A unified modal semantics for ‘out-of-control’ marking in St’át’imcets

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1 Introduction
The ‘out-of-control’ circumfix *ka-...-a* in St’át’imcets (Lillooet Salish) expresses an apparently disparate cluster of meanings, including “be able to”, “manage to”, “suddenly”, “accidentally”, and “non-controllable”. In this paper, we present an analysis of the semantics of this morpheme. Our proposal is that *ka-...-a* encodes circumstantial modality, and that its various meanings all reduce to either an existential (ability) or universal (involuntary action) interpretation.1

Our analysis provides support for a striking cross-linguistic difference between the St’át’imcets modal system and more familiar (primarily Indo-European) systems, which we have detailed in previous work: see Matthewson et al. (2006) and Rullmann et al. (to appear). According to standard formal semantic analyses, modals are quantifiers over possible worlds whose quantificational strength is lexically specified as, e.g., universal or existential, but differences between epistemic, deontic and other modal interpretations are derived from implicit conversational backgrounds, rather than being due to lexical ambiguity (Kratzer 1981, 1991). However, the lexical specification of St’át’imcets modals is the inverse of the standard model: differences in modal conversational backgrounds are lexically specified (as e.g., epistemic or deontic) but quantificational strength is not. The current paper extends this analysis by demonstrating that *ka-...-a* lexically encodes circumstantial modality, but does not encode differences in quantificational strength. The parallel between *ka-...-a* and other uncontroversially modal elements in St’át’imcets provides support for our modal analysis, in contrast to previous accounts (Demirdache 1997, Davis and Demirdache 2000), which treat *ka-...-a* as primarily aspectual in nature.

The structure of the paper is as follows. In section 2, we illustrate the five interpretations of *ka-...-a*. We then reduce these five interpretations to two: *ability* and *no-choice*. Section 3 presents our analysis, and Section 4 concludes.

St’át’imcets is a Northern Interior Salish language spoken in the southwestern interior of British Columbia, Canada. The language is highly endangered, with fewer than 100 first language speakers remaining. The data in this paper are drawn both from textual materials and from primary fieldwork.

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2 The St’át’ímcets marker ka-…-a

The discontinuous morpheme ka-…-a is affixal; unlike the second position clitics in the language, it remains fixed to the main predicate in clauses containing pre-predicative auxiliaries. This distinguishes it from other modals in St’át’ímcets, which are all second position clitics. This also reflects a structural difference: ka-…-a is in the c-command domain of the subject, whereas other modals are propositional operators with sentential scope.

While its distribution is generally free, ka-…-a may not co-occur with certain aspectual and transitive morphemes, most notably the directive (full control) transitive –Vn. See Davis et al. (to appear) for discussion of this restriction, which we argue is purely morphological in nature.

2.1 The interpretations of ka-…-a

There are five salient interpretations associated with ka-…-a: ability, manage-to, accidentally, suddenly, and non-controllable. We will argue that these different interpretations can be captured by a unified analysis that posits no lexical ambiguity for ka-…-a.

In this sub-section we illustrate each of the five interpretations, and in 2.2 we show that the five interpretations are reducible to two. In section 3, we will show that the two interpretations of St’át’ímcets ka-…-a correspond to existential and universal circumstantial modal uses, respectively.

2.1.1 The ability interpretation

The ability interpretation is illustrated in (1-2); it covers typical ability attributions, which in English use can or be able to. (2a-c) show ka-…-a affixed to the same root, but with three different argument/event structures. In (a), it attaches to the bare (unaccusative) root gwel ‘get burned’ (an achievement); in (b) it attaches to the active intransitive gwel-cál ‘do burning’ (an activity); and in (c) it adds to the causative transitive gwel-s ‘burn something’ (an accomplishment).³

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² See Davis (2006) and Demirdache (2007) for previous discussion. These authors claim that there are four readings; we have added the fifth ‘non-controllable’ one.

³ St’át’ímcets examples are given in the van Eijk practical orthography now in general use in St’át’ímc communities. Abbreviations are as follows: ACT = active intransitivizer, ADD = additive, ADHORT = adhortative, AUT = autonomous intransitivizer, CAUS = causative transitive, CIRC = circumstantial modal, COMP = complementizer, CONJ = conjunctive (subjunctive) subject, COUNTER = counterfactual, DEM = demonstrative, DET = determiner, DIR = directive transitive, EPIS = epistemic, ERG = ergative (transitive) subject, EXIS = existential, FOC = focus, FUT = future, IMPF = imperfective, INCH = inchoative, IND = indirective transitive, IRR = irrealis, LOC = locative, MID = middle intransitivizer, NEG = negation, NOM = nominalizer, OBJ = object, PASS = passive, PL = plural, POSS = possessive, RED = redirective (relational) transitive, SG = singular, STA = stative, SUBJ = (indicative) subject, TOP = topic maintenance marker, YNQ = yes-no question. A dash (-) marks an affix boundary and an equals sign (=) a clitic boundary.
1. a. cúy’=lhkacw=ha  ka-cwák-a  lh=ma7g’úlm’ecw=as
going.to=1SG.SUBJ=YNQ  CIRC-wake-CIRC  COMP=daybreak=3CONJ
‘Are you going to be able to wake up at dawn?’ (Davis 2006)

b. wá7=lhkan  ka-cát-s-a  ta=k’ét’h=a
IMPF=1SG.SUBJ  CIRC-lift-CAUS-CIRC  DET=rock-EXIS
‘I can lift the rock.’

