'ax* *'a=hl* *lo'op*
 hit-TRA-3SG.II=REPORT=CN INSTR-in-light LOC=CN rock

'I hear he hit the window with a rock (and broke it).'

'Apparently, he hit the window with a rock.' (Peterson 2010:169)

(32) Context: Your brother told you the berries are ripe now. Later, you tell me the berries are ripe, based on what your brother told you.

hlaa mukw-t=gat=hl maa'y

INCEPT ripe-3SG.II=REPORT=CN berries

'The berries are ripe (I heard).' (VF BS)

Gat is infelicitous if the speaker personally witnessed the event, as shown in (33).

(33) Context: You were at the gathering and heard and saw Bob singing. Later I ask you what happened at the gathering, and you say:

limx=gat Bob

sing=REPORT Bob

'Bob sang (I heard).' (rejected BS)

Peterson (2010) argues that *gat* has the semantics of an epistemic modal, and that it has variable modal strength, like *ima('a)*. *Gat* is felicitous both when the speaker heard the information from a reliable source (this corresponds to a necessity interpretation: given what I heard, this *must* be the case), and also when the information was obtained from a less reliable source (a possibility interpretation: given what I heard, this *might* be the case).¹⁶ The analysis of *gat* as a modal predicts that it cannot be used if the speaker knows the embedded proposition is false, since a *gat* sentence asserts that the embedded proposition is at least possibly true. Peterson (2010) shows that this prediction is upheld:

(34) Context: You know John was at work yesterday.

#*si-hon=gat=t* *John k'yoots*

do-fish=REPORT=DM John yesterday

'[I heard] John canned fish yesterday.'

Consultant's comment (paraphrased): "Why say you heard it from someone else when you know it's not true yourself?" (Peterson 2010:127)

In the next sub-section we turn to modal-temporal interactions in the epistemic domain.

3.3. Modal-temporal interactions with epistemic modals. Let's consider what we predict will happen with respect to modal-temporal interactions in Gitksan. According to Condoravdi (2002), the *temporal perspective* of an unembedded modal is given by the tense. Given my assumption that Gitksan possesses a null non-future tense, I predict that the temporal perspective of *ima('a)* and *gat* should be able to be past or present. In other words, the modals should be felicitous either when the evidence for the claim was gained prior to the utterance time, or when it holds at the utterance time. With respect to *temporal orientation*, Condoravdi analyzes English possibility modals as being inherently future-oriented. Along with certain assumptions about the interpretation of different aspectual classes, her analysis correctly derives the core facts for English *might*, namely that a future orientation is permitted with stative predicates, and required for eventive predicates (in the perfective aspect). This is shown in (35):

(35a) *He might be sick.* PRESENT / FUTURE T.O.

(35b) *He might run.* FUTURE T.O. ONLY

(35a) can make a claim about a sickness which either coincides with the utterance time, or will happen in the future. (35b) can only make a claim about a potential running which takes place after the utterance time. We will see below that while Condoravdi's predictions about temporal perspective are upheld, the predictions about temporal orientation based on English do not extend to Gitksan. The data suggest that we will need a semantics for Gitksan epistemic modals which is not inherently future-oriented.

3.3.1. Modal-temporal interactions with *ima('a)*. *Ima('a)* is usually interpreted with a present temporal perspective. In all the cases seen so far, the speaker makes an epistemic claim based on his/her knowledge at the utterance time. Cases of unambiguously past temporal perspective for epistemics involve situations where at some time in the past, there was evidence that something was possible or necessary, but at the utterance time, the speaker knows the embedded proposition to be false (no longer possibly true). Examples of this type are given in (36-37).

(36) Context: When you looked out your window earlier today, water was falling, so it looked like it was raining. But you found out later it was the gutters leaking.

yugw=imaa=hl wis da'awhl

IMPF=EPIS=CN rain then

'It might have been raining earlier.'

PAST T.P.

(VF BS)

(37) Context: The Canucks were playing last night. You weren't watching the game but you heard your son sounding excited and happy from the living room where he was watching the game, so you thought they were winning. You found out after the game that the Canucks lost 20-0, and your son was happy about something else that his friend had told him on his cellphone.

yugw=imaa=hl xsdaa-dii

IMPF=EPIS=CN win-3PL.II PAST T.P. (accepted BS)

'They might have been winning.' (according to my evidence last night)

In terms of temporal orientation, Gitksan displays a strict requirement: the future marker *dim* is both necessary and sufficient for a future orientation of the modal. In the absence of *dim*, an *ima('a)* sentence only makes a claim about a potential event which takes place either before, or concurrently with, the time of the evidence for that event. When *dim* is present, the potential event may only occur after the evidence time. A typical contrast showing this is given in (38).¹⁷

(38a) Context: You can hear people hollering, so the Canucks might be winning.

yugw=imaa=hl xsdaa-dii

IMPF=EPIS=CN win-3PL.II

'They might be winning.' PRESENT T.O. (VF BS, accepted VG)

(38b) Context: You are watching the Canucks. They might win.

yugw=imaa[=hl] dim xsdaa-dii

IMPF=EPIS[=CN] FUT win-3PL.II

‘They might win.’

FUTURE T.O.

(VF BS)

(39-40) are a minimal pair showing that *dim* is necessary and sufficient for a sentence containing *ima('a)* to be accepted in a context with a future temporal orientation.

(39) *yugw=imaa/ima'=hl wis*

IMPF=EPIS=CN

rain

(accepted/rejected in contexts given BS, VG)

‘It might have rained.’ / ‘It might be raining.’ / ≠‘It might rain (in the future).’

√ Context: You see puddles, and the flowers looking fresh and damp. PAST T.O.

√ Context: You hear pattering on the roof. PRESENT T.O.

Context: You hear thunder, so you think it might rain soon. FUTURE T.O.

(40) *yugw=imaa/ima'=hl dim wis*

IMPF=EPIS=CN

FUT

rain

(accepted/rejected in contexts given BS, VG)

≠‘It might have rained.’ / ≠‘It might be raining.’ / ‘It might rain (in the future).’

Context: You see puddles, and the flowers looking fresh and damp. PAST T.O.

Context: You hear pattering on the roof. PRESENT T.O.

√ Context: You hear thunder, so you think it might rain soon. FUTURE T.O.

The same facts hold with stative predicates, as shown in (41-42).

(41) *yugw=imaa/ima'=hl siipxw-t*

IMPF=EPIS=CN

sick-3SG.II

(accepted/rejected in contexts given BS, VG)

‘He might have been sick.’ / ‘He might be sick (now).’ / ≠‘He might be sick (in future).’

√ Context: Why wasn’t Joe at the meeting yesterday? PAST T.O.

√ Context: Why isn’t Joe here? PRESENT T.O.

Context: He’s wearing no coat in the rain, he might get sick. FUTURE T.O.

(42) *yugw=imaa/ima’=hl dim siipxw-t*

IMPF=EPIS=CN FUT sick-3SG.II (accepted/rejected in contexts given BS, VG)

≠‘He might have been sick.’ / ≠‘He might be sick (now).’ / ‘He might be sick (in future).’

Context: Why wasn’t Joe at the meeting yesterday? PAST T.O.

Context: Why isn’t Joe here? PRESENT T.O.

√ Context: He’s wearing no coat in the rain, he might get sick. FUTURE T.O.

The data just given display an interesting contrast with English. In English, temporally unmarked epistemic sentences can be future-oriented, as in (35) above; in Gitksan they cannot. I argue in Matthewson (2011) that this follows from the absence of a future-orientation in the lexical semantics of epistemic modals in Gitksan (unlike in English; cf. Condoravdi 2002).

Examples (38-42) showed cases with present temporal perspectives and all possible temporal orientations, but for *past* temporal perspectives, we have so far only seen present temporal orientations, as in (36-37). To complete the paradigm, we need cases with past temporal perspectives and past or future temporal orientations. (43-45) show that here, too, *dim* is necessary and sufficient for a future temporal orientation for *ima(’a)*. (In (43), I give versions both with and without the imperfective aspect.)

(43) Context: When you looked out your window earlier today, the ground was wet, so it looked like it might have rained. But you found out later that the sprinklers had been watering the ground.

(43a) *yugw=imaa=hl* (#*dim*) *wis da'awhl*

IMPF=EPIS=CN (#FUT) rain then

'It might have rained.' [based on my evidence earlier] PAST T.P., PAST T.O.

(accepted BS, VG without *dim*, rejected BS with *dim*)

(43b) (#*dim*) *wis=ima'* *da'awhl*

(#FUT) rain=EPIS then

'It might have rained.' [based on my evidence earlier] PAST T.P., PAST T.O.

