

Adverbial clauses with and without operator movement*

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1. Introduction

1.1. Background: the typology of adverbial clauses

- Cross-linguistically, adverbial clauses typically behave in two distinct ways, categorized as central adverbial clauses (CACs) and peripheral adverbial clauses (PACs).
 - The terms “central” and “peripheral” were intended to capture adverbial clauses’ degree of integration into main clauses (i.e. *external syntax*).
 - Recent studies reveal that CACs and PACs fundamentally differ in their derivational history (i.e. *internal syntax*), specifically, the presence/absence of operator (OP) movement (Haegeman 2010a, b, 2012, i.a.).
 - Some arguments for OP movement in temporal *when*- and conditional *if*-clauses:
 - High-low ambiguities in temporal clauses (e.g. *John left when Sheila said he should leave*)
 - Intervention by high modals and adverbs (e.g. **If George probably comes*)
 - Intervention by Argument fronting (e.g. **If these exams you don’t pass*)
 - Intervention by VP preposing (e.g. **If passed these exams you had*)
 - The semantic class of adverbial clauses is said to align with a cluster of properties of internal syntax and external syntax.
 - A dichotomy: *central—peripheral*
 - A three-way correlation: *semantic class—internal syntax—external syntax*
- (1) [While_{conc} OP_{in-situ} this ongoing lawsuit probably won’t stop the use of lethal injection],
it will certainly delay its use [while_{temp} OP the Supreme Court *top* decides what to do].

(adapted from Haegeman 2009:399)

- CACs: temporal *while*-clause:
 - *Semantic class*: temporal modification, related to event structure
 - *Internal syntax*: movement of temporal OP → intervened by epistemic adverbs
 - *External syntax*: more integrated to the main clause, low attachment site
- PACs: concessive *while*-clause:
 - *Semantic class*: concession/background assumption, related to discourse structure
 - *Internal syntax*: No OP movement → no interaction with epistemic adverbs
 - *External syntax*: less integrated to the main clause, high attachment site

* This is a work in progress and it has greatly benefited from Anoop Mahajan, Ethan Poole, Milena Šereikaitė, Harold Torrence, Sze-Wing Tang, Jim Wood, and Raffaella Zanuttini. We thank Sheila Chan, Jiahui Huang, Tommy Tsz-Ming Lee, Huilei Wang and Mui Yang for discussions and checking the Mandarin and Cantonese data. Thanks to Blake Lehman, Travis Major and Kyle McIntosh for English judgments, Hironori Katsuda for Japanese data, Nguyen Thi Hong Quy for Vietnamese data, and Hashmita Agarwal for Hindi data. All remaining errors are ours.

(2) The central-peripheral dichotomy of adverbial clauses (Haegeman 2003a, b, 2010a, b, 2012)¹

	Semantic class	Internal syntax	External syntax
CACs	Event-related <i>e.g. temporal, event conditional, event reason, purpose</i>	OP movement (2003: impoverished)	Attach <i>low</i> to vP/IP (subordination)
PACs	Discourse-related <i>e.g. inferential/rationale, premise conditional, contrast, concessive</i>	No OP movement (2003: articulated)	Attach <i>high</i> to full CP (coordination)

- The central-peripheral dichotomy is attested in various (unrelated) languages:

(3) The central-peripheral typology is attested cross-linguistically

- English (Haegeman 1991 *et seq.*, Verstraete 2002, 2007)
- Mandarin Chinese** (Lu 2003, Pan & Paul 2018, Wei & Li 2018)
- Cantonese (Yip 2019, 2021) (for adverbial clauses with converbs)
- Akɔɔse (Zentz 2011)
- Bulgarian (Laskova 2012)
- French (Lahousse 2010, Lahousse & Borremans 2014)
- German (Frey 2012, Frey & Truckenbrodt 2015)
- Greek (Tsimpli, Papadopoulou & Mylonaki 2010)
- Japanese (Endo 2012)
- Swedish (Müller 2017)

1.2. Our central claims

- We argue that the **internal syntax** of adverbial clauses does *not* correlate with the **semantic class** of adverbial clauses. Specifically, we argue that

- both CACs and PACs may be derived by OP movement, and
- both CACs and PACs may involve *no* OP movement

- That is, the **presence/absence of OP movement** does *not* correlate with the often assumed central-peripheral dichotomy regarding adverbial clauses' semantic classes.

(4) Both *central* and *peripheral* adverbial clauses employ two strategies for derivation

- MOVEMENT strategy: OP merges at a lower position and moves to the edge of CP

[Adv-Clause **OP** [C ... [... *t* ...]]]

- IN-SITU strategy: OP directly merges at the highest CP

[Adv-Clause **OP** [C ... [...]]]

¹ Haegeman (2012) suggests three possibilities for the internal derivation of PACs: (i) OP directly merges at the CP and stay in-situ (=4b below); (ii) the OP does move but the base-generation site is too high for any elements to intervene; (iii) no OP is generated at all. We advocate for the first option. The second option would undesirably predict PACs to have high-low ambiguities just like *when*-clauses. The third option can be ruled out by converbal agreement in Cantonese, where intervention effects are found in PACs with a converb that agrees with an OP (Yip 2019).

- Substantiated by two types of CACs in Mandarin Chinese, with cross-linguistic support:
 - *Temporal adverbial clauses*:
Manifested as different subordinators: *zai* ‘at’ vs. *dang* ‘at, while’
 - *Event conditional clauses*:
Manifested as different positions of subordinators: inner *ruguo* vs. outer *ruguo* ‘if’
- And by PACs like inferential clauses as well.

