Yale Syntax Reading Group
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Two types of temporal adverbial clauses in Cantonese

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1. Introduction

➢ The typology of adverbial clauses

- Dichotomy (Haegeman 2003, 2010 *et seq.*)
  - Central adverbial clauses (CACs), e.g. temporal *while*
  - Peripheral adverbial clauses (PACs), e.g. concessive/contrastive *while*

(1) [While$_{conc}$ this ongoing lawsuit probably won't stop the use of lethal injection],
it will certainly delay its use [while$_{temp}$ the Supreme Court decides what to do]. (Haegeman 2009:399)

- Structurally, they differ in both internal and external syntax
  - *Internal syntax:* CACs are derived by operator movement (e.g. *when*), while PACs are not
  - *External syntax:* CACs have a lower attachment site to main clauses, while PACs have a higher one
  - i.e. internal syntax *correlates* with external syntax

- Another correlation: *meaning* and structure
  - CACs: event temporal, event conditional, event reason …
  - PACs: concessive/contrast, background assumption, rationale …
  - A *semantic* label corresponds to a *syntactic* class

➢ Temporal adverbial clauses (TACs) in Cantonese

- Two temporal subordinators: *hai* 'at' and *dong* 'at, while'
- Differ in both internal & external syntax
  → In accord with the internal-external structural correlation
- Both convey temporal reading (and do not convey concessive/contrastive meaning)

➢ Claims

1. Temporal adverbial clauses in Cantonese are not a homogeneous syntactic class (empirical)
2. Temporal operators may merge at different positions to form TACs (analytical)
3. Cantonese TACs support Endo & Haegeman (2019)'s claim that operator merge sites (internal syntax) determines attachment sites to main clauses (external syntax) (theoretical)

➢ Roadmap

- §2: The internal syntax of two types of TACs
- §3: Proposal
- §4: Internal syntax corelates with external syntax
- §5: Further issues

2. The internal syntax of two types of TACs

- TACs formed by *hai* 'at'
- TACs formed by *dong* 'at, while'

(1) ***Hai*** *Aafan fan-gan gaau gozan, Aaming lai wan keoi* (*hai*-TACs)
at Fan sleep-PROG nap that.time Ming come find 3SG
'Ming came find Fan when she was sleeping.'

(2) ***Dong*** *Aafan fan-gan gaau gozan, Aaming lai wan keoi* (*dong*-TACs)
while Fan sleep-PROG nap that.time Ming come find 3SG
'Ming came find Fan while she was sleeping.'

- Both may convey conditional-like reading under generic contexts (just like English *when*)
  - To avoid this reading, examples are all constructed in episodic contexts
- Never convey a contrastive/concessive reading (unlike English *while*)

2.1. High-low construals and locality

➢ English *when*-clause (Geis 1970, 1975, Larson 1987, 1990)

- Ambiguity of *when*-clause with embedded structure
  - High-low construals

(3) High-low construals of English *when*-clauses

a. John left [$_{CP}$ when$_i$ [$_{TP}$ Sheila *said* [$_{CP}$ [$_{TP}$ he should leave]] t_i]] (high construal)

b. John left [$_{CP}$ when$_i$ [$_{TP}$ Sheila said [$_{CP}$ [$_{TP}$ he should *leave* t_i]]]] (low construal)

  - Island sensitivity

(4) Complex NP island in English *when*-clauses

I saw Mary in New York when [$_{IP}$ she made [$_{DP}$ the claim [$_{CP}$ that [$_{IP}$ she would leave.]]]]

(high construal / *low construal)

➢ Cantonese TACs

- *hai*-TACs
  - High-low construals (has also been observed in Mandarin by Liou 2003)

(5) Low construal favoring context in *hai*-TACs

Hai [$_{CP}$ *Maangaa jan jyujin* [$_{CP}$ ***saigaai wui waimit***]] *gozan, ngo zung saangngaungau.*
at Maya people foretell world will destroy that.time 1SG still alive

i. #'I'm still alive at the time when Maya people made the apocalyptic prophecy.' (high reading)

ii. 'I'm still alive at the time when Maya people predicted to be the end of the world.' (low reading)