Consultant's comment: "You can't use the future tense in front of that ... 'It will rain a while ago.' It doesn't make sense." (VF VG without *dim*, rejected VG with *dim*)

(44) Context: This morning you looked out your window and judging by the clouds, it looked like it might have been going to rain, so you took your raincoat. Later you're explaining to me why you did that.¹⁸

yugw=imaa=hl #(*dim*) *wis*

IMPF=EPIS=CN #(*FUT*) rain

'It might have been going to rain.' PAST T.P., FUTURE T.O. (accepted VG)

(45) Context: You saw your granddaughter going out into the pouring rain without any coat and you thought she might get sick from that. So you told her to take her coat. Later you're explaining to me why you did that.

yugw=imaa=hl #(*dim*) *siipxw-t*

IMPF=EPIS=CN #(FUT) sick-3SG.II

‘She might have been going to get sick.’ PAST T.P., FUTURE T.O. (VF VG)

Summarizing this sub-section, we have seen that *ima('a)* is compatible with either past or present temporal perspective, and allows past or present temporal orientation in the absence of *dim*. The addition of *dim* gives a future orientation.

3.3.2. Modal-temporal interactions with *gat*. *Gat* displays very similar temporal results to *ima('a)*, with one exception: the temporal perspective is necessarily past with *gat*. Intuitively, this follows from the nature of the evidential restriction, since the report must always have taken place before utterance of the *gat*-sentence.¹⁹ Just like *ima('a)*, *gat* has a future temporal orientation if and only if *dim* is present: *dim* is necessary and sufficient to ensure that the potential event takes place after the time of the report. Compare (32), which lacks *dim* and is present-oriented, with (46), which contains *dim* and is future-oriented.

(46) Context: Your brother told you the berries are going to be ripe tomorrow. Later on the same day, you tell me:

hlaa yukw=gat[=hl] *dim* *mukw=hl* *maa'y ligi* *t'aahlakw*

INCEPT IMPF=REPORT[=CN] FUT ripe=CN berries INDEF tomorrow

‘The berries are going to be ripe tomorrow (I heard).’ (VF BS, accepted VG²⁰)

A minimal pair with and without *dim*, with judgments for all temporal orientations, is given in (47-48).

(47) *limx=gat[=t]* Bob

sing=REPORT[=DM] Bob

‘(I heard that) Bob sang.’ (accepted/rejected in contexts given BS)

√ Context: Yesterday, Henry told you that Bob sang last week. PAST T.O.

√ Context: Yesterday, Henry told you that Bob was singing (at that time). PRESENT T.O.

Context: Yesterday, Henry told you that Bob would be singing later that day. FUTURE T.O.

Context: Yesterday, Henry told you that Bob would be singing next week. FUTURE T.O.

(48) *dim limx=gat[=t]* Bob

FUT sing=REPORT[=DM] Bob

‘(I heard that) Bob would/will sing.’ (accepted/rejected in contexts given BS)

Context: Yesterday, Henry told you that Bob sang last week. PAST T.O.

Context: Yesterday, Henry told you that Bob was singing (at that time). PRESENT T.O.

√ Context: Yesterday, Henry told you that Bob would be singing later that day. FUTURE T.O.

√ Context: Yesterday, Henry told you that Bob would be singing next week. FUTURE T.O.

Notice that *dim* does not require the event to take place after the utterance time, but only after the temporal perspective. This is predicted by an analysis of *dim* as ordering the event time after the reference time, which is the temporal perspective in these cases (see Matthewson 2011).

The same requirement of *dim* for a future temporal orientation with *gat* seems to hold in Nisga'a, as suggested by data in Tarpent (1984):²¹

(49) *ts'axw=gatj=hl sil-s Peter*
 considerable=REPORT=CN drunk-PN Peter
 'They say Peter was very drunk.' (Tarpent 1984:362)

(50) *dim naksgw-i-t=gatj-s Peter t=Lilian*
 FUT marry-TRA-3SG.II=REPORT-PN Peter DM=Lilian
 'They say Peter is going to marry Lilian.' (Tarpent 1984:362)

3.4. Summary of epistemic modality. The data presented here have shown that Gitksan possesses two epistemic modals, one of which is restricted to relying on evidence which comes via reports. Both the epistemic modals are felicitous in contexts supporting anything from possibility to necessity interpretations. Both allow past temporal perspectives, and both allow future temporal orientations only if *dim* is present. The temporal results are summarized in Figure 4, with numbers given for one relevant example of each type.²²

TEMPORAL ORIENTATION		
PAST	PRESENT	FUTURE

TEMPORAL	PAST	<i>ima('a)</i> (43)	<i>ima('a)</i> (37)	<i>ima('a) dim</i> (44)
		<i>gat</i> (47)	<i>gat</i> (47)	<i>dim gat</i> (48)
PERSPECTIVE	PRESENT	<i>ima('a)</i> (29)	<i>ima('a)</i> (22)	<i>ima('a) dim</i> (42)

FIG. 4.—Modal–temporal interactions, epistemic.

4. Circumstantial modality in Gitksan. In this section I show how all the sub-types of circumstantial modality listed in section 2.1 are encoded in Gitksan. As was indicated in Figure 1, there is a formal difference between the epistemic and circumstantial modals: while the epistemic modals are second-position clitics, the circumstantials are either full verbs, or predicative particles. I return to this issue in section 5.1.

4.1. Circumstantial possibility: *da'akhlxw*. The circumstantial possibility modal *da'akhlxw* has two syntactic manifestations.²³ Usually, it is a transitive verb, which takes an individual subject, and a subordinate clause which functions as the direct object. *Da'akhlxw* may also appear as an intransitive verb in an impersonal construction, in a structure similar to ‘It is possible that ...’.²⁴ Rigsby (1986:240) glosses *da'akhlxw* as ‘be able to’, and Hindle and Rigsby (1973:8) translate it as ‘to be able to, to attain, to get to.’ I show in this section that *da'akhlxw* is used for all kinds of circumstantial possibility, including pure circumstantial, ability, and priority interpretations. *Da'akhlxw* is acceptable but not preferred for expressing priority interpretations, such as bouletic or deontic readings; there is an alternative lexical item (*anook*) for deontic possibility, as we will see below.

Pure circumstantial possibility is encoded by *da'akhlxw*, as already noticed by Peterson (2010). Peterson’s intransitive version of the berries sentences is given in (51a) (repeated from

(25a)); my consultant volunteers the transitivized version in (51b) (but also accepts (51a)).²⁵

(51a) *da'akhlxw=hl dim limxs=hl maa'y go'osun*
CIRC.POSS=CNFUT grow.PL=CN berries LOC.here
'Berries might/can/are able to grow here.' (Peterson 2010:158)

(51b) *da'akhlxw-i=hl maa'y dim limxs-t*
CIRC.POSS-TRA=CN berries FUT grow.PL-3SG.II
'Berries could grow here.' (VF VG)

Recall that the pure circumstantial interpretation (unlike the epistemic) allows the speaker to know that there are not actually any berries growing here. This is shown for *da'akhlxw* in (52).

(52a) *nee=dii wan=hl maa'y go'osun ii ap da'akhlxw dim limxs-t*
NEG=CNTR sit.PL=CN berries LOC.here and EMPH CIRC.POSS FUT grow-3SG.II
'There are no berries around here, but they could grow here.' (accepted VG)²⁶

(52b) *nee=dii 'wihl wan=hl maa'y gosun=sa ii ap*
NEG=CNTR about sit.PL=CN berries LOC.here=PROX and EMPH
da'akxw-diit dim limxs-diit gosun
CIRC.POSS-3PL.II FUT grow-3PL.II LOC.here
'There are no berries around here, but they could grow here.' (VF BS)

In (51-52), *da'akhlxw* co-occurs with the future marker *dim*. The consultant rejects a version of (51b) which lacks *dim*, commenting “No, you couldn’t drop the *dim*.” In fact, *da'akhlxw* in all its uses obligatorily requires *dim*; this will be seen in all the data, and discussed further below.

More examples of pure circumstantial possibility are given in (53-54).

- (53) *da'akxw-i=hl t'xalpx-a gat #(dim) luu wan-diit goo=hl ts'im kyaa tust*
 CIRC.POSS-TRA=CN four-LINK people #(FUT) in sit-3PL.II LOC=CN inside car that
 ‘Four people can fit in this car.’ (VF BS)

- (54) Context: We are at a party and people are wanting rides home. I ask you if my friend Sally can ride in your car. The answer is yes, because your car is big enough, it holds 5.
ee'e, da'akxw-i-t #(dim) makxw-t loo-'y
 yes CIRC.POSS-TRA-3SG.II #(FUT) catch.a.ride-3SG.II OBL-1SG.II
 ‘Yes, she can come with me.’ (VF BS)

Ability interpretations of *da'akhlxw* are shown in (55-56). A co-occurring *dim* is obligatory.