2. a. cw7aoz  k=wa=s  ka-gwél-a  i=nesnús=a
NEG  DET(NOM)=IMPF=3POSS  CIRC-burn-CIRC  PL.DET=damp=EXIS
sp’ams
firewood
‘The damp firewood can’t be burned.’

b. lh=as  pipántsek,  cw7aoz  kwelhkálh
COMP=(IMPF)3CONJ  summer  NEG  DET+NOM+IMPF+1PL.POSS
ka-gwél-cal-a,  nilh  t=s=k’ac-7úl=s=a
CIRC-burn-a-ACT-CIRC  FOC  DET=NOM=dry-real=3POSS=EXIS
ta=tmiçw=a
DEF=land=EXIS
‘We can’t burn in the summer because the land is too dry.’

c. cw7aoz  kw=s=ka-gwél-s-tum’-a  i=sp’áms=a
NEG  DET=NOM=CIRC-CAUS-1PL.ERG-CIRC  PL.DET=firewood=EXIS
‘We can’t get the firewood to burn.’

2.1.2 The manage-to interpretation
The manage-to interpretation is illustrated in (3).

(3) a. ka-gwél-s=kan-a
CIRC-burn-CAUS=1SG.SUBJ-CIRC
‘I managed to get it lit.’ (van Eijk 1997:51)

b. ka-cwák-s=kan-a  na=wá7  xúq’wleqs
CIRC-wake-CAUS=1SG.SUBJ-CIRC  DET=IMPF  snore
n-snúk’wa7
1SG.POSS-friend
‘I managed to wake up my snoring friend.’ (Davis 2006)

c. ka-t’ál-a=ha  ta=káoh-sw=a  l=ta=kwézkwzem=a
CIRC-stop-CIRC=YNQ  DET=car-2SG.POSS=EXIS  on=DET=smooth=EXIS
s7ao7t
ice
‘Did your car manage to stop on the slippery ice?’ (Davis 2006)
d. qwenúxw=kan inátcwas, t’u7 ka-tsunam’-cal=lhkán-a=t’u7 
sick=1SG.SUBJ yesterday but CIRC-teach-ACT=1SG.SUBJ-CIRC=ADD 
‘I was sick yesterday, but I still managed to teach.’ (Davis 2006)

2.1.3 The accidentally interpretation
The examples in (4) illustrate the accidentally interpretation.

(4) a. ka-gwél-s=kan-a ta=ngúy’tten=a
    CIRC-burn-CAUS=1SG.SUBJ-CIRC DET=bed=EXIS
    ‘I accidentally set my bed on fire.’ (Davis 2006)

b. ka-mul-aká7=lhkan-a l=ta=slhúm’=a
    CIRC-dip-hand=1SG.SUBJ-CIRC in=DET=soup=EXIS
    ‘I dipped my hand in the soup by accident.’ (Davis 2006)

c. ka-sék’w-s-as-a ta=nk’wanústen’=a ta=twéww’et=a
    CIRC-break-CAUS-3ERG-CIRC DET=window=EXIS DET=boy=EXIS
    ‘The boy broke the window accidentally.’ (Davis 2006)

d. ka-nk’méq’w=lhkan-a aylh
    CIRC-immers=1SG.SUBJ-CIRC
    l=ti=n-gwáts’-cal-ten=a
    in=DET=LOC-irrigate-ACT-thing=EXIS
    ‘I fell into the ditch.’ (Matthewson 2005:158)

2.1.4 The suddenly interpretation
The suddenly reading is shown in (5).

(5) a. ka-lhexw-min-ts=kácw-a
    CIRC-come.up-RED-1SG.OBJ=2SG.SUBJ-CIRC
    ‘You came up to me all of a sudden.’ (Alexander et al. 2006)

b. nilh s=cuy’=s ka-tigw-a i=tintin=a kentákem
    FOC NOM=start=3POSS CIRC-ring-CIRCPL.DET=bell=EXIS everywhere
    ‘And suddenly bells started ringing everywhere.’ (Matthewson 2005: 454)

c. qwaqwx-mín=lhkan ta=scwelálhp=a,
    nightmare-RED=1SG.SUBJ DET=ghost=EXIS
    ka-cwák=kan-a aylh
    CIRC-wake=1SG.SUBJ-CIRC then
    ‘I had a nightmare about a ghost, then I woke up suddenly.’ (Davis 2006)
2.1.5 The non-controllable interpretation

The non-controllable interpretation arises with unaccusative predicates, including weather verbs (6a-b), verbs of appearance (6b-c), and change-of-state verbs (6d).

(6) a. ka-t’ál-a ta=sk’éxem=a, kekáw’ kent7ú ku=szénk
     CIRC-stop-CIRC DET=wind=EXIS far around DET=circle
     ‘The wind stopped blowing, far around that circle.’ (Davis 2006)

b. ka-lhéxw-a ta=snéqwem=a
     CIRC-come.up-CIRC DET=sun=EXIS
     ‘The sun came out.’ (Davis 2006)

c. lts7a sek’wel’wás=a lh=tákem=at ka-hál’h-a
     here Cayoose.Creek=EXIS COMP=all=1PL.CONJ CIRC-show-CIRC
     ‘We were all born here at Cayoose Creek.’ (Matthewson 2005:96)

d. ka-lhót-a aylh i=s7áy’tsqw=a nilh
     CIRC-get.squished-CIRC then PL.DET=raspberry=EXIS FOC
     ka-téqw=s-a ti=n-tsq-ús-tn=a
     CIRC-dent=3POSS-CIRC DET=LOC-put.down-face-thing=EXIS
     ‘The raspberries got squished and the pot got dented.’ (Matthewson 2005:73)

Predicates with an external argument, including those with a natural force or other inanimate entity as subject, fail to yield a non-controllable interpretation with *ka-....-a*. Instead, these predicates get only ability and/or accidental interpretations. With inanimate subjects, such interpretations are incongruous, as shown in (7), since inanimate entities cannot generally be ascribed abilities or perform accidental actions. For transitive sentences with inanimate subjects and non-controllable meanings, speakers volunteer plain causatives without *ka-....-a*. We discuss this restriction in detail in Davis et al. (to appear).

