

SCRAMBLING

1. What is scrambling?

A general term for the process that derives non-canonical word order in languages with “free word order” such as German, Japanese, Russian, German, Hindi. In such languages, constituents can occur in a variety of orders without change of the core meaning of the sentence:

- (1) a. Mary-ga sono hon-o yonda (koto) *Japanese*
Mary-NOM that book-ACC read (fact)
'Mary read that book'
- b. sono hon-o Mary-ga yonda (koto)
that book-ACC Mary-NOM read (fact)
'Mary read that book'

Some questions that have been addressed in the literature on scrambling:

1. Is it a uniform phenomenon or just a cover term for a family of constructions
2. How does it differ from related constructions such as Object Shift
3. Technical issues concerning the nature of the process involved:
 - a. Movement or base-generation?
 - b. If movement, what kind of movement (A, A' or a third type of movement?)
4. What is the account for the semantic effects induced or not induced by scrambling
5. How can the optionality of the construction be accounted for? Is it optional?

The term ‘scrambling’ is due to Ross (1967) who proposed that there is a scrambling transformation which alters the order among constituents inside the clause (short-distance scrambling) and applies in the stylistic component of the grammar.

In the early generative literature scrambling languages have been treated as non-configurational following Hale’s proposal that there is a configurationality parameter (Hale 1983; see also Chomsky 1981, Farmer 1980).

Warlpiri and Free word order: the only requirement is for the AUX to appear in "second" (Wackernagel's) position.

- (2) a. S Aux O V
 Ngarrka-ngku ka wawirri pnati-rni.
 man-Erg Aux kangaroo spear-NonP
 'The man is spearing the kangaroo.'
- b. O Aux V S
 Wawirri ka pantirni ngarrka-ngku.
- c. V Aux S O
 Pantirni ka ngarrka-ngku wawirri.

"...no truly convincing case has been made for a basic order of constituents, nor has any convincing evidence been forthcoming in favor of a movement analysis..." (Hale 1994, p. 185).

However, later research has shown that there is no evidence for non-configurationality in Japanese, German, etc.

Two types of scrambling:

Scrambling is either Short Distance (clause-bounded) or Long Distance

Not all languages have long-distance scrambling

Japanese, Korean, Hindi have both short distance and long distance scrambling.

German has short distance scrambling.

Dutch has short distance order-preserving scrambling (while non-order preserving scrambling in Dutch can also be long-distance, but is it scrambling? see fn 6 in Thráinsson).

2. Since we talked about Object Shift.....

Within Germanic, Object Shift (OS) is said to occur in Icelandic, Norwegian, Swedish, Danish while Scrambling is said to occur in German and Dutch.

Main properties of the two processes (see Thráinsson's paper) and their differences.

a) Movable constituents

- OS can only affect pronouns or (in Icelandic) object DPs, not PPs:

- (3) a. Jag kysste **henne** inte [VP t_v t_o] Swedish
 I kissed her not
- b. Ég skilaði **manninum** ekki bókinni Icelandic
 I returned the man-DAT not the book-DAT
 'I did not return the book to the man'
- c. *Jón talaði [**við Maríu**] ekki t Icelandic
 John spoke to Mary not

Scrambling may affect DPs and PPs:

- (4) a. dass Hans nicht **die Bücher** kauft
 that Hans not the books buys
- b. dass Hans **die Bücher** nicht kauft
- c. dat Jan niet **de boeken** koopt
 that Jan not the books buys
- d. dat Jan **de boeken** niet koopt
- (5) a. dass Hans kaum **auf meine Bemerkung** reagierte
 b. dat Jan nauwelijks **op mijn opmerking** reageerde
 that H/J hardly on my remark reacted
 c. dass Hans **auf meine Bemerkung** kaum reagierte
 d. dat Jan **op mijn opmerking** nauwelijks reageerde

b) Structural Conditions

-OS is subject to Holmberg's Generalization (V-raising plus the other restrictions we saw).

-Scrambling doesn't seem to be subject to HG. It can take place when there is an auxiliary and a participle:

- (6) a. dass Hans **das Buch** nicht gekauft hat
 that H. the book not bought has

This is incompatible with Chomsky's 1993 explanation for HG, compatible with Bobaljik's 1995 explanation for HG, compatible with F&P's explanation for HG.