- (55) *da'akhlxw-i-s Henry #(dim) jam-t*
 CIRC.POSS-TRA-PN Henry #(FUT) cook-3SG.II
 ‘Henry is able to cook.’ / ‘Henry was able to cook.’ (VFs BS, VG)

VG on *dim*-less version: “Kids can speak like that. But no, you need something in there.”

- (56) *da'akhlxw-i-'y #(dim) hahla'lsd-i'y (k'yoots)*

CIRC.POSS-TRA-1SG.II #(FUT) work-1SG.II (yesterday)

‘I was able to work (yesterday).’

(VFs BS, VG)

BS on *dim*-less version: “It’s like baby talk, or a new learner.”

Ability-like interpretations with non-agentive subjects are also possible, as shown in (57-58).

(57) *da’akhlxw-i=hl* *aats’ip* (*tun=sa*) *dim* *k’ak-t*

CIRC.POSS-TRA=CN door (DEM=PROX) FUT open-3SG.II

‘The door can open.’

(VFs BS, VG)

(58) *da’akhlxw-i=hl* *t’uuts’xw* (*tun*) #(dim) *k’oj-aa-t / k’ots*

CIRC.POSS-TRA=CN knife (DEM) #(FUT) cut-DETR-3SG.II / cut

‘This knife can cut.’

(VFs BS, VG)

A pair which contrasts the ability interpretation of *da’akhlxw* with the epistemic interpretation, rendered by *ima(’a)*, is given in (59-60) (adapted from von Fintel and Heim 2007).²⁷

(59) Context: You are talking about the ability of your friend Cathy to make cheese.

da’akhlxw-i-s *Cathy* *dim(=t)* *jap=hl* *tsiiz* *a=hl* *miilik* *tun*²⁸

CIRC.POSS-TRA-PN Cathy FUT(=3SG.I) make=CN cheese LOC=CN milk DEM

‘Cathy can make cheese out of this milk.’

ABILITY

(VFs BS, VG)

(60) Context: I ask you if I can drink this milk, and you think Cathy might actually make cheese out of it.

yugw=imaa dim=t jap-s Cathy=hl tsiiz loo-t

IMPF=EPIS FUT=3SG.I make-PN Cathy=CN cheese OBL-3SG.II

‘Cathy might make cheese out of this.’ EPISTEMIC (VF BS)

One often-discussed property of ability attributions is whether they have actuality entailments (cf. Bhatt 1999, Hacquard 2006, Davis et al. 2009, among others). Actuality entailments (AEs) are when a perfective/past tense circumstantial modal gives rise to an entailment that the relevant event took place. A French example is given in (61). Hacquard (2006:13) states that ‘For [61] to be true, Jane must have taken the train *in the actual world*.’

(61) *Pour aller au zoo, Jane a pu prendre le train.*

to go to the zoo Jane **can-past-pfv** take the train (Hacquard 2006:13)

As shown in (62) (see also Davis et al. 2009), Gitksan *da’akhlxw* does not give rise to AEs. See Matthewson (2011) for an explanation for the absence of AEs with *da’akhlxw* which relies on the presence of *dim*.

(62) *da’akhlxw-i-’y #(dim) hahla’lsd-i’y (k’yoots), ii (ap) nee=dii wil-’y*

CIRC.POSS-TRA-1SG.II #(FUT) work-1SG.II (yesterday) and(EMPH) NEG=CONT COMP-1SG.II

‘I was able to work yesterday, but I didn’t.’ (VFs BS, VG)

In deontic possibility (permission) contexts, *da'akhlxw* is possible, but competes here with a specialized deontic possibility modal, *anook* (discussed in the next section). An example of *da'akhlxw* in a permission context is given in (65).

- (65) *mahl-d-i-s nox-'y da'akhlxw[-i]-'y dim ma'us-'y*
 tell-T-TRA-PN mother-1SG.II CIRC.POSS[-TRA]-1SG.II FUT play-1SG.II
 'My mother told me I could play.' (VF VG)

I have claimed that *da'akhlxw* has a specified modal strength, namely possibility, and this is consistent with all the data so far. Further evidence that *da'akhlxw* is strictly a possibility modal comes from its rejection when the context warrants a necessity claim instead. (66) is an attempt to use *da'akhlxw* in a circumstantial necessity context. The sentence is grammatical, but infelicitous in this context, since it only renders a possibility meaning:

- (66) Context: Bob ate bad chicken last night. He should be sick now (given the facts about what he ate).

?? *da'akxw-i=hl dim sim siipxw-t*
 CIRC.POSS-TRA=CN FUT very sick-3SG.II

Attempted: 'He should be very sick.'

Consultant's comment: "Not very good. Nothing wrong with [the sentence] because

da'akxw is 'able'. He's able to be very sick." (rejected in context BS)

Examples showing the interaction of *da'akhlxw* with negation are given in (67). The modal obligatorily scopes under the negation, and we obtain a 'not possible' reading, just like for English *can't* (see Horn 1989). A 'not necessary' reading is not available; when asked if (67a) can mean 'I don't have to go out', BS comments "No, that *da'akxw* hints that she has a barrier, like her mommy, her chores." When asked if (67b) can mean 'She doesn't have to play', BS comments "No, *da'akxw* is like 'able'."²⁹

(67a) *nee=dii=n* *da'akxw* #(dim) *xsaw-i'y / xsaxw-i'y*
 NEG=CNTR=1SG.I CIRC.POSS #(FUT) go.out-1SG.II
 'I am not able to go out.' (VF BS, TFSC, "Chore Girl", accepted VG)

(67b) *ii nee=dii-t* *da'akxw* *dim ma'us-t*
 and NEG=CNTR-3SG.II CIRC.POSS FUT play-3SG.II
 'And she was not able to play.' (VF BS, TFSC, "Sick Girl")

(67c) *nee=dii-t* *da'akxw=hl* *t'uuts'xw tun=sa* *dim k'oj-aa-t*
 NEG=CNTR-3SG.II CIRC.POSS=CN knife DEM=PROX FUT cut-DETR-3SG.II
 'This knife can't cut.' (VF BS)

(67d) *nee=dii-t* *da'akxw=hl* *aats'ip tun=sa* *dim k'ak-t*
 NEG=CNTR-3SG.II CIRC.POSS=CN door DEM=PROX FUT open-3SG.II
 'This door can't open.' (VF BS)

Turning finally to temporal interpretation, we find that *da'akhlxw* allows either a present or a past temporal perspective. This is predicted by the claim that Gitksan has a null non-future tense which provides the temporal perspective. Most of the data given above involve a present temporal perspective: the relevant circumstances which license the possibility hold at the utterance time. However, we have seen several cases where the relevant circumstances held in the past: (55), (56), (62), (65), and (67b). (68) shows that the pure circumstantial interpretation allows a past temporal perspective.

(68) Context: You are talking about some land you used to have. I ask you ‘What was the soil like? Could berries have grown there?’

da'akhlxw-i=hl *maa'y=hl* #(dim) *limxs-t*

CIRC.POSS-TRA=CN berries=CN #(FUT) grow.PL-3SG.II

‘Berries could have grown.’

(VF VG)

As *da'akhlxw* is a circumstantial possibility modal which allows past temporal perspective, it is predicted to allow counterfactual readings (cf. Condoravdi 2002). This prediction is upheld, as shown in (69).

(69) Context: You were watching the Canucks and at one point in the first period they were up 2-1. At that point, they might have still won (but they didn't in the end).

(69a) *k'ay da'akxw-diiit* #(dim) *xsgaa-diiit, ii* *ap* *nee=dii* *xsgaa-diiit*

still CIRC.POSS-3PL.II #(FUT) win-3PL.II and EMPH NEG=CNTR win-3PL.II

‘They still could have won, but they didn't win.’

