# The interaction of modals and temporal markings in Squliq Atayal

Sihwei Chen

University of British Columbia

SEALS-23

Chulalongkorn University Bangkok, May 29-31, 2013

# Outline

- Background
- Modality in S. Atayal
- Temporal system in S. Atayal
- Interaction of modal types and temporal markings
- Implications
- Conclusion

# Modality

- Uses of modals are decided by conversational backgrounds (Kratzer 1991)
    - A **modal base** *'determines for every world the set of worlds which are [...] accessible from it'* (644)
    - An **ordering source** *'induces an ordering on the set of worlds accessible from that world'* (644)

- Two types of modal base:
    - (a) Hydrangeas could grow here.                [circumstances compatible with P]
    - (b) There might be hydrangeas growing here.  [evidence compatible with P]

- (b) is false if the speaker knows that there are no hydrangeas here at the utterance time.

- Languages may vary in whether they have a <span style="color:magenta">contextually given</span> or <span style="color:magenta">lexicalized</span> conversational background (Rullmann et al. 2008).
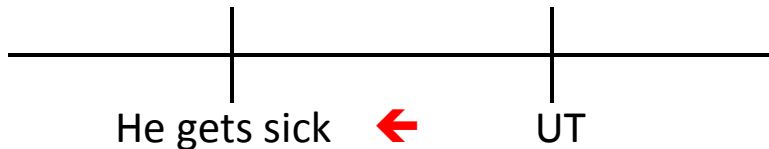
# Modal and time

- Condoravdi (2002)
  - Temporal perspective (TP): time at which the modal background is accessed
  - temporal orientation (TO): relation between the TP and the time of the event

(a) He might get sick tomorrow/??now/*yesterday.   [Present TP, future TO]

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        |              |
_____|_____|_____
       UT    ➜     He gets sick
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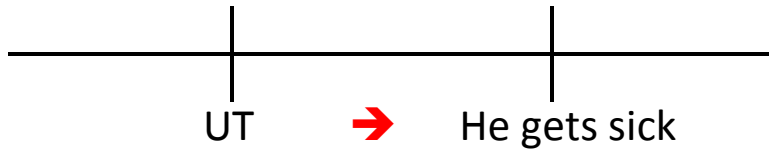
(b) He might have gotten sick *tomorrow/*now/yesterday.   [Present TP, past TO]

