Some Reconstructions Are by Default Semantic

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1. Background – Three Types of Scrambling and Their "A/A'-properties"

Japanese has (at least) three types of scrambling: VP-internal scrambling (VPS), Short Scrambling (SS), and Long Scrambling (LS). VPS is the scrambling of a direct object (DO) over an indirect object (IO); SS is the scrambling of an object to the edge of the local clause; and LS is the scrambling beyond the local clause. They are exemplified in (1) through (3).

(1) **VP-internal scrambling**

Taroo-wa	Hanako-o	dareka-ni	*e*	syookaisita.
Taro-TOP	Hanako-ACC	someone-DAT		introduced

'Taro introduced Hanako to someone.'

(2) **Short Scrambling**

Hanako-o	Taroo-wa	*e*	suisensita.
Hanako-ACC	Taro-TOP		recommended

'Taro recommended Hanako.'

(3) **Long Scrambling**

Hanako-o	Taroo-wa	[Jiroo-ga	*e*	suisensita	to]	omotteiru.
Hanako-ACC	Taro-TOP	Jiro-NOM		recommended	C	think

'Taro thinks Jiro recommended Hanako.'

It has been claimed that the three types of scrambling exhibit different behaviors with respect to "A/A'-properties" (Mahajan (1989); Saito (1992)).[1] Scrambling that shows "A-properties" is often called "A-scrambling", and one with "A'-properties" is called "A'-scrambling."

(4) **"A-properties"**

a. Change quantifier scope

b. Cannot be reconstructed for binding

c. Bind variables from a derived position

d. Do not cause a Weak Crossover (WCO) violation

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[1] I put the terminology in scare quotes because it is nothing more than a convenient label for a bundle of characteristics. I argue below that they are rooted in semantics, not in the syntactically primitive "A-ness" or "A'-ness" in the sense of Government and Binding Theory (Chomsky (1981); Haegeman (1994)).

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(5) **"A'-properties"**

a. Do not change quantifier scope

b. Can be reconstructed for binding

c. Cannot bind variables from a derived position

d. Cause a Weak Crossover (WCO) violation

The main body of this paper concerns the first two properties. (The latter two will be discussed in Sections 3 and 4.) As demonstrated in (6), VPS shows the "A-properties" (Nemoto (1993)). (6a) illustrates that VPS makes available the reading where DO takes scope over IO (DO>IO), which is unavailable otherwise due to the scope-rigidity of the language. Under the given scenario, the sentence is true in the $DO_{\forall} > IO_{\exists}$ but not in the $IO_{\exists} > DO_{\forall}$ reading. The sentence is indeed judged to be true, suggesting that the $DO_{\forall} > IO_{\exists}$ reading is available there. (6b) indicates that a variable in the scrambled DO cannot be bound by IO. The DO contains the (locational) anaphor *soko*.[2] The reading where the anaphor is bound by the IO-quantifier is unavailable. The absence of the reading suggests that the quantifier cannot serve as a binder, which in turn indicates that the scrambled object cannot be reconstructed to the in-situ position where it is bound by the quantifier. (Note that the binding would be possible without VPS.)

(6) a. **VPS makes the $DO_{\forall}$>$IO_{\exists}$ reading avaialble**
(Scenario: Among the three persons, A, B, and C, John introduced A to Alex, B to Beth, and C to Cathy.)

John-wa **daremo$_{\forall}$-o** **dareka$_{\exists}$-ni** *e* syookaisita.
John-TOP everyone-ACC someone-DAT introduced
'John introduced everyone to someone.' ($^{ok}DO_{\forall} > IO_{\exists}$)

b. **VPS does not reconstruct for binding**

*John-wa [$_{DO}$ **soko$_i$**-ni funinsuru sensee]-o [$_{IO}$ **dono-gakkoo–ni-mo$_i$**] e
John-TOP there-DAT assign teacher -ACC each-school-DAT-all
syookaisita
introduced.
'John introduced to every school a teacher who is assigned to that school.'