(VF BS)

(69b) *da'akhlxw-dii* *dim xsdaa-dii,* *ii* *nee=dii* *wil-dii*
 CIRC.POSS-3PL.II FUT win-3PL.II and NEG=CNTR do-3PL.II
 'They could have won but they didn't.' (accepted VG)

Da'akhlxw always co-occurs with the future marker *dim*; this holds regardless of whether the temporal perspective is present or past.³⁰ The presence of *dim* correlates with an obligatory future temporal orientation, something which is often claimed to hold for (all, or specific subsets of) circumstantial modals (Condoravdi 2002, Copley 2006, Werner 2006, Kratzer 2012, Vander Vate 2010). The future orientation means that *da'akhlxw* always makes a claim about a possible event after the time at which the modal is assessed. For example, an ability claim with a present temporal perspective asserts that it is possible for an event to happen after the utterance time. This is shown in (70-71): ability claims are accepted if the event has never taken place in the past, but might in the future, and are rejected if the event has taken place in the past, but is no longer possible in the future.³¹

(70) Context: Henry has taken a theoretical cooking course, and he is now able to cook, but he never has yet.

da'akxw-i-s *Henry #(dim) jam-t,* *ii ap ha'w'en=dii jam-t*
 CIRC.POSS-TRA-PN Henry #(FUT) cook-3SG.II and EMPH not.yet=CNTR cook-3SG.II
 'Henry can cook, but he hasn't yet.' (VF BS)

(71) *da'akxw[-i]- 'y* *dim ayee=hl* *bax- 'y*

CIRC.POSS[-TRA]-1SG.II FUT go.fast=CN run-1SG.II

‘I can run fast.’ (VF BS)

Rejected in a hypothetical described context in which you were a fast runner, but you have become permanently paralysed.

The final case to consider is *da’akhlxw* with a future temporal perspective – cases where the claim is about a possibility which does not yet hold at the utterance time, but will hold in the future. I have claimed that the (null) tense provides the temporal perspective for modals in Gitksan. This predicts that a future temporal perspective with *da’akhlxw* will require ‘double *dim*’: one *dim* which gives future temporal orientation, and a higher *dim* which moves the temporal perspective into the future. This is exactly what we find, as shown in (72).

(72) Context: He can’t cook now, but he will be able to cook (after taking a cooking course).

dim *da’akxw-i-t* *dim* *jam-t*

FUT CIRC.POSS-TRA-3SG.II FUT cook-3SG.II

‘He will be able to cook.’ (VF BS)

Summarizing this section, we have seen that *da’akhlxw* is a circumstantial possibility modal that allows pure circumstantial, ability, and priority interpretations.³² It obligatorily co-occurs with *dim*, which gives it a future temporal orientation. It allows either past or present temporal perspective, and future temporal perspective just in case another *dim* precedes the modal.

4.2. Deontic possibility: *anook*. Gitksan expresses deontic possibility (permission) by

means of the verb *anook* (cf. English *allow* or *be allowed to*). Rigsby (1986:416) translates *anook* as ‘allow’, and Hindle and Rigsby (1973:36) translate it as ‘permit.’³³ Syntactically, *anook* introduces a subordinate clause, whose subject is the one being granted the permission. It allows both impersonal subjects (73-74) and personal subjects (75-78). Just like *da’akhlxw*, *anook* on its modal meaning obligatorily co-occurs with the future marker *dim* in the subordinate clause.

(73) *anook-xw(=hl)* #(dim) *ha’w-s* *Savanna* (*k’yoots*)
 DEON.POSS-MED(=CN)#(FUT) go.home-PN *Savanna* (yesterday)
 ‘It was allowed that Savanna went home.’ (VFs BS, VG)

VG on *dim*-less version: “That’s not how we would say it. Sounds like a three-year-old.”

(74) *ii* *nee=dii* *anook-xw* #(dim) *xsaw-i’y*
 and NEG=CNTR DEON.POSS-MED #(FUT) go.out-1SG.II
 ‘It is not allowed that I go out.’ (semi-VF BS, TFSC, “Chore Girl”)

(75) *anook-xw-diit* #(dim) *ha’wi-s* *Savanna* (*gyuu’n / k’yoots*)
 DEON.POSS-MED-3PL.II #(FUT) go.home-PN *Savanna* (now / yesterday)
 ‘They allow / allowed Savanna to go home (now / yesterday).’ (VFs BS, VG)

(76) *anoog-a-s* *nox-s* *Savanna* *dim* *ha’w-t* *gyuu’n*
 DEON.POSS-TRA-PN mother-PN *Savanna* FUT go.home-3SG.II now
 ‘Savanna’s mother allows her to go home now.’ (VF BS)

anook-xw=diit *dim* *hahla'lsd-i'y* *yuxwsatun*
 DEON.POSS-MED=3PL.II FUT work-1SG.II evening DEM
 'I'm allowed to work tonight.' [Lit.: 'They allow me to work tonight.]
 (Cannot mean 'I have to work tonight.')

(rejected in context BS)

Turning to temporal interpretation, we see that just like *ima('a)* and *da'akhlxw*, *anook* allows both a present temporal perspective (where the permission is granted at the utterance time) and a past temporal perspective (where the permission was granted in the past). This can be seen in (73-78), which involve both past and present temporal perspectives. For a future temporal perspective (i.e., when talking about permission which will be granted after the utterance time), we predict the appearance of a second, higher *dim* preceding *anook*. This is correct:

(81) Context: Savanna is currently in prison, but tomorrow the governor of the prison is going to change her mind about Savanna's parole.

dim *anook-xw=diit* *dim* *ha'w-s* *Savanna* *t'aahlakw*
 FUT DEON.POSS-MED-3PL.II FUT go.home-PN Savanna tomorrow
 'Savanna will be allowed to go home tomorrow.'

(VFs BS, VG)

With respect to temporal orientation, we have seen that just like *da'akhlxw*, *anook* always co-occurs with *dim*. This correlates with the future-orientation of permission statements: if I allow you to do something, it means that you are able to do it after the time at which I give you the permission.³⁴

Summarizing this section, we have seen that in addition to the general circumstantial

possibility modal *da'akhlxw*, there is a specialized deontic possibility modal *anook*. The temporal properties of *anook* match those for the other modals examined so far in that either a past or a present temporal perspective is possible. Like the verb *da'akhlxw* but unlike the epistemic modal clitics *ima('a)* or *gat*, the verb *anook* obligatorily requires a future orientation and therefore requires *dim* in its subordinate clause. Future temporal perspective is achieved via an additional *dim* preceding the modal.

4.3. Circumstantial (weak) necessity: *sgi*. Circumstantial necessity and weak necessity interpretations are rendered in Gitksan by the modal *sgi*. This element is homophonous with the predicate *sgi* ‘lie, be in a lying position’, but is distinguishable from it on morphological, syntactic and semantic grounds (see Appendix C). Syntactically, modal *sgi* occurs sentence-initially, and introduces a clause in the dependent order. Unlike the verbs *da'akhlxw* or *anook*, *sgi* does not take its own pronominal endings. Rigsby (1986:379) classifies *sgi* as a ‘predicative particle’, meaning that it parallels other dependent-clause-introducing elements like the aspectual marker *hlaa* ‘inceptive’. Modal *sgi* obligatorily co-occurs with the future marker *dim*.³⁵

One of the most common uses of *sgi* is to express deontic necessity (obligation), as in (82-85). As predicted, either a past or a present temporal perspective is allowed; the obligation can either hold at the utterance time, or have held in the past (translations in (83-85) reflect the temporal contexts in which these sentences were elicited).

- | | | | | |
|------|---|----------------|-----------------------|-------------------|
| (82) | <i>sgidim</i> | <i>t'aa=hl</i> | <i>hanak' go'o=hl</i> | <i>an-t'aa-t</i> |
| | have.to | sit=CN | womanLOC=CN | place-sit-3SG.II |
| | ‘The woman has to, must sit in her reserved place.’ | | | (Rigsby 1986:379) |

(83) *sgi* #(dim) (ap) ha'w-s Lisa
 CIRC.NECESS #(FUT) (EMPH) go.home-PN Lisa
 'Lisa should/must go home.' / 'Lisa should have gone home.' (VF BS, VG)

(84) *sgi* #(dim) ap ha'w-t wil ban=hl t'imges-t³⁶
 CIRC.NECESS #(FUT) EMPH go.home-3SG.II COMP hurt=CN head-3SG.II
 'She should go home, she has a headache.' (VF BS)

(85) Context: Lisa's son was all alone / he needed to see her.

sgi dim=t sga-'wa-s Lisa=hl hlguuhl^xwim gat-t
 CIRC.NECESS FUT=3SG.I across-get.to-PN Lisa=CN child man-3SG.II
 'Lisa should have met her son.' (VF BS)

Sgi is also freely used for non-deontic circumstantial necessity readings, as in (86-88). Here, the speaker is saying that given the relevant facts, it should follow that a certain event takes place.