(7)#ka-tayt-s-tumulh-ás-a ta=wá7 q’wel sts’úqwaz’
     CIRC-hungry-CAUS-1PL.OBJ-3ERG-CIRC DET=IMPF cooked fish
     ‘The cooked fish managed to/acidentally made us hungry.’
Some predicates with a non-controllable interpretation show free variation between the *ka-...-a* version and a bare root intransitive, as in (8). In these cases, there is no detectable difference in meaning between the two forms.

(8) lan wa7 (*ka-*)kwís(-a) i=pétskelh-ts-a
already IMPF (*CIRC-*)fall(-*CIRC*) PL.DET=leaf-3POSS=EXIS
i=sráp-a
PL.DET=tree=EXIS
‘The leaves have already fallen from the trees.’

In fact, some non-controllable predicates denoting changes of state have been lexicalized so that they only occur with *ka-...-a*, as shown in (9), while others have been lexicalized so that they fail to occur with *ka-...-a* altogether, as in (10).

(9) a. xwém=t’u7 kw=s=ka-t’ép=s-a
fast=ADD DET=NOM=*CIRC-*get.dark=3POSS-*CIRC*
‘It got dark fast.’

   b.* xwém=t’u7 kw=s=t’ep=s
fast=ADD DET=NOM=get.dark=3POSS
‘It got dark fast.’

(10) a.* xwém=t’u7 kw=s=ka-máqa7=s-a
fast=ADD DET=NOM=*CIRC=*snow=3POSS-*CIRC*
‘It suddenly snowed.’

   b. xwém=t’u7 kw=s=máqa7=s
fast DET=NOM=snow=3POSS
‘It suddenly snowed.’

We believe that the variation associated with the non-controllable interpretation of *ka-...-a* comes about because of the close relationship between universal circumstantial interpretations of eventive predicates and plain event descriptions; in many cases, there are no detectable truth-conditional differences between the two, leading to free variation and apparently arbitrary lexicalization of forms with and without *ka-...-a*.

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4 Or between the *ka-...-a* version and a form containing the inchoative infix -7-, or C2 (‘out of control’) reduplication. See Davis et al. (to appear) for data.

5 There is considerable speaker variation as to the acceptability of non-controllable predicates with and without *ka-...-a*. One of our speakers rejected (8a), for example, while another found it fine.

6 Again, there is speaker variation here. One of our consultants accepts *ka-máq7-a*, while another rejects it.
Apart from these restrictions, there are other more straightforwardly pragmatic restrictions on which interpretations appear with which predicates. For example, it is difficult to accidentally become a chief, but it makes sense to talk about whether one is able to become a chief. Conversely, it is not usual to talk about the sun being able to come up. Nevertheless, many predicates allow multiple interpretations, depending on the context. For example, (4c) above, The boy broke the window accidentally, can also mean The boy managed to break the window, given an appropriate discourse context.

In the next sub-section we begin the process of unifying the various interpretations of ka-…-a.

2.2 Unifying the interpretations

2.2.1 Manage-to = ability

Davis (2006) (following a suggestion by Demirdache 1997) shows that the manage-to reading of predicates with ka-…-a, unlike the English implicative verb manage, lacks an actuality entailment. As argued by Karttunen (1971) and Karttunen and Peters (1979), a sentence containing manage asserts that an event took place, and conventionally implicates that there was some difficulty involved:

(11) John managed to sit through the Chinese opera.
   a. Assertion: John sat through the Chinese opera.

As predicted by this analysis, the assertion does not project when manage is in the scope of negation while the conventional implicature does. Thus, the truth of (12) entails the falsity of (11a), but not of (11b):

(12) John didn’t manage to sit through the Chinese opera.

In contrast with manage, the past tense of an ability attribution does not carry an actuality entailment. Thus, (13a) is a contradiction, but (13b) is not.

(13)a. #I managed to teach yesterday, but I didn’t.
   b. I was able to teach yesterday, but I didn’t.

With St’át’imcets ka-…-a, there is no actuality entailment. Instead, the understanding that the event happened is only a cancelable conversational implicature. This is shown in (14-15). (14a) yields a typical manage-to interpretation; (14b) uses the same predicate and shows that there is no contradiction when the event is asserted not to have taken place.

(14)a. qwénúxw=kan i=nátcw=as, t’u7
     sick=1SG.SUBJ when.PAST=day=3CONJ but
"I was sick yesterday, but I still managed to teach." (Davis 2006)

b. qwenúxw=kan i=nátcw=as, sick=1SG.SUBJ when.PAST=day=3CONJ
ka-tsunam’-cal=lhkán-a=ka, t’u7 cw7áoy=t’u7
CIRC-teach-Act=1SG.Subj-CIRC=IRR but NEG=ADD
‘I was sick yesterday. I could have taught, but I didn’t.’ (Davis 2006)

(15) Context (given in St’àt’imcets): I was sick. I had a sore throat, so I couldn’t swallow anything. Then I began to get better.

ka-q’ém-s=kan-a aylh n-kál’wat=a, CIRC-swallow-CAUS=1SG.SUBJ-CIRC then 1SG.POSS-medicine=EXIS
t’u7 cw7áoz=t’u7 múta7 kw=en=s=xát’-min’,
but NEG=ADD again DET=1SG.POSS=NOM=want-RED
nilh s=7ús-ts-an FOC NOM=throw.out–CAUS=1SG.ERG
‘I was able to swallow my medicine, but I didn’t want it any more, so I threw it out.’

