

Constraints on contrast sluicing*

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Today

We investigate *contrast sluicing* in Japanese and English, as in (1) and its translation:

- (1) **Single-*wh* – single-*wh* contrast sluicing in Japanese (and English):**
[A Taro-ga dono-ZASSI-o yon-da ka]-wa shi-tteiru-ga,
Taro-NOM which-magazine-ACC read-PAST KA TOP know-PROG-but
[B dono-HON-o ka]-wa shira-nai.
which-book-ACC KA TOP know-NEG
'I know [A which MAGAZINES Taro read], but I don't know [B which BOOKS].'

We call B the *remnant* ('which book') and the corresponding material in the *antecedent clause* A the *correlate* ('which magazine'). We assume following Ross (1969), Chung, Ladusaw & McCloskey (1995), Merchant (2001) a.o. that the remnant reflects an underlying clause at LF, the *sluicing clause*.

While much work has investigated sluicing with indefinite antecedents, relatively little attention has been paid to contrast sluicing. See (some) discussion in Merchant (2001, 2008), Fukaya (2003, 2012), and Barros (2014).

- **Restrictions on contrast sluicing reflect independent requirements of the syntax and semantics of contrast (contrastive topic) and sluicing.**

Roadmap

- A syntactic restriction on contrast sluicing
 - Observed in novel data on contrast sluicing with multiple *wh*-questions
 - Explained by syntactic requirements on the pronunciation of *wh*-phrases and contrastive phrases
- A semantic restriction on contrast
 - Contrastive topics must be disjoint (see e.g. Rojas-Esponda 2014; see also Mayr 2012 on focus alternatives)

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1. Contrast sluicing and multiple *wh*-questions

1.1. A restriction on multiple-*wh* – multiple-*wh* contrast sluicing

- In contrast sluicing between antecedent and sluicing clauses with two *wh*-phrases each, with pair-list interpretation, simplex contrast sluicing is grammatical only with the surface-lower *wh*-phrase as the remnant. Multiple sluicing is always grammatical.^{1,2}

(2) Generalization:

a. ^{ok} [A ... *wh*₁ ... *wh*₂ ...] ... [B ... ~~*wh*₁~~ ... *wh*₂' ...] (3)

b. * [A ... *wh*₁ ... *wh*₂ ...] ... [B ... *wh*₁' ... ~~*wh*₂~~ ...] (4)

c. ^{ok} [A ... *wh*₁ ... *wh*₂ ...] ... [B ... *wh*₁' ... *wh*₂ ...] (5)

- (3) ^{ok} 先生は [A どの生徒が 北棟のどの教室を掃除した か]は知っているが、
[B 南棟のどの教室をか]は知らない。

Sensei-wa [A dono-seito-ga KITATOO-no dono-kyooshitsu-o
teacher-TOP which-student-NOM North Building-GEN which-classroom-ACC
souji-shi-ta ka]-wa shi-tteiru-ga,
clean-do-PAST KA TOP know-PROG-but

[B MINAMITOO-no dono-kyooshitsu-o ka]-wa shir-anai.

South Building-GEN which-classroom-ACC KA TOP know-NEG

'The teacher knows [A which student cleaned which North Building classroom],
but doesn't know [B ~~which student cleaned~~ which South Building classroom].'

- (4) * 先生は [A A組のどの生徒がどの教室を掃除した か]は知っているが、
[B B組のどの生徒がか]は知らない

Sensei-wa [A A-GUMI-no dono-seito-ga dono-kyooshitsu-o
teacher-TOP Class A-GEN which-student-NOM which-classroom-ACC
souji-shi-ta ka]-wa shi-tteiru-ga,
clean-do-PAST KA TOP know-PROG-but

[B B-GUMI-no dono-seito-ga ka]-wa shir-anai.

Class B-GEN which-student-ACC KA TOP know-NEG

Intended: 'The teacher knows [A which st. in Class A cleaned which classroom],
but doesn't know [B ~~which st. in Class B cleaned which classroom~~].'