Both present and past temporal perspectives are possible: the modal claim is made based either on past information, or information which holds at the utterance time.

(86a) Context: Bob ate bad chicken last night, so he should be sick now.

sgi #(dim) siipxw-t gyuu'n
 CIRC.NECESS #(FUT) sick-3SG.II now
 'He should be sick now.' (VF BS)

(86b) Context: Bob ate bad chicken last week, so he should have been sick (but he was ok).

sgi dim siipxw-t ii nee=dii wil-t
CIRC.NECESS FUT sick-3SG.II and NEG=CNTR do-3SG.II

‘He should have been sick, but he wasn’t.’ (VF VG)

(87) Context: You have just walked into the house and see a cake in the oven. You find a note saying ‘I put the cake in at 2:30. It takes half an hour to bake.’ You look at your watch and see that it’s 3pm. You say:

(87a) *sgi #(dim) hliisxw-t gyuu’n*
CIRC.NECESS #(FUT) finished-3SG.II now

‘It should be ready now.’ (VF BS)

(87b) (*hlaa*) *sgi dim ankws-t*
(INCEPT) CIRC.NECESS FUT be.cooked-3SG.II

‘It should be cooked.’ (VF VG)

(88) Context: Your grandmother is a little forgetful. Your grandfather calls you on the phone.

Grandfather: Where is your grandmother? She’s not home yet.

You: I didn’t even know she was out; she wasn’t with me. Where did she go?

Grandfather: She went bowling four hours ago, and she only bowls for an hour.

You: She should have got home long ago!

sgi dim yagayt ligi ’witxw-t da’awhl

CIRC.NECESS FUT already INDEF arrive-3SG.II then

‘She should have got home long ago.’ (VF BS)

Sgi also allows teleological (weak) necessity interpretations, as shown in (89-90) (adapted from von Fintel and Iatridou 2008), as well as bouletic interpretations, as in (91-92).

(89) Context: There is only one way to get to Whistler: Highway 99. NECESSITY

ji daa hasak-t dim yee-t goo=hl Whistler ii sgi

IRR ever want-3SG.II FUT go-3SG.II LOC=CN Whistler and CIRC.NECESS

#(dim)-t yuxw=hl genim 99

#(FUT)-3SG.II follow=CN road 99

‘If he wants to go to Whistler, he has to take Highway 99.’ (VF BS)

(90) Context: There are two ways to get to Lillooet: 99 or 1. 99 is better. WEAK NECESSITY

ji daa dim yee-n goo=hl Lillooet ii sgi mi=dim yuxw=hl genim 99

IRR ever FUT go-2SG.II LOC=CN Lillooet and CIRC.NECESS 2SG.III=FUT follow=CN road 99

‘If you go to Lillooet, you should take Highway 99.’ (accepted BS)

(91) *sgi mi=dim bak=hl cake tun*

CIRC.NECESS 2SG.III=FUT try=CN cake DEM

‘You should try this cake.’ (VF VG)

(92) *k’ap sim sgi mi=dim bak=hl cake tun*

EMPH really CIRC.NECESS 2SG.III=FUT try=CN cake DEM

‘You MUST try this cake.’

(VF VG)

My claim that *sgi* is a circumstantial (weak) necessity modal predicts that it cannot be used for possibility meanings, such as permission or ability. This is correct, as shown in (93) and (94) respectively. The consultants accept the sentences in the given contexts, but make it clear that the permission/ability interpretation is not what is conveyed.

(93) Context: Savanna is in prison and she gets her parole.

sgi *dim* *ha’w-s* *Savanna* *gyuu’n*

CIRC.NECESS FUT go.home-PN Savanna now

‘Savanna should go home now.’

(accepted in context BS)

Consultant’s comment: “Yeah, if she’s already been passed by the parole board. The [version with *anook*] says she was allowed to go home. So now, she *should* go home.”

(94) Context: Henry took a cooking class.

sgi *dim* *jam-s* *Henry* *gyuu’n*

CIRC.NECESS FUT cook-PN Henry now

‘Henry should cook now.’

(accepted in context BS)

Elicitor: “Can this mean that he is able to cook now?”

Consultant: “He should cook now. Especially if it’s salmon!”

There is one circumstantial necessity interpretation which *sgi* does not seem to instantiate, and

that is pure circumstantial strong necessity: the sneeze case (see (4) above). In Gitksan, such sentences are expressed using a plain future, as in (95a), or *'nim* ‘want’, as in (95b).

(95a) *dim* *hajiswa-'y*
 FUT sneeze-1SG.II
 ‘I have to sneeze.’ [Lit.: ‘I’m going to sneeze.’] (VF VG)

(95b) *'nim* *hajiswa* *'nii'y*
 want sneeze 1SG.III
 ‘I have to sneeze.’ [Lit.: ‘I want to sneeze.’] (VF BS)

The speakers do not like *sgi* in this context, as shown in (96).

(96) ??*sgi* *dim* *hajiswa-'y*
 CIRC.NECESS FUT sneeze-1SG.II
 ‘I should sneeze.’ (rejected in context BS, marginally accepted VG)

BS’s comment: “*Sgidim* says I should sneeze. You wouldn’t say it if you just mean you have to sneeze because you have something in your nose.”

The same effect, namely a circumstantial necessity modal not being felicitous in the sneeze case, is observed for St’át’imcets by Davis et al. (2009). They present an analysis which correctly predicts that in St’át’imcets, if we place a sneeze case into the past, or the habitual aspect, the circumstantial necessity modal becomes felicitous. However, in Gitksan even these measures do

interpretation (i.e., it needs a non-empty ordering source), but further investigation is required.

With regard to the temporal properties of *sgi*, we have seen that like all the other modals, *sgi* allows both past and present temporal perspectives. *Sgi* always co-occurs with the future marker *dim* introducing the dependent clause, and this correlates with a future orientation. An obligation imposed at time *t*, for example, is an obligation to do something after *t*. As with the other circumstantial modals, we predict double *dim* in cases of future temporal perspective (e.g., cases where an obligation will arise in the future). The prediction is upheld, as shown in (101).³⁸

(101) Context: Your son is going to military school. You are telling him that things are going to change; he's going to have to get up early.

dim sgi *dim hlook-n* *hlaa* *dim suwilaaks-'n go'o=hl* *military*

FUT CIRC.NECESS FUT early-2SG.II INCEPT FUT learn-2SG.II LOC=CN *military*

‘You will have to get up early when you go to military school.’ (accepted BS, VG)

5. Conclusions and future research. In sections 3 and 4 we have seen evidence for the categorization of Gitksan modals given in Figure 1, section 1. Gitksan lexically encodes both modal strength and type of modality, possessing two purely epistemic modals (following Peterson 2010), a general circumstantial possibility modal, a deontic possibility modal, and a (weak) necessity circumstantial modal. Gitksan is thus a ‘mixed’ system: it encodes modal strength distinctions only within the circumstantial domain.

In the remainder of the paper I will outline some theoretical questions raised by the Gitksan results reported on here, as well as some further empirical issues. We start with the formal distinction between epistemic and circumstantial modals with respect to syntactic

category.

5.1. Syntax and typology. Gitksan is not only a ‘mixed’ modal system from the point of view of the semantic distinctions it makes. It is also mixed in that the modals belong to different syntactic categories: the epistemic modals are second-position clitics, the circumstantial necessity modal is a predicative particle, and the circumstantial possibility modals are regular verbs.³⁹ This syntactic heterogeneity raises several interesting questions. Within the circumstantial domain, Amy Rose Deal observes that if there are scalar implicatures among these items (e.g., if the permission modal *anook* implicates that one is not obligated), this would provide an argument for a purely semantic characterization of scale formation, rather than one that takes syntax into account.⁴⁰ Investigation of this question must await future research.

The syntactic heterogeneity of the Gitksan modals also has implications for the cross-linguistic comparison of modal systems. Recall Rullmann et al.’s (2008) preliminary classification of modal systems given in Figure 2, section 2.3. The contrast between English and St’át’imcets is especially striking if one restricts oneself, as Rullmann et al. did, to English modal auxiliaries, and St’át’imcets modal second-position clitics. However, English possesses many elements which are selective for modal type, including verbs such as *be able*, *allow*, *require*, *want*, *believe*, or *be likely*, and adverbs such as *perhaps* or *maybe*. Conversely, St’át’imcets possesses attitude verbs which unambiguously introduce universal quantification over worlds, and thus are specified for modal strength (Matthewson 2010a). Given this, is there any qualitative difference between English and St’át’imcets on the one hand, and Gitksan, which I have argued instantiates a ‘mixed’ system? Are there really any *non-mixed* modal systems?

