

Scope Properties of Parasitic Gaps in Adjunct Control in Japanese*

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1 Parasitic Gaps in English and Japanese

Parasitic Gaps (PGs) in English exhibit scope disambiguation between an object wh-phrase and a subject quantifier phrase (QP), as shown in (1b).

(1) a. Which paper did everyone file? (collective/distributive)

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- b. Which paper did everyone file without reading?
 (collective/*distributive) (Hornstein 1995)

In this paper, we aim to show that the same scope disambiguation effect is observed with PGs in adjunct control clauses in Japanese, and provide a unified analysis of PGs in English and Japanese in terms of the quantifier (Q)-absorption mechanism (Watanabe 2000, Miyamoto 2008, 2022), FormCopy (Chomsky 2021), and Parallelism on copy deletion.

- (2) Dare_i-o minna-ga [*pg_i* hagemasi ni] *t_i* tazuneta no?
 who-ACC everyone-NOM cheer.up NI visited Q
 ‘Who_i did all visit *t_i* [to cheer up *pg_i*]?’ (collective/*distributive)

As adjunct control in Japanese has attracted little attention in the literature, we first show that goal/rationale clauses in Japanese are instances of adjunct control, and then give an analysis on scope properties of PGs in goal clauses.

2 Goal Clauses and Rationale Clauses as Adjunct Control Clauses

Most of the analyses on control constructions in Japanese have focused on complement control constructions (Nemoto 1993, Uchibori 2000, Fujii 2006, a.o.), the notable exception being Dubinsky and Hamano (2007, 2010), who treat sentences like (3a) to be adjunct Obligatory Control (OC). In (3a), the adjunct clause contains an accusative DP and the locative *ni* ‘at’. Dubinsky and Hamano observe that the *ni*-marked NP must be possessed by the sentential subject (its controller). For instance, in (3a), *kuti-ni* ‘mouth-at’ is interpreted as Ken’s mouth. They observe the possessor cannot be overt in the adjunct clause, as shown in (3b), claiming that the possessor is PRO obligatorily controlled by the matrix subject.

- (3) a. Ken_i-wa [kiseru-o PRO_i kuti ni] tatiagatta.
 Ken-TOP pipe-ACC mouth NI stood.up
 ‘Ken stood up [with a pipe in PRO (=his) mouth].’
 (Dubinsky and Hamano 2010: 183)
- b. Mari_i-wa [neko-o (*kanozyo_i-no) aite ni] syokuzi-o siteiru.
 Mari-TOP cat-ACC she-GEN companion NI meal-ACC is.doing
 ‘Mari is eating a meal with a cat as her companion.’ (ibid: 188)

We present other and yet-unnoticed types of adjunct control clauses; goal clauses like (4a) and rationale clauses like (4b). Following the classification of Landau (2021), we argue that a goal clause is an instance of strict

OC clauses, and a rationale clause is an instance of alternating OC/non-obligatory control (NOC) clauses. The OC status of a goal clause is indicated by the absence of the overt pronoun in the position of PRO. In contrast, rationale clauses, an instance of OC/NOC, may include the overt pronoun.

- (4) a. Ken_i-wa [(PRO_i /*kare_i-ga) tabako-o sui ni]
 Ken-TOP he_i-NOM cigarette-ACC smoke NI
 soto-ni deta.
 outside-to went
 ‘(Lit.) Ken went outside [(*him) to smoke].’
- b. Ken_i-wa [(PRO_i /kare_i-ga) tabako-o suu tame ni]
 Ken-TOP he_i-NOM cigarette-ACC smoke purpose NI
 soto-ni deta.
 outside-to went
 ‘Ken went outside [in order (for him) to smoke].’

Let us examine properties of goal clauses and rationale clauses. First, PRO in goal clauses exhibits obligatorily sloppy interpretation, while PRO in rationale clauses exhibits referent ambiguity. Given that the obligatory sloppy interpretation is a hallmark of OC, the obligatoriness of sloppy interpretation in (5a) shows that goal clauses are OC clauses. In contrast, the optionality in (5b) suggests that rationale clauses are alternating OC/NOC clauses.