LS exhibits the "A'-properties" (Saito (1992)) with respect to the elements outside the local clause. (7) demonstrates that LS does not let the scrambled element take scope over a quantifier in the matrix clause. The given scenario would make the sentence true only in the ∀ > ∃ reading, in which the scrambled universal quantifier would take scope over the existential quantifier in the matrix subject position. The sentence is judged to be false, indicating that the ∀ > ∃ reading is absent from the sentence. (7b) shows that the scrambled element can be reconstructed for binding by a matrix subject.

(7) a. **LS does not let the scrambled element take scope over a matrix element**
(Scenario: Among the three persons A, B, and C, A said John met Alex, B said John met Beth, and C said John met Cathy.)

Daremo$_{\forall}$-ni [**dareka$_{\exists}$**-ga [John-ga *e* atta to] itta] .
everyone-DAT someone-NOM John-NOM met C said
'Someone said John met everyone.' (∃ > ∀, *∀ > ∃)

[2] I use the term *anaphor* in the non-technical sense. It refers to items that are anaphoric, instead of the technical sense that is saved for 'things that are subject to Condition A.'

b. **LS reconstruct for binding by a matrix element**

[**soko$_i$**-ni funinsuru sensee]-o **dono$_i$**-gakoo-mo [soori-ga *e* mendansuru
there-DAT assign teacher -ACC every-school-all premi.minisiter-NOM interview
to] koohyoosita.
C announced
'Every school announced that the prime minister will interview the teacher who is assigned to that school.'

Lastly, SS exhibits mixed behavior with respect to the local subject (Saito (1985, 1992)). Though SS does make available the inverse scope reading that is otherwise absent ("A-property"), the scrambled element can also be reconstructed to be bound by the local subject ("A'-property"). The sentence in (8a) is felicitous under the given scenario that is true only in the $\text{obj}_{\forall} > \text{subj}_{\exists}$ reading. The scrambled anaphor can be bound by the local subject, as shown in (8b).

(8) a. **SS makes the inverse scope available**
(Scenario: Among the persons A, B, and C, Alex recommended A, Beth recommended B, and Cathy recommended C.)

Daremo$_{\forall}$-o **dareka$_{\exists}$-ga** *e* suisenshita.
everyone-ACC someone-NOM recommended
'Someone recommended everyone.' ($^{\text{ok}}\text{obj}_{\forall} > \text{subj}_{\exists}$)

b. **SS reconstruct for binding by a local subject**

[**soko$_i$**-ni funinsita sensee]-o **dono-gakkoo-mo$_i$** *e* hihansita.
there-DAT assign teacher -ACC every.school criticized
'Every school criticized the teacher who is assigned there.'

The claims of the paper are the following:

- "A-scrambling", despite its alleged *anti-reconstruction* property, can be reconstructed for scope. It suggests that *Semantic Reconstruction* (Cresti (1995); Rullman (1995)) is an option available for interpreting scrambling chains.
- "A-properties" and "A'-properties" are better understood by semantic terminologies. These properties are by-products of a constraint on the type of trace left by scrambling.

The rest of this paper is organized as follows. Section 2 lays out the semantic background necessary for the discussion that follows. Section 3 demonstrates the first claim: "A-scrambling" does reconstruct for scope, hence calling for Semantic Reconstruction. Section 4 is devoted to establishing the second claim. This section also discusses the latter two of the "A/A'-properties." (4c) and (5c) are shown to be derived from (4a) and (5a), respectively. The significance and the reality of (4d)/(5d) is reexamined there as well.