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        |              |
_____|_____|_____
   He gets sick  ⬅       UT
```

## Research questions

- How do modals in S. Atayal anchor temporal perspective and temporal orientation?

- Atayal is claimed to have no tense but a future/non-future distinction (Zeitoun et al. 1996). How are the TP and TO realized with respect to the two-way system?

- Matthewson et al. (2013) have established a formal hypothesis of modal-temporal interactions. How do Atayal patterns support the hypothesis?

# Squliq Atayal



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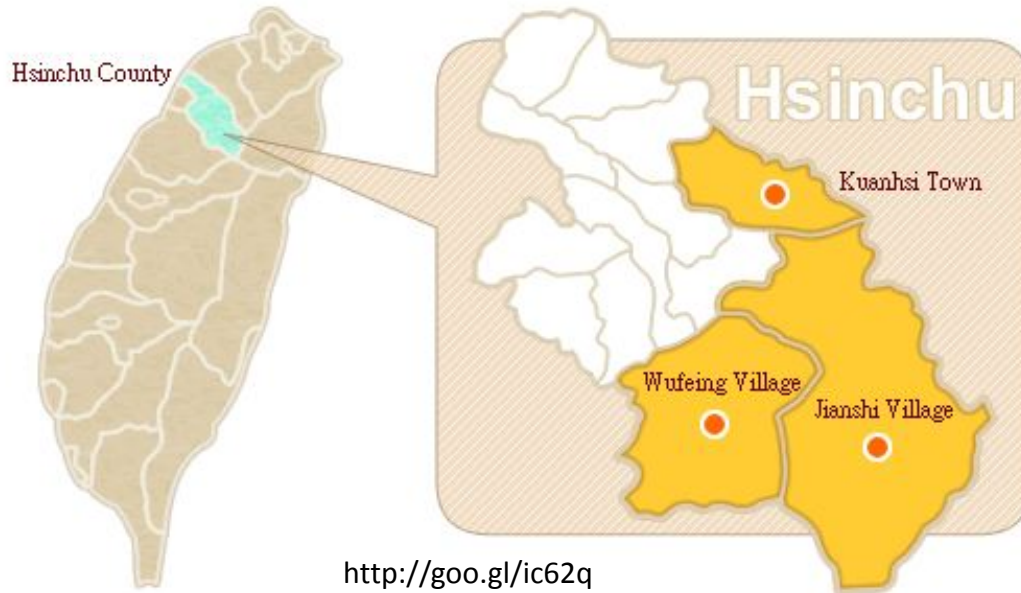
- One of the two major dialects of Atayal (Austronesian language)

- 4-way voice inflection on V: **A**(ctor)**V**, **P**(atient)**V**, **L**(ocative)**V**, **B**(eneficiary)**V**

- V-(O)-S$_{ABS}$ (Antipassive = AV) and V-S-O$_{ABS}$ (Ergative = Non-AV)

# Possibility modals

# Epistemic vs. circumstantial

- *ki'a* is unambiguously epistemic; *blaq* is unambiguously circumstantial

(1) Context: *You acquire a new piece of land and discover that the soil and climate are such that persimmons would have a chance of growing here although you know that there are currently no persimmons here.* (adapted from Kratzer 1991: 646)

| musa' | *blaq* | pmhi-un | sqani | qapu'. |
|-------|--------|---------|-------|--------|
| FUT | *CIRC.POS* | plant-PV | here | Persimmon |

'Persimmons can be planted here.'
Lit. 'It will be good that persimmons are planted here.'

(2) Context: *You arrived home but found your key lost so you returned to the restaurant which you dined at. The waiter tells you, "I didn't see any key. Maybe you didn't leave it here or maybe someone took it."*

| *ki'a* | kya | squliq | wal | m-agal. |
|--------|-----|--------|-----|---------|
| *EPIS.POS* | exist | person | past | AV-take |

'There might be someone who took (it).'
Lit. 'Someone who took (it) might exist.'

# Subtypes of circumstantial possibility: *blaq vs. nway*

- *blaq* cannot be deontic

(3) Context: *Only family members are allowed to enter the patient's room during visiting hours, but you're exceptional since you are a really close friend.*

      ***nway*=su         wah-an   m-ita'.

      **CIRC.POS**=2SG  come-LV   AV-see

      'You can come to see (him).'

      Lit. 'Your coming to see (him) is fine/okay.'

    #musa'  ***blaq***        wah-an=su     m-ita'.

    FUT     **CIRC.POS**  come-LV=2SG AV-see

    'You can come to see (him).'

    Lit. 'Your coming to see (him) will be good.'

    Comment: "It's a suggestion."

# Subtypes of circumstantial possibility: *blaq vs. nway*

- *nway* can only be deontic. It has no teleological, bouletic, or pure circumstantial readings.

(4) Context: *Someone wants to visit that tribe in the mountain and asks you which road he can take. You answer:*

| musa' | ***blaq*** | pwah | sa | tuqi | qani. |
|-------|-----------|------|-----|------|-------|
| FUT | *CIRC.POS* | pass.AV | LOC | road | this |

'You can go this way.'

| #***nway***=su | | pwah | sa | tuqi | qani. |
|---------------|--|------|-----|------|-------|
| *CIRC.POS*=1S.ABS | | pass.AV | LOC | road | this |

'You can go this way.'

Comment: (Laughing) "This means the road belongs to you."

(5) Context: *Mother bought a basket of very delicious taros. Since I know you like taros very much, I recommend you to taste them.*

| musa' | ***blaq*** | tlam-an=su | cikay. |
|-------|-----------|------------|--------|
| FUT | *CIRC.POS* | taste-LV=1SG | little |

'You can try a bit.'

| #***nway***=su | tlam-an | cikay. |
|---------------|---------|--------|
| *CIRC.POS*=2SG | try-LV | little |

'You can try a bit.'

(6) Context: *persimmons' glowing* (cf. (1))

| #***nway***=su | pmhi-un | sqani. |
|---------------|---------|--------|
| *CIRC.POS*=2SG | plant-PV | here |

'You can plant (persimmons) here.'

Comment: "It's okay if you don't hinder my farming."

# Subtypes of ability: *baq* vs. *thuzyay*

- *baq* and *thuzyay* involve epistemic/mental and physical ability of the subject respectively.

- Context: *asking the ability of playing the instrument*

(7) ***baq***=saku'       tlubuw   hamunika.
   ***ABL.AV***=1S.ABS  play.AV    harmonica
   'I can play the harmonica.'
   Comment: "You know how to play the harmonica."

