

## Two types of temporal adverbial clauses in Cantonese

Ka-Fai Yip  
Yale University  
[kafai.yip@yale.edu](mailto:kafai.yip@yale.edu)

### 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<sub>conc</sub> this ongoing lawsuit probably won't stop the use of lethal injection],  
it will certainly delay its use [while<sub>temp</sub> 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)
  - Within TP (followed by movement) vs. CP (without movement)
3. Internal syntax correlates with external syntax (theoretical)
  - Operator sites (TP vs. CP) seem to determine attachment sites to main clauses (TP vs. CP)
  - support Endo & Haegeman (2019)'s claim

#### ➤ Roadmap

- §2: The internal syntax of two types of TACs
- §3: Proposal
- §4: Internal syntax correlates 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) 喺阿芬瞓緊覺個陣，阿明嚟搵佢  
*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) 當阿芬瞓緊覺個陣，阿明嚟搵佢  
*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 [<sub>CP</sub> when<sub>i</sub> [<sub>TP</sub> Sheila said [<sub>CP</sub> [<sub>TP</sub> he should leave]] *t<sub>i</sub>*]] (high construal)  
 b. John left [<sub>CP</sub> when<sub>i</sub> [<sub>TP</sub> Sheila said [<sub>CP</sub> [<sub>TP</sub> he should leave *t<sub>i</sub>*]]]] (low construal)

- Island sensitivity

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

I saw Mary in New York when [<sub>IP</sub> she made [<sub>DP</sub> the claim [<sub>CP</sub> that [<sub>IP</sub> 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

喺<sub>CP</sub>馬雅人預言<sub>CP</sub>世界會毀滅]]個陣，我仲生勾勾  
*Hai* [<sub>CP</sub> Maangaa jan jyujin [<sub>CP</sub> 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

#**喺** [馬雅人講 [NP [CP **世界會毀滅**] 嘅預言] 嗰陣, 我仲生勾勾  
 #**Hai** [Maangajaan 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 alive 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

#**當** [CP 馬雅人預言 [CP **世界會毀滅**] 嗰陣, 我仲生勾勾  
 #**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) \***尋日喺** [係阿明瞓覺] 嗰陣, 老師就發癲

\*Camjat **hai** [hai-Aaming fangaau] gozan, lousi zau faatnau.  
 yesterday 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) **尋日當** [係阿明瞓覺] 嗰陣, 老師就發癲

Camjat **dong** [hai-Aaming fangaau] gozan, lousi zau faatnau.  
 yesterday 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) \***尋日喺** [應該<sup>Epi</sup>佢仲喺屋企] 嗰陣, 有警察上佢屋企

\*Camjat **hai** [jinggoi<sup>Epi</sup> 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) **尋日當** [應該<sup>Epi</sup>佢仲喺屋企] 嗰陣, 有警察上佢屋企

Camjat **dong** [jinggoi<sup>Epi</sup> 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) **尋日喺/當** [佢應該<sup>Deo</sup>做野] 嗰陣, 佢人就唔見咗

Camjat **hai/dong** [keoi jinggoi<sup>Deo</sup> 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) #**㗎** [CP 馬雅人 可以<sup>Deo</sup> 預言 [CP 世界會毀滅]] 嗰陣, 我仲生勾勾  
 #**Hai** [CP Maangaa jan hoji<sup>Deo</sup> 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

	<i>hai</i> -TACs	<i>dong</i> -TACs
High-low ambiguity	YES	NO
Low reading blocked by islands	YES	N/A
Ban on (high) Qu-elements (e.g. modal <sup>Epi</sup> )	YES	NO
Low reading blocked by (low) Qu-elements (e.g. modal <sup>Deo</sup> )	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<sub>temp</sub>), comparable to English *when*
    - Consistent with the fact that Cantonese does not have overt relative pronouns in relative clauses
  - OP<sub>temp</sub> 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<sub>temp</sub> [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<sub>temp</sub> [C ... [TP ... ]]]

- Deriving the asymmetries in internal syntax
  - Movement and locality
    - Movement in *hai*-TACs → high-low ambiguity

- (17) OP<sub>temp</sub> movement from the higher and the lower clauses

*Hai* [CP OP<sub>temp</sub> [TP *t*<sub>high</sub> Maya people predicted [CP [TP *t*<sub>low</sub> the world will end ... ]]]



(Intermediate steps skipped)

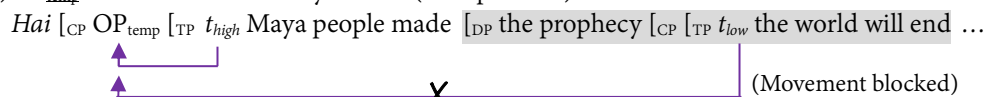
High: ‘At the time when Maya people made the apocalyptic prophecy.’