Scrambling in the A clauses in (3–4) to reverse the order of the *wh*-phrases makes (4) grammatical and (3) ungrammatical, further supporting the generalization in (2).

¹ The Japanese paradigm here seems robust across speakers. We also surveyed English speakers with a similar paradigm, but there was less agreement in judgment in English and we therefore do not report these results here and concentrate on the Japanese facts.

² Examples (3–4) also have readings where the A clause is a single-pair question, where the B clause is interpreted as a single-*wh* question with 'that student' or 'that classroom.'

In addition, the configuration in (4) is improved by preserving the lower *wh*. Example (5) has the same underlying structure as (4) above, but differs only in the extent of deletion:

- (5) ^{ok} 先生は [_A A 組のどの生徒がどの教室を掃除した か]は知っているが、
 [_B B 組のどの生徒がどの教室を か]は知らない
 Sensei-wa [_A A-GUMI-no dono-seito-ga dono-kyooshitsu-o
 teacher-TOP Class A-GEN which-student-NOM which-classroom-ACC
 souji-shi-ta ka]-wa shi-tteiru-ga,
 clean-do-PAST KA TOP know-PROG-but
 [_B B-GUMI-no dono-seito-ga dono-kyooshitsu-o ka]-wa shir-anai.
 Class B-GEN which-st.-ACC which-classroom-ACC KA TOP know-NEG
 ≈ ‘The teacher knows [_A which student in Class A cleaned which classroom], but
 doesn’t know [_B which student in Class B, which classroom, ~~cleaned~~].’

We can restate the generalization in (2) above as follows:

- The **lower *wh*-phrase and the contrastive phrase** must always be pronounced.
 - With contrast between lower *wh*-phrases (3) (and between simplex *wh*-questions), the lower *wh*-phrase properly contains the contrasting phrase. Pronouncing just the lower *wh*-phrase satisfies both requirements.
 - With contrast between higher *wh*-phrases (4–5), pronouncing just the higher *wh*-phrase (4) or just the lower *wh*-phrase is insufficient. Both must be pronounced, as in (5).

Q: But why is the lower *wh*-phrase special?

1.2. Background: the syntax and semantics of multiple *wh*-questions

Constituent questions are requests for a unique, maximal answer, and presuppose the existence of such an answer:

- (6) *Which student* read the book?
 Presupposition: Some unique student read the book.

In pair-list *wh*-questions, the two *wh*-phrases have different functions. The higher *wh*-phrase is a *sorting key* (Kuno 1982), raising multiple simplex *wh*-questions which must be answered.

- (7) *Which student* read *which book*?
 ≈ ‘For each student_i, *which book* did they_i read?’
 Presupposition: For each student_i, they_i read a unique book. (See Dayal 1996)

In other words, the higher *wh*-phrase functions as a quantifier (see also Chierchia 1993).³

³ The higher *wh* is a universal quantifier in paraphrases here but, depending on the approach to *wh*-question syntax/semantics taken, it could be an existential quantifier (Karttunen 1977, Fox 2012) or an alternative generator in a distinct syntactic position, above an AltShift operator (Kotek 2014, 2016).

The different status of these *wh*-phrases is reflected overtly in the syntax of Hungarian:

- (8) **Hungarian left periphery:** (É Kiss 1987, Brody 1995, Szabolcsi 1997)
 (TOPIC+) [_{DistP} (DIST+) [_{FocusP} (FOCUS) [_{VP} V...
 DIST+ = one or more distributive quantifiers
 FOCUS = a unique, immediately preverbal position for *wh* or contrastive focus⁴
- (9) **Single *wh*-question: *wh*-phrase must be in focus position:** (É Kiss 2002 p. 90)
 János [_{FocusP} *kit* [_{VP} mutatott be Marinak?
 John who introduce VM Mary-DAT
 ‘Who did John introduce to Mary?’
- (10) **Pair-list multiple *wh*-question: one *wh* in distributive pos., one *wh* in focus:**
 a. [_{DistP} *Ki* [_{FocusP} *melyik ajándékot* [_{VP} választotta?
 who which present chose
 ‘Who chose which present?’ ≈ ‘For each person, *which present* did they choose?’
 b. [_{DistP} *Melyik ajándékot* [_{FocusP} *ki* [_{VP} választotta?
 which present who chose
 ‘Which present did which person choose?’ ≈ ‘For each present, *who* chose it?’