These data indicate that what we have been calling the manage-to interpretation does not carry an actuality entailment, but an actuality implicature which arises in a past episodic context.7 We thus follow Davis (2006) in arguing that the ability and manage-to interpretations are reducible to the ability reading.8

7 St’àt’imcets does not encode a past / present tense distinction. Imperfective aspect is overtly marked by the auxiliary wa7, but perfective aspect is unmarked: therefore, crucially, the sentences in (14-15) are perfective. See Matthewson (2006) for analysis of the St’àt’imcets temporal system.
8 The St’àt’imcets data contrast with Bhatt’s (1999) and Hacquard’s (2006) findings for perfective ability attributions in Modern Greek, Hindi, French and Italian. Bhatt and Hacquard show that in these Indo-European languages, ability attributions with perfective aspect have actuality entailments. Furthermore, Mills (2005:27) reports that in Tagalog, an imperfective form with the ability / involuntary action (AIA) morpheme (the Austronesian analogue of ka-…-a) gives only an ability reading, while a perfective form gives either a manage-to or an involuntary action reading, as shown in (i-ii):

(i) nakakain ko ang lamok AIA.IMPF.eat 1SG.case NOM mosquito
‘I am able to eat the mosquito.’
(ii) nakain ko ang lamok AIA.PERF.eat 1SG.case NOM mosquito
‘I managed to eat / accidentally ate the mosquito.’

Furthermore, as explicitly stated by Kroeger (1993:81), the perfective manage-to reading of AIA forms in Tagalog has an actuality entailment, as in Indo-European, not an implicature, as in St’àt’imcets. Travis (2000:180-181) makes the same claim for parallel cases in Malagasy. Obviously, this difference invites further cross-linguistic research.
2.2.2 Accidentally = suddenly = non-controllable = ‘no choice’

Davis (2006) argues that the accidentally and the suddenly interpretations of ka-...-a are also reducible to a single reading. The basic intuition is that events that are accidents often happen suddenly, and vice versa. In contrast to Davis (2006), however, we will provide evidence that the accidental rather than the suddenly interpretation is the key to this unified reading, which we will call ‘no-choice’.

Evidence that the accidental (= lack of choice) aspect of meaning is basic comes from the fact that the suddenly aspect is cancelable, but the accidental aspect is not. In other words, ka-...-a never yields a deliberate-but-sudden reading, only an accidental (and possibly, but not necessarily, sudden) one. This is shown in (16-17), where a deliberate sudden action does not license ka-...-a.

(16) Situation: I wanted to do something funny for my kids so I was standing there perfectly still and then suddenly I stuck my tongue out.

# ka-taolhao7-cít=kan-a  i=sk’wemk’úk’wmi7t=a  
circ-tongue-IND=1SG.SUBJ-circ  pl.det=children=exis
‘I suddenly stuck my tongue out at the children.’

Consultant’s comment: ‘That would mean you didn’t mean to do it but you did.’

(17) Situation: We were sitting in a meeting when suddenly John stood up and ran from the room.

a. * ka-tálh-lec-a  kw=s=John,  nilh  s=qwatsáts=s  
circ-stand-a  det=nom=John  foc  nom=leave=3poss  
q’ílhil
run
‘John stood up suddenly, and ran out of the room.’

b. lep  kw=s=tálh-lec=s  s=John,  nilh  
suddenly  det=nom=stand-a  3poss  nom=John  foc  
s=q’ílhil=s  úts’qa7  lhél=ta=s-gáw’p=a  
nom=run=3poss  outside  from=det=nom-meet=exis  
‘John stood up suddenly, and ran out of the meeting.’

On the other hand, (18-19) show that it is possible to obtain an accidentally-but-not-suddenly reading for ka-...-a.

(18) Situation: You were sitting in court being on the jury and you were not supposed to stand up until it’s time to go. But you were trying to get something out of your pocket and your pocket was really tight and you had to wiggle and squirm and eventually you found that you had stood
up by accident while you were trying to get that thing out of your pocket.

\[ka\text{-}talh\text{-}lec=\text{kán}\text{-}a, \quad \text{nílh=t’u7 \ múta7} \\]
\[CIRC\text{-}stand\text{-}\text{AUT}=1SG\text{.}\text{SUBJ}\text{-}CIRC \quad \text{then=}\text{ADD again} \]
\[n=s=xwem \quad \text{mitsa7q} \quad 1SG\text{.}\text{POSS=}\text{NOM=}\text{quick} \quad \text{sit} \]
\[\text{‘I stood up by mistake, so I quickly sat down again.’} \]

(19) \quad \text{Situation: You’re playing a game where you draw with a blindfold on and then look and see how your drawing came out. When you take your blindfold off, you discover that you have accidentally written your name.}

\[ka\text{-}mets-s=\text{kán}\text{-}a=k’a \quad \text{ti=n-skwátsits=a} \quad CIRC\text{-}write\text{-}\text{CAUS}=1SG\text{.}\text{SUBJ}\text{-}CIRC=\text{EPIS} \quad \text{DET=}1SG\text{.}\text{POSS=}\text{name=}\text{EXIS} \]
\[\text{‘I drew my name by accident.’} \]

These data suggest that it is the accidentalness that is basic, and that the suddenly effect is a cancelable implicature.