2. Three Interpretations of Chains

Let α_i ... β ... α_i be a syntactic movement chain of α_i, where β is some syntactic constituent crossed over by the movement. At the interpretation interface, the movement can be interpreted one of the three ways: *Syntactic Reconstruction* (or *Higher Copy Neglect*; Chomsky (1995)); *Trace Conversion* (Fox (1999); or the canonical interpretation of movement leaving a type e trace formalized in Heim & Kratzer (1998)); *Semantic Reconstruction* (Cresti (1995); Rullman (1995); leaving a type et, t trace).[3] To simplify the following discussion, I assume a copy is converted to a type e trace or a type et, t trace with

[3] Notational convention: I assume e and t are (basic) types, and $\langle \sigma, \tau \rangle$ is a (compositional) type if σ and τ are types. I adopt the standard abbreviation for types and notate $\langle\langle e, t\rangle, t\rangle$ as et, t.

some procedural mechanism, ignoring the detail of the process. See Fox (1999) for the detail of *Trace Conversion*, and Yagi (2024) for its extension to Semantic Reconstruction.

- *Syntactic Reconstruction*
  ~~α_i~~ ... β ... α_i
- *Trace Conversion / type e trace*
  α_i ... β ... t_e
- *Semantic Reconstruction / type et, t trace*
  α_i ... β ... $t_{et,t}$

The three strategies exhibit different syntactic/semantic properties at the interpretation interface. The following facts are of particular importance in this paper.

(9) *Syntactic Reconstruction*
  a. β c-commands α_i at the interpretation interface.
  b. If β and α_i are scope-taking elements, β takes scope over α_i.
  c. If β is a quantifier and α_i contains a variable, β may bind the variable.

(10) *Trace Conversion*
  a. α_i c-commands β at the interpretation interface.
  b. If β and α_i are scope-taking elements, α_i takes scope over β.
  c. Suppose β is a quantifier and α_i contains a variable. β cannot bind the variable.

(11) *Semantic Reconstruction*
  a. α_i c-commands β at the interpretation interface.
  b. If β and α_i are scope-taking elements, β takes scope over α_i.
  c. Suppose β is a quantifier and α_i contains a variable. β cannot bind the variable.

The properties exhibited by Syntactic Reconstruction are obvious. Since it *undoes* the movement entirely, the interface interprets it as if the movement did not happen. The ones of *Trace Conversion* are also well-acknowledged in the literature, but (10c) is worth a note. This property holds because the variable contained in α_i is out of the scope of β, rendering the variable free (unless it is bound by anything else). To see this, consider (12).

(12) *Every boy talked to a student who met him.*
  Covert Syntax: [$_{\alpha_i}$ *a student who met him*] [[$_\beta$ *every boy*] *talked to* t_{α_i}]
  $\rightsquigarrow [\lambda P_{et}.\, \exists x_e[\texttt{student}(x) \wedge \texttt{met}(x,y) \wedge P(x)]](\lambda x_e.\forall y_e[\texttt{boy}(y) \rightarrow \texttt{talked\_to}(y,x))]$
  $\rightsquigarrow \exists x_e[\texttt{student}(x) \wedge \texttt{met}(x,y) \wedge \forall y_e[\texttt{boy}(y) \rightarrow \texttt{talked\_to}(y,x)]]$

The object *a student who met him* undergoes quantifier raising (QR), crossing over *every boy*. The QRed noun contains *him*, which will be analyzed as variable y. Notice that the moved α_i takes scope over the crossed-over universal quantifier. Furthermore, the variable y, translated from the pronoun *him*, is *not* bound by the universal quantifier. The y there is left free, despite the occurrence of $\forall y$ in the translation of *every boy*.[4] In general, for a quantifier to bind a variable, the variable must be in the scope of the quantifier.

Semantic reconstruction patterns with Trace Conversion in that the moved element α_i c-commands the crossed over β, but it differs in that α_i takes scope below β. Consider (13). Although in the covert syntax [$_{\alpha_i}$*a student* ...] c-commands [$_\beta$ *every boy*], the QRed existential quantifier takes scope below the universal quantifier.

[4] The other way to see that the variable is unbound is to be aware that $\forall y_e : \texttt{boy}(y) \rightarrow \texttt{talked\_to}(y,x)$ is semantically equivalent to $\forall z_e : \texttt{boy}(z) \rightarrow \texttt{talked\_to}(z,x)$.