- (5) a. Ken_i-wa Yui_k-ga zibun_{*i/k}-no kuruma-o arai ni
 Ken-TOP Yui-NOM self-GEN car-ACC wash NI
 gasorinsutando-ni itta to omotta.
 gas.station-to went C thought
 ‘Ken_i thought that Yui_k went to the gas station to wash *his_i/her_k car.’
- b. Ken_i-wa Yui_k-ga zibun_{i/k}-no kuruma-o arau tame ni
 Ken-TOP Yui-NOM self-GEN car-ACC wash purpose NI
 gasorinsutando-ni itta to omotta.
 gas.station-to went C thought
 ‘Ken_i thought that Yui_k went to the gas station in order to wash his_i/her_k car.’

Second, goal clauses are smaller than rationale clauses in size; the irrelevant circumstantial reading aside, only the latter can include negation.

- (6) a. *Ken-wa tabako-o suwa-zu ni niwa-ni deta.
 Ken-TOP cigarette-ACC smoke-NEG NI yard-to went
 ‘Ken went to the yard not to smoke.’

- b. Ken-wa tabako-o suwa-nai tame ni niwa-ni deta.
 Ken-TOP cigarette-ACC smoke-NEG purpose NI yard-to went
 ‘Ken went to the yard in order not to smoke.’

However, neither goal clauses nor rationale clauses are not large enough to block extraction, as they both allow *wh*-extraction out of the adjunct clause, as shown in (7).¹

- (7) a. Nani-o Ken-wa t_i tabe ni café-ni kita no?
 what-ACC Ken-TOP eat NI café-to came Q
 ‘What did Ken come to the café to eat?’
 b. Nani-o Ken-wa t_i taberu tame ni café-ni kita no?
 what-ACC Ken-TOP eat purpose NI café-to came Q
 ‘What did Ken come to the café in order to eat?’

In addition, goal clauses and rationale clauses both allow Argument Ellipsis (AE).

- (8) a. Ken-wa [3-nin-no sensei-ni ai ni] gakkoo-ni itta.
 Ken-TOP 3-CL-GEN teacher-DAT meet NI school-to went
 ‘Ken went to school to meet three teachers.’
 b. Yui-wa [Δ ai ni] gakkoo-ni ika-nakat-ta.
 Yui-TOP meet NI school-to go-NEG-PAST
 ‘Yui didn’t go to school to meet Δ .’
 (Δ = three teachers: E-type/quantificational)
 (9) a. Ken-wa [3-nin-no sensei-ni au tame ni] gakkoo-ni itta.
 Ken-TOP 3-CL-GEN teacher-DAT meet purpose NI school-to went
 ‘Ken went to school in order to meet three teachers.’
 b. Yui-wa [Δ au tame ni] gakkoo-ni ika-nakat-ta.
 Yui-TOP meet purpose NI school-to go-NEG-PAST
 ‘Yui didn’t go to school in order to meet Δ .’
 (Δ = three teachers: E-type/quantificational)

As shown in (8b) and (9b), the null objects may receive quantificational interpretation. Such quantificational reading is expected to be absent if the empty element is a null pronoun corresponding to ‘them’. Therefore, the availability of the quantificational reading suggests the underlying full-

¹ The truncated status of these adjunct clauses may be supported by the absence of the inflected tense morpheme. The detailed discussion on the correlation between the size of the adjunct clause and extraction possibilities is left for future research.

fledged nominal expression ‘three teachers’, which is deleted by AE (Takahashi 2008).

3 Parasitic Gaps in Goal Clauses

So far, we have observed that goal clauses are OC clauses and rationale clause are alternating OC/NOC clauses, and they both allow *wh*-extraction and AE. Now, let us consider an OC goal clause (10a), where a *wh*-phrase is connected to two gap positions in the main clause and the adjunct control clause. We argue that (10a) is an instance of PG in an adjunct clause in Japanese.

- (10) a. Dare_i-o Ken-wa [*pg*_i hagemasi ni] *t*_i tazuneta no ?
 who-ACC Ken-TOP cheer.up NI visited Q
 ‘Who did Ken visit *t*_i [to cheer up *pg*_i]?’
 b.* Ken-wa [*pg*_i hagemasi ni] dare_i-o tazuneta no?
 Ken-TOP cheer.up NI who-ACC visited Q
 ‘Who did Ken visit *t*_i [to cheer up *pg*_i]?’