Once we have unified the accidentally with the suddenly interpretation, it is a small step to observe that the non-controllable cases share a fundamentally similar semantics. The core idea is that there is a lack of choice or control. In the accidentally cases, this is because an agent who could potentially be in control of the event is not actually in control; in the non-controllable cases, there was never any agent who is even potentially in charge. Note that just like the accidentally cases, the non-controllable cases often implicate suddenness, but they need not:

(20)a. \[\text{skenkín=t’u7 kw=s=ka-t’ép=s-a} \quad \text{slow=}\text{ADD} \quad \text{DET=}\text{NOM=}CIRC\text{-}dark=3POSS\text{-}CIRC \]
\[\text{‘It gradually got dark.’} \]

b. \[\text{t’ák=t’u7} \quad \text{ka-mág-a,} \quad \text{ka-mág-a} \quad \text{aylh} \quad \text{go.along=}\text{ADD} \quad \text{CIRC=}\text{get.light}\text{-}CIRC \quad \text{CIRC=}\text{get.light}\text{-}CIRC \quad \text{then} \]
\[\text{‘It got light gradually.’} \]

We conclude that the core meaning of all the non-ability-related interpretations of \(ka\text{-}\ldots\text{-}a\) is that something happened without the choice of any agent. The implicature of suddenness derives from the fact that accidents usually – but not necessarily – happen all of a sudden.

One further point is worth making here, namely that the no-choice reading of \(ka\text{-}\ldots\text{-}a\) lacks an actuality entailment, just like the ability reading. It is more difficult to show this for the no-choice interpretation, since when an event has to
happen, in the normal course of events, it does happen. So we need to find an 
abnormal course of events to demonstrate the cancelability of the actuality:

(21)  Context (given in St’át’imcets): Gillian had a very bad cold yesterday. 
      Her nose was really plugged up. 
      kens-q’á7 ku=t’ec szaq’ t’u7 ka-nsnán7-a
      try-eat DET=sweet bread but CIRC-sneeze-CIRC
      ‘She started to eat some sweet bread, but she had to sneeze.’

      Conclusion (given in St’át’imcets): ‘But then her house exploded and 
      she died.’
      Interviewer: She never got to eat her sweet bread and she never got to 
      sneeze? Consultant: Right.

We see here that the actuality of the sneezing event is cancelable, when events 
take an unexpected course. This shows that the no-choice reading of ka-....-a 
shares fundamental properties with the ability reading, suggesting that even these 
two apparently quite dissimilar interpretations should ultimately be unified. This 
is the task to which we turn in the next section.

3  Ka-....-a as a circumstantial modal
We begin this section by briefly summarizing both standard analyses of 
circumstantial modals, and our own previous work on modals in St’át’imcets 
(Matthewson et al. 2006, Rullmann et al. to appear). We show in 3.2 that the 
ability interpretation of ka-....-a displays the range of meanings which are 
predicted for an existential circumstantial modal, and in 3.3 that the no-choice 
interpretation displays the range of meanings which are predicted for a universal 
circumstantial modal to have. In 3.4 we present the formal analysis.

3.1 Quantificational strength and conversational background: 
modals in English and St’át’imcets
We start from the standard view that modals are quantifiers over possible worlds. 
For example, must and should are universal quantifiers whereas can, could, and 
might are existential quantifiers. As is well known, English modals can have 
many different readings, including deontic, epistemic, and circumstantial. To 
account for this, Kratzer (1977, 1981, 1991) argues that the discourse context 
provides a conversational background for the modal. The conversational 
background consists of two components: the modal base and the ordering source. 
The modal base is a function which maps each world onto the set of worlds that 
are accessible from it. In any given world, the modal only quantifies over these 
accessible worlds. The ordering source ranks worlds in some contextually-

9 In forthcoming work, Nauze (in prep.) also claims that ka-....-a is a circumstantial modal.
determined way and further restricts the domain of quantification of the modal to worlds at one end of the ranking.

Circumstantial modals have a circumstantial modal base and a stereotypical ordering source. Circumstantial modality is concerned with what is possible or necessary given certain facts about the world. So, a circumstantial conversational background picks out a set of worlds in which certain facts hold that obtain in the actual world. Kratzer’s (1991) example illustrating the contrast between epistemic and circumstantial modality is (22), with her explanation below.

(22)a. Hydrangeas can grow here. CIRCUMSTANTIAL
   b. There might be hydrangeas growing here. EPISTEMIC

Suppose I acquire a piece of land in a far away country and discover that soil and climate are very much like at home, where hydrangeas prosper everywhere. Since hydrangeas are my favorite plants, I wonder whether they would grow in this place and inquire about it. The answer is [22a]. In such a situation, the proposition expressed by [22a] is true. It is true regardless of whether it is or isn’t likely that there are already hydrangeas in the country we are considering. All that matters is climate, soil, the special properties of hydrangeas, and the like. Suppose now that the country we are in has never had any contacts whatsoever with Asia or America, and the vegetation is altogether different from ours. Given this evidence, my utterance of [22b] would express a false proposition. What counts here is the complete evidence available. And this evidence is not compatible with the existence of hydrangeas (Kratzer 1991:646).

In the literature, various subtypes of circumstantial modality have been distinguished. Ability attributions are usually analyzed as existential circumstantial modals (e.g., Kratzer 1991, Hackl 1998, but see Bhatt 1999 for a different analysis). However, existential circumstantials need not ascribe abilities per se. Thus, in (22a) we would not say that hydrangeas “have the ability” to grow here. Many authors make a distinction between “dispositional” readings, whose interpretation is dependent on the subject’s abilities, desires, or dispositions, and pure circumstantials, which are not relativized to a subject. This distinction is further illustrated in (23). Below, we will refer to the pure circumstantial reading as the *impersonal* reading and the dispositional reading as the *personal* reading.