Roadmap:

§2: CACs: Temporal clauses

§3: CACs: Event conditional clauses

§4: PACs: Inferential clauses and beyond

§5: Concluding remarks


2. Temporal clauses with and without operator movement

➤ Overview: Two types of temporal adverbial clauses (TACs)

- With OP movement: formed by *zai* 在 ‘at’
- Without OP movement: formed by *dang* 当 ‘at, while’

(5) Zai-TACs with operator movement:

zai [_{CP} **OP**_{temp} [C ... [_{TP} *t* ...]]] (Base-generate at the edge of TP and MOVE to Spec,CP)



(6) Zai [Zhangsan zhengzai shuijue] de shihou, Lisi lai zhao ta (zai-TACs)
ZAI Zhangsan PROG sleep MOD time Lisi come find 3SG
‘Lisi came find Zhangsan when he was sleeping.’

(7) Dang-TACs with operator base-generated at CP²

dang [_{CP} **OP**_{temp} [C ... [_{TP} ...]]] (Base-generate at the highest Spec,CP and stay IN-SITU)

(8) Dang [Zhangsan zhengzai shuijue] de shihou, Lisi lai zhao ta (dang-TACs)
DANG Zhangsan PROG sleep MOD time Lisi come find 3SG
‘Lisi came find Zhangsan when he was sleeping.’

2.1. The high-low ambiguity

- Observed by Geis (1970, 1975) and Larson (1987, 1990) in English *when*-clauses
- Also found in Mandarin Chinese for *zai*-TACs (Liou 2003)
 - Crucially, we observe that *dang*-TACs do not have such high-low ambiguity

² In (7), both *zai* and *dang* are outside of the adjunct CP. While *zai* is a preposition, *dang*, however, is likely to be a subordinator at the C head (see Appendix A for the evidence). That is, the derivation of (7) may alternatively be (i):

(i) Dang-TACs with operator base-generated at CP and *dang* as C
[_{CP} **OP**_{temp} [C-*dang* ... [_{TP} ...]]]

Since the categorical status of *dang* does not directly bear on differentiating between the two types of TACs, we still adopt (7) for notational convenience. For a different view that *dang* is a preposition, see Pan and Paul (2018).

- ***zai*-TACs**: High-low construals (Liou 2003)
 - ✓ High construal (pragmatically odd but possible): I have lived thousands of years
 - ✓ Low construal: I'm alive in 2012, precisely December 21 2012

(9) Low construal favoring context in *zai*-TACs

Zai [_{CP} Mayaren yuyan [_{CP} **shijie hui huimie**]]de shihou, wo hai huozhe.
 ZAI Maya.people foretell world will destroy MOD time 1SG still alive
 i. #‘I’m still alive at the time when Maya people made the apocalyptic prophecy.’ (high)
 ii. ‘I’m still alive at the time when Maya people predicted to be the end of the world.’ (low)

- Island sensitivity → the high-low construals are the result of *movement*
 ✓ High construal, ✗ Low construal

(10) Complex NP island in *zai*-TACs

#**Zai** [Mayaren shuo[_{NP} [_{CP} **shijie hui huimie**] de yuyan]] de shihou, wo hai huozhe.
 ZAI Maya.ppl. say world will destroy MOD prophecy MOD time 1SG still alive
 #‘I’m still alive at the time of Maya people making the apocalyptic prophecy.’ (only high reading)


- ***dang*-TACs**: Lack of low construals (even in non-island contexts)
 - ✓ High construal, ✗ Low construal

(11) Low construal favoring context in *dang*-TACs

#**dang** [_{CP} Mayaren yuyan [_{CP} **shijie hui huimie**]]de shihou, wo hai huozhe.
 DANG Maya.people foretell world will destroy MOD time 1SG still alive
 #‘I’m still alive at the time when Maya people made the apocalyptic prophecy.’ (only high reading)

- The asymmetry in high-low ambiguities between *zai*-TACs and *dang*-TACs can be explained by their different strategies of getting the operator to Spec,CP.
 - *zai*-TACs: MOVEMENT of OP, i.e. Base-generate in the lower clause and move to Spec,CP
 - *dang*-TACs: IN-SITU OP, i.e. Base-generate at the highest Spec,CP and no movement

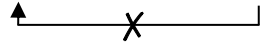
(12) The asymmetry in high-low ambiguities derived by the presence/absence of OP movement

a. *zai* [_{CP} **OP_{temp}** [_{TP} **t_{high}** Maya people predicted [_{CP} [_{TP} **t_{low}** the world will end ...]]

 (high: local movement)
 (low: successive cyclic movement)

b. *dang* [_{CP} **OP_{temp}** [_{TP} Maya people predicted [_{CP} [_{TP} the world will end ...]]]
 (high: no movement)

2.2. *Operator movement and intervention effects*

- Operator movement is subject to intervention effects
 - Important diagnostics in Haegeman (2010)
 - Relativized Minimality (Rizzi 1990, 2001, 2004)

(13) $X_{OP} \dots Z \dots Y_{TOP}$
 $[Qu] \dots [Qu] \dots [Qu]$


- Operator movement in Chinese has been proposed in at least two constructions (Huang 1982a, 1991, Aoun & Li 1993, Ernst 1994, P. Law 2006, *i.a.*):
 - (i) *Why*-questions (i.e. covert *wh*-movement), and
 - (ii) A-not-A questions
- Intervention effects are attested in *why*- and A-not-A questions (Ernst 1994, Wu 1997, A. Law 2001, R. Huang 2012, Soh 2005, P. Law 2006, B. Yang 2012, Tsai & Yang 2015, *i.a.*)
 - Interveners: [Qu] quantificational elements
 1. Focus operators, e.g. “only”, “even”,
 2. Modals, e.g. “must”,
 3. Quantifiers, e.g. “everyone”, “someone”, “no one”,
 4. Negation “not”,
 5. Adverbs of quantification, e.g. “often”, etc.
 - Non-interveners: non-quantificational elements
 1. Locatives, e.g. “on the subway”,
 2. Temporals, e.g. “today”,
 3. *Wh*-nominals, e.g. “who”,
 4. Fronted argument (i.e. topics) (vs. Haegeman 2010a,b),
 5. Preposed VPs (vs. Haegeman 2010a,b), etc.³
- Some examples showing intervention effects in A-not-A questions:
 - Focus: ✗ $XP_{Foc} \dots A\text{-not-A}$,
 ✓ $A\text{-not-A} \dots XP_{Foc}$
 - Modals & modal adverbs: ✗ $Mod \dots A\text{-not-A}$
 ✓ $A\text{-not-A} \dots Mod$

(14) a. *zhiyou Zhangsan **hui-bu-hui** lai?
 only Z. will-NEG-will come
 b. **hui-bu-hui** zhiyou Zhangsan lai?
 will-NEG-will only Z. come
 ‘Will it be that only Zhangsan comes?’