In one sense, the answer to this question is probably ‘no’ – it seems likely that all

languages will possess some elements which encode modal strength, and some which encode modal type. However, there is still a distinction between languages in which *all* modal elements are specified for modal type (such as St'át'imcets or Gitksan), and languages which possess variable-type modals (such as English).⁴¹ Interesting further questions also arise regarding the syntax-semantics interface. Are there cross-linguistic regularities in which syntactic categories prefer fixed-force modals, or fixed-type modals? And if so, why? Are there languages whose attitude verbs, for example, lack either modal force distinctions or modal type distinctions? Are there cross-linguistic regularities in which syntactic categories prefer epistemic modals, or circumstantial ones? Is there for example some connection between the fact that English modal adverbs seem to be all epistemic, while in Gitksan it is the epistemic modals which are clitics rather than matrix verbs?

This last question may relate to a debate in the literature about whether modals display syntactic differences which correlate with interpretive differences (cf. Brennan 1993, Bhatt 1998, Wurmbrand 1999, Lechner 2005, Hacquard 2006, among others). For example, it is often argued that epistemic modals sit higher in the tree than most circumstantial ones, or that epistemic modals take an entire proposition in their scope, while some circumstantial ones are relativized to individuals. For Gitksan, there is suggestive evidence that some version of these proposals might be on the right track. The epistemic modals are second-position clitics, hence plausibly always take scope over the entire proposition, whereas the circumstantial modals *da'akhlxw* and *anook* are verbs which often take an individual subject argument. As noted above, however, *da'akhlxw* and *anook* sometimes appear in an impersonal construction, taking the entire proposition as their argument, and the circumstantial necessity modal *sgi* has an intermediate status, taking a dependent, but not truly subordinate clause. Further research is required.

The use of future markers for imperative-like speech acts is attested cross-linguistically (Ulan 1978). A non-modal analysis of the future has at least two options for dealing with such data. We could postulate a null modal element, or we could argue that these sentences are in fact ordinary future statements, rather than true deontic claims. In the latter case, the imperative-like illocutionary force arises via inferences about whose responsibility it is that something should be done; there is no explicit deontic modal element.⁴³

5.3. The (absence of) inherent future orientation for modals. Recall that Gitksan epistemic modals cannot be future-oriented without the presence of *dim*; an example showing this was given in (41) above, repeated here.

- (105) *yugw=imaa/ima'=hl siipxw-t*
 IMPF=EPIS=CN sick-3SG.II (accepted/rejected in contexts given BS, VG)
 ‘He might have been sick.’ / ‘He might be sick (now).’ / ≠ ‘He might be sick (in future).’

These data differ from English, and suggest that we need a semantics for Gitksan *ima('a)* which is not inherently future-oriented, unlike English *might* as analyzed by Condoravdi (2002).

Circumstantial modals in Gitksan also have the potential to shed light on the correct analysis of the temporal interpretation of modals. Many authors have observed that circumstantial modals tend to be future-oriented (for example Kratzer 2012); this future-orientation could be either built into the lexical entry of the modal itself (Enç 1996, Abusch 1998), or it could come for free from general mechanisms (Condoravdi 2002, Copley 2006,

Werner 2006). (See Portner (2009:230ff) for an overview.) The Gitksan data support an analysis whereby the futurity comes not from the modal itself, but rather from the temporal ordering predicate *dim*. Gitksan would then be an overt spell-out of an analysis independently proposed for English by Kratzer (2011), according to which a null prospective aspect which can co-occur with circumstantial modals provides the future orientation (and removes actuality entailments).⁴⁴ Note that although I have been calling *dim* a future marker, in a technical sense it is a prospective aspect, because it orders the reference time with respect to the event time (see footnote 3).

Here as well, however, there is a competing analysis, sketched by Peterson (2011). If *dim* is itself modal, we could say that the elements I have been calling modals instead merely provide the modality type (the ordering source, in a Kratzerian analysis). *Dim* would then provide both modality (quantification over possible worlds) as well as futurity. One question for this analysis is how we distinguish modal force for the circumstantial modals, if *anook*, *da'akhlxw* and *sgi* only encode the ordering source. We would also have to explain why with epistemic modals, *dim* is optional and merely provides future semantics, as discussed in section 3.3 above.⁴⁵

5.4. The irrealis marker *ji*. Throughout section 4, I claimed that circumstantial modals in Gitksan obligatorily require *dim*. Some refinement of this claim is required. Firstly, while neither of my consultants have ever volunteered a circumstantial modal without *dim*, one of my consultants (VG) occasionally does accept *dim*-less circumstantial modals. Some modal constructions also marginally allow substitution of the irrealis marker *ji* for *dim*. This is illustrated in (106-107); these constructions are however never volunteered by the consultants.

(106) ?*sgi* *ji-t* *sga-'wa-s* *Lisa=hl hlgauhwxwim gat-t*

CIRC.NECESS IRR-3SG.II across-get.to-PN Lisa=CN child man-3SG.II

‘Lisa should have fetched her son.’ (accepted BS, rejected VG)

(107)? *anook-xw-diit* **ji** *ha’w-s* *Savanna*

DEON.POSS-MED-3PL.II IRR go.out-PN Savanna

‘Savanna is allowed to go home.’ (accepted BS, marginally accepted VG)

Ji is not always substitutable for *dim* under modals, as shown in (108-109).

(108) **ii* *nee=diin* *da’akxw* **ji** *xsaw-i’y*

and NEG=CNTR DEON.POSS IRR go.out-1SG.II

‘And I am not able to go out.’ (rejected BS)

(109) **yugw=imaa* **ji** *wis*

IMPF=EPIS IRR rain

‘It might be going to rain.’ (rejected BS)

My proposal that *dim* provides the future-orientation of circumstantial or epistemic modals, and that this future orientation is not intrinsic to the modal itself, may require me to assume that *ji* also contains future semantics. This is not implausible, but more work is required.⁴⁶ (See Tarpent 1989:466-471 for discussion of *ji* in Nisga’a.)

APPENDIX A

HINDLE AND RIGSBY ORTHOGRAPHY⁴⁷

Orth.	IPA	Orth.	IPA	Orth.	IPA	Orth.	IPA	Orth.	IPA
a	a	hl	ɬ	l	l	s	s	x	x
aa	a:	i	ə/i	'l	l'	t	t	<u>x</u>	χ
b	b	ii	i:	m	m	t'	t'	xw	x ^w
d	d	j	dʒ	'm	m'	tl'	tl'	y	j
e	e	k	k	n	n	ts	ts	'y	j'
ee	e:	k'	k'	'n	n'	ts'	ts'	'	ʔ
g	g	<u>k</u>	q	o	o	u	u		
g	G	<u>k'</u>	q'	oo	o:	uu	u:		
gw	g ^w	kw	k ^w	p	p	w	w		
h	h	kw'	k ^w '	p'	p'	'w	w'		

Velar unrounded stops are palatalized before any vowel other than (long or short) *o* or *u*, so this palatalization is not written in the orthography (Rigsby 1986:123). So, the *g* is pronounced [g^y] in both *gyuu* 'now' and *gat* 'man'.

APPENDIX C

THE TWO *SGIS*

I proposed in section 4.3 that there are two homophonous morphemes *sgi* in Gitksan. The first distinction between the two is semantic: the modal *sgi* has circumstantial necessity readings, while the verb *sgi* has locational or possession readings; the latter are illustrated in (1).

(1a) *sgi=hl ha-'nii-t'aa loo-'y*
lie=CN INSTR-in-sit OBL-1SG.II
 'I have a chair.' (VF BS)

(1b) *ee'e, sgi=hl gwila-'y*
 yes **lie**=CN blanket-1SG.II
 'Yes, I have a blanket.' (Rigsby 1986:298)

The two *sgi*'s also differ morphologically, in that only the location/possessive one has a suppletive plural form (Rigsby 1986:76). This is shown in (2), which contains the suppletive plural, vs. (3), which shows that the modal *sgi* does not turn to *dox* in the plural.

(2) *dox=hl ha-'nii-wan loo-'m*⁴⁸
lie.PL=CN INSTR-in-sit.PL OBL-1PL.II
 'We have chairs.' (BS)

(3) Context: You were watching the Canucks and at one point in the first period they were up

2-1. They should have still won (but they didn't in the end).