(23)a. Sally can swim (she is able to). DISPOSITIONAL
   b. Sally can come along (the car fits five). PURE (Lechner 2005:2)

So far we have only discussed circumstantial modals with existential force. Examples of universal circumstantial modals are given in (24).
(24)a. Jockl must sneeze (in view of the present state of his nose, etc.).
(Kratzer 1991)
b. Jockl had to sneeze.

(24a) asserts that in all worlds in which the actual state of Jockl’s nose, Jockl’s respiratory tract, and the atmospheric conditions hold, Jockl sneezes. In other words, Jockl has no choice but to sneeze. We will show below that St’át’imcets \textit{ka-...-a} also has this kind of use.

Note that in both languages, universal circumstantial modals are relatively rare. Even in situations where the facts force something to happen, future modals are usually preferred (e.g., \textit{The bomb will / is going to / * must explode at 6pm.}). We return to this issue in 3.3.

3.2 The ability reading of \textit{ka-...-a} as an existential circumstantial

We have reduced the five interpretations associated with \textit{ka-...-a} to two: ability and no-choice. Now, we take a closer look at the type of interpretations subsumed under ability, to convince ourselves that we are dealing with an existential circumstantial modal. Firstly, we see \textit{ka-...-a} used for core cases of ability attributions, as in (25-26), which - as discussed above - are often translated as ‘managed to’.

(25) wa7 xíl-em=wit ets7á kw=s=zwat-en-ítas
IMPF do-MID=3PL this DET=NOM=know-DIR-3PL.ERG
swát=as ku=wá7 ka-xilh tal’i-ha ku=xwém
who=3CONJ DET=IMPF CIRC-do(CAUS)-TOP-CIRC DET=fast
‘They did that to see who could do it the fastest.’ (Matthewson 2005:88)

(26) nilh (s-)sek-qw-án’-ítas, aylh ka-zuqw-s-twítas-a
FOC NOM-hit-head-DIR-3PL.ERG then CIRC-die-CAUS-3PL.ERG-CIRC
‘…so they hit them on the head and managed to kill them.’ (Matthewson 2005:144)

The ability interpretations fall squarely into the personal sub-type of circumstantial modality. \textit{ka-...-a} also has impersonal readings, as in (27-28). The meaning of (27), for example, relies only on the facts and circumstances of the background, namely how big the bags were.

(27) í7ez’ kw=s=zwum=s kw=s=ka-k’úl’-a
enough DET=NOM=big=3POSS DET=NOM=CIRC-make-CIRC
ku=nkúp-s ku=pápla7 xzum úcwlmcw
DET=mattress-3POSS DET=one big person
‘They [the bags] were big enough that they could be made into a mattress for one big person.’ (Matthewson 2005:75)
(28)  t’ai’em’kst úcwalmicw wa7 ka-nlhám’-a  l=ti=káoh=a
six person IMPF CIRC-LOC-put.in-CIRC in=DET=car=EXIS
‘Six people can fit in that car.’

We also see ka-….a used with St’át’imcets counterparts to Kratzer’s circumstantial hydrangea example, as in (29-30). (30) shows that it is not contradictory to assert that no Douglas-firs are growing here, while at the same time asserting that it is circumstantially possible that they can grow here.

(29)  Situation: The soil and climate are right, but the speaker knows no sagebrush actually grows here.

wa7  ka-ríp-a  ku=káwkew  kents7á
IMPF  CIRC-grow-CIRC  DET=sagebrush around.here
‘Sagebrush can grow around here.’

Consultant’s comment: “If somebody brought some seeds it would grow here – it’s just a possibility it would grow here.”

(30)  cw7aoz ku=wá7  srap-7úl  lts7a,  t’ú7  wa7  ka-ríp-a  lts7a
NEG  DET=IMPF  tree-real.here  but  IMPF  CIRC-grow-CIRC  here
‘There are no Douglas-firs around here, but they can grow here.’

For comparison, (31) shows the epistemic half of the hydrangeas minimal pair. The consultant volunteers the epistemic modal =k’a instead of ka-….a here.

(31)  Situation: Not only are the climate and soil right, but you have reason to believe it’s actually possible there is some sagebrush growing here.

wá7=k’a  kents7á  sxek  ku=káwkew
be=EPIS  around.here  maybe  DET=sagebrush
‘Sagebrush might be growing around here.’

Sentence (31) is not accepted in the (29) situation. This reflects the status of =k’a as an unambiguously epistemic modal (see Matthewson et al. 2006 for analysis).

The data in this section lead us to conclude that ka-….a is used in all contexts that license existential circumstantial interpretations.

3.4 The no-choice reading of ka-….a as a universal circumstantial
The range of uses of the no-choice reading are those predicted by the claim that ka-….a has a universal circumstantial interpretation. Recall that the no-choice reading covers cases which translate into English as accidentally or suddenly, as well as non-controllable cases. In section 2.2 we argued that what these readings have in common is a lack of choice on the part of the subject. The central idea is
that if an event happens without any choice, then all the facts of the world conspire to make that event inevitable. The semantics of no-choice thus correlates with the semantics of universal circumstantial as discussed by Kratzer (1991).

### 3.4.1 Universal circumstantial and the future

In this subsection we deal with a potential problem with the claim that the no-choice interpretation of *ka-..-a* corresponds to a universal circumstantial. When speakers of St’át’imcets are given translations of English sentences containing universal modals with a circumstantial interpretation, they sometimes do not accept *ka-..-a*, as shown in (32). Instead, they offer equivalents with a plain future auxiliary or enclitic, as in (33).

(32) Context (given in St’át’imcets): Gertie has a bad cold. Her nose is really plugged up.