Summary: The *wh*-phrases in multiple *wh*-questions are not equivalent in function. This is reflected overtly in the syntax of Hungarian.

Van Craenenbroeck & Lipták (2006) propose that sluicing in Hungarian is deletion of the complement of Focus → sluicing will always include the phrase in the FOCUS position.

1.3. Proposal

- The different functions of the two *wh*-phrases are also reflected syntactically at LF in Japanese multiple *wh*-questions. **Japanese sluicing also deletes the complement of Focus.** The sluicing remnant must include Spec,FocusP.⁵
- In addition, **contrastive material must be pronounced.**

These constraints together derive the pattern observed above in (3–5):

- (11) **Contrast sluicing against the lower *wh* in (3): grammatical**
 A = [*which student* [_{FocusP} *which NORTH BUILDING classroom* [cleaned
 B = [~~*which student*~~ [_{FocusP} *which SOUTH BUILDING classroom* [~~cleaned~~
 Deletion of the higher *wh*-phrase is independently possible due to the availability of argument ellipsis in Japanese (Oku 1998, Saito 2007, Takahashi 2008, a.o.).

⁴ A “unique” position because, if there are multiple *only*-phrases or a *wh*-phrase and an *only*-phrase, only one can move to the preverbal focus position. The position of the verbal marker (VM) can be used to diagnose whether something is in the focus position or not. See É Kiss (2002) and references there.

⁵ Takahashi (1994) proposed the move-and-delete approach for Japanese sluicing. See Fukaya (2003, 2012) for evidence that contrast sluicing remnants are island-sensitive and therefore have moved to a higher position in Japanese.

(12) **Contrast sluicing against the higher *wh* in (4): ungrammatical**

A = [*which CLASS A student* [_{FocusP} *which classroom* cleaned

B = [*which CLASS B student* [_{FocusP} ~~*which classroom*~~ cleaned

Sluicing does not allow for deletion of Spec,FocusP.

(13) **Contrast sluicing against the higher *wh* in (5): grammatical**

A = [*which CLASS A student* [_{FocusP} *which classroom* [cleaned

B = [*which CLASS B student* [_{FocusP} *which classroom* [~~cleaned~~

This follows both requirements: that Spec,FocusP be pronounced and that the contrastive phrase be pronounced.

Our analysis also explains the unavailability of contrast sluicing with a multiple-*wh* sluicing clause against a single-*wh* antecedent clause, as in the following configurations:

(14) **Single-*wh* – multiple-*wh* contrast sluicing is impossible:**

a. * [_A *JON-ga/wa* dono-kyooshitsu-o sooji-shi-ta ka]-wa

John-NOM/CT which-classroom-ACC clean-do-PAST KA TOP

shi-tteiru-ga, [_B *dono-sensei-ga* ka]-wa shir-anai.

know-PROG-but which-teacher-NOM KA TOP know-NEG

* 'I know [_A which classroom JOHN_{F/CT} cleaned],

but I don't know [_B which TEACHERS ~~cleaned which classroom~~].'

b. * [_A *dono-gakusei-ga ASUPEKUTSU-o* yon-da ka]-wa

which-student-NOM Aspects-ACC read-PAST KA TOP

shi-tteiru-ga, [_B *dono-IMIRON-no hon-o* ka]-wa shir-anai.

know-PROG-but which-semantics-GEN book-ACC KA TOP know-NEG

* 'I know [_A which student read ASPECTS],

but I don't know [_B which SEMANTICS books ~~which student read~~].'