(15) a. *Zhangsan yiding **hui-bu-hui** lai?
 Z. definitely will-NEG-will come
 b. **shi-bu-shi** Zhangsan yiding hui lai?
 COP-NEG-COP Z. definitely will come
 ‘Will Zhangsan definitely come?’

³ Unlike English, fronted arguments and preposed VPs do not trigger intervention effects in Chinese, see Appendix B. They are presumably derived by topicalization. Relatedly, topics in Italian also do not disrupt *wh*-movement (Rizzi 2004). Rizzi suggests that the [topic] feature is distinct from other A-bar features in Italian (i.e. not belong to [Qu]), as evidenced by that topic iteration is allowed in Italian, but not English. Since topics may also iterate in Chinese, the same explanation may apply to Chinese as well.

- Quantifiers: ✗ QP... A-not-A
✓ A-not-A...QP

- Negation: ✗ ¬...A-not-A
✓ A-not-A...¬

- (16) a. *hen shaoren/meiren **hui-bu-hui** lai?
very few ppl./nobody will-NEG-will come
b. **hui-bu-hui** hen shaoren/meiren lai?
will-NEG-will very few ppl./nobody come
'Will very few people/nobody come?'

- (17) a. *Zhangsan bu **hui-bu-hui** lai?
Z. NEG will-NEG-will come
b. Zhangsan{**hui-bu-hui**} bu lai?
Z. will-NEG-will NEG come
'Will Zhangsan not come?'

➤ Intervention effects are found in *zai*-TACs only

- No intervention effects in *dang*-TACs
- (High) Quantificational elements⁴
 - **Focus**, e.g. *zhiyou* 'only', *shi* 'be' clefting

(18) **Focus**: ✗ *zai*-TACs, ✓ *dang*-TACs

- a. ??**zai** [zhiyou-Zhangsan] kao gaofen] de shihou, mama jiu hen gaoxing.
ZAI only-Z. get high.score MOD time mum then very happy
b. **dang** [zhiyou-Zhangsan] kao gaofen] de shihou, mama jiu hen gaoxing.
DANG only-Z. get high.score MOD time mum then very happy
'Mum was happy when only ZHANGSAN got a high score.'

- **Epistemic modals**

(19) **Epistemic modals**: ✗ *zai*-TACs, ✓ *dang*-TACs

- a. ??Zuotian **zai**[Zhangsan yinggai^{Epi}] hai zai jia] de shihou, you jingcha lai zhaota
ytd. ZAI Z. should still at home MOD time have police come find 3SG
b. Zuotian **dang** [Zhangsan yinggai^{Epi}] hai zai jia] de shihou, you jingcha lai zhaota
ytd. DANG Z. should still at home MOD time have police come find 3SG
'Yesterday, when Zhangsan probably was still at home, police came find him.'

- Note that quantificational elements that are low in the structure may occur in *zai*-TACs
 - E.g. deontic modals, (post-subj.) *lian* 'even' focus, negation *bu* 'not', quantifiers (subj.), etc.

⁴ Assuming *ruguo* 'if' as a quantificational element (e.g. it may existentially bind a *wh*-indefinite, Lin 2014), it also triggers intervention effects in *zai*-TACs but not *dang*-TACs:

- (i) 当如果要表达一边...一边..的时候, 通常使用 As/ as well as 喔! (from [Internet](#))
Dang [ruguo] yao biaoda "yibian...yibian..."de shihou, tongchang shiyong "As/ as well as" o!
DANG if need express yibian...yibian... MOD time usually use as/ as well as
'When we need to express the meaning of "yibian...yibian..."', we usually use "as" or "as well as".'
(ii) *在如果要表达一边...一边..的时候, 通常使用 As/ as well as 喔!
***zai** [ruguo] yao biaoda "yibian...yibian..."de shihou, tongchang shiyong "As/ as well as" o!
ZAI if need express yibian...yibian... MOD time usually use as/ as well as

(20) Deontic modals

Zuotian **zai** [Zhangsan **yinggai**^{Deo} houhou daizai jia] de shihou, ta que bujian-le
ytd. ZAI Z. should well stay home MOD time 3SG instead disappear-PERF
'Yesterday, when Zhangsan ought to stay at home, he instead disappeared.'

- They would trigger intervention effects if they occur high:
e.g. epistemic *yinggai* 'should' (19)-(20) (cf. Lin 2012 & Tsai 2015 for modal positions)
e.g. pre-subject *lian* 'even' focus (cf. Chen 2020 for the two positions of *lian* 'even' focus)

(21) High vs. low *lian* 'even' focus

- a. **zai** [{*lian* shuxue}] Zhangsan [{*lian* shuxue}] dou guadiao] de shihou, laoshi jiu shengqi
ZAI even math. Z. even math. also failed MODtime teacher then mad
'When Zhangsan even failed mathematics, the teacher became mad.'
- b. **dang** [{*lian* shuxue}] Zhangsan [{*lian* shuxue}] dou guadiao] de shihou, laoshi jiu shengqi
DANG even math. Z. even math. also failed MODtime teacher then mad
'When Zhangsan even failed mathematics, the teacher became mad.'

