Scrambling to Reduce Scrambling

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Introduction.

Scrambling is a general cover term for the process that derives non-canonical word order patterns in so-called "free word order languages" such as Japanese, Russian, German, Hindi and many others. In such languages, constituents can appear in a variety of surface orders, without changing the core meaning of the sentence. Typical Japanese examples are given in (1), where (1a) is the canonical order, and (1b) the "scrambled" order.

1) a. Mary-ga sono hon-o yonda (koto)
Mary-Nom that book-Acc read (fact)

b. sono hon-o Mary-ga yonda (koto)
that book-Acc Mary-Nom read (fact)
'Mary read that book.'

Considering that *sono hon-o* in (1) is the theta-marked direct object of the active verb *yanda* ('read'), it is presumed to be base-generated in object position in both cases, (although we will see some other proposals as well), and scrambled to its surface position in (1b). scrambling has certain properties that bear directly on the theory of grammar as a whole, and therefore it has been of interest to syntacticians for some time. Questions have included the technical nature of the movement involved, the semantic effects induced (or not induced) by this process, and the issue of its apparent complete optionality in those languages that allow it at all -- a curious distinction from many other known movement processes. In this article I survey major claims about the nature of scrambling, address the optionality issue in a separate section, and provide an optimistic possibility for the direct incorporation of scrambling phenomena into core grammar.

No survey of scrambling could hope to cover all published research on this important area of syntactic theory. Partly this is because discussion of scrambling has developed alongside general developments in syntactic theory and therefore had quite a different character in 1967 when Ross coined the term in his dissertation, to today, when the apparent optionality of scrambling presents an obvious dilemma for those invested in the "perfect" nature of the linguistic system. The extensive literature on scrambling also cuts across language areas, with their distinct syntactic traditions, not all of which accept the existence of such a process, and those that do disagree as to what falls into the category the term "scrambling" covers. However, three language areas appear to have the best known albeit distinct traditions in this regard: Germanic, Slavic and Japanese/Korean. But the number of languages and language groups with scrambling-like phenomena to be analyzed is vast, and no survey could do justice to all the intricate findings of area syntacticians. A third reason for the diffuse nature of the scrambling literature relates to the difficulty of placing this process in an appropriate theoretical context: Discussion of its interactions range from the claim that scrambling is a PF phenomenon, considering its close connection with intonation and its apparent semantic inertness, to the claim that it directