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)  
       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.
"...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 tₐ] Swedish
   I kissed her not
d. Ég skilaði manninnum ekki bókinni Icelandic
   I returned the man-DAT not the book-DAT
   'I did not return the book to the man'
c. *Jón talaði [v íð 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
   dass Hans **die Bücher** nicht kauft
   dass Jan nicht **de boeken** koopt
   dass Jan **de boeken** nicht koopt
   dat Jan nicht **de boeken** koopt
   dat Jan **die Bücher** nicht kauft
   dat Jan **die Bücher** kauft
   dass Hans **die Bücher** kauft
   dass Jan **de boeken** koopt
   dass Jan **de boeken** nicht koopt
   dass Jan **de boeken** koopt

(5)  a. dass Hans kaum auf meine Bemerkung reagierte
   dass Jan nauwelijks op mijn opmerking reageerde
   dass Jan nauwelijks on my remark reacted
   dass H/J kaum reagierte
   dass Jan op mijn opmerking reageerde
   dass Jan kaum reagierte
   dat Jan kaum 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
   dass Hans **das Buch** kauft hat
   dass Jan **das Buch** kauft hat
   dass Jan **das Buch** hat gekauft
   dass Jan **das Buch** hat gekauft
   dass H/J **das Buch** hat gekauft

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:
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 buys
b. dat zulke boeken zelfs Jan niet t koopt
<table>
<thead>
<tr>
<th>Scandinavian OS</th>
<th>German Scrambling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Icelandic</td>
</tr>
<tr>
<td>Moves full NPs</td>
<td>yes</td>
</tr>
<tr>
<td>Moves pronouns</td>
<td>yes</td>
</tr>
<tr>
<td>Moves PPs</td>
<td>no</td>
</tr>
<tr>
<td>HG</td>
<td>yes</td>
</tr>
<tr>
<td>Moves to a low position</td>
<td>yes</td>
</tr>
<tr>
<td>Moves to a high position</td>
<td>no</td>
</tr>
</tbody>
</table>

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. ??? uskei m aalik-ne kOn sii kitaabî pheNk dii itsî author-Erg which bookî threw away
    'Which book did its author throw away.'

    b. kOn sii kitaabî uskei m aalik-ne tî pheNk dii which bookî itsî author-Erg tî threw away
       'Which book did its author throw away.'

(14) a. *Whoî does hisî mother love tî? (A'-movement)

    b. Whoî appears to hisî teacher tî to be a genius? (A-movement)

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

(15) a. * apneî maalik-ne ek naukarî naukari se nikaal diyaa selfî'sboss-Erg a servantî service from dismissed
    'Self's boss dismissed a servant.'

    b. ? ek naukarî apneî maalik-ne tî naukari se nikaal diyaa
       a servantî selfî'sboss-Erg tî service from dismissed
Does not undergo reconstruction

(16) a. raam-nei mohan-koj apnii/*j kitaab lOTaaii
   Ram-Sub Mohan-IO self's book-F-DO return-Perf-F
   'Ram returned self'si/j book to Mohanj.'

   b. raam-nei apnii/*j kitaab mohan-koj lOTaaii
   Ram-Sub self's book-F-DO Mohan-IO 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, [John-ga [t' Mary-ga t 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) * kon saa aadmiii uskiii/apniii bahin-nesocaa [CP ki raam-ne tj
   which mani-DO hisi /selfi's sister-Sub thought [CP that Ram-Sub tj
   dekhaa thaa]
   'Which mani did his/selfi's sister think that Ram had seen ti?'

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 kamlaasocctii He ki raam Osritaa 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:

6
A’ scrambling is adjunction (non-L-related position):

$[\text{IP NP}_j [\text{r} \ldots \text{t} \ldots]]$

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).