(8) ***thuyay***=ku       tlubuw      hamunika   la.
   ***ABL.AV***=1S.ABS  play.AV     harmonica  PRT
   'I can play the harmonica.'
   Comment 1: "You already learnt how to play the harmonica but you might have gotten sick and couldn't play it for a while; you say this because you can play it now."
   Comment 2: "You are old but you are able to play the harmonica."

# Necessity modals

# Only lexical circumstantial modals

(9)  Context: *For the sake of environmental issue, your school decides to stop providing students with bamboo chopsticks at lunch. The teachers announce:*

        ***siki***         m-aras  qway        nanak  kwara'  qutux~qutux  hi'.

        ***CIRC.NEC***  AV-take  chopsticks  self      all         DIS~one        body

        'Everyone must bring their own chopsticks.'

(10) Context: *You hunted some flying squirrels for Tali and he said he would come to pick them up by himself. Today you were out. When you come home, you find the flying squirrels are not there.*

        *si*  *baq-i*        *sa*  wal  gal-un    ni    tali  la.

        AFF  know-DEP.PV  LOC  past  take-PV  ERG  PN   PRT

        'Tali must have taken (them).'

        Lit. 'That Tali took (them) is just known.'

# Ambiguity of *siki*

- Deontic in (9)

- Teleological

(11) Context: *There's only one road to that tribe.*

m-usa'=su        mita'  qalang  qasa ga,  ***siki***      pwah      tuqi  sqani.

AV-go=2S.ABS  see.AV tribe      that  TOP  ***CIRC.NEC***  pass.AV  road  this

'For your going to see that tribe, (you) have to go this way.'

- Bouletic

(12) nanu'  yan qani  k<in>blaq=su            niq-un  sayhuy  ga,  ***siki***        si=su

what    like this    NML<PFV>good=2SG  eat-PV  taro      TOP  ***CIRC.NEC***  AFF=2SG

tlam-i          balay  qutux  qani  hya'  ha!

taste-DEP.LV  truly  one      this  EMP  PRT

'For your loving of eating taros, you have to taste this one!'

- Circumstantial

(13) ungat        qu  uglgan=myan          sraral  hga,  ***siki***        *si=sami*        *phkang-i.*

exist.NEG  ABS  transportation=1PG before TOP  ***CIRC.NEC***  AFF=1P.ABS  walk-DEP.AV

'Our transportation was none before, so we had to walk.'

# Summary: Atayal modal system

- Atayal lexically encodes *types of modality* and *quantificational strength*.

- There's no lexical epistemic necessity modals.

- Circumstantial possibility modals are lexicalized in terms of types of ordering source.

- Ability modals lexically vary with mental/physical status of subject.

| MB / OS | epistemic | circumstantial | | | | ability |
|---|---|---|---|---|---|---|
| | stereotypical | deontic | teleological | bouletic | pure | ability |
| necessity | -- | *siki* | | | | *baq thuzyay* |
| possibility | *ki'a hazi'\** | *nway* | *blaq* | | | |

*hazi'* is an adverb and exhibits syntactic properties different from the modal *ki'a* (Chen 2013).

Temporal interpretations
**Future vs. Non-future**

# Future

- Future is morphologically marked.

(14) *p*-qwalax.
   *PROSP*.AV-rain
   'It will rain.'

(15) *musɑ'* m-qwalax.
   *PROSP* AV-rain
   'It will rain.'

(16) m-*o*sa'    inu'   suxan    qu   yumin?
   AV-go.*PROSP*  where  tomorrow  ABS  PN
   'Where will Yumin go tomorrow?'

(17) *k*~kbal-ay=misu'                qutux  sanminc'.
   *PROSP*~make-SUBJ.BV=1SG+2SN  one    sandwich
   'I'll make a sandwich for you.'

# Non-future

- Past and present are disambiguated by viewpoint aspectual markers.

- Two perfective markers

(18) ***wal***=saku'=nya' pgyar-an    la.
    ***PFV***=1SN=3SG    escape-LV  PRT
    'He ran away from me.'

(19) iyat=maku  q<***in***>niq-an        qulih  qani.
    NEG=1SG    eat<***PRF***>eat-LV  fish    this
    'I have not eaten this fish.'

(Perfective –*in*- is usually used in nominalizations.)

(20) s-ngilis  nanak  ni    tali  qu   k<***in***>s'ang            ni    yaya=nya.
    BV-cry   only    ERG PN  ABS  NML<***PFV***.PV>scold   ERG mother=3SG
    'Only Tali cries as being scolded by his mother.'

- Two progressive markers *cyux* vs. *nyux* are proximal vs. distal.

- Voice markers also encode aspect: AV for habitual; PV for future and LV for past.

# Temporal interpretations of modals

# Possible combinations: 3 X 3

- Do the 9 combinations all exist?  I focus on the present and past TP so 6 combinations.