(13) *Every boy talked to a student who met him.*
Covert Syntax: [$_{\alpha_i}$ *a student who met him*] [[$_\beta$ *every boy*] *talked to* t_{α_i}]
$\rightsquigarrow \big([\lambda P_{et}.\,\exists x_e[\texttt{student}(x) \wedge \texttt{met}(x,y) \wedge P(x)]]\big)[\lambda \mathcal{P}_{et,t}.\forall z_e[\texttt{boy}(z) \rightarrow \mathcal{P}(\lambda v_e.\texttt{talked\_to}(z,v))]]$
$\rightsquigarrow \forall z_e[\texttt{boy}(z) \rightarrow \exists x_e[\texttt{student}(x) \wedge \texttt{met}(x,y) \wedge \texttt{talked\_to}(z,x)]]$

Nevertheless, Semantic Reconstruction does not allow the pronoun *him* to be bound by *every boy*. One might wonder if the following translation, where *him* is translated into variable z instead of y, achieves the intended binding:

(14) $\big([\lambda P_{et}.\,\exists x_e[\texttt{student}(x) \wedge \texttt{met}(x,z) \wedge P(x)]]\big)[\lambda \mathcal{P}_{et,t}.\forall z_e\ \texttt{boy}(z) \rightarrow \mathcal{P}(\lambda v_e.\texttt{talked\_to}(z,v))]$
?? $\rightsquigarrow \forall z_e[\texttt{boy}(z) \rightarrow \exists x_e[\texttt{student}(x) \wedge \texttt{met}(z,y) \wedge \texttt{talked\_to}(z,x)]]$

This is not the case. The apparent binding is because of the accidental reuse of the variable z in $\texttt{met}(x,z)$ and $\forall z$.... Such reuse, known as *accidental capture*, is explicitly banned in the grammar of lambda calculus. Notice that $\forall z_e\ \texttt{boy}(z) \rightarrow \mathcal{P}(\lambda v_e.\texttt{talked\_to}(z,v))$ is semantically equivalent to $\forall y_e\ \texttt{boy}(y) \rightarrow \mathcal{P}(\lambda v_e.\texttt{talked\_to}(y,v))$. Therefore, the first line of (14) cannot be reduced to the second line, and thus the pronoun cannot be bound by *every boy*.

Given the distinct properties of the three interpretation strategies of chains, their availability in movement chain α_i ... β ...α_i is diagnosed as follows.[5]

(15) **Diagnosis of interpretation strategies**

a. α_i taking scope over β shows that Trace Conversion is available for the chain.
b. α binding a variable in β shows that Trace Conversion is available for the chain.
c. β binding a variable in α_i shows that Syntactic Reconstruction is available for the chain.
d. β taking scope over α_i *despite the unavailability of Syntactic Reconstruction* shows that Semantic Reconstruction is available for the chain.

For example, the absence of bound reading in (6b) indicates that Syntactic Reconstruction is not available for the movement involved in VPS. However, it does not necessarily suggest that Semantic Reconstruction is also unavailable. The next section demonstrates that Semantic Reconstruction is indeed available for VPS. Moreover, it is also shown that Semantic Reconstruction is not constrained: it is available for interpreting any kind of scrambling.

3. "A-scrambling" Can Be Reconstructed for Scope – the Need of Semantic Reconstruction

The unavailability of bound reading in (6b) has motivated the anti-reconstruction property of "A-scrambling," mentioned in (4b). However, the resistance against reconstruction is only exhibited for binding, not for quantifier scope.[6] Consider, for example, the VP-internal scrambling in (16) with the given scenario.

(16) **VPS reconstructs for quantifier scope**
(Scenario: John introduced Student A to Professor A, Student B to Professor B, and Student C to Professor C).

John-wa	**dareka$_\exists$-o**	**dono-sensee-ni-mo$_\forall$**	*e*	syookaisita.
John-TOP	someone-ACC	every-professor-DAT-all	*e*	introduced

'Taro introduced someone to every teacher.' ($^{\text{ok}}\forall > \exists$)

[5] (15) is not an exhaustive list of possible diagnostics.
[6] The data and the discussion in this section heavily rely on the paradigm in German discussed by Lechner (1999, 2017).