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-oji dareka-ga ti sikatta.
   everyone-Acc someone-Nom ti scolded
   'Everyone, someone scolded.'
   every >> some, some >> every
   everyone-Acc someone-Nom [teacher-Nom ti 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 jeder Gast, [ohne e anzuschauen] seinem, 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, [ohne e anzuschauen] einander, 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**

<table>
<thead>
<tr>
<th></th>
<th>O-chains</th>
<th>A-chains</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Moves DP</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>2. Moves PP</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>3. Mover lacks Case</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>4. Licenses parasitic gaps</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>5. Strands prepositions</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

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:
weil er [die Behauptungen, die Hans_k während der Konferenz gemacht hatte] zurücknehmen musste
because he [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 [die Behauptungen, dass Hans_k während der Konferenz geschlafen hatte] zurücknehmen musste
because he [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:

[welche der Behauptungen Hans_k während der Konferenz gemacht hatte] musste er zurücknehmen
[which of the claims Hans_k during the conference made has] had to he 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 zurücknehmen
[how many of the claims that Hans_k during the conference slept had] had to he take back
‘how many of the claims that Hans was asleep during the conference did he have to take back

scrambling:

weil [manche der Behauptungen, die Hans_k während der Konferenz gemacht hatte] er [die Behauptungen, dass Hans_k während der Konferenz geschlafen hatte] zurücknehmen musste
because [some of the claims Hans_k during the conference made has] he [the claims that Hans_k during the conference slept had] take back had
*weil [manche die Behauptungen, dass Hans_k während der Konferenz geschlafen hatte] er [die Behauptungen, dass Hans_k während der Konferenz geschlafen hatte] zurücknehmen musste
because [some of the claims that Hans_k during the conference slept had] he [the claims that Hans_k during the conference slept had] take back had

Webelhuth’s A diagnostics

Anaphor binding:

*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:

\[(40)\]
\[
\begin{array}{l}
\text{Er hat die Gäste einander vorgestellt} \\
\text{He has the guests-DO each other-IO vorgestellt}
\end{array}
\]

Same with variable binding (WCO):

\[(41)\]
\[
\begin{array}{llll}
\text{a. weil} & \text{seine} & \text{Eltern} & \text{jeden Schüler} \\
\text{because} & \text{his parents-SU} & \text{every student-OB} & \text{visited}
\end{array}
\]
\[
\begin{array}{llll}
\text{b. weil} & \text{jeden Schüler} & \text{seine} & \text{Eltern} \\
\text{because} & \text{every student} & \text{his parents} & \text{visited}
\end{array}
\]

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

\[(21)\] ?Peter hat \textit{jeden Gast}, [ohne e anzuschauen] seinem, Nachbar t vorgestellt
'Peter introduced every guest-Acc without to look at his neighbor introduced 'Peter introduced every guest to his neighbor without looking at him.'

\[(22)\] ?Peter hat \textit{die Gäste}, [ohne e anzuschauen] einander, t vorgestellt
'Peter introduced every guest-Acc without to look at his neighbor introduced 'Peter introduced every guest to his neighbor without looking at him.'

\section*{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:

\[(23)\]
\[
\begin{array}{ll}
\text{a. Spec,CP position} & \text{A’ (operator) position} \\
*\text{A binding} & \text{A’ binding only}
\end{array}
\]
\[
\begin{array}{ll}
\text{b. Spec, IP position} & \text{A (argument) position} \\
*\text{A’ binding} & \text{A binding only}
\end{array}
\]
\[
\begin{array}{ll}
\text{c. Adjoined position} & \text{non-A / non-A’ position} \\
& \text{A/A’ binding}
\end{array}
\]

\(^2\) A very puzzling fact.....
Mahajan’s re-analysis of Webelhuth’s paradox cases:

(21’) ?Peter hat **jeden Gast**, [ohne e anzuschauen] t’’ seinem, 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**, [ohne e anzuschauen] t’’ einander, 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

    what-ACC John-NOM Mary-NOM bought Q knows
    ‘John knows what Mary bought.’

    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 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 ₃ 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) [John₁-ni-tuite-no dono hon]-o kare,-ga [Hanako-ga ₃ ki-ni-itteiru ka]
    [John₁-about-GEN which article]-ACC₃ he,-NOM [Hanako-NOM ₃ 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 Johni-no hihan-o]j karei-ga [Hanako-ga t\_j
[everyone-GEN Johni-GEN criticism-ACC]j he\_t-NOM [Hanako-NOM t\_j
osiete-kureta to] itta.
told.him COMP] said
‘[Everyone’s criticism of John], he said that Hanako told him.’
[[everyone-NOM Johni-from was.hiding] criticism-ACC]j he\_t-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.