  - ✓High construal: I have lived thousands of years (i.e. odd reading)
    ✓Low construal: I'm alive in 2012 (precisely December 21 2012)

- Island sensitivity

(6) Complex NP island in *hai*-TACs
#Hai [*Maangaajan gong* [$_{NP}$ [$_{CP}$ ***saigaai wui waimit***] ***ge jyujin***]] *gozan, ngo zung saangngaungau.*
at Maya ppl. say world will destroy MOD prophecy that.time 1SG still alive
#'I'm still at the time of Maya people making the apocalyptic prophecy.' (only high reading)

- *dong*-TACs
  - Lack of low construals

(7) Low construal favoring context in *dong*-TACs
#Dong [$_{CP}$ *Maangaa jan jyujin* [$_{CP}$ ***saigaai wui waimit***]] *gozan, ngo zung saangngaungau.*
while Maya people foretell world will destroy that.time 1SG still alive
#'I'm still alive at the time when Maya people made the apocalyptic prophecy.' (only high reading)

2.2. Ban on quantificational elements

- Exhaustive focus

(8) ****Hai*** [*hai-Aaming fangaau*] *gozan, lousi zau faatnau.*
at be-Ming sleep that.time teacher then become.mad
'*The teacher became mad when it was MING (but not someone else) that fell asleep.'
(9) ***Dong*** [*hai-Aaming fangaau*] *gozan, lousi zau faatnau.*
at be-Ming sleep that.time teacher then become.mad
'The teacher became mad while it was MING (but not someone else) that fell asleep.'

- Epistemic modals

(10) **Camjat* ***hai*** [*jinggoi*^{Epi} *keoi zung hai ukkei*] *gozan, jau gingcaat soeng keoi ukkei*
yesterday at should 3SG still at home that.time have police go 3SG home
'*Yesterday, when he probably was still at home, police came to his house.'
(11) *Camjat* ***dong*** [*jinggoi*^{Epi} *keoi zung hai ukkei*] *gozan, jau gingcaat soeng keoi ukkei*
yesterday while should 3SG still at home that.time have police go 3SG home
'Yesterday, while he probably was still at home, police came to his house.'

- Low quantificational (Qu) elements may occur in both types of TACs
  - E.g. deontic modals:

(12) *Camjat* ***hai/dong*** [*keoi jinggoi*^{Deo} *zouje] gozan, keoi jan zau mgin-zo*
yesterday at while 3SG should work that.time 3SG body then disappear-PERF
'Yesterday at the time when he should work, he was just gone.'

- Interestingly, they block the low reading in *hai*-TACs

(13) ***#Hai*** [$_{CP}$ *Maangaa jan hoji*^{Deo} *jyujin* [$_{CP}$ ***saigaai wui waimit***]] *gozan, ngozung saangngaungau.*
at Maya people can foretell world will destroy that.time 1SG still alive
#'I'm still alive at the time when Maya people could make the apocalyptic prophecy.' (only high reading)

(14) The asymmetries in internal syntax for two types of TACs in Cantonese

	hai-TACs	*dong*-TACs
High-low ambiguity	YES	NO
Ban on (high) Qu-elements	YES	NO
Low reading blocked by islands	YES	N/A
Low reading blocked by (low) Qu-elements	YES	N/A

- Temporal adverbial clauses in Cantonese are not a homogeneous syntactic class

3. Proposal

3.1. Two merge sites of temporal operators

➢ Temporal operators

- Cantonese TACs have a null temporal operator (OP_{temp}), comparable to English *when*
  - Consistent with the fact that Cantonese does not have overt relative pronouns in relative clauses
- OP_{temp} may merge at different positions to form TACs
- Option 1: first merge at **TP** – then moves to the highest CP (comparable to *when*-movement)
  → *hai*-TACs

(15) *Hai*-TACs with operator movement:
hai [$_{CP}$ **OP_{temp}** [C … [$_{TP}$ … *t* …]]]

- Option 2: directly merge at the highest **CP** – in-situ
  → *dong*-TACs

(16) *Dong*-TACs with operator base-generated at CP
dong [$_{CP}$ **OP_{temp}** [C … [$_{TP}$ …]]]

➢ Deriving the asymmetries in internal syntax

- Movement and locality
  - Movement in *hai*-TACs → high-low ambiguity

(17) OP_{temp} movement from the higher and the lower clauses
Hai [$_{CP}$ OP_{temp} [$_{TP}$ t_{high} Maya people predicted [$_{CP}$ [$_{TP}$ t_{low} the world will end …
(Intermediate steps skipped)
High: 'At the time when Maya people made the apocalyptic prophecy.'
Low: 'At the time when Maya people predicted to be the end of the world.'