- (3a) *sgi* (hli) *dim* *x_sdaa-dii*, *ii* *nee=dii* *wil-dii*
CIRC.NECESS (PAST) FUT win-3PL.II and NEG=CNTR do-3PL.II
'They should have won, and they didn't.' (accepted BS, VF VG)

- (3b) * *dox* *dim* *x_sdaa-dii*, *ii* *nee=dii* *wil-dii*
lie.PL FUT win-3PL.II and NEG=CNTR do-3PL.II
'They should have won, and they didn't.' (rejected BS, VG)

The third distinction between the two *sgi*'s is that only the modal *sgi* obligatorily co-occurs with *dim*. (1) and (2) show that location/possession *sgi/dox* does not require the presence of *dim*.

The claim that there are two homophonous *sgis* correctly predicts that they can co-occur.

- (4) *sgi* *dim* *sgi=hl ha-'nii-t'aa* *loo-'y*
CIRC.NECESS FUT **lie=CN** INSTR-in-sit OBL-1SG.II
'I should have a chair.' (BS, VG)

APPENDIX D

GITKSAN VERSIONS OF NISGA'A DIM-LESS DA'AKHLXW SENTENCES

This appendix presents Gitksan versions of three sentences in Tarpent (1986a), which in Nisga'a appear without *dim*. We see that in all cases except (3b), the versions given by my consultants do contain *dim*. I have no explanation at this stage for the optional dropping of *dim* in (3b).

- (1) *hinda wil t'ugwant-xw=hl gan ii ma=da'akxw dim jaga-yi-n*
 when COMP fall-MED=CN tree and 2SG.I=CIRC.POSS FUT cross-go-TRA
 'When the tree falls, you can get across.' (VF BS, adapted from Tarpent 1986a:7.4)

- (2) *ga-sgoo=hl da'akhlxw-'y dim he-'y*
 PL-so.much=CN CIRC.POSS-1SG.II FUT say-1SG.II
 'That's all I can say.' (VF VG, adapted from Tarpent 1986a:21.3)

- (3a) *amxsa smax an-diit da'akxw #(dim) pdaltxw-t*
 only bear AX-3PL.II CIRC.POSS #(FUT) climb-3SG.II
 'Only the black bear can climb.'

(semi-VF BS with *dim*; rejected without *dim*, adapted from Tarpent 1986a:4.6)

- (3b) *(k'am) ksax-a ol ant da'akhlxw=hl (dim) pdal-txw-t*
 (only) only-LINK bear AX CIRC.POSS=CN(FUT) climb-MED-3SG.II
 'Only the black bear can climb.'

(VF VG without *dim*; accepted with *dim*, adapted from Tarpent 1986a:4.6)

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² Kratzer's original sentence contained *can*, but *could* is preferable for many speakers.

³ In Condoravdi's analysis, the temporal perspective is provided by tense. This means that the temporal orientation is a relation between the reference time (provided by tense) and the event time, and is therefore technically an aspect, in the sense of Klein (1994). This approach dovetails very nicely with the Gitksan system; see Matthewson (2011) for discussion.

⁴ See also Kratzer (2012), Kaufmann (2011).

⁵ The interpretation of these modals depends in part on syntactic position; see Hacquard (2006), among others.

⁶ Another potential mixed system is Kwak'wala (Wakashan), which may possess variable-strength epistemic modals but no variable-strength circumstantial ones (Stacey Menzies, p.c.). See also Deal (2011) on Nez Perce (Penutian), which does not make modal strength

distinctions in the non-epistemic domain, and Gipper (2010) for the claim that Yurakaré (Central Bolivia, unclassified) does not express a contrast between epistemic necessity and possibility.

⁷ Bruce Rigsby (p.c.) and Marie-Lucie Tarpent (p.c.) believe that there are significant differences between the speech and grammar of the current senior generation of Gitksan speakers and those of the previous one. The ‘younger fluent speakers’ whom Rigsby knew in the 1960s-1980s have become the current older generation, and it is their speech which is reported on in this paper. With respect to the modals, it is not possible to determine whether there has in fact been language shift, since semantic fieldwork of the sort conducted for this paper was not carried out with earlier generations.

⁸ There is debate about potentially different discourse properties of the two orders; see Hunt (1993) on Gitksan and Tarpent (1989) on Nisga’a.

⁹ Aspectual classes in Gitksan have not been comprehensively studied. I am assuming that predicates like *siipxw* ‘sick’, which are typically stative across languages, are stative in Gitksan.

¹⁰ Abbreviations used in morpheme glosses: I/II/III = series I/II/III pronoun, ATT = attributive, AX = A (transitive subject) extraction, CAUS = causative, CIRC = circumstantial, CN = common noun connective, COMIT = comitative, COMP = complementizer, CNTR = contrastive, DEM = demonstrative, DETR = detransitive, DM = determinate, EMPH = emphasis, EPIS = epistemic, LOC = locative, IMPERS = impersonal, IMPF = imperfective, INCEPT = inceptive, INDEF = indefinite, INSTR = instrumental, IRR = irrealis, MED = medial, NECESS = necessity, OBL = oblique, PART = particle, PN = proper noun connective, POSS = possibility, REPORT = reportative, SUBORD = subordinator, T = ‘T’ suffix, TRA = transitivizer, YNQ = yes-no question. Square brackets [] indicate that a morpheme is grammatically there, but not pronounced. - marks an affix boundary,

and = a clitic boundary.

¹¹ Tarpent (1989:466) writes that *dim* in Nisga'a indicates 'strong or definite potentiality of an event that is certain or at least intended to happen (hence the future).'

¹² These modals have variant spellings in the literature. The first is spelled *ima* by Hunt (1993) and Peterson (2010), and *(i)ma'a* by Tarpent (1984) for Nisga'a. Tarpent (1989) notes variant pronunciations depending on environment. My consultants pronounce this modal in two distinct ways: *imaa* (BS) and *ima'* (VG). I use *ima('a)* as the citation form, but in the data, I spell it according to which speaker gave the form. Historically, the form with the long vowel is probably derived from the one with the glottal stop (Henry Davis, p.c., Marie-Lucie Tarpent, p.c.).

For *gat*, the issue is not one of pronunciation but of convention, i.e. whether the author cites the form as it is pronounced (*gat*, with voicing of the uvular due to the following vowel; Tarpent 1984, 1989) or in its underlying form (*kat*; Peterson 2010). I use the surface form here.

¹³ The imperfective *yukw* is preferred when *ima('a)* is used. However, (23a) shows that epistemic modal sentences do not require *yukw*.

¹⁴ According to Marie-Lucie Tarpent (p.c.), in Nisga'a the progressive auxiliary (which I am glossing 'imperfective') is incompatible with stative verbs, and would not appear in sentences like (24). My consultants freely offer statives with *yukw*. Tyler Peterson (p.c.) also finds many cases of *yukw* with statives, especially when *ima('a)* is present. Gitksan *yukw* differs from the English progressive in its ability to freely occur with statives.

¹⁵ The spelling has been corrected here; cf. Rigsby (1986:170).

¹⁶ As with *ima('a)*, it is unclear whether *gat* can actually be semantically strengthened to a necessity-like reading (as in Peterson's analysis), or is strictly a possibility modal which is usable in a necessity context, but only in non-downward-entailing environments (as in Deal's).

¹⁷ The Nisga'a data presented in Tarpent (1984) are also consistent with the claim that epistemic future orientation is provided by the combination of *ima('a)* plus *dim*.

¹⁸ Both consultants reject the *dim*-less versions for (44-45); however they also do not prefer the versions with *dim* in these discourse contexts. For (44) they prefer paraphrases meaning 'I thought it was going to rain,' as for example in (i).

- (i) ha-'nii-good-'y ji **dim** wis
INSTR-in-heart-1SG.II IRR **FUT** rain

'I thought it was going to rain.' (VF BS)

For (45), BS's response references *ima('a)*'s evidential properties: "It's a good sentence, but it's something a mother would say if she sees that her child has rosy cheeks, like looking sick."

¹⁹ Amy Rose Deal asks (p.c.) whether this is always true. For example, what if one is listening to the news while talking? The consultant does judge (46) to be good if uttered while watching a news report about the berries' future ripeness. However, even in this case, one has probably heard the relevant part of the report before uttering (46) to a third party.

²⁰ VG translates (46) into English as 'The berries might ripen tomorrow,' which perhaps provides support for the modal analysis of the reportative.

²¹ Some glosses have been added and made consistent with the terminology used here.

²² I am setting aside cases with a future temporal perspective, since these involve pragmatically unusual meanings involving knowledge which will arise in the future. Sentences like (i) are accepted, but they are not spontaneously offered.