The sentence would be true in the reconstructed $\forall > \exists$ reading, but false in the surface $\exists > \forall$ reading.[7] The sentence is indeed judged to be true, suggesting that the reconstructed scope is available. Since we independently know from the absence of the bound reading in (6b) that Syntactic Reconstruction is unavailable for interpreting VPS, we should conclude that Semantic Reconstruction enables the reconstructed reading.

The same diagnosis and logic can be applied to Short Scrambling (SS). It turns out that the widely-held view that SS can be reconstructed for binding (via Syntactic Reconstruction) fails to capture the entire paradigm. As (17) shows, SS will not be reconstructed for binding by an indirect object: the bound reading is absent there. This fact should be contrasted with the availability of the bound reading in (8b), whose theoretical significance will be discussed shortly below.

(17) **SS does not reconstruct for binding by indirect object**

*[$_{DO}$ **soko**$_i$-ni funinsuru sensee]-o John-wa [$_{IO}$ **dono-gakkoo–ni-mo**$_i$] *e* syookaisita
there-DAT assign teacher -ACC John-TOP each-school-DAT-all introduced.
'John introduced every school a teacher who is assigned to that school.'

Nevertheless, SS can reconstruct for taking a lower scope than an indirect object. (18) is judged to be true under the same scenario as (16), which only makes the reconstructed $\forall > \exists$ reading true.

(18) **SS reconstruct to take scope below the indirect object**

Dareka$_{\exists}$**-o** John-wa **dono-sensee-ni-mo**$_{\forall}$ *e* syookaisita.
someone-ACC John-TOP every-student-DAT-all *e* introduced
'Taro introduced everyone someone.' ($^{ok}\forall > \exists$)

Furthermore, even Long Scrambling (LS), which is often argued to be subject to *radical reconstruction* (Saito (1992)) does not reconstruct for being bound by an indirect object. Replicating the observation for SS, however, LS *can* be reconstructed for scope, as shown by the truth of (20) under the given scenario, and it *can* be reconstructed for binding by the embedded subject.

(19) **LS does not reconstruct for binding by indirect object**

*[$_{DO}$ **soko**$_i$-ni funinsuru sensee]-o Taroo-wa [John-ga [$_{IO}$ **dono-gakkoo–ni-mo**$_i$] e
there-DAT assign teacher -ACC Taroo-TOP John-NOM each-school-DAT-all
syookaisita to] omotteiru
introduced C think.
'Taro believe that John introduced every school a teacher who is assigned to that school.'

(20) **LS reconstruct to take scope below the indirect object**
(Scenario: Taroo believes John introduced Student A to Professor A, Student B to Professor B, and Stucnt C to Professor C.)

Dareka$_{\exists}$**-o** [Taroo-wa [John-ga **dono-sensee-ni-mo**$_{\forall}$ *e* syookaisita to] omotteiru].
someone-ACC Taro-TOP John-NOM every-student-DAT-all *e* introduced C think
'Taro introduced everyone someone.' ($^{ok}\forall > \exists$)

[7] I use *surface scope reading* to refer to readings where scope relation matches with the order of phonological string.

(21) **LS reconstructs for binding by the embedded subject**

[DO **soko**$_i$-ni	funinsuru	sensee	]-o	Taroo-wa	[**dono-gakkoo-mo**$_i$	*e*	hihansita	to]
there-DAT	assign	teacher	-ACC	Taroo-TOP	each-school–all		criticized	C

omotteiru
think.

'Taro believes that every school criticized the teacher who is assigned there.'