  - Movement blocked by islands in *hai*-TACs → lack of low reading

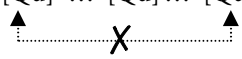
(18) OP_{temp} movement blocked by islands (Complex NP)
Hai [$_{CP}$ OP_{temp} [$_{TP}$ t_{high} Maya people made [$_{DP}$ the prophecy [$_{CP}$ [$_{TP}$ t_{low} the world will end …
(Movement blocked)

- No movement in *dong*-TACs → lack of low reading

(19) $\underline{OP_{temp}}$ merged directly to the highest CP
Dong [$_{CP}$ OP_{temp} [$_{TP}$ Maya people predicted [$_{CP}$ [$_{TP}$ the world will end …

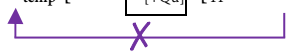
- Minimality effects
  - Rizzi's (2001, 2004) feature-based Relativized Minimality (RM)
  - *Minimality effects* arise when a relation formed by two elements X and Y sharing the feature [F] is not in a minimal configuration, i.e. if there is a Z such that Z carries [F] and Z intervenes between X and Y (i.e. commands Y but not X).
  - A set of quantificational elements carrying a common superfeature [Qu]:
    Quantificational: neg, measure, focus, modal … etc.[1]
  - They all trigger minimality effects in Chinese (to *why*-questions and A-not-A questions, Wu 1997, Law 2001, Soh 2005, Tsai & Yang 2015 *i.a.*)

(20) X … Z … Y
[Qu] … [Qu] … [Qu]



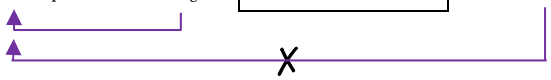
  - Assume that *when* and OP_{temp} are also quantificational and carry a [Qu] superfeature
    (cf. *why* in Chinese is an operator whose movement would be disrupted by Qu-elements)
  - Minimality effects in *hai*-TACs → ban on Qu-elements higher than TP
    (i.e. exhaustive focus, epistemic modals etc.)

(21) $\underline{Op_{temp}}$ movement disrupted by (high) Qu-elements
Hai* [$_{CP}$ **OP_{temp} [C … $\boxed{Z_{[+Qu]}}$ [$_{TP}$ … *t* …]]]



  - Minimality effects in *hai*-TACs → Lack of low reading with Qu-elements lower than TP
    (i.e. deontic modals, negation etc.)

(22) Long-distance $\underline{Op_{temp}}$ movement disrupted by low Qu-elements
Hai [$_{CP}$ **OP_{temp}** [C … [$_{TP}$ t_{high} … $\boxed{\text{Deontic Modal}_{[+Qu]}}$ [$_{CP}$ … t_{low}]]]]]



(long-distance movement blocked)

  - Absence of minimality effects in *dong*-TACs → allow Qu-elements to occur

(23) No $\underline{Op_{temp}}$ movement dependency for Qu-elements to disrupt
Dong [$_{CP}$ **OP_{temp}** [C … $\boxed{Z_{[+Qu]}}$ [$_{TP}$ …]]]

  - Note: the major argument from Haegeman (2010) for OP movement, argument/adjunct asymmetry in fronting, is inapplicable in Cantonese
  - Topics in Cantonese (and Chinese in general) are not interveners to an A-bar chain, just like Italian (Rizzi 2004). Arguments may be freely fronted without inducing minimality effects.

[1] In Chinese, *wh*-nominals (e.g. "who") are variables rather than operators (Huang 1982), hence do not carry [Qu] and do not trigger minimality effects.

- One problem left – how to know the existence of null OP_{temp}?
  - Supported by movement dependency in *hai*-TACs
  - … But not in *dong*-TACs, which do not show any movement dependency
  - Alternative analysis: no OP_{temp} in *dong*-TACs at all → Appositives?