# ka-nsnán7-a
  CIRC-sneeze-CIRC
= ‘She can sneeze.’
≠ ‘She must sneeze.’

(33)  cuz’ nsnána7 kw=s=Gertie
going.to sneeze DET=NOM=Gertie
  ‘Gertie is gonna sneeze.’

We think that what is going on here is that with eventive predicates, a universal circumstantial is very similar to a future meaning. What does it mean for Gertie to sneeze in every possible world consistent with the relevant facts? It means she is going to sneeze. Note that futures have circumstantial modal bases; they thus quantify over the same kinds of modal bases as plain circumstantials do. Futures and plain circumstantials also share a stereotypical ordering source (cf. Kratzer 1991, Copley 2002). In both *Gertie has to sneeze* and *Gertie is going to sneeze*, we quantify over all worlds where the actual world facts about Gertie’s nose hold, and in which the normal course of events takes place. (For example, we do not in either case consider worlds where, one millisecond after the utterance, a nuclear attack takes place and Gertie is vapourized.)

We thus propose that the absence of *ka-..-a* in sentences like (33) is not due to the absence of a universal circumstantial reading for *ka-..-a*, but instead reflects a temporal issue with eventive predicates. Either Gertie is already sneezing (in which case a simple present tense (imperfective) form will be used), or she is not sneezing yet but she has to sneeze. In the latter case, it follows that she is going to sneeze, and speakers prefer to use an explicit future. Of course, this does not explain the difference between St’át’imcets, where a future is required in these cases, and English, where it is not. However, the universal
The circumstantial use of *must* is very restricted in English as well, being often absent when its truth conditions would be satisfied.

The idea that the problem with (33) is basically temporal, rather than reflecting the absence of a universal circumstantial reading, is confirmed by the finding that when we put the same situation into the past, we do get *ka-…-a*, as in (34-35).

(34)  
*Context (given in St’át’imcets): Gertie had a bad cold yesterday. Her nose was really plugged up.*

\[
\begin{align*}
\text{kens-7ilhen} & \quad \text{ku=t’éc} \quad \text{szaq’, t’u7} \quad \text{ka-nsnán7-a} \\
\text{try-eat} & \quad \text{DET=sweet} \quad \text{bread but} \quad \text{CIRC-sneeze-CIRC} \\
\text{‘She wanted to eat a cookie, but she suddenly had to sneeze.’}
\end{align*}
\]

(35)  
\[
\begin{align*}
\text{ka-wat’k’}=\text{kán-a} & \quad \text{i=ts’áqw-an’-an} \\
\text{CIRC-vomit=1SG.SUBJ-CIRC} & \quad \text{when.PAST=eat-DIR-1SG.ERG} \\
\text{ti=qvl-wíil} & \quad \text{ts’úqwaz’} \\
\text{DET=bad-become=EXIS} & \quad \text{fish} \\
\text{‘I had to throw up after eating that rotten fish.’}
\end{align*}
\]

Further confirmation is provided by (present) habitual contexts, where, again, there is no interference from the future, and the universal circumstantial interpretation surfaces:

(36)  
\[
\begin{align*}
\text{kán=t’u7} & \quad \text{ka-q’sán’k-a} \quad \text{lh-en} \quad \text{qan’ím-ens} \\
1SG.SUBJ=ADD & \quad \text{CIRC-laugh-CIRC} \quad \text{COMP=(IMPF)=3CONJ hear-DIR} \\
\text{k=Henry} & \quad \text{kens-7ucwalmícw-ts} \\
\text{DET=Henry} & \quad \text{try-Indian-mouth} \\
\text{‘I have to laugh when I hear Henry try to speak Indian.’}
\end{align*}
\]

### 3.4.2 Circumstantial imperatives with *ka-…-a*

Before turning to the formal implementation of our analysis, we would like to bring one more set of facts to light, which support our view of *ka-…-a* as a circumstantial modal. These involve a previously unexplained use of *ka-…-a* on imperatives. Examples are given in (37).

(37)a.  
\[
\begin{align*}
\text{ka-xék-a}=\text{malh!} \\
\text{CIRC-be.ruled-CIRC}=\text{ADHORT} \\
\text{‘You better behave!’ (Davis 2006)}
\end{align*}
\]

b.  
\[
\begin{align*}
\text{ka-t’íl-a} & \quad \text{látí7, kwís=kacw=kelh} \\
\text{CIRC-be.still-CIRC} & \quad \text{there fall=2SG.SUBJ=FUT} \\
\text{‘Stay still there, or you will fall.’ (Davis 2006)}
\end{align*}
\]
Imperatives with *ka-...-a* are used when the speaker wishes to express a particularly forceful command or admonition. We suggest that this is because *ka-...-a* in these cases is being used as a universal circumstantial – essentially, giving the addressee “no choice” as to what to do. (In contrast, the deontic/irrealis modal =*ka* ‘should, would’ has weaker force than an ordinary imperative, and is used to express a less forceful injunction.) The imperative use of circumstantial modality is thus an implicature, similar to that which holds with the (future) circumstantial modal in English, as in *You will go to bed this instant!*

The imperative use of *ka-...-a* is striking because alternative accounts (either based on an aspectual analysis, or taking “control” to be an irreducible primitive) either have nothing to say about it, or must produce ad-hoc extensions to account for it. In contrast, on the modal analysis, the imperative use falls out naturally.

### 3.5 Unifying the existential and universal interpretations

We have now reduced the set of available interpretations of *ka-...-a* to two, as summarized in the table in (38).