The ungrammaticality of (14) may be surprising given the availability of contrast sluicing between single-*wh* sluicing clauses and declarative antecedents with referential correlates:⁶

(15) **Declarative – single-*wh* contrast sluicing:**

I think [_A John read ASPECTS], but I don't know [_B which SEMANTICS books].

The A clauses in (14) are single-*wh* questions and therefore their *wh*-phrases must be in Spec,FocusP. By ellipsis parallelism, the corresponding *wh*-phrases must be in Spec,FocusP in the B clauses and must be pronounced. Instead, the contrast sluices here in both (14a) and (14b) correspond to higher *wh*-phrases in the B clauses at LF.

Summary: The novel pattern of contrast sluicing between multiple *wh*-questions shows that both the lower *wh*-phrase and the contrasting phrase must be pronounced in contrast sluicing. This is explained by the unique syntactic position of lower *wh*-phrases at LF.

⁶ We discuss such cases in section 2.3 below.

2. A semantic constraint on contrasting questions

We now turn to the nature of contrast in contrast sluicing. Consider the following contrast:

- (16) I don't remember [A which SEMANTICISTS we invited], and I also can't recall...
- ok [B which SYNTACTICIANS (we invited)].
 - * [B which LINGUISTS (we invited)].

Example (14b) is ungrammatical/infelicitous unless semanticists are understood to be disjoint from linguists. Note that this requirement holds of contrasting questions as well as contrast sluicing in (14).

The equivalent of (14b) in Japanese is also degraded:

- (17) * [A Dono-IMIRONGAKUSHA-o shoutai-shi-ta ka] oboe-tei-nai-shi,
which-semanticist-ACC invite-do-PAST KA remember-PROG-NEG-CONJ
[B dono-GENGOGAKUSHA-o (shoutai-shi-ta) ka]-mo omoidas-e-nai.
which-linguist-ACC invite-do-PAST KA also recall-able-NEG
'I don't remember [A which SEMANTICISTS we invited], and I also can't
remember [B which LINGUISTS (we invited)].'

- The NPs of contrasting *wh*-phrases in contrast sluicing and similar contrasting questions **must be disjoint** — except where they don't:

- (18) **A potential counterexample to this disjointness requirement:**
ok ANN knows [*which SYNTACTICIANS* came to the party], and
BEN knows [*which LINGUISTS* (came to the party)].

2.1. Background: contrastive topics and discourse strategies

Contrasting assertions use *focus* (F) to indicate positions of contrast. The focus structures of contrasting phrases must match. See Rooth (1985, 1992) and references there.

- (19) It's false to say that Dave [BOUGHT]_F a new bicycle; he [STOLE]_F a new bicycle!

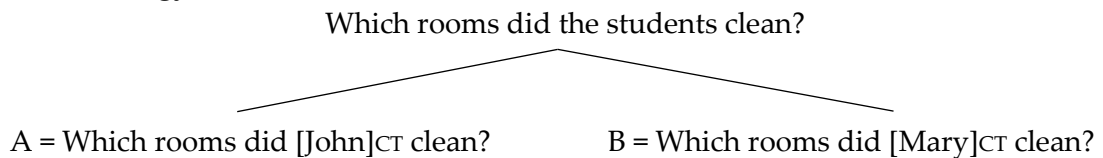
Similarly, questions can contrast using *contrastive topics* (CT) (Büring 2003, Constant 2014):

- (20) A: [Which rooms]_F did [JOHN]_{CT} clean?
A': [JOHN]_{CT} cleaned [room number 3]_F.
B: Ok. Then, [which rooms]_F did [MARY]_{CT} clean?
B': [MARY]_{CT} cleaned [room number 2]_F.

Questions with CT are required to be sister questions in a *discourse strategy* (Büring 2003).