    ← We do have evidence for the existence of null OP_{temp} in *dong*-TACs, from an agreement marker of temporal operators

3.2. An agreement marker of temporal operators

➢ Progressive aspectual suffix *-haa*

- Obligatory subordination
  - Clauses with *-haa* cannot standalone and must be subordinated
  - Note: *-haa* requires the host verb to be reduplicated

(24) *Aafan fanfan-**haa** gaau, *(**Aaming lai wan keoi**)*
Fan RED.sleep-HAA nap Ming come find 3SG
'Ming came find Fan when she was sleeping.'

- *-Haa* may occur in both types of TACs

(25) ***Hai/dong** Aafan fanfan-**haa** gaau gozan*, Aaming lai wan keoi (temporal)
at while Fan RED.sleep-HAA nap that.time Ming come find 3SG
'Ming came find Fan when/while she was sleeping.'

- Subordinate clauses with *-haa* only have a temporal reading and resist other types of subordinators, e.g. conditional, causal, concessive etc.

(26) ***Jyugwo** Aafan fanfan-**haa** gaau, Aaming zau m-wui lai wan keoi.* (conditional)
if Fan RED.sleep-HAA nap Ming then NEG-will come find 3SG
'If Fan is sleeping, Ming will not find her.'

(27) ***Janwai** Aafan fanfan-**haa** gaau, Aaming zau m-wui lai wan keoi.* (causal)
because Fan RED.sleep-HAA nap Ming then NEG-will come find 3SG
'Since Fan is sleeping, Ming will not find her.'

(28) ***Seoijin** Aafan fanfan-**haa** gaau, daan Aaming jingjin lai wan keoi.* (concessive)
although Fan RED.sleep-HAA nap but Ming still come find 3SG
'Although Fan is sleeping, Ming will still come find her.'

➢ *-Haa* as an agreement marker with temporal operators

- To capture the obligatory TAC formation, *-haa* may be treated as an agreement marker of temporal operators:

(29) Agreement of *-haa* with temporal operators
$[_{CP}$ **OP_{temp}** $[C \ldots \ [_{AspP}$ ***-haa*$_{[temp]}$** … $[_{vP}$ … (agreement blocked)

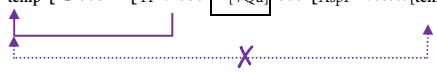
- Evidence from minimality effects
  - Low Qu-elements do not trigger minimality effects in *hai*-TACs (with high reading), yet, they cannot occur with *-haa*.

(30) * (***Hai***) [*Aafan* *m-hai* *fanfan-**haa*** *gaau*] *gozan*, *Aaming lai* *wan keoi*
at Fan NEG-be RED.sleep-HAA nap that.time Ming come find 3SG
Int.: 'Ming came find Fan when she wasn't sleeping.'

(31) ***Hai*** [*Aafan* *m-hai* *fan-**gan*** *gaau*] *gozan*, *Aaming lai* *wan keoi*
at Fan NEG-be sleep-PROG nap that.time Ming come find 3SG
'Ming came find Fan when she wasn't sleeping.'

- This can be explained if there is an agreement dependency between OP_{temp} and *-haa*.

(32) "Extra" minimality effects in *hai*-TACs with *-haa*:
Hai* [$_{CP}$ **OP$_{temp}$ [C … [$_{TP}$ *t* … Z$_{[+Qu]}$ … [$_{AspP}$ ***-haa***$_{[temp]}$ … [$_{vP}$ … (agreement blocked)

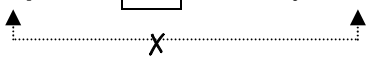


- *-Haa* in *dong*-TACs
  - The occurrence of *-haa* in *dong*-TACs suggests the presence of a.
  - Supported by minimality effects:
    High (and low as well) Qu-elements do not trigger minimality effects in *dong*-TACs, yet, they cannot occur with *-haa*.

(33) ****Dong*** [*hai-Aaming* *fanfan-**haa*** *gaau*] *gozan*, *lousi* *zau* *faatnau*.
while be-Ming RED.sleep-HAA nap teacher then become.mad
Int.: 'The teacher became mad while it was MING (but not someone else) that was sleeping.'