German scrambling is not order preserving: DO>IO orders and O>S orders are ok.
 Dutch non-focus scrambling is order preserving *DO>IO orders, *O>S orders.

c) Landing sites

In Scandinavian OS the landing site is immediately to the left of sentential adverbs and negation:

- (7) a. Þá máluðu allir strákar stundum
 then painted all the boys sometimes
bílana rauða
 cars red
- b. Þá máluðu allir strákar **bílana**
 then painted all the boys the cars
 stundum t rauða
 sometimes t red
- c. *Þá máluðu **bílana** allir strákar stundum t rauða

There are a few cases of ‘long OS’ in Swedish and older Scandinavian Danish and Norwegian, with 1st, 2nd person and reflexive pronouns:

- (8) Därför gav mej Marit inte någon present
 Therefore gave me Marit not any present
 ‘Therefore Mary did not give me any present’

In German scrambling the IO and DO can move across subjects (so, one could argue that the landing site is higher):

- (9) a. dass der Schüler **den Lehrer** nicht t überzeugt
 that the student-NOM the teacher-ACC not t convinces
- b. ?dass **den Lehrer** der Schüler nicht t überzeugt
- (10) a. ?dass die Antwort **den Lehrer** nicht t überzeugt
 that the answer-NOM the teacher-ACC not t convinces
- b. dass **den Lehrer** die Antwort nicht t überzeugt

In Dutch, scrambling of the object across the subject is possible only when a special focus reading is involved (i.e. in focus scrambling):

- (11) a. dat Jan **die boeken** niet t koopt
 that Jan the books not t buys
- b. *dat **die boeken** Jan niet t koopt
- (12) a. dat zelfs Jan **zulke boeken** niet t koopt
 that even J. such books not t buys
- b. dat **zulke boeken** zelfs Jan niet t koopt

	Scandinavian OS		Germanic Scrambling	
	<i>Icelandic</i>	<i>Other</i>	<i>German</i>	<i>Dutch non focus scrambling</i>
Moves full NPs	yes	no	yes	yes
Moves pronouns	yes	yes	yes	yes
Moves PPs	no	no	yes	yes
HG	yes	yes	no V-raising no order-pres.	no V-raising yes order-pres.
Moves to a low position	yes	yes	yes	yes
Moves to a high position	no	no	yes	no

3. What is the nature of the movement involved?

3.1. Hypothesis 1. Scrambling targets two distinct positions

Mahajan (1990, 1994): "scrambling" is either A-movement (argument shift) that is induced by Case, or A'-movement (adjunction to XP).

A-movement Scrambling: O S; S O IO

-Overrides WCO effects

(13) a. ??? uske_i maalik-ne *kOn sii kitaab_i* pheNk dii
 its_i author-Erg which book_i threw away
 'Which book did its author throw away.'

b. *kOn sii kitaab_i* uske_i maalik-ne t_i pheNk dii
 which book_i its_i author-Erg t_i threw away
 'Which book did its author throw away.'

(14) a. ?*Who_i does his_i mother love t_i? (A'-movement)

b. Who_i appears to his_i teacher t_i to be a genius? (A-movement)

-Alters binding possibilities: landing site for A-scrambling relevant for BT

(15) a. * apne_i maalik-ne *ek naukari* naukari se nikaal diyaa
 self_i's boss-Erg a servant_i service from dismissed
 'Self's boss dismissed a servant.'

b. ? *ek naukari* apne_i maalik-ne t_i naukari se nikaal diyaa
 a servant_i self_i's boss-Erg t_i service from dismissed

Does not undergo reconstruction

- (16) a. raam-nej mohan-koj *apnii/j* *kitaab* IOTaaii
Ram-Sub Mohan-IO self's book-F-DO return-Perf-F
'Ram_i returned self's_{i/j} book to Mohan_j.'
- b. raam-nej *apnii/*jkitaab* mohan-koj t IOTaaii
Ram-Sub self's book-F-DO Mohan-IO t return-Perf-F

A'-scrambling

In languages like Japanese or Hindi scrambling can be long-distance and can be analysed as a successive cyclic adjunction process, similarly to English Topicalization:

- (17) **sono hon-o**₁ [John-ga [**t**₁ Mary-ga **t**₁ yondo to] itta] (koto)
that book-Acc John-Nom Mary-Nom read COMP said (fact)
'John said that Mary read **that book**.'

Long distance scrambling has A' properties

- a. Does not override a WCO violation:
b. Does not provide a new binder:

- (18) * konsaa aadmii_i uskii/apnii_i bahin-nesocaa [CP ki raam-ne t_j
which man_i-DO his_i /self_i's sister-Sub thought [CP that Ram-Sub t_j
dekhaa thaa]
seen be-Past]
'Which man_i did his/self_i 's sister think that Ram had seen t_j?'