- Crucially, these low quantificational elements block the low reading:
✓ High construal (I have lived thousands of years) vs. ✗ Low construal (I'm alive in 2012)

(22) Low *lian* 'even' focus blocks the low reading

#**zai** [_{CP} Mayaren [*lian* shijie] dou yuyan [_{CP} *ti* hui huimie]] de shihou, wo hai huozhe.
ZAI Maya.people evenworld also foretell will destroy MODtime 1SG still alive
'I'm still alive at the time when Maya people even predicted the world to end.' (only high reading)

(23) Deontic modals block the low reading

#**zai** [_{CP} Mayaren [*keyi*] yuyan [_{CP} **shijie hui huimie**]] de shihou, wo hai huozhe.
ZAI Maya.people can foretell world will destroy MODtime 1SG still alive
'I'm still alive at the time when Maya people could make the apocalyptic prophecy.' (only high reading)

(24) Quantifiers block the low reading

#**zai** [_{CP} you Mayaren [*keyi*] yuyan [_{CP} **shijie hui huimie**]] de shihou, wo hai huozhe.
ZAI have Maya.people can foretell world will destroy MODtime 1SG still alive
'I'm still alive at the time when some Maya people made the apocalyptic prophecy.' (only high reading)

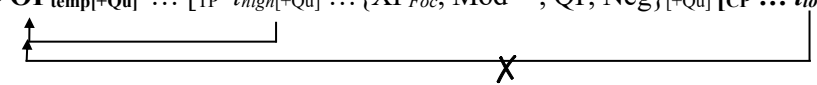
(25) Negation blocks the low reading

#**zai** [_{CP} Yinshangren hai [*mei*] yuyan [_{CP} **shijie hui huimie**]] de shihou, wo hai huozhe.
ZAI Shang.people yet NEG foretell world will destroy MODtime 1SG still alive
'I'm still alive at the time when Maya people hadn't make the apocalyptic prophecy.' (only high reading)

- Explaining the differences between high vs. low [Qu] elements (e.g. Mod^{Epi} vs. Mod^{Deo})
 - For mono-clausal *zai*-TACs,
 - The OP moves from the edge of TP to Spec,CP
 - Mod^{Epi} is higher than TP → c-command OP_{temp} → blocks movement
 - Mod^{Deo} is lower than TP → does not c-command OP_{temp} → does not block movement

(26) [CP OP_{temp}[+Qu] Mod^{Epi}[+Qu] [TP *t*_[+Qu] ... Mod^{Deo}[+Qu] ...]]
 (movement blocked by high [Qu]-elements only)

- For bi-clausal *zai*-TACs with a low construal,
 - The lower OP_{temp} is always c-commanded by the low [Qu] elements in the upper clause
 - Intervention effects block the long-distance OP movement

(27) *hai* [CP OP_{temp}[+Qu] ... [TP *t*_{high}[+Qu] ... {XP_{Foc}, Mod^{Deo}, QP, Neg}[+Qu] [CP ... *t*_{low}[+Qu]]]]
 (high reading allowed)
(low reading blocked)

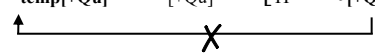
- Taking stock:

(28) Asymmetries in intervention effects among the two types of TACs

[Qu]-elements	Trigger intervention effects to ...		
	A-not-A strings?	<i>zai</i> -TACs?	<i>dang</i> -TACs?
Focus	YES	YES	NO
Modals	YES	YES	NO
Quantifiers	YES	YES	NO
Negation	YES	YES	NO

- Again, the asymmetries in intervention effects between *zai*-TACs and *dang*-TACs can be explained by their different strategies employed:

(29) The asymmetries in intervention effects derived by the presence/absence of OP movement

- **hai* [CP OP_{temp}[+Qu] ... Z_[+Qu] ... [TP ... *t*_[+Qu] ...]]
 (block local or long-distance movement)
- dong* [CP OP_{temp}[+Qu] ... Z_[+Qu] [TP ...]]
 (no movement to be blocked)

2.3. A cross-linguistic note: TACs in Cantonese and Hungarian

- The MOVEMENT vs. IN-SITU strategies also crosscut TACs in other languages
- Cantonese, another Chinese language (Yip to appear)
 - Hai* 係 ‘at’-TACs vs. *Dong* 当 ‘at, while’-TACs
 - Asymmetries in high-low ambiguities:

- (30) {**Hai/#dong**} [Maangaajan **jyujin** [saigaai wui **waimit**]] gozan, ngo zung saangngaungau.
HAI DONG Maya.people foretell world will destroy that.time 1SG still alive
High: #‘I’m still alive at the time when Maya people made the apocalyptic prophecy.’ (*hai, dong*)
Low: ‘I’m still alive at the time when Maya people predicted to be the end of the world.’ (*hai*)

- Asymmetries in intervention effects (e.g. focus):

- (31) {***hai2 /^{OK}dong**} [**hai6** Aaming] fangaau] gozan, lousi zau faatnau.
HAI DONG be Ming sleep that.time teacher then mad
‘The teacher became mad when it was MING (but not someone else) that fell asleep.’

➤ Hungarian

- Two types of *wh*-expressions in TACs (Lipták 2005, Ürögdi 2009)⁵
 - Type I: With relative morphology *a-*: e.g. *ameddig* REL-what-WHILE ‘while’
 - Type II: Without relative morphology *a-*: e.g. *miután* what-AFTER ‘after’
- Type I: *wh*-OP *mi* merges low to relativize a time variable by OP movement
→ detected by the relative morphology
Type II: *wh*-OP *mi* merges high to relativize the whole IP/TP (+ head mvt. to P): No OP mvt.
- Asymmetries in high-low ambiguities:

- (32) Addig maradok, [**ameddig** mondod [hogy maradjak]].
that-WHILE stay-1SG REL-what-WHILE say-2SG that stay-SUBJ-1SG
high: ‘I stay until the time you keep saying that I should say.’
low: ‘I stay until time t. You say I should stay until time t.’ (Lipták 2005:75)
- (33) Azután indulok el [**miután** szólsz [hogy Péter elindult]].
that-AFTER leave-1SG PV what-AFTER tell-1SG that Péter left-3SG
high: ‘I leave after time t when you tell me that Péter has left.’
*low: ‘I leave after time t. You tell me that Péter left at time t.’ (Lipták 2005:75)

⁵ Ürögdi (2009) also extends the account to English temporal *while*-clauses, which disallow low readings (Larson 1990) and may allow epistemic modal adverbs *probably*. Note that this departs from Haegeman (2009), who argues that temporal *while*-clauses are subject to intervention effects.