(34) ***Dong*** [*hai-Aaming* *fan-**gan*** *gaau*] *gozan*, *lousi* *zau* *faatnau*.
while be-Ming sleep-PROG nap that.time teacher then become.mad
'The teacher became mad while it was MING (but not someone else) that was sleeping.'

(35) 'Extra' minimality effects in *dong*-TACs with *-haa*:
Dong* [$_{CP}$ **OP$_{temp}$ [C … Z$_{[+Qu]}$ [$_{TP}$ … [$_{AspP}$ ***-haa***$_{[temp]}$ … [$_{vP}$ … (agreement blocked)



- Hence, *dong*-TACs do have a (null) OP_{temp}.

- Further evidence from locality (embedding) [not being discussed today]

4. Internal syntax corelates with external syntax

4.1. The external syntax of the two types of TACs

- Post-subject position

→ *hai*-TACs attach to the main clause below subjects

→ *dong*-TACs attach to the main clause above subjects

(36) *Aaming* [***hai*** [*Aafan* *fan-gan* *gaau*] *gozan*] *lai* *wan keoi*
Ming at Fan sleep-PROG nap that.time come find 3SG
'Ming came find Fan when she was sleeping.'

(37) **Aaming* [***dong*** [*Aafan* *fan-gan* *gaau*] *gozan*] *lai* *wan keoi*
Ming while Fan sleep-PROG nap that.time come find 3SG
'Ming came find Fan while she was sleeping.'

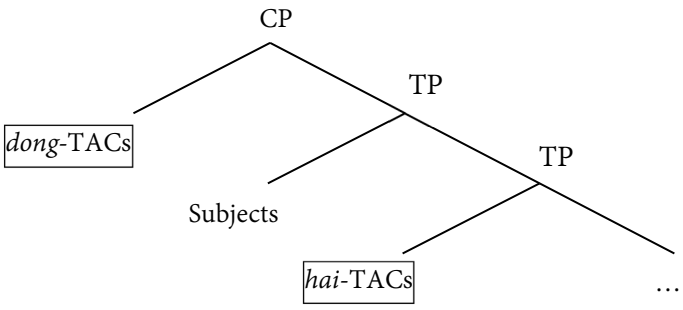
- Reconstruction for binding reflexives
  → (pre-subject) *hai*-TACs can be reconstructed to a position below main clause's subject
  → *dong*-TACs cannot

(38) [***hai*** [*keoizigei*$_{i/*j}$ *pin man dou mei se-jyun*] *gozan*] Aaming$_i$ zau heoi-zo waan
at 3SG.self CL paper also NEG write-finish that.time Ming then go-PERF play
'Ming went playing when he hasn't even finish his paper.'

(39) *[***dong*** [*keoizigei*$_{*i/*j}$ *pin man dou mei se-jyun*] *gozan*] Aaming$_i$ zau heoi-zo waan
while 3SG.self CL paper also NEG write-finish that.time Ming then go-PERF play
Int.:'Ming went playing while he hasn't even finish his paper.'

- *hai*-TACs attach to TP (below subjects, presumably Spec,TP)
- *dong*-TACs attach to CP (above subjects)