We follow the notion of strategy trees and sub-questions from Rojas-Espondas (2014):

(21) **The strategy tree for (18):**



- As suggested by Rojas-Espondas (p. 41), (the choice of answers to) sister questions must be logically independent; i.e. **contrastive topics must be disjoint**.⁷

2.2. Proposal

- **Contrasting nominal domains in contrast sluicing are contrastive topics embedded within *wh*-phrases in focus.**

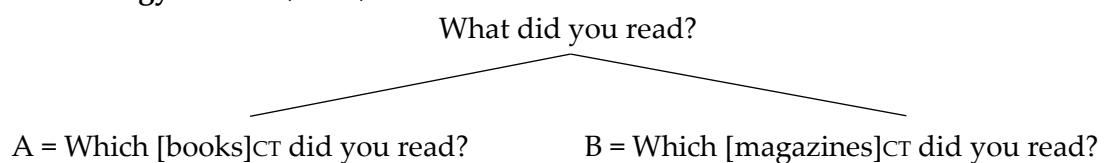
CTs must scope higher than focused phrases, and therefore these CT nominals must move.

We can see this explicitly in Japanese. We can use CT-marking (contrastive *wa*) for these contrastive domains and explicitly separate them from their *whs*:

- (22) A: [Which books]_F did you read?
 B: Then, [which [MAGAZINES]_{CT}]_F did you read?

- (23) A: [Dono hon-o]_F yon-da no?
 which book-acc read-PAST Q
 B: Jyaa, [dono [ZASSHI]_{CT-o}]_F yon-da no?
 then which magazines -ACC read-PAST Q
 B': Jyaa, [ZASSHI-wa]_{CT} [dore-o]_F yon-da no?
 then magazines-CT which-ACC read-PAST Q

(24) **The strategy tree for (22/23):**



- The disjointness requirement on contrast sluicing (and contrasting questions) follows from the disjointness requirement on contrastive topics.

⁷ See also Mayr (2012) who proposes that focus alternatives must be disjoint.

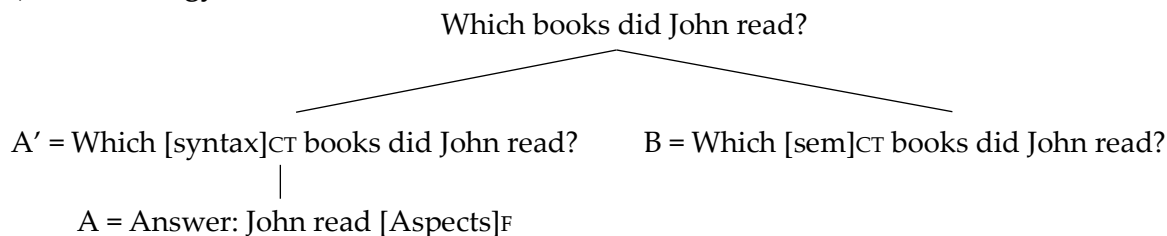
2.3. An extension to declarative antecedents

A version of this disjointness requirement is also observed in contrast sluicing with a declarative antecedent clause with referential correlate (cf Barros, 2014):

- (25) **Referential correlate – single-*wh* contrast sluicing:**
 I think [A John read ASPECTS], but I don't know...
 a. ^{ok} [B which SEMANTICS books (he read)].
 b. * [B which SYNTAX books (he read)].
- (26) [A Jon-ga ASUPEKUTSU-o yon-da no]-wa shi-tteiru-ga, ...
 Jon-NOM Aspects-ACC read-PAST NO-TOP know-PROG-but
 'I know [John read ASPECTS]...'
 a. ^{ok} [B dono IMIRON-no hon-o ka]-wa shir-anai.
 which semantics-GEN book-ACC KA-TOP know-NEG
 'but I don't know [which SEMANTICS books].'
 b. * [B dono TOUGORON-no hon-o ka]-wa shir-anai.
 which syntax-GEN book-ACC KA-TOP know-NEG
 'but I don't know [which SYNTAX books].'