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<sub>temp</sub> movement blocked by islands (Complex NP)

*Hai* [<sub>CP</sub> OP<sub>temp</sub> [<sub>TP</sub> *t<sub>high</sub>* Maya people made [<sub>DP</sub> the prophecy [<sub>CP</sub> [<sub>TP</sub> *t<sub>low</sub>* the world will end ...



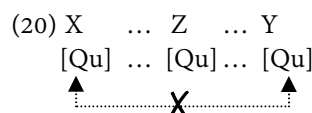
- No movement in *dong*-TACs → lack of low reading

(19) OP<sub>temp</sub> merged directly to the highest CP

*Dong* [<sub>CP</sub> OP<sub>temp</sub> [<sub>TP</sub> Maya people predicted [<sub>CP</sub> [<sub>TP</sub> 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.<sup>1</sup>
  - 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.*)

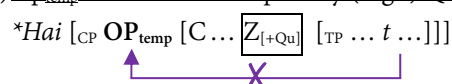
(20) X ... Z ... Y  
[Qu] ... [Qu] ... [Qu]



- Assume that *when* and OP<sub>temp</sub> 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) Op<sub>temp</sub> movement disrupted by (high) Qu-elements

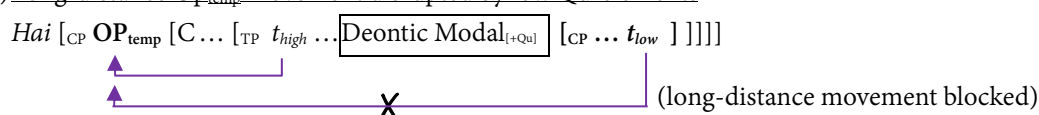
\**Hai* [<sub>CP</sub> OP<sub>temp</sub> [<sub>C</sub> ... [<sub>Z<sub>[+Qu]</sub></sub> [<sub>TP</sub> ... *t* ...]]]



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

(22) Long-distance Op<sub>temp</sub> movement disrupted by low Qu-elements

*Hai* [<sub>CP</sub> OP<sub>temp</sub> [<sub>C</sub> ... [<sub>TP</sub> *t<sub>high</sub>* ... [Deontic Modal<sub>[+Qu]</sub> [<sub>CP</sub> ... *t<sub>low</sub>* ] ]]]]



<sup>1</sup> 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.

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

(23) No  $OP_{temp}$  movement dependency for Qu-elements to disrupt

*Dong* [<sub>CP</sub>  $OP_{temp}$  [C ... [<sub>Z[+Qu]</sub> [<sub>TP</sub> ... ]]]]

- 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.
- 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 stand alone and must be subordinated
  - Note: *-haa* requires the host verb to be reduplicated

(24) 阿芬瞓瞓吓覺, \*(阿明嚟搵佢)

*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) 喺當阿芬瞓瞓吓覺嗰陣, 阿明嚟搵佢

*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) \*如果阿芬瞓瞓吓覺, 阿明就唔會嚟搵佢

*\*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) \*因為阿芬瞓瞓吓覺, 所以阿明就唔會嚟搵佢

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

(28) \*雖然阿芬瞓瞓吓覺, 但阿明仍然嚟搵佢

*\*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<sub>temp</sub> [C ... [AspP -haa<sub>[temp]</sub> ... [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)\* (係)[阿芬 唔係瞓吓覺] 嗰陣，阿明嚟搵佢

\* (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) 係[阿芬 唔係瞓紧覺] 嗰陣，阿明嚟搵佢

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<sub>temp</sub> and -haa.

(32) "Extra" minimality effects in hai-TACs with -haa:

\*Hai [CP OP<sub>temp</sub> [C ... [TP t ... Z<sub>[+Qu]</sub> ... [AspP -haa<sub>[temp]</sub> ... [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)\* 當 [係阿明 唔係瞓吓覺] 嗰陣，老師就發癲

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

(34) 當 [係阿明 唔係瞓紧覺] 嗰陣，老師就發癲

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<sub>temp</sub> [C ... Z<sub>[+Qu]</sub> [TP ... [AspP -haa<sub>[temp]</sub> ... [vP ... (agreement blocked)

- Hence, dong-TACs do have a (null) OP<sub>temp</sub>.

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

#### 4. Internal syntax correlates 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) 阿明 [㗎 [阿芬瞓緊覺] 個陣] 㗎搵佢

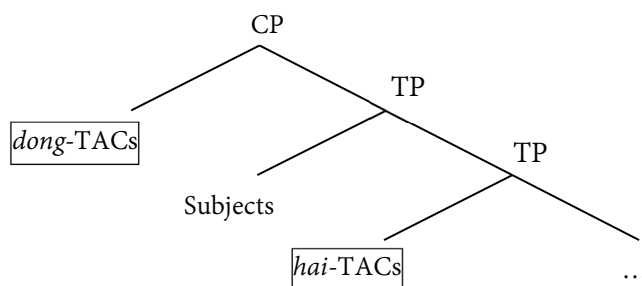
Aaming [*hai* [Aafan fan-gan gaau] gozan] lai wan keoi  
Ming at Fan sleep-PROG nap that.time come find 3SG  
'Ming came find Fan when she was sleeping.'