The above paradigm reveals three significant facts. Firstly, the lack of binding reading shows that Syntactic Reconstruction to the position below an indirect object (which I call the *in-situ* position) is banned across all types of scrambling. Secondly, the availability of the reconstructed scope reading *despite the ban on Syntactic Reconstruction* suggests that Semantic Reconstruction to the in-situ position is possible regardless of types of scrambling. Thirdly, the contrast between binding by a (local/embedded) subject and by an indirect object indicates that Syntactic Reconstruction to below the subject but above the indirect object – presumably to the edge of *v*P, which I call the *v*P-edge position – is possible for LS and SS.

Not only does it reveal the prevalence of Semantic Reconstruction, it also reveals that the *(im)possibility of Syntactic Reconstruction does not adhere to types of scrambling*. Rather, it depends on syntactic positions and interpretation strategies: Syntactic Reconstruction *to the in-situ position* is impossible, but *to the vP-edge position* is possible. I argue that this observation is most compatible with the view that longer scrambling contains shorter scrambling (see, for example, the derivational view in Saito (2003)). The shortest scrambling is VPS from the in-situ position to the *v*P-edge position, and this movement cannot be subject to Syntactic Reconstruction. Longer scrambling, SS or LS, results from applying further movement to the element in the *v*P-edge position. The further movement, however, does not remedy the unavailability of Syntactic Reconstruction for the first movement. Which interpretation strategy is available on which position, and how does it relate to the "A/A'-properties" shown by scrambling then? The next section is devoted to addressing these questions.

4. "A/A'-properties" and interpretation strategies

Consider the schematic representation in (22). e_1 is the in-situ position of the scrambling. e_2 is the *v*P-edge position, the landing site of VPS. e_3 is what I call *the local clausal edge* position, the landing site of SS. Lastly, e_4, called *the non-local clausal edge positoin*, is the landing site of LS.

(22) [e_4 [TP1 SUBJ ... e_3 [TP2 SUBJ ... [$_{v\text{P}}$ e_2 [VP ... IO ... e_1 ...]]]]

LS   SS   VPS

We have already seen that Syntactic Reconstruction to e_1 is banned, and Semantic Reconstruction to e_1 is possible, summarized in Table 1. This section investigates the rest of the table and discusses theoretical implications regarding the "A/A'-properties."

	e_1 (in-situ)	e_2 (*v*P-edge)	e_3 (local clausal edge)
Trace Conversion			
Syntactic Reconstruction	*		
Semantic Reconstruction	✓		

Table 1: Summary

Recall from section 2 that movement changes quantifier scope only if the chain is interpreted via Trace Conversion. Therefore, the $\forall > \exists$ reading available in (6a) indicates that a trace in the in-situ position (e_1) can be interpreted as a type *e* trace. That is, e_1 can be subject to Trace Conversion.

That e_1 can undergo Tace Conversion immediately predicts another "A-feature" of VPS, namely (4c): a scrambled element binds a variable from the derived position. This is demonstrated in (23). Recall from section 2 again that only Trace Conversion enables the binding from the derived position. That is, the two "A-properties" – (4b) and (4c) – should be derived from one semantic property, namely that the trace is interpreted as of type *e*.

(23) **VPS lets the moved item bind a variable from the derived position**

John-wa [$_{DO}$ **dono-gakkoo-mo**$_i$][$_{IO}$ **soko**$_i$-ni funinsuru sensee]-ni *e* syookaisita
John-TOP each-school-all there-DAT assign teacher -DAT introduced.
'John introduced every school to a teacher who is assigned to that school.'

The fact that Short Scrambling (SS) allows the object to take scope over the subject (8a) indicates that e_2 can also be subject to Trace Conversion.[8] Again, this immediately predicts the well-known fact that SS allows the scrambled element to bind a variable from the derived position, as shown by (24). Syntactic Reconstruction to e_2 is also possible. Otherwise, the bound reading of (8b) would be wrongly ruled out because we have already established that Syntactic Reconstruction to e_1 is not an available option.

(24) **SS lets the moved item bind a variable from the derived position.**

dono-gakkoo-mo$_i$ [**soko**$_i$-ni funinsuru sensee]-ga *e* otozureta
each-school-all there-DAT assign teacher -NOM visited.
Lit. 'Every school, a teacher who is assigned there visited.'
⇝ Every school is visited by a teacher who is assigned there.