Given that an element can be elided in goal/rationale clauses, as shown in (8b) and (9b), one may regard (10a) as another example of AE. However, that the in-situ *wh*-phrase cannot license the gap in adjunct clause (10b) shows that the gap is a parasitic gap, which is not licensed by an *in-situ* element (Nissenbaum 2000).

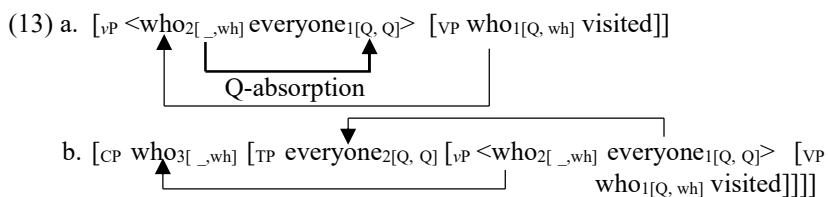
Taking (10a) as an example of PGs, let us consider the quantifier scope interactions. It is well attested that a scrambled *wh*-phrase and a subject QP show scope ambiguities, as shown in (11). Interestingly, if a sentence contains PG in OC clauses, the sentence lacks scope ambiguity, as shown in (2), repeated as (12).

- (11) Dare_i-o minna-ga *t*_i tazuneta no?
 who-ACC everyone-NOM visited Q
 ‘Who_i did everyone visit *t*_i?’ (collective/distributive)
 (12) Dare_i-o minna-ga [*pg*_i hagemasi ni] *t*_i tazuneta no?
 who-ACC everyone-NOM cheer.up NI visited Q
 ‘Who_i did everyone visit *t*_i [to cheer up *pg*_i]?’ (collective/*distributive)

In the following, we argue that the distributive reading is obtained by Q-absorption (Watanabe 2000, Miyamoto 2008, 2022). We further argue that Q-absorption, with FormCopy (Chomsky 2021), results in chain formation that violates the Parallelism condition on copy deletion. Before analyzing (12), let us lay out background assumptions and proposal.

4 Q-absorption, Form Copy and Parallelism on Copy Deletion

Watanabe (2000) and Miyamoto (2008, 2022) argue that scope is determined derivationally in terms of Q-absorption; specifically, distributive reading is obtained when a wh-phrase with [Q, wh] feature is attached to a QP with [Q] feature, where the Q-feature of the wh-phrase is absorbed by the QP, resulting in [Q, Q] feature on the QP. Miyamoto (2008, 2022) further assumes that Q-absorption is conducted at the earliest possible point of the derivation, to the QP in Spec, vP. The subject is then excorporated and moves to Spec, TP. We assume that this excorporation should be operated so that {Subj, TP} is successfully labeled under the Labeling Algorithm (Chomsky 2013, 2015) or in order for the Subject Criterion (Rizzi and Shlonsky 2006). The wh-phrase also undergoes wh-movement to CP.



Now, let us elaborate on the mechanism of copy identification and copy deletion. Chomsky (2021) assumes that derivations are strictly Markovian, and at a particular stage of derivation, earlier application of Merge is not detectable, which renders history of derivation inaccessible. Hence, in order to ensure copy relations, an operation FormCopy (FC) is needed; FC, operating at the phase level, assigns the relation *Copy* to certain identical inscriptions. With FC and Markovian nature of the syntactic derivation, it is then expected that configurations subject to FC but not Internal Merge (IM) are available. Chomsky calls gaps created by such configurations M(arkovian)-gaps, and claims that M-gaps are attested, for instance, in PG sentences like (14).

- (14) a. Which papers did everyone file without reading?
 b. *Which paper₅* did everyone [_{vP} *wh₄* file *wh₃*]
 [_{CP} *wh₂* without reading *wh₁*]?

Chomsky argues that at the CP phase level, FC identifies the wh-phrase at Spec, CP (which paper₅) and at the vP edge (wh₄) to be copies. At the same time, FC identifies the wh-phrase at Spec, CP (wh₅) and the wh-phrase that undergoes movement in the adjunct clause (wh₂) to be copies, an instance of

M-gap. That is, FC identifies three morphologically non-distinct wh-phrases to be copies at the CP-phase level.