(37) \*阿明 [當 [阿芬瞓緊覺] 個陣] 㗎搵佢

\*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.'

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

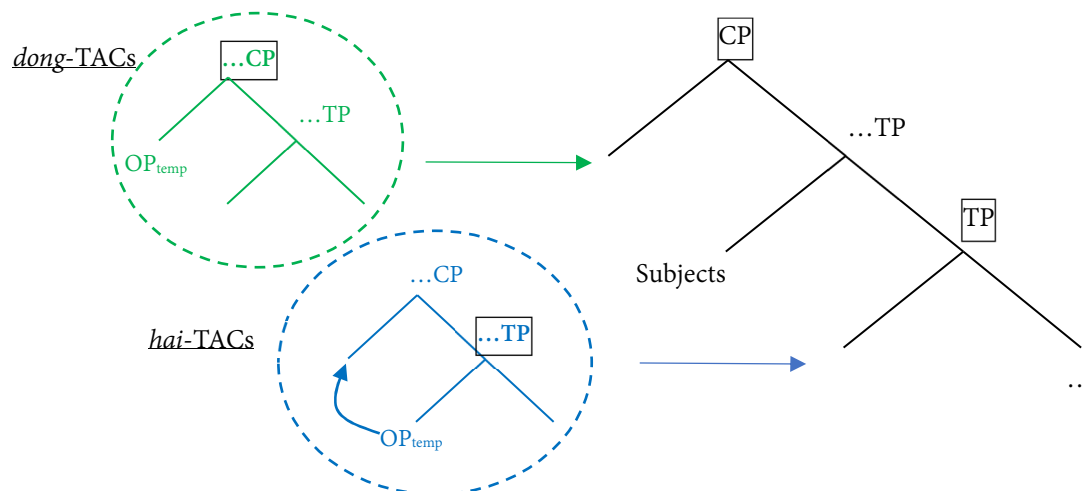
(38) Attachment sites for the two types of TACs



##### 4.2. The height of operator sites and attachment sites

- Correlation of OP<sub>temp</sub> sites and attachment sites in TACs

(39) Internal and external syntax of the two types of TACs



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



➤ Endo & Haegeman (2019)

- Gradient typology of Japanese adverbial clauses (head movement)

(40) The launching sites of operators/ heads in adverbial clauses

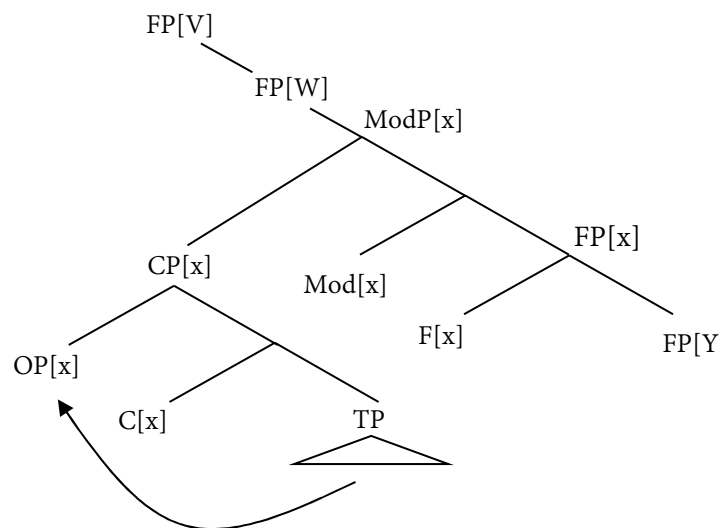
Voice	<	Asp	<	Neg/Pol	<	T	<	S-Mood	<	A-Mood				
		Gp A			Gp B			Gp C/D			Gp D/E			Gp F
		nagara ‘while’			zuni ‘without’			ba ‘if’			toki ‘when’			ga ‘though’
								toki ‘when’			node ‘because’			

- The attachment sites of adverbial clauses to main clauses (= (40))

→ adverbial concord

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

(41) Featuring matching in adverbial concord (Endo & Haegeman 2019:24)



## 5. Concluding remarks

### ➤ 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)  
→ Within TP (followed by movement) vs. CP (without movement)
3. Internal syntax correlates with external syntax (theoretical)  
→ Operator sites (TP vs. CP) seem to determine attachment sites to main clauses (TP vs. CP)  
→ support Endo & Haegeman (2019)'s claim

### ➤ TACs in English

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

(42) I didn't see Mary in New York [<sub>PP</sub> while [<sub>CP1</sub> she said [<sub>CP2</sub> she was there]]]

(43) I will be in Boston [<sub>PP</sub> while [<sub>CP1</sub> I promised [<sub>CP2</sub> 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.

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