To diagnose if Semantic Reconstruction is available for e_2, consider (25) (the configuration is borrowed from Lechner (1999, 2017); see also Keine & Poole (2023)). A quantificational element with a relative clause undergoes SS, and the reconstructed $\forall > \exists$ reading is possible. Under the given scenario, only the reconstructed scope reading is true, and the sentence is indeed judged to be true. But the reconstruction to achive the intended scope configuration cannot be Syntactic Reconstruction because it would cause a Condition C violation – the proper name *John* would be c-commanded by the pronoun *kare*. Therefore, the reading is only derived by Semantic Reconstruction to e_2, which in turn proves the operation is available.[9]

(25) **Semantic Reconstruction to e_2 is possible**
(John showed his paper A to student A, his paper B to student B, and his paper C to student C.)

[John$_i$-ga kaita ronbun-no **doreka**$_\exists$]-o kare$_i$-wa **dono-gakusee-ni-mo**$_\forall$ *e* miseta.
John-NOM wrote paper-GEN some -ACC he-TOP every-student-DAT-all showed
'He showed some paper that John wrote to every student.' ($^{ok}\forall > \exists$)

[8] Recall that I am assuming SS contains VPS as a local movement step. Trace Conversion in e_1 is not enough to derive the $\forall > \exists$ reading in (8a). Trace Conversion in e_1 *plus* Syntactic/Semantic Reconstruction to e_2 does not let the scrambled element take scope over the subject.

[9] Two notes are in order here. Firstly, one may wonder if the reading is derived by Semantic Reconstruction to e_1. Although it is true that Semantic Reconstruction to e_1 does derive the reading, it also necessitates Syntactic or Semantic Reconstruction to e_2. The combination of Trace Conversion to e_2 and Semantic Reconstruction to e_1 is not possible due to type mismatch. Since Syntactic Reconstruction is not an option due to Condition C, the only reconstruction possible here is Semantic Reconstruction, and the argument made in the text still holds. Secondly, one may wonder if a Condition C violation by Syntactic Reconstruction to e_2 is made possible by *partial copy deletion* (Chomsky (1995)), as in (i). This structure, however, is semantically anomalous. The relative clause left in the derived position has nothing to modify. A proponent of this analysis owes a semantic procedure that properly interprets (i).

(i) [~~Some paper~~ John wrote] he showed every student [some paper]

Moving on to Long Scrambling (LS), the unavailability of the $\forall > \exists$ reading in (7a) indicates that Trace Conversion is unavailable in e_3. Once again, the unavailability of Trace Conversion immediately predicts another "A'-property" of LS, exhibited in (26), namely that LS does not let the moved element bind a variable from the derived position.

(26) **LS does not let the moved element bind a variable from the derived position**

*__dono-gakkoo-mo__$_i$	[__soko__$_i$-ni	funinsuru	sensee	]-wa	[Taroo-ga	e	otozureta	to]
each-school-all	there-DAT	assign	teacher	-TOP	Taro-NOM		visited	C

omotteiru
believe.

Lit. 'Every school, a teacher who is assigned there believes that Taro visited.'
⇝ For every school, the teacher who is assigned there believes that Taro visited that school.

The observation in (7b) that a variable contained in a long scrambled element be bound then indicates that Syntactic Reconstruction to e_3 is also possible. By the same technique and reasoning we appealed to for SS, (27) further shows that Semantic Reconstruction is also an option there. To get the intended and attested $\forall > \exists$ reading without causing a Condition C violation, the scrambled phrase must undergo Semantic Reconstruction to e_3 (see Footnotes 8 and 9). This is a prerequisite to further get reconstructed to e_1, in which the scrambled element takes a lower scope than the universal quantifier.