Once copy relations are identified, lower copies should be phonologically deleted. Consider a wh-interrogative sentence like (1a), repeated as (15a). When the sentence yields the collective reading, Q-absorption is not operated as shown in (15b). Here, at the derivational point of the CP phase, FC identifies wh_3 at Spec, CP and wh_2 at Spec, vP to be copies, and the lower copy is deleted based on the copy relation. In (15c), where the distributive reading is obtained, Q-absorption occurs at the derivational point of the wh-phrase being adjoined to the subject in Spec, vP. Here as well, FC identifies wh_3 and wh_2 to be copies, with the lower copy deleted based on the copy relation. Here, however, the copy relation is established between the bare wh_3 and the wh_2 that is pair-merged with the subject. This leads to the chain interpretation where the wh-phrase is extracted out of the subject.

- (15) a. Which paper did everyone file? (collective/distributive)
 b. [_{CP} wh_3 _[Q, wh] [_{TP} [_{QP}_[Q] [_{VP} wh_2 _[Q, wh] [_{QP}_[Q] [_{VP} file wh_1 _[Q, wh]]]]]]]]
 c. [_{CP} wh_3 _[_, wh] [_{TP} [_{QP}_[Q, Q] [_{VP} < wh_2 _[_, wh], _{QP}_[Q, Q]> [_{VP} file wh_1 _[Q, wh]]]]]]]]

Going back to a PG sentence like (14), the lower copies (wh_4 and wh_2) are phonologically/morphologically deleted based on the copy relation $\{wh_5, wh_4\}$ and $\{wh_5, wh_2\}$ that are identified at the same time. Regarding such parallel copy identification, we assume that copy-deletion is an instance of deletion operation and it obeys the parallelism condition on deletion in the sense of Fox (2000). Specifically, we suggest that when copy relations $\{\alpha, \beta\}$ and $\{\alpha, \gamma\}$ are identified at the same time, they should exhibit parallel morphological relations; When wh_β is pair-merged to XP at a derivational point, $\{wh_\alpha, <wh_\beta, XP>\}$ and $\{wh_\alpha, wh_\gamma\}$ cannot be identified as copies at the same time; the wh_α cannot be regarded as being extracted out of the pair-merged element and as having moved as a bare wh-phrase simultaneously. Therefore, parallelism cannot identify $<wh_\beta, XP>$ and wh_γ to be copies with respect to wh_α , leaving one copy undeleted.

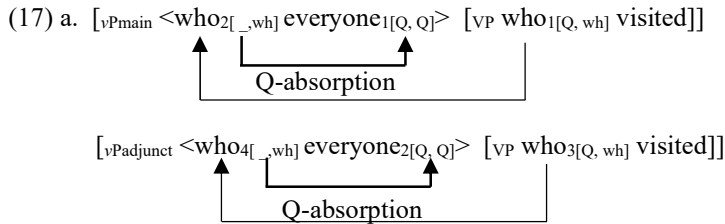
Summarizing so far, we assume that distributive reading is obtained by Q-absorption in a course of derivation. We further assume that copies are identified by FormCopy, which may identify a wh-phrase that heads a parasitic gap in a PG construction to be copies with respect to the wh-phrase in the main clause (M-gap). We argue that copy deletion is subject to the parallelism condition on copy deletion.

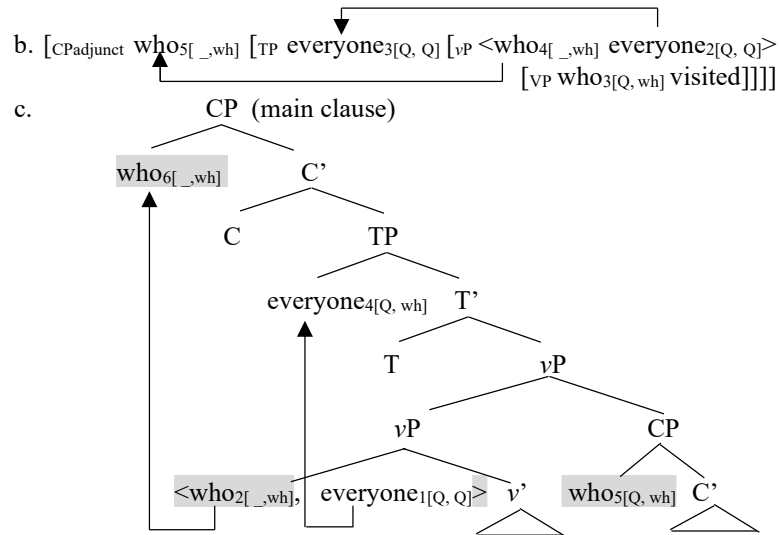
5 Scope Disambiguation with Parasitic Gaps in OC Goal Clauses in Japanese

The Q-absorption analysis, with FC and parallelism on copy deletion, accounts for the absence of distributive reading in (12), repeated as (16).