Can undergo reconstruction

- (19) a. ek duusre-koraamOr siitaa t pasandkarte Hen
each other-DO Ram and Sita t like
'Ram and Sita like each other.'
- b. ekduusre-ko kamlaa soctii He ki raam Orsiitaa t pasandkare HEN
each other-DO Kamla think that Ram and Sita t like
'Kamla thinks that Ram and Sita like each other.'

Note that (19a) is a case of short distance scrambling, i.e. the correct generalization is that long-distance scrambling is A' movement while short distance scrambling can be A or A' movement.

Mahajan (1990):

A-scrambling is movement to an IP (AgrS, T, AgrO) SPEC (L-related) position:

[_{IP} NP_j [_{IP}.....t_j.....]]

A' scrambling is adjunction (non-L-related position):

[_{IP} NP_j [_{IP}.....t_j.....]]

One could exclude long distance A scrambling by appealing to the fact that A-movement is bounded....(see Mahajan 1990 for a binding-theoretic account of this, see Saito 1992 for an alternative based on locality, i.e. on the idea that A-movement must be 0-subjacent and CPs are barriers)¹.

Tada (1993): Long-distance scrambling is reconstructed obligatorily (Tada's argument is based on Saito's (1989) observation that long-distance scrambling *may* undergo "radical" reconstruction).

- (20)a. Daremo-o_i dareka-ga t_j sikatta.
everyone-Acc_i someone-Nom t_j scolded
'Everyone, someone scolded.'
every >> some, some >> every
- b. Daremo-o_i dareka-ga [sensei-ga t_j sikatta to] omotteiru.
everyone-Acc_i someone-Nom [teacher-Nom t_j scolded Comp] scolded
'Everyone, someone thinks that the teacher scolded.'
*every >> some, some >> every

3.2. Hypothesis 2. Webelhuth's Paradox and Webelhuth's third type position

Based on German which does not have long distance scrambling

Scrambling shows mixed A / A' movement properties even within the same construction:

- (21) ?Peter hat **jeden Gast**_i [ohne e anzuschauen] seinem_i Nachbar t vorgestellt
Peter has every guest-Acc without to look at his neighbor introduced
'Peter introduced every guest to his neighbor without looking at him.'
- (22) ?Peter hat **die Gäste**_i [ohne e anzuschauen] einander_i t vorgestellt
Peter has every guest-Acc without to look at his neighbor introduced
'Peter introduced every guest to his neighbor without looking at him.'

Here we find mixed properties: on the one hand, a parasitic gap is licensed, a property of A'-movement. On the other hand, the scrambling involved does not trigger weak crossover (an A-movement property).

¹ I am not sure I see what is meant here. probably, that scrambling cannot undergo successive cyclic movement through Spec,CP and hence CP becomes a barrier by Inheritance ? (crucially for A scrambling and not A' scrambling which adjoins to IP...).

This mixed behavior has become known as "Webelhuth's Paradox".

Webelhuth's A' diagnostics

Properties of Operator and Argument Chains

	O-chains	A-chains
1. Moves DP	+	+
2. Moves PP	+	-
3. Mover lacks Case	+	-
4. Licenses parasitic gaps	+	-
5. Strands prepositions	+	-

With respect to these properties Scrambling qualifies as an O-chain and OS as an A-chain.

-DPs undergo the process

Wh-movement

(23) Which book did John read t?

Scrambling

(24) weil Hans das Buch wahrscheinlich t gelesen hat
because Hans the book probably read has

Passivization

(25) The book was stolen t

Object Shift

(26) Han köpte den inte t

-PPs undergo the process

Wh-movement

(27) [To whom] did you talk t?

Scrambling

(28) weil er [mit ihr] nicht t tanzen wollte
because he with her not dance wanted

Passivization

(29) *At Mary was looked

Object Shift

(30) *Jag tror [pa det] inte t
I believe in it not

-Mover lacks Case

-Not the case in wh-movement

-Not the case in scrambling:

(31) weil den Jungen niemand gesehen hat
because the boy nobody seen has

-Not clear in object shift (W. says that the landing site in OS can be a Case position).

-Parasitic Gaps

Wh-movement

(32) What did John file t [without having read e]?