| | | TP | | |
|---|---|---|---|---|
| | | Past | Present | Future |
| **TO** | Past | | | |
| | Present | | | |
| | Future | | | |

- Do epistemic and circumstantial modals behave the same?

- How are TP and TO derived?

# How epistemic and circumstantial modals differ?

- They differ in both TO and TP

| | | TP | | |
|---|---|---|---|---|
| | | Past | Present | Future |
| TO | Past | | A | |
| | Present | | | |
| | Future | B | | |

- Reading A and B can be illustrated by the ambiguity of *might have* (Condoravdi 2002):

(21) Context: *You were watching the Canucks but you fell asleep when it was tied.*

They *might have* won the game (but I'm not sure if they did).     [Reading A]

(22) Context: *You were watching the Canucks and at one point in the first period they were up 2:1 but they lost in the end.*

They *might have* won the game (but they didn't).     [Reading B]

# Reading A (present TP, past TO): YES for epistemics

- Epistemic modals allow all the three TO with whichever marker used for aspect.

- The past TO uses the perfective markers *-in-/wal*

(23)  Context: *You met Tali this morning and he's in a good mood, but when you see him again, he looks very sad. You think:*

        ki'a=nya'        ***wal***  kyal-un.

        EPIS.POS=3s.erg  **PFV**  speak-PV

        'He might have been scolded.'

- The present TO uses the progressive markers *cyux/nyux*

(24) Context: *You can't find your dog but you know he likes to sleep under a leafy shade.*

        ki'a        ***cyux***  m-'abi    slaq  qu  huzil.

        EPIS.POS  ***PROG***  AV-sleep  farm  ABS  dog

        'The dog might be sleeping in the farm.'

- The future TO uses the prospective markers *musa'/p-/vowel change/reduplication*

(25) Context: *Tali was sick last week but you know he's getting better.*

        ki'a        ***m-osa'***        m-qwas    qu  tali.

        EPIS.POS  ***AV-go.PROSP***  AV-sing    ABS PN

        'Tali might go to school.'

# Reading A (present TP, past TO): NO for circumstantials

- Circumstantial modals do not have a past TO. Presence of the perfective markers is ungrammatical.

(26) *siki        **wal**  m-usa' bnka'.
    CIRC.NEC  **PFV**  go-AV  Taipei

(27) siki        **[ wal** l<m>aqux balay ga,  biq-an  qnabu' na   sefu=ta **]**   **[Sequential event]**
    CIRC.NEC  **PFV** win<AV>   truly  TOP give-LV  award  ERG  government=1PG
    '(He) must win before our government gives award to him.'

- The present TO uses the progressive markers.

(28) siki        **cyux**=su'        balay  pnaynama'  m-twaring.
    CIRC.NEC  **PROG**=2S.ABS    really  beforehand  AV-prepare
    'You have to be in the progress of preparation.'

- The future TO uses covert marking.

(29) Context: *You made a mistake and offended the people of that tribe. You are asking my advice to reconcile the situation. I suggest:*

        siki        (***musa'***) s-kut =su      kacing. /*siki    **p**-kut        kacing.
        CIRC.NEC    **PROSP**  BV-kill=2SG  bull       CIRC **PROSP**.BV-kill  bull
        'You must kill a bull (to apologize).'

# Asymmetry of modality type in TO

- Atayal endorses the cross-linguistic tendency for circumstantial modals to be inherently future-oriented, and to differ in this respect from epistemic modals (Enç 1996, Werner 2006, Van de Vate 2011 among many others).

| Reading | Modality | TP | TO |
|---------|----------------|---------|------|
|         | epistemic      | present | past |
| *       | circumstantial | present | past |

- Morphological patterns of the *futurity* in languages (Matthewson et al. 2013)

|   | epistemic | circumstantial | language |
|---|-----------|-----------------------------|------------------------------------|
|   | null      | null                        | English                            |
|   | overt     | null                        | Mandarin; Atayal                   |
|   | overt     | overt (obligatorily present) | Gitxsanimx̲ (Matthewson 2012)       |
| * | null      | overt                       | ?                                  |

## Reading B (past TP, future TO): Yes for circumstantials

- Circumstantial modals rely on an irrealis marker *aki.*

(30) Context: *You were watching the game and at one point your friends' team were up to 5:0 but it turned out that they were caught up in the second period.*