(40) Attachment sites for the two types of TACs

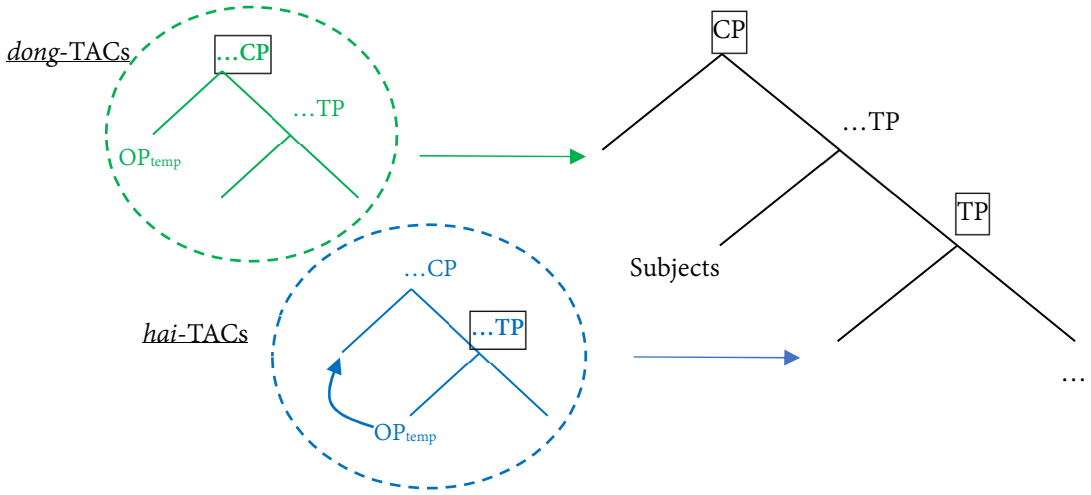


4.2. The height of operator sites and attachment sites

➢ Correlation of OP_{temp} sites and attachment sites in TACs

- Putting their internal & external syntax together …

(41) Attachment sites for the two types of TACs



- The height of the operator base-generation sites seems to determine the attachment sites of TACs.

VP
VP

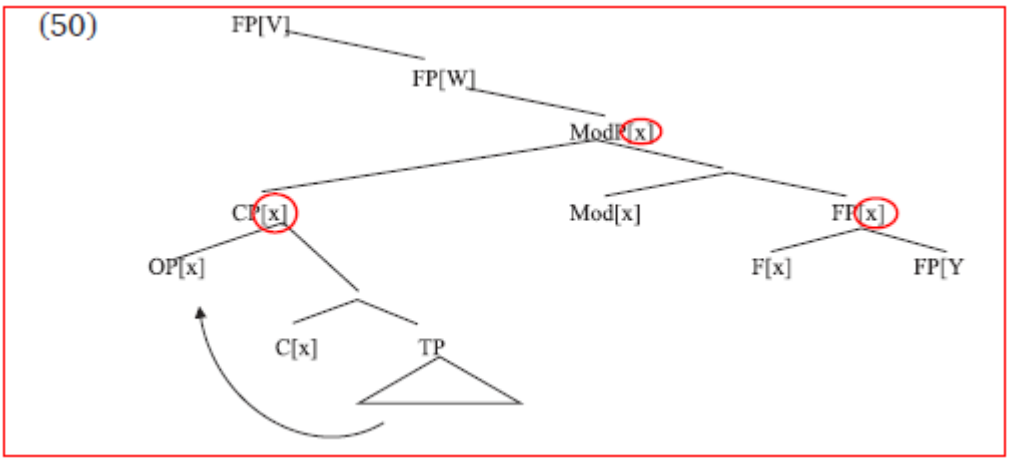
➢ Endo & Haegeman (2019)

- Gradient typology of Japanese adverbial clauses (head movement)
  - The launching sites of operators/ heads in adverbial clauses

Voice	<	Asp	<	Neg/Pol	<	T	<	S-Mood	<	A-Mood
		Gp A		Gp B		Gp C/D		Gp D/E		Gp F
		nagara 'while'		zuni 'without'		ba 'if'		toki 'when'		ga 'though'
						toki 'when'		node 'because'		

  - The attachment sites of adverbial clauses to main clauses (=above)
    → adverbial concord

- The operator determines the attachment site of the adverbial clause formed by labeling



5. Further issues

➢ TACs in English

- *When* allows low reading, but *while* resists low reading. (Larson 1990:174)

(42) I didn't see Mary in New York [$_{PP}$ while [$_{CP1}$ she said [$_{CP2}$ she was there]]]
(43) I will be in Boston [$_{PP}$ while [$_{CP1}$ I promised [$_{CP2}$ I would be there]]]

- Yet, *while* disallows argument fronting, which is argued to be evidence for OP movement (Haegeman 2010:629)

(44) *While this paper I was revising last week, I thought of another analysis.

➢ Potential meaning differences for *hai* and *dong*, also *when* and *while*

- Can the meaning-structure correlation of adverbial clauses be still maintained?

➢ How the operator sites may determine attachment sites

➢ Other TACs? *Before, after, until*?

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