Scrambling

(33) a. ?weil er den Patienten [ohne PRO vorher e zu untersuchen]
because he the patient without first to examine
t operierte
operated
b. *weil er [ohne PRO vorher e zu untersuchen] den Patienten operierte
because he without first to examine the Patient operated

Passivization

(34) *The article was filed t [without having read e]

Object Shift

(35) *Jag kastade den inte t [innan jag hade läst e]
I threw it not before I had read
'I didn't throw it away before I had read it'

In addition, scrambling can show 'anti-crossover effects' just like wh-movement:

- (36) *weil er_k [die Behauptungen, die Hans_k während der Konferenz gemacht hatte] zurücknehmen musste
 because he_k [the claims that Hans_k during the conference made had] take back had to
 ‘because he had to take back the claims that Hans made during the conference’
 *weil er_k [die Behauptungen, dass Hans_k während der Konferenz geschlafen hatte] zurücknehmen musste
 because he_k [the claims that Hans_k during the conference slept had] take back had to
 ‘because he had to take back the claims that Hans was asleep during the conference’

wh-movement:

- (37) [welche der Behauptungen Hans_k während der Konferenz gemacht hatte] musste er_k zurücknehmen
 [which of the claims Hans_k during the conference made has] had to he_k take back
 ‘which of the claims Hans made during the conference did he have to take back’
 *[wie viele der Behauptungen, dass Hans_k während der Konferenz geschlafen hatte] musste er_k zurücknehmen
 [how many of the claims that Hans_k during the conference slept had] had to he_k take back
 ‘how many of the claims that Hans was asleep during the conference did he have to take back’

scrambling:

- (38) weil [manche der Behauptungen, die Hans_k während der Konferenz gemacht hatte] er_k zurücknehmen musste
 because [some of the claims Hans_k during the conference made has] he_k to take back had
 *weil [manche die Behauptungen, dass Hans_k während der Konferenz geschlafen hatte] er_k zurücknehmen musste
 because [some of the claims that Hans_k during the conference slept had] he_k to take back had

Webelhuth’s A diagnostics

Anaphor binding:

- (39) *Er hat den Gästen einander vorgestellt
 He has the guests-IO each other-DO introduced

No anaphor binding possible in the IO>DO order (which he assumes to be the base order).²

The DO can bind the IO when the DO scrambles across the IO:

- (40) Er hat die Gäste einander vorgestellt
 He has the guests-DO each other-IO vorgestellt

Same with variable binding (WCO):

- (41) a. *weil seine_k Eltern jeden Schüler_k besuchten
 because his parents-SU every student-OB visited
 b. weil jeden Schüler_k seine_k Eltern besuchten
 because every student his parents visited

Based on “Webelhuth’s Paradox” sentences he argues that scrambling targets a third type of position with mixed A/A’ properties:

- (21) ?Peter hat **jeden Gast**_i [ohne e anzuschauen] seinem_i Nachbar t vorgestellt
 Peter has every guest-Acc without to look at his neighbor introduced
 'Peter introduced every guest to his neighbor without looking at him.'
 (22) ?Peter hat **die Gäste**_i [ohne e anzuschauen] einander_i t vorgestellt
 Peter has every guest-Acc without to look at his neighbor introduced
 'Peter introduced every guest to his neighbor without looking at him.'

Webelhuth’s analysis

Webelhuth proposes that scrambling is uniformly an adjunction operation. A phrase in an adjoined position can be an A binder as well as an A’ binder.

Webelhuth’s typology of positions:

- (23) a. Spec,CP position A’ (operator) position
 *A binding A’ binding only
 b. Spec, IP position A (argument) position
 *A’ binding A binding only
 c. Adjoined position non-A / non-A’ position
 A/A’ binding

² A very puzzling fact....

Mahajan's re-analysis of Webelhuth's paradox cases:

- (21') ?Peter hat **jeden Gast**_i [ohne e anzuschauen] t'' seinem_i Nachbar t' vorgestellt
Peter has every guest-Acc without to look at his neighbor introduced
'Peter introduced every guest to his neighbor without looking at him.'
- (22') ?Peter hat **die Gäste**_i [ohne e anzuschauen] t'' einander_i t' vorgestellt
Peter has every guest-Acc without to look at his neighbor introduced
'Peter introduced every guest to his neighbor without looking at him.'

(an A movement step leading to variable binding and reciprocal binding followed by an A' movement step licensing the parasitic gap).

He furthermore presents evidence that scrambling in German cannot simultaneously bind and reconstruct.