<table>
<thead>
<tr>
<th></th>
<th>existential = ability</th>
<th>universal = no-choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>able to</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>manage to</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>accidentally</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>suddenly</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>non-controllable</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>imperative</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

As a first pass, we give separate representations of the existential and universal interpretations of *ka-...-a* in (39-40). We are leaving the ordering source out of the truth conditions for simplicity.

\[
[[ka-...-a_E]]^c \text{ is only defined if } c \text{ provides a circumstantial modal base } B \text{ and a stereotypical ordering source.}
\]

\[
\text{If defined, } [[ka-...-a_E]]^c = \lambda P_{<e,<s,t>} . \lambda x.\lambda w. \exists w'[w' \in B(w) \land P(x)(w)]
\]

---

10 Unlike other modals in St’át’imcets, *ka-...-a* attaches to the predicate, and therefore does not take scope over the entire proposition. Furthermore, as we discuss in Davis et al. (to appear), it is sensitive to properties of the external argument. We therefore assume that it takes the predicate and its external argument to produce a proposition, i.e., it is of type \(<e, <s, t>>, <e, <s, t>>\).
(40) \([ka-\ldots-a]c\) is only defined if \(c\) provides a circumstantial modal base \(B\) and a stereotypical ordering source. If defined, \([ka-\ldots-a]c = \lambda P_{<e,\langle s,p\rangle,\lambda x,\lambda w. \forall w'[w' \in B(w) \Rightarrow P(x)(w)\]}

The question now arises as to whether a further unification is possible. In Rullmann et al. (to appear) we provide a unified formal analysis of the (apparent) quantificational variability of other modals in St’át’ímcets. The analysis (inspired by previous work by Klinedinst 2005) involves a choice function over possible worlds. This choice function selects a subset of \(B(w)\) (the set of worlds that are accessible from \(w\)). We obtain the existential versus universal uses by varying the size of the set of accessible worlds which are considered. If the entire set of accessible worlds constitutes the restrictor of the modal quantifier, the interpretation ends up equivalent to a universal modal. If a proper subset of accessible worlds makes up the restrictor of the modal quantifier, the interpretation is weakened to that of an existential modal. The basic schema is adapted in (41) for \(ka-\ldots-a\).

(41) \([ka-\ldots-a]c\) is only defined if \(c\) provides a circumstantial modal base \(B\) and a stereotypical ordering source. If defined, \([ka-\ldots-a]c = \lambda P_{<e,\langle s,p\rangle,\lambda x,\lambda w. \forall w'[w' \in f_x(B(w)) \Rightarrow P(x)(w')\]}

In this analysis, the choice function \(f\) is relativized to the subject argument \(x\). This reflects the fact that the choice of subset of possible worlds in the modal base may depend on certain properties (dispositions, abilities, and desires) of the subject. In other words, (41) captures what we have called the personal reading of \(ka-\ldots-a\). Space prevents us extending the analysis to the impersonal reading here; see Davis et al. (to appear) for discussion.

4 Conclusion

In this paper, we have offered a reanalysis of the St’át’ímcets “out of control” circumfix \(ka-\ldots-a\) as a circumstantial modal, in contrast to previous approaches, which have either treated it as part of a sui generis “control system”, or as an aspectual operator.

In doing so, we have also provided support for a striking generalization (reported on in Matthewson et al. 2006, Rullmann et al. 2007) which distinguishes the St’át’ímcets modal system from its counterparts in English and other familiar languages. English modals are lexically distinguished by quantificational force (existential versus universal) but are unselective with respect to the modal base. In contrast, St’át’ímcets modals show the opposite profile, being unselective with respect to quantificational force but lexically encoding distinctions in the modal base (e.g., epistemic versus deontic). In the present paper, we have extended this difference to circumstantial modality, by showing that the five interpretations associated with \(ka-\ldots-a\) are associated with variable quantificational force
(existential for the ability and manage-to interpretations, universal for the accidentally, suddenly, and non-controllable interpretations), but involve the same (circumstantial) modal base.

Our conclusions have implications that extend well beyond the grammar of St’át’imcets. To start with, our analysis invites comparison with control phenomena in other Salish languages, which have been regarded as comprising a unified “control system” (see Thompson 1979, 1985). Our work suggests otherwise: it seems unlikely that the modal treatment we have given here for ka-...-a will extend straightforwardly to more typical transitivity-based control alternations, or indeed, to other Salish “out-of-control” phenomena, as exemplified by C₂ reduplication (Carlson and Thompson 1982, Kinkade 1982). A systematic comparison is clearly warranted.

Beyond Salish, there is an intriguing resemblance between ka-...-a and the Austronesian “ability/involuntary action” (AIA) marker, which exhibits a parallel cluster of interpretations (see Dell 1983/4, Kroeger 1993, and Mills 2005 on Tagalog). It remains an open question how close the parallel is, and whether our modal analysis of ka-...-a can be extended to its Austronesian counterparts.

One way in which the interpretation of ka-...-a differs not only from Austronesian languages like Tagalog, but also from ability modals in more familiar Indo-European languages is with respect to the actuality entailment of the perfective ability reading. As mentioned in footnote 8, in both Tagalog and Malagasy, predicates in the perfective with the AIA morpheme have an entailment of culmination (Kroeger 1993, Travis 2000). And as argued by Bhatt (1999) and Hacquard (2006), existential modals in the perfective in a number of Indo-European languages (including French, Italian, Bulgarian, Greek, and Hindi) have actuality entailments like English manage to. In contrast, as we have seen, the manage-to interpretation of ka-...-a only has a cancelable actuality implicature (see 2.2.1 above). We do not know whether this difference is primitive, or derivative from some other property of the languages in question; neither do we currently know of other systems with a St’át’imcets-type actuality implicature. Clearly, further investigation is needed.

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