(iii) I didn’t see Mary in New York [while [she **said** [she **was** there]]]
High: ‘I didn’t see Mary in New York at the time of her utterance.’
*Low: ‘I didn’t see Mary in New York at the time that she claimed to be when she was there.’ (Larson 1990:174)
(iv) I didn’t dare go in [while John was (**probably**) in the room]. (Ürögdi 2009:164)

3. Event conditional clauses with and without operator movement

- The internal syntax of conditional adverbial clauses involves operator movement (“World” operator in Bhatt & Pancheva 2002, 2006, 2017, and “Irrealis” operator in Haegeman 2010a, b, 2012, Danckaert & Haegeman 2012)

(33) [CP **OP**_{world/irrealis} [TP ... *t* ...]]



- **Overview:** Two types of event conditional clauses
 - Without OP movement: formed by **outer *ruguo* 如果 ‘if’**
 - With OP movement: formed by **inner *ruguo* 如果 ‘if’**

(34) Outer *ruguo* conditionals without operator movement:

[CP **OP**_{world/irrealis} *ruguo* [TP ...]]

(35) **Ruguo** dajia piping Zhangsan, ta hui hen shengqi.
if everyone criticize Z. 3SG will very angry
‘If everyone criticizes Zhangsan, he will be very angry.’

(36) Inner *ruguo* conditionals with operator movement:

[CP **OP**_{world/irrealis} [C ... [TP XP...*ruguo t* ...]]]



(37) Dajia **ruguo** piping Zhangsan, ta hui hen shengqi.
everyone if criticize Z. 3SG will very angry
‘If everyone criticizes Zhangsan, he will be very angry.’

3.1 Distributional properties of conditional *ruguo*

- The existence of inner *ruguo*
 - Pan & Paul (2018): A DP can precede *ruguo* within the conditional adverbial clause

(38) Zhangsan **ruguo** e-le, ta hui qu mai dongxi de.
Z. if be.hungry-PERF 3SG will go buy thing DE
‘If Zhangsan is hungry, he will go and buy something.’

(Pan & Paul 2018: 135)

- In addition to DPs, *ruguo* can linearly follow various phrases and occur clause-internally.

(39) a. **ruguo** mingnian Zhangsan zai Shanghai jiehun, ta hui yaoqing Lisi.
if next.year Z. in get.married 3SG will invite L.
‘If Zhangsan gets married in next year, he will invite Lisi.’
b. mingnian **ruguo** Zhangsan zai Shanghai jiehun,
next.year if Z. in get.married

- c. mingnianZhangsan **ruguo** zai Shanghai jiehun,
next.year Z. if in get.married
d. mingnian Zhangsan zai Shanghai **ruguo** jiehun,
next.year Z. in if get.married

➤ Is inner *ruguo* the result of topicalization (cf. Pan & Paul 2018)?

(40) [_{CP} XP_i *ruguo* [_{TP}...t_i...]]

- Inner *ruguo* is compatible with indefinite subjects, which cannot be topics.
 - Indefinite DPs like *dajia* 大家‘everyone’, *da-bufen ren* 大部分人‘the majority of people’, *hen-duo ren* 很多人‘many people’ cannot be topics, but they are compatible with inner *ruguo*.

(41) *[*dajia* / *da-bufen ren* /*hen-duo ren*]_i, Lisi juede, t_i hui piping Zhangsan
everyone big-part people very-many people L. think will criticize Z.
Intended ‘Everyone/the majority/many people, Lisi thinks, will criticize Zhangsan.’

- (42) a. Ruguo *dajia* / *da-bufen ren* /*hen-duo ren* piping Zhangsan, ta hui hen shengqi.
if everyone big-part people very-many people criticize Z. 3SG will very angry
‘If everyone/the majority/many people criticize Zhangsan, he will be very angry.’
b. *Dajia* / *da-bufen ren* /*hen-duo ren* ruguo piping Zhangsan, ...
everyone big-part people very-many people if criticize Z.

- NPI licensing (Lin 1996, 1998): indefinite *wh* is compatible with inner *ruguo*
 - In the case of inner *ruguo*, NPIs are c-commanded/licensed by a moved operator at LF

- (43) a. {*Ruguo*} *shenme ren* /*shui* {*ruguo*} chidao-le, ni yao gaosu wo
if what people who if late-PERF 2SG should tell 1SG
‘If anyone has been late, you should tell me.’ (Conditional reading)
b. *Shenme ren* /*shui* chidao-le, ni yao gaosu wo
what person who late- PERF 2SG should tell 1SG
‘Who has been late, you should tell me.’ (Embedded question reading)

3.2 *Inner ruguo and intervention effects*

➤ English *if*-clauses lack certain main clause phenomena: high modals and adverbs are not allowed.