-
- (i) ?dim yugw=imaa dim wis
 FUT IMPF=EPIS FUT rain

‘It will look like it’s going to rain.’ (accepted BS)

²³ BS pronounces this modal as *da’akxw*. I write the longer form, *da’akhlxw*, throughout, except where an example is only from this consultant.

²⁴ According to Marie-Lucie Tarpent (p.c.), the Nisga’a cognate of *da’akhlxw* is a transitive verb, derived from the prefix *di-/da-* (which indicates deliberate action), the root *ak* (‘not to be, not to exist’), and the suffix *-hlkw* (temporary action). The use of *da’akhlxw* as an impersonal verb does not seem to have a Nisga’a equivalent.

²⁵ BS usually does not use *da’akxw* for pure circumstantial interpretations (although she volunteered (55b) below). She translates (51a) as ‘Berries are able to grow here,’ and comments “Maybe [*da’akxw*] doesn’t apply to plant life.”

²⁶ VG’s volunteered version of this sentence contains an additional modal, as in (i), but he consistently accepts (52a).

- (i) nee=dii wan=hl maa’y go’osun ii ap **sgi** dim **da’akhlxw** dim
 NEG=CNTR sit.PL=CN berries LOC.here and EMPH **CIRC.NECESS** FUT **CIRC.POSS** FUT
 limxs-t
 grow-3SG.II

‘There are no berries around here, but they should be able to grow here.’ (VF VG)

²⁷ Amy Rose Deal asks (p.c.) whether *da’akhlxw* is rejected in epistemic contexts. *Da’akhlxw* is never volunteered in such contexts, and was rejected on the one occasion it has been tried so far:

- (i) *Context: As in (60).*

da'akxw-i-s Cathy dim=t jap=hl tsiiz a=hl miilik tun
CIRC.POSS-TRA-PN Cathy FUT=3SG.I make=CN cheese LOC=CN milk DEM
‘Cathy might make cheese out of this.’ (rejected BS)

Consultant’s comment: “I didn’t have a ‘might’ in there.”

Interestingly, however, *da'akhlxw* is not predicted to be completely bad in epistemic contexts (although it is predicted to be dispreferred, due to the availability of the unambiguously epistemic *ima('a)*). Davis et al. (2009) observe that in St'át'imcets, the circumstantial modal is permitted in epistemic contexts. They argue that if something is epistemically possible, it is also circumstantially possible. So while epistemic modals are bad in purely circumstantial contexts (see (25b)), circumstantial modals may sometimes be accepted in epistemic contexts.

²⁸ Both consultants volunteered the same sentence here, with slight differences in pronunciation due to dialect.

²⁹ Thanks to Amy Rose Deal (p.c.) for suggesting this be tried.

³⁰ In Tarpent (1986a) there are three cases of the Nisga'a equivalent of *da'akhlxw* which occur without *dim* (and 11 which occur with *dim*); thanks to Marie-Lucie Tarpent (p.c.) for pointing these out to me. I have elicited the relevant sentences in Gitksan; see Appendix D for these data.

³¹ Amy Rose Deal (p.c.) asks about Kratzer's (2012) trombone case: can one say ‘I am able to play the trombone’ when one is stranded on a desert island without any trombone? Preliminary investigation for Gitksan suggests that one can; I would have to assume that it is considered possible that one might be rescued from the island.

³² *Da'akhlxw* was also volunteered by one consultant in an attempt to render a quantificational modal interpretation:

-
- (i) **da'akhlxw-i=hl** gadalee dim jakw-t-n
CIRC.POSS-TRA=CN spider FUT kill-T-2SG.II
 'A spider can kill you.' (VF VG)

The other consultant declines to use any modal in sentences of this type. In (i), we probably have an ability reading of *da'akhlxw* ('Spiders are able to kill you'), not a quantificational reading ('Some spiders kill you'). Quantificational modals raise independent issues to do with the expression of genericity, determiners, and so on, and I set them aside for future research.

³³ This verb also means 'to like', as shown by (i).

- (i) **anoog-[a]-'y=hl** maa'y
like-[TRA]-1SG.II=CN berries
 'I like berries.' (VF VG)

The 'like' meaning is common in Nisga'a (see Tarpent 1989), but less so in Gitksan; the 'like' translation is not given in Rigsby (1986) or Hindle and Rigsby (1973), and BS identifies it as coming from the Western part of Gitksan territory (closer to the Nisga'a-speaking area). I analyze this as a case of homophony, and the analysis of modal *anook* presented here is not intended to cover the 'like' meaning. The homophony analysis is supported by grammatical differences between the two verbs (see footnote 34).

³⁴ In Tarpent (1986a), all examples of *anook* with a modal meaning have *dim*, but *anook* when used to mean 'like' often does not have *dim*. (Thanks to Marie-Lucie Tarpent (p.c.) for drawing my attention to these data.) The same appears to be true in Gitksan, as seen by the absence of *dim* in the 'like' case in footnote 33. These facts support the homophony analysis of *anook*, as well as the idea that it is the modality of *anook* which is responsible for the obligatory future marking in the subordinate clause.

³⁵ The obligatory use of *dim* with *sgi* is noted by Rigsby (1986:379), who also suggests that the combination *sgidim* may have been reanalyzed as *sgit-im*. This suggestion would not account for (i) (or (90-91) below), where *sgi* is separated from *dim* by pronominal morphology:

- (i) nee=dii **sgi** mi=**dim** yo'oxs=hl no'ohl
 NEG=CNTR CIRC.NECESS 2SG.I=FUT wash=CN dishes

‘Don’t wash the dishes / You don’t have to wash the dishes.’ (VF BS, accepted VG)

³⁶ VG gives a similar sentence, but offers *siipxwhl t'imgest* (literally ‘sick head’) for ‘headache’.

³⁷ The word for ‘all’ has variable pronunciation. Hunt (1993) spells it ‘*walga*. It is not in Hindle and Rigsby (1973) or Rigsby (1986), but Bruce Rigsby (p.c.) says that it is always pronounced *gwalga* in his Eastern Gitksan data. Tarpent (1986a:357) gives the Nisga’a version as *gwilk'a*-. See Davis and van der Zwan (2011) on the pronunciation and analysis of this quantifier.

³⁸ Both consultants accept (101), but volunteer versions without double *dim*, containing either a plain future (‘You will get up early ...’), or a plain modal (‘You should get up early ...’).

³⁹ Thanks to Amy Rose Deal (p.c.) and Tonya Stebbins (p.c.) for suggesting I discuss the implications of the syntactic categories of Gitksan modals.

⁴⁰ Deal asks (p.c.) whether Gitksan possesses any regular verbs which encode circumstantial necessity, such as ‘force’ or ‘require’. The answer appears to be ‘no’; the consultants paraphrase these meanings as in (i).

- (i) *Context: You see a little boy sweeping the path and you tell him ‘You are a good worker.’*
 He replies, ‘My mother forced me to do it.’

a. ap he-s naa dim wil-'y

EMPH say-PN Mum FUT do-1SG.II

‘Mum told me to do it.’ (VF VG)

b. ap gun=wil-is noo-’y ’nii’y

EMPH CAUS=do-PN mother-1SG.II 1SG.III

‘My mother made me do it.’ (VF BS)

⁴¹ Van der Auwera and Ammann (2008) present a typology of modal systems which partially addresses the question of which languages encode modal strength, and which encode modal type. However, Matthewson (2011 to appear) argues that the categories used in this work are too vaguely and too coarsely defined, and that there are inaccuracies in the results given.

⁴² Rigsby (1986:312-313) gives examples of *dim*-sentences used to give commands, calling them ‘future declarative directives’. *Dim* is also used in this way in Nisga’a (Tarpent 1989).

⁴³ Thanks to Tonya Stebbins (p.c.) for discussion of this issue.

⁴⁴ Modals which have actuality entailments are a systematic exception to the correlation between circumstantial modality and future orientation. Under AE interpretations, the ability coincides temporally with the actual event (see Hacquard 2006, and thanks to Valentine Hacquard for discussion).

⁴⁵ Thanks to Amy Rose Deal (p.c.) for comments on the ‘*dim* as modal’ analysis.

⁴⁶ *Ji* cannot function on its own as a future marker, as shown by the contrast in (i).

(i) **dim/*ji** limx=t James t’aahlakw

FUT/*IRR sing=DM James tomorrow

‘James will sing tomorrow.’ (accepted / rejected BS)

⁴⁷ Thanks to Jason Brown (p.c.) for help with this table.

⁴⁸ VG prefers *ha'niit'aa* for 'chair'; he reserves *ha'niiwan* for 'floor' (cf. Hindle and Rigsby 1973:23).