- (16) Dare_i-o minna-ga [pg_i hagemasi ni] t_i tazuneta no?
 who-ACC everyone-NOM cheer.up NI visited Q
 ‘Who_i did everyone visit t_i [to cheer up pg_i]?’ (collective/*distributive)

Let us consider the derivation that yields distributive reading, concentrating on wh-copies. First, as shown in (17a), the wh-phrase is adjoined to the subject QP and Q-absorption is operated both in the main clause and the adjunct clause, respectively, to assure the parallel interpretation between the main clause and the adjunct clause. FC identifies the wh-phrases ($\{wh_2, wh_1\}$ and $\{wh_4, wh_3\}$) to be copies, deleting the lower copies. Next, the derivation proceeds to the CP phase in the adjunct clause, as shown in (17b); the subject and wh-phrase undergo movement to Spec, TP and Spec, CP, respectively. Again, FC identifies the identical elements created by IM to be copies, deleting the lower one. Then, the adjunct clause is adjoined to the main vP, as shown in (17c). In the main clause, the subject is excorporated and undergoes movement to Spec, TP. The wh-phrase in the main clause also undergoes wh-movement to CP.





Turning to the wh-phrase in the adjunct clause (who₅), following Chomsky (2021), we assume it is regarded as a copy with respect to the wh-phrase in the main clause that moves to CP (who₆). Here, FC identifies {wh₆, <wh₂, QP>} and {who₆, who₅} to be copies. However, under the Parallelism condition on copy deletion, one copy fails to be deleted, as {wh₆, <wh₂, QP>} and {wh₆, wh₅} cannot be identified as copies at the same time; the wh₆ cannot be regarded as being extracted out of the pair-merged element and as having moved as a bare wh-phrase simultaneously.

When Q-absorption is absent, such anomaly does not occur, as all the wh-copies are bare wh-phrases.

- (18) [CP who₆[_{Q,wh}] [TP everyone₄[_Q] [[vP who₂[_{Q,wh}] [everyone₁[_Q] [VP who₄[_{Q,wh}] visit]]] [adjunct CP who₅[_{Q,wh}] [TP everyone₃[_Q] to [vP who₄[_{Q,wh}] [everyone₂[_Q] [VP who₃[_{Q,wh}] cheer up]]]]]]]]]

The present analysis is further extended to scope disambiguation in English PGs illustrated in (1b), repeated as (19).

- (19) Which paper did everyone file without reading?
(collective/*distributive)

If Q-absorption is conducted, FC fails to relate the wh-phrase in the matrix CP with the amalgamated wh-phrase in Spec, vP and the bare wh-phrase in

the adjunct clause. This leads to the absence of Q-absorption and as a result, the absence of the distributive reading.

(20) * $[_{CP} \text{wh}_6[_{., \text{wh}}] \text{ did } [_{TP} \text{everyone}_4[Q, Q] [_{VP} \langle \text{wh}_2[_{., \text{wh}}], \text{everyone}_1[Q, Q] \rangle$
 $[_{VP} \text{file wh}_4[Q, \text{wh}}]] [_{\text{adjunct CP}} \text{wh}_5[_{., \text{wh}}] \text{ without } [\text{everyone}_3[Q, Q]$
 $[_{VP} \langle \text{wh}_4[_{., \text{wh}}] \text{everyone}_2[Q, Q] \rangle \text{ [reading wh}_3[Q, \text{wh}}]]]]]]]]$

6 Concluding Remarks

In this paper, we have observed that PGs in goal clauses exhibits the scope disambiguation effect, and provide a uniform analysis of PGs in English and Japanese in terms of the interaction of the Q-absorption, FormCopy, and the Parallelism on copy deletion.

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