3.3. Saito (1992): both Mahajan and Webelhuth are right

-Short distance scrambling in Japanese: A properties

-Long distance scrambling in Japanese: A' properties

However, it does not establish a significant operator-variable relationship. It can be undone.

Undoing properties of scrambling. Scrambling can be undone in LF:

(a) *Evidence from scrambled wh-phrases*

- (24) a. Nani-o₁ John-ga [Mary-ga t₁ katta ka] sitteiru.
what-ACC John-NOM Mary-NOM bought Q knows
'John knows what Mary bought.'
- b. [Mary-ga nani-o katta to]₁ John-ga [Bill-ga t₁ itta ka] sitteiru.
Mary-NOM what-ACC bought that John-NOM Bill-NOM said Q knows
'John knows what Bill said that Mary bought.'

In (24a) the embedded object *wh*-phrase is scrambled to the matrix clause, but it must take embedded scope, since the matrix clause is not specified as interrogative. (Japanese interrogative clauses are marked by the question markers *ka* and *no*.) (26b) involves scrambling of the most embedded CP containing a *wh*-phrase to the matrix clause, and the *wh*-phrase again must take scope in the intermediate CP, unlike *wh*-movement and topicalization.

- (25) *[That picture of who₁]₂, I know who₃ t₃ bought t₂.

(25) is ungrammatical, showing that *who* cannot take embedded scope once the phrase containing it topicalizes out of the embedded clause. On the basis of these facts, Saito (1989) concludes that unlike *wh*-movement and topicalization, scrambling has no semantic import; that is, it does not establish an operator-variable relation and hence can be undone in LF, so that the *wh*-phrases are within their scope at LF in (24).

(b) *Evidence from scrambled QPs*

Scrambled QPs cannot take scope over the matrix QP subject (see Saito 1992 and Tada 1993):

- (26) Daremo₁-ni dareka-ga [Mary-ga *t*₁ atta to] omotteiru.
everyone-DAT someone-NOM Mary-NOM met that thinks
=for some *x*, *x* a person, *x* thinks that for every *y*, *y* a person, Mary met *y*
≠ for every *y*, *y* a person, there is some *x*, *x* a person, such that *x* thinks that Mary met *y*

The sentence-initial QP *daremo-ni* ‘everyone’ necessarily lowers to the embedded VP-complement position in LF and hence is not able to take scope over the matrix subject QP.

A lowering approach and arguments against it

Bošković & Takahashi (1998): an LF lowering approach to scrambling to account for the undoing property.

(also accounts for absence of long distance scrambling of adjuncts and for the lack of freezing effects with scrambling, i.e. the fact that scrambled XPs are not islands to extraction).

However,

1) As noted by Nishigauchi (2002) and Miyagawa (2005), Saito’s (1989) undoing analysis makes the wrong prediction in Condition C environments:

- (27) [John_i-ni-tuite-no dono hon]-o_j kare_i-ga [Hanako-ga *t*_j ki-ni-itteiru ka]
[John_i-about-GEN which article]-ACC_j he_i-NOM [Hanako-NOM *t*_j like Q]
sitte-iru.
knows
‘He knows which article about John, Hanako likes.’

Under the undoing analysis, this entire *wh*-phrase must obligatorily reconstruct. But that would incorrectly predict a Condition C violation, because *John* in the *wh*-phrase would end up being c-commanded by the pronoun *kare* ‘he’ in the matrix subject position. The fact that there is no Condition C violation is evidence that the *wh*-phrase does not get put back.

2) Moreover, scrambling displays the Lebeaux argument-adjunct asymmetries:

- (28) a. ??/?*[Minna-no John_i-no hihan-o]_j karei-ga [Hanako-ga t_j
[everyone-GEN John_i-GEN criticism-ACC]_j he_i-NOM [Hanako-NOM t_j
osiete-kureta to] itta.
told.him COMP] said
'[Everyone's criticism of John], he said that Hanako told him.'
- b. [[Minna-ga John_i-kara kakusite-ita] hihan-o]_j karei-ga
[[everyone-NOM John_i-from was.hiding] criticism-ACC]_j he_i-NOM
[Hanako-ga t_j osiete-kureta to] itta.
[Hanako-NOM t_j told.him COMP] said
'The criticism that everyone was hiding from John, he said that Hanako told
him.'

3) Finally, an LD-scrambled QP may have wide scope if the embedded clause contains a quantifier which the scrambled QP may take scope over, a fact suggesting that wide scope is licensed if every step in the movement has an effect on the outcome.