> balay  ga    ***aki*** **(thuzyay)** l<m>aqux laha hya  ga,  ini   kzyan
> true   TOP  *IRR*  **ABL**       win<AV> 3PN  PRT TOP NEG  like
> na    inlungan=mya nqu  zyuwaw la.
> GEN heart=1PG       OBL  thing      PRT
> 'In fact, they could have won, but the thing was not like what we thought.'

- *aki* cannot co-occur with epistemic modals.

(31) ***aki*** **(*ki'a)**      l<m>aqux  laha  hya  ga,   wal=naha  s-laqux.
> *IRR*   **EPIS.POS** win<AV>   3PN   PRT TOP  PAST=3PG  BV-win

- Compare (30) with the reading A (present TP, past TO)

(32) ki'a          wal  l<m>aqux  laha ga,  # wal=naha    s-laqux.
> EPIS.POS PFV  win<AV>    3PN  TOP    PFV=3PG    BV-win
> 'They might have won (#but they lost)'
> Comment: *You just guess.*

# Reading B (past TP, future TO): ? for epistemics

- Dispute on past epistemic
  - Some argue that epistemic modals have only the present TP (Cinque 1999, Drubig 2001, Condoravdi 2002, Stowell 2004, Hacquard 2006, Laca 2008 etc.)
  - Past TP exists for epistemic modals in different languages (Eide 2003, von Fintel and Gillies 2008, Martin 2011, Rullmann and Matthewson 2012)

- Our proposals (Matthewson et al. 2013):

Null hypothesis: modal-temporal interactions are restricted *only* by independent language-internal properties of the tense and aspect systems.
  - The **temporal perspective** is provided by **tense** (or its functional equivalent).
  - The **temporal orientation** is provided by **aspect** (viewpoint and lexical)

- Temporal perspective is not restricted by modality type. All possibility modals can in principle have temporal perspectives different from the present.

# Past TP for epistemic modals

- It's a reading where a proposition was epistemically possible at some past time but is no longer possible at the utterance time.

- Context: *You and your friend agreed to meet at a store, but you didn't see him at the appointed time. You thought he might wait you at the other door of the store so you went there but still didn't find him. When you came home, you got his call. He says, 'Why didn't you wait for me? I was only 15 minutes late!' You reply:*

  > ima' baq  la! ***kiaʼ***=su  wal  m-nanga' tay  bzinah.
  >
  > who  know.AV PRT ***EPIS.POS***=1S.ABS  PAST AV-wait  LOC another
  >
  > 'Who knows! You might have waited at the other side.'

- Since Atayal allows ordinary predicates to have past reference times without over past tense marking, epistemic modals are expected to have a past TP without overt marking.

- (Future TP is expected to be given by the prospective markers. This is upheld for circumstnatials. Following work is on future epistemics.)

# Conclusions so far

- All types of modals allow shifting of temporal perspective.

    Methodology:  Felicity judgment tasks

    Storyboard tasks (www.totemfieldstoryboards.org, cf. Burton et al. 2013).

- While epistemic modals allow all the three TO, circumstantial modals do not have the past TO and are future-oriented.

- Marking of TO

| Circumstantial | | TP | | |
|---|---|---|---|---|
| | | Past | Present | Future |
| TO | Past | * | * | |
| | Present | PROG | PROG | |
| | Future | IRR | null | |

| Epistemic | | TP | | |
|---|---|---|---|---|
| | | Past | Present | Future |
| TO | Past | PFV | PFV | |
| | Present | PROG | PROG | |
| | Future | PROSP | PROSP | |

# Typological implications

- There is no restriction on modality type and temporal perspective.
    - Epistemic modals can have a past temporal perspective in S. Atayal.
    - Remaining work is on future temporal perspective.

- Temporal perspective is given by tense (or its functional equivalent).
    - Atayal temporal interpretations are made between future and non-future. Past vs. present tense is not morphologically encoded on predicates and on modals.
    - Future marking is overt and thus marked on (circumstantial) modals.

- Temporal orientation is given by aspect.
    - Atayal has various aspectual markers and the same marking is found for TOs of either modal.
    - A big question: how to derive futurity on circumstantials?
    
    (a) Circumstantial modals lexically encode futurity.
    
    (b) ?? Futurity comes from a covert prospective.

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