(27) **Semantic Reconstruction to e_3 is possible**

[__Taroo__$_i$-ga	kaita	ronbun-no	__doreka__	]$_1$-o	__kare__$_i$-wa	[Hanako-ga	__dono-gakusee-ni-mo__	e
Taro-NOM	wrote	paper-GEN	some	ACC	he-TOP	Hanako-NOM	every-student-DAT-all	

haifusita to] omotteiru.
distributed think

'He thinks that Hanako distributed to every student a paper that Taro wrote.' ($^{ok}\forall > \exists$)

Summarizing, the discussion so far provides us with Table 2. It is now obvious that "A/A'-properites" can be decomposed into more concrete terms, instead of leaving them as unanalyzable primitives. The "A-properties" of VPS are the reflection of the unavailability of Syntactic Reconstruction and the availability of Trace Conversion. On the other hand, the "A'-properties" of LS is the reflection of the availability of Syntactic Reconstruction and the unavailability of Trace Conversion. The table further proves the hitherto unnoticed property of scrambling: Semantic Reconstruction is always an option. It also demonstrates that the "A/A'-properties" do not adhere to types of scrambling, but to available interpretation strategies in a given position SS, for example, can be reconstructed to e_2 but not to e_1. The "mixed" properties of SS are due to the flexibility in the interpretation at the e_2 position.

	e_1 (in-situ)	e_2 (vP-edge)	e_3 (local clausal edge)
Trace Conversion	✓	✓	*
Syntactic Reconstruction	*	✓	✓
Semantic Reconstruction	✓	✓	✓

Table 2: Summary

The way Table 2 conceptualizes the "A/A'-properties" offers theoretical advantages. Firstly, it makes a testable prediction. For example, if a displacement operation in a language changes the scope of quantifiers, it suggests Trace Conversion is available. Therefore, the movement should also allow the displaced element to bind a variable from the derived position. If a moved element can be reconstructed for binding, Syntactic Reconstruction is available. Therefore, the element should also be reconstructed for scope. The predictions about possible/impossible combinations of these properties should be investigated in future work.

Secondly, it makes a future investigation based on a more concrete question. For example, instead of asking why VPS shows "A-properties" we should ask why the position e_1 is incompatible with Syntactic Reconstruction. Although I have not come up with any answer even for the concrete question, I hope the view argued for in this paper casts a new light on future research. See Lechner (2017) for one line of analysis.

I conclude this paper by briefly discussing the crossover effect. In Saito (1992), the crossover effect is classified as one of the "A'-properties" based on data like (26). It is argued that the lack of the bound reading is due to Weak Crossover. However, we have shown that a quantifier binds a variable only if the quantifier has a variable within its scope. The desired scope configuration is not available for LS. Therefore, (26) does not even constitute a crossover configuration. The bound reading is ruled out due to the unavailability of Trace Conversion, which lets the scrambled quantifier take scope over the variable.

Based on the availability of bound reading in (24), which would be available without scrambling as shown in (28), Saito (1992) also claims that SS remedies the crossover violation. That is, for Saito, the unavailability of the bound reading without scrambling is due to the crossover effect. However, Japanese is known to be a scope-rigid language, in which an object never takes scope over a subject without scrambling. Again, variable binding by a quantifier hinges on the quantifier having the variable within its scope, which is impossible in Japanese without scrambling. Therefore, the absence of the bound reading in (28) cannot be attributed to the crossover effect because the sentence does not constitute a crossover configuration, and the presence of the bound reading in (24) does not show that SS remedies the alleged crossover effect.

(28) *[**sono**$_i$-gakkoo-ni funinsuru sensee]-ga **dono-gakkoo-mo**$_i$ hihansita.
there-school-DAT assigned teacher -NOM every-school-all criticized
'The teacher assigned there criticized every school.'

The fact that (24) is well-formed, despite its structural identity with Weak Crossover configuration, thus casts doubt on the conjecture that scrambling exhibits the crossover effect. It seems to me that whether or not Japanese scrambling ever exhibits a crossover effect should be worth a serious reinvestigation before classifying the presence/absence of the effect as the properties of scrambling.

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