- (44) a. *If they **luckily/fortunately** arrived on time, we will be saved.
b. *If George **probably** comes, the party will be a disaster. (Haegeman 2010: 9, 22)

- High modal and adverbs in *ruguo*-clauses: \times Mod/Adv...*ruguo*, \checkmark *ruguo*...Mod/Adv

(45) a. {**ruguo**} Zhangsan {**ruguo**} xingyun-de {***ruguo**} mei shoushang, Lisi hui hen gaoxing
if Z. if fortunately if NEG injured L. will very happy
'If Zhangsan fortunately is not injured, Lisi will be very happy.'

b. {**ruguo**} Zhangsan {**ruguo**} yiding {***ruguo**} hui chidao, women yinggai tiqian zuo zhunbei
if Z. if definitely if will late 1PL should beforehand do prepare
'If Zhangsan definitely will be late, we should do some preparations beforehand.'

➤ Other interveners in A-not-A questions and *zai*-TACs: Quantifiers, Focus, Negation, etc. (see §2.2)

- The same set of elements also behave like interveners to inner *ruguo* but not outer *ruguo*

□ **Quantifiers:** \times QP...*ruguo*, \checkmark *ruguo*...QP

(46) {**Ruguo**} hen shao ren/ meiren {***ruguo**} lai, Lisi hui hen shiwang.
if very few person/ nobody if come L. will very disappointed
'If very few people/nobody come(s), Lisi will be very disappointed.'

□ **Focus:** \times XP_F...*ruguo*, \checkmark *ruguo*... XP_F

(47) {**ruguo**} zhiyou Zhangsan {***ruguo**} lai, Lisi hui hen shiwang.
if only Z. if come L. will very disappointed
'If only Zhangsan comes, Lisi will be very disappointed.'

□ **Negation:** \times \neg ...*ruguo*, \checkmark *ruguo*... \neg

(48) {**ruguo**} Zhangsan {**ruguo**} bu {***ruguo**} lai, Lisi hui hen shiwang.
if Z. if NEG if come L. will very disappointed
'If Zhangsan doesn't come, Lisi will be very disappointed.'

3.3 Another cross-linguistic note: Japanese *moshi*, Vietnamese *nếu*, and Hindi *agar*

➤ *moshi* 'if' can also occur clause-internally in certain Japanese conditionals.

(49) {**moshi**} John-ga {**moshi**} Mary-ni choko-o age-tara, minna-ga odoroku
if J-NOM if M-DAT choco-ACC give-COND everyone-NOM be.surprised
'If John gives chocolates to Mary, everyone will be surprised.' (Modified from M. Yang 2020: 9)

- Inner *moshi* is subject to intervention effects

□ **Focus and quantifier** are interveners to in-situ wh-elements in Japanese (Tomioka 2007):

(50) a. ???Ken-dake-ga nani-o yon-da-no?
Ken-only-NOM what-ACC read-PAST-Q
'What did only Ken/Ken also read?'

- b. ??Dareka-ga nani-o yon-da-no?
someone-NOM what-ACC read-PAST-Q

‘What did everyone/someone/Ken or Erika read?’

(Tomioka 2007: 2-3)

□ **Focus:** \times $XP_F \dots moshi$, \checkmark $moshi \dots XP_F$

- (51) {moshi} John-dake-ga {*moshi} Mary-ni choko-o age-tara, minna-ga odoroku
if J-only-NOM if M-DAT choco-ACC give-COND everyone-NOM be.surprised
‘If only John gives chocolates to Mary, everyone will be surprised.’

□ **Quantifiers:** \times $QP \dots moshi$, \checkmark $moshi \dots QP$

- (52) {moshi} dareka-ga {*moshi} Mary-ni choko-o age-tara, minna-ga odoroku
if someone-NOM if M-DAT choco-ACC give-COND everyone-NOM be.surprised
‘If someone gives chocolates to Mary, everyone will be surprised.’

➤ Vietnamese *nếu* ‘if’ also has the same contrast (Nguyen Thi Hong Quy p.c.):

- Inner *nếu* ‘if’ vs. Outer *nếu* ‘if’:

- (53) {Nếu} Lan {nếu} đến, Minh sẽ rất vui
if Lan if come Minh will very happy
‘If Lan comes, Minh would be very happy.’

- Only inner *nếu* ‘if’ is subject to intervention effects, but not outer *nếu* ‘if’:

- (54) {Nếu} chỉ có Lan {*nếu} đến, Minh sẽ rất thất vọng. (‘only’ focus)
if only have Lan if come Minh will very disappointed
‘If there’s only Lan coming, Minh would be very disappointed.’

- (55) {Nếu} Lan có thể {*nếu} đến, Minh sẽ rất vui. (modals)
if Lan capably if come, Minh will very happy
‘If Lan could come, Minh would be very happy.’

- (56) {Nếu} không có ai {*nếu} đến, Minh sẽ rất thất vọng. (quantifiers)
if NEG have anyone if come Minh will very disappointed
‘If there is nobody coming, Minh would be very disappointed’

- (57) {Nếu} không phải Lan {*nếu} đến, Minh sẽ rất thất vọng. (negation)
if NEG COP Lan if come Minh will very disappointed
‘If Lan could come, Minh would be very happy.’

- (58) {Nếu} Lan thường xuyên {*nếu} đến, Minh sẽ rất vui. (adverbs of quantification)
if Lan often if come Minh will very happy
‘If Lan could come, Minh would be very happy.’

➤ Hindi *agar* also shows a similar pattern (Mahajan p.c.):

- It may occur clause-internally:

(59) {**agar**} John {**agar**} kal {**agar**} Mary-ko chocolate de:, log bohot hera:n hōge
if John if tomorrow if Mary-ACC chocolate give people very surprised will-be
'If John gives chocolates to Mary tomorrow, people will be surprised.'
(Agarwal: p.c.)

- (For some speakers), focus behave like an intervener to inner *agar*:

□ Focus: ✗ $XP_F \dots \text{agar}$, ✓ $\text{agar} \dots XP_F$

(60) {**agar**} [John-hii] {%**agar**} kal {%**agar**} Mary-ko chocolate de:,
if John-FOC if tomorrow if Mary-ACC chocolate give
log bohot hera:n hōge
people very surprised will-be
'If only John gives chocolates to Mary tomorrow, people will be surprised.'
(Mahajan p.c.)