Contrast (CT) on *semantics/syntax* in (25) indicates the presence of a sister question in the discourse strategy. The answer A with focus on *Aspects* indicates the presence of a (possibly implicit) question A' in the discourse, which A answers:

(27) **The strategy tree for (25):**



In (25a), CT is satisfied by B being a sister to A', the (implicit) question that A answers. In (25b), B is equal to the question A' answered by A, not a sister question.⁸

⁸ Alternatively, A is already a complete answer to the super-question 'Which books did John read?' The question A' in (24) will therefore not be reflected in the discourse, and the resolution of the super-question makes discussion of B no longer valid as well.

2.4. The potential counterexample

Consider our potential counterexample (18), repeated here as (28):

(28) **A potential counterexample to this disjointness requirement:**

^{ok} ANN knows [*which SYNTACTICIANS* came to the party], and
 BEN knows [*which LINGUISTS* (came to the party)].

➤ It is crucial here that there is another contrasting phrase higher: *Ann* and *Ben*.

(29) **Without the higher contrasting phrases:**

* I don't know [*which LINGUISTS* came to the party], and
 I (also) don't know [*which SYNTACTICIANS* (came to the party)] (either).

Note that in (26), it is logically possible to not know which linguists came but know which syntacticians came,⁹ so the second sentence in (26) is informative. (26) is still ungrammatical.

We propose that the lower contrast on *syntacticians* and *linguists* in (25) is licensed by congruence with questions at the *matrix* level, above the *know* embeddings:

(30) **LFs for (18/28):**

^{ok} [A [ANN]_{CT} λx [SYNTACTICIANS]_F λP x knows [which P came to the party]]
 [B [BEN]_{CT} λx [LINGUISTS]_F λP x knows [which P (came to the party)]]

(31) **The strategy tree for (30):**

Which groups P do people know the answer to [which P came to the party]

A' = Which groups P does [Ann]_{CT} know the answer to [which P came to the party]

B' = Which groups P does [Ben]_{CT} know the answer to [which P came to the party]

A = Answer: [Ann]_{CT} knows, for [syntacticians]_F, [which came to the party]

B = Answer: [Ben]_{CT} knows, for [linguists]_F, [which came to the party]

➤ Contrast in (25) is licensed because *syntacticians* is the answer A to question A' and *linguists* is the answer B to question B'. A' and B' are sister questions, licensing the higher CT on *Ann* and *Ben*. **Because A and B answer different questions, there is no disjointness requirement.** The disjointness requirement applies to sister questions.

⁹ Imagine there were separate check-in sheets at the party for syntacticians, semanticists, and phonologists. I only have the check-in sheet for the syntacticians. I therefore know which syntacticians came to the party but it's false that I know which linguists came to the party.

3. Summary

1. We presented new data on **contrast sluicing between multiple *wh*-questions**, which to our knowledge has not been previously studied in any language. We observe:

(32) **Generalization, repeated from (2):**

a. ^{ok} [A ... *wh*₁ ... *wh*₂ ...] ... [B ... ~~*wh*₁~~ ... *wh*₂' ...] (3)

b. * [A ... *wh*₁ ... *wh*₂ ...] ... [B ... *wh*₁' ... ~~*wh*₂~~ ...] (4)

c. ^{ok} [A ... *wh*₁ ... *wh*₂ ...] ... [B ... *wh*₁' ... *wh*₂ ...] (5)

2. This complex pattern in (2/32) is explained by the following independent premises:
 - In pair-list multiple *wh*-questions, the lower *wh* is in Spec,FocusP.
 - Sluicing deletes the complement of Focus and must retain Spec,FocusP.
 - Contrastive phrases (CT) must be pronounced.
3. We propose that the **contrast sluices involves the nesting of a contrastive topic**¹⁰ within a *wh*-phrase: e.g. [which [MAGAZINE]_{CT}]_F.
4. **Disjointness requirements** on contrast sluicing and contrastive questions — and their exceptions — are explained by the interpretation of CT.

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¹⁰ Or in the case of (28), a focus that takes scope in a higher clause.

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