3.4 *Interim summary*

- Parallel to A-not-A and *zai*-TACs, inner *ruguo* consistently show intervention effects:

□ ✗ intervener ... *ruguo*/A-not-A, ✓ *ruguo*/A-not-A ... intervener

[Qu]-elements	Trigger intervention effects to ...				
	A-not-A	<i>zai</i> -TACs?	<i>dang</i> -TACs?	Inner <i>ruguo</i> ?	Outer <i>ruguo</i> ?
Focus	YES	YES	NO	YES	NO
Modals	YES	YES	NO	YES	NO
Quantifiers	YES	YES	NO	YES	NO
Negation	YES	YES	NO	YES	NO

- **Both** IN-SITU and MOVEMENT strategies are found in the internal syntax of CACs.

	TACs	Conditionals
IN-SITU	<i>dang</i> -TACs	Outer <i>ruguo</i>
MOVEMENT	<i>zai</i> -TACs	Inner <i>ruguo</i>

3.5 *Ruguo, if and islandhood*

➤ If *ruguo* involves operator (movement), do we expect to find island effects associated with it?

- In conditionals, *ruguo* adverbial clause is an island (Huang et al. 2009)

□ *ruguo*-clauses do not allow A-bar extraction.

(61) a. *ruguo* Zhangsan cai lei, Lisi hui hen shiwang
if Z. step.on land.mine L. will very disappointed
'If Zhangsan suffers a loss, Lisi will be very disappointed.'

- b. **ruguo* Zhangsan **cai-bu-cai** lei, Lisi hui hen shiwang?
if Z. step.on-NEG-step.on land.mine L. will very disappointed
Intended ‘Will Lisi be very disappointed if Zhangsan suffers a loss, or if Zhangsan doesn’t suffer a loss?’

- A *ruguo* clause is not a dependent/adverbial clause on its own

- (62) a. tamen jiashe-le [{(**ruguo**)} Zhangsan {(**ruguo**)} hui cai lei].
3PL hypothesize-PERF if Z. if will step.on land.mine
‘They hypothesized that Zhangsan would take a loss.’
b. tamen hui kaolv [{(**ruguo**)} Zhangsan {(**ruguo**)} cai lei] **de qingkuang**
3PL will consider if Z. if step.on land.mine DE situation
‘They will consider a situation in which Zhangsan takes a loss.’

- Merging *ruguo* creates an island outside adjunct configurations

- (63) a. tamen jiashe [(***ruguo**) Zhangsan (***ruguo**) **hui-bu-hui** cai lei]?
3PL hypothesize if Z. if will-NEG-will step.on land.mine
‘Do they hypothesize that Zhangsan will take a loss or Zhangsan will not take a loss?’
b. na ge [tamen jiashe [(***ruguo**) Zhangsan (***ruguo**) hui cai]] **de lei**
that CL 3PL hypothesize if Z. if will step.on DE land.mine
‘the loss *x* such that they hypothesize that Zhangsan would suffer *x*’

- English *if* outside conditional configurations

- (64) a. RobJ1981 asked us to imagine [**if** this were a DVD list].
b. (?)*The Man in the High Castle* asked us to imagine [**if** Germany had won WWII].

- *if* seems to block wh-extraction as well

- (65) a. ***Which war**_i did *The Man in the High Castle* ask us to imagine [**if** Germany had won t_i]?
b. **Which war**_i did *The Man in the High Castle* ask us to imagine [**that** Germany had won t_i]?

4 Extensions: Peripheral adverbial clauses

- In fact, the MOVEMENT strategy is also involved in some PACs.

- Mandarin “inferential clauses” involving *jiran* 既然 ‘since’ (Pan & Paul 2018’s terminology):
 - *Semantic class*: discourse-related (≠event reasons)
 - *External syntax*: attach high: main clauses at the speech act level (e.g. an imperatives with a SFP *ba*), a characteristic of PACs. (see also Wei & Li 2018)
 - *Internal syntax*: *jiran* can occur clause-initially (=outer) and clause-internally (=inner).

- (60) {**jiran**} **dajia** {**jiran**} shijian chongtu, na quxiao huiyi ba.
since everyone since time conflict then cancel meeting SFP.IMP
‘Since everyone’s schedule conflicts (with each other), then (you should) cancel the meeting.’

- Inner *jiran* and **intervention effects**

- Only outer but not inner *jiran* is compatible with ‘only’, suggesting the existence of operator movement in the internal syntax of inferential clauses formed with inner *jiran*; while outer *jiran* involves IN-SITU OP.

(61) {**jiran**} zhiyou-Zhangsan {***jiran**} lai, na quxiao huiyi ba.
since only-Z. since come then cancel meeting SFP.IMP
‘Since only ZHANGSAN came, then (you should) cancel the meeting.’

- Similar contrasts are also found in other PACs, e.g. concessive *suiran* 虽然 ‘although’ clauses.
- **Both** IN-SITU and MOVEMENT strategies are found in the internal syntax of **both** CACs and PACs.

(62) A typology of the internal syntax of CACs and PACs

	CACs		PACs	
	Temporal	Conditional	Inferential	Concessive
IN-SITU	<i>dang</i> -TACs	Outer <i>ruguo</i>	Outer <i>jiran</i>	Outer <i>suiran</i>
MOVEMENT	<i>zai</i> -TACs	Inner <i>ruguo</i>	Inner <i>jiran</i>	Inner <i>suiran</i>

5 Concluding remarks

➤ The existence/absence of operator movement is *not* a syntactic correlate of the CAC vs. PAC dichotomy.

- CACs like *dang*-TACs and outer-*ruguo* conditionals do *not* involve OP movement;
- PACs like inner-*jiran* inferential clauses may also involve OP movement.

(63) CACs with and without OP movement

a. *Temporal clauses: zai vs. dang*

zai [_{CP} **OP**_{temp} [C ... [_{TP} *t* ...]]] vs. *dang* [_{CP} **OP**_{temp} [C ... [_{TP} ...]]]

b. *Event conditional clauses: inner vs. outer ruguo*

[_{CP} **OP**_{world/irrealis} [C ... [_{TP} XP...*ruguo t* ...]]] vs. [_{CP} **OP**_{world/irrealis} *ruguo* [_{TP} ...]]

(64) PACs with and without OP movement

Inferential clauses: inner vs. outer jiran

[_{CP} **OP**_{inferential} [C ... [_{TP} XP...*jiran t* ...]]] vs. [_{CP} **OP**_{inferential} *jiran* [_{TP} ...]]

- Supported by the correlation with **intervention effects**:
OP MOVEMENT → Subject to intervention effects
IN-SITU OP → No intervention effects

➤ **Intervention effects** as strong evidence for OP MOVEMENT in adverbial clauses

- Previous proposals have been primarily based on data from ***wh-ex-situ*** languages⁶
- Intervention effects offer strong support for OP MOVEMENT in ***wh-in-situ*** languages:
E.g. Mandarin, Cantonese, Japanese
- The parallel in A-bar dependencies between *wh-in-situ* and *wh-ex-situ* languages extends beyond constructions like *wh*-questions, relative clauses, etc.

➤ **A unified internal syntax** for various kinds of adverbial clauses

- Operators may freely merge low and high
 - Low → OP MOVEMENT strategy
 - High → IN-SITU strategy
- Also hints on the autonomy of syntax (i.e. OP mvt. does not align with semantic classes)
- **Re-consideration of the central-peripheral dichotomy** of adverbial clauses
(cf. a finer typology in Endo & Haegeman 2019)
 - Misalignment between *internal syntax* and *semantic classes*
 - Any misalignment between *internal* and *external syntax*?⁷

⁶ E.g. English, German, Dutch, and West Flemish (Haegeman 2010a, b; Danckaert & Haegeman 2012), Serbo-Croatian (Arsenijević 2009), Polish (Tomaszewicz 2009), Akɔɔse (Zentz 2011), French (Authier & Haegeman 2015), and Greek (Chatzopoulou 2019).

⁷ Temporal clauses seem to have the alignment, e.g. only *zai*-clauses but not *dang*-clauses may attach to main clauses below matrix subjects (see also Pan & Paul 2018).

(v) 妈妈[在/*当张三考高分的时候]很高兴
 mama [{zai/*dang} Zhangsan kao gaofen deshihou] hen gaoxing.
 mum at at Z. get high.score that.time very happy
 ‘Mum was happy when Zhangsan got a high score.’

However, PACs like inferential clauses may not (i.e. both inner and outer *jiran* clauses attach to imperatives in §4).

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Appendix A: Evidence for *dang* as a subordinator at C

- There are three pieces of evidence supporting *dang* to be a subordinator at C rather than a preposition. First, *dang* may directly take a clause without *shihou*, whereas *zai* must occur with a head NP *shihou* ‘time’.

(65) {当/*在}[看到他的家人], 才知道他为何要当演员 (From [Internet](#), with *zai* added)
{Dang/*zai}[kandaota de jiaren], cai zhidao ta weihe yao dangyanyuan
DANG ZAI saw 3SG MODfamily then know 3SG why wantto.be actor
‘When I saw his family, I (finally) know that why he wanted to be an actor.’

- Second, *dang* also allows the bound morpheme *shi* ‘time’ to cliticize to the clause, which is degraded for *zai*.

(66) {当/??在}[他醒来]时, 恐龙还在那里 (From [Internet](#), with *zai* added)
{dang/??zai}[ta xinglai] shi, konglonghai zai nali
DANG ZAI 3SG wake.up time dinosaur still at there
‘When he woke up, the dinosaur is still there.’

- Third, *dang* never takes a simple NP, as opposed to *zai*.

(67) {*当/在}_[NP 星期天]
{*dang/ zai}_[NP Xingqitian]
DANG ZAI Sunday
‘on Sunday’

Appendix B: Argument fronting and VP preposing do not trigger intervention effects in Chinese

➤ A-not-A does not interact with argument fronting or VP preposing.

(68) a. [自己的朋友]_i 张三会不会出卖 _{t_i}?

[**ziji_j** **de pengyou**]_i Zhangsan_j **hui-bu-hui** chumai _{t_i}?
SELF DE friend Z. will-NEG-will betray
'Will Zhangsan betray self's friends?'

b. [出卖自己的朋友]_i 张三会不会 _{t_i}?

[**chumai ziji_j** **de pengyou**]_i Zhangsan_j **hui-bu-hui** _{t_i}?
betray SELF DE friend Z. will-NEG-will
'Will Zhangsan betray self's friends?'

➤ Similarly, inner-*ruguo* does not interact with argument fronting or VP preposing either.

(69) a. [自己_j的朋友]_i{如果}张三_j{如果}肯定不会出卖 _{t_i}, 我们就可以信任他。

[**ziji_j** **de pengyou**]_i {**ruguo**} Zhangsan_j {**ruguo**} kending bu hui chumai _{t_i},
SELF DE friend if Z. if definitely NEG will betray
women jiu keyi xinren ta
1PL JIU can trust 3SG
'If self's friends Zhangsan definitely won't betray, then we can trust him.'

b. [出卖自己_j的朋友]_i{如果}张三_j{如果}肯定不会 _{t_i}, 我们就可以信任他。

[**chumai ziji_j** **de pengyou**]_i {**ruguo**} Zhangsan_j {**ruguo**} kending bu hui _{t_i},
betray SELF DE friend if Z. if definitely NEG will
women jiu keyi xinren ta
1PL JIU can trust 3SG
'If betray self's friends Zhangsan definitely won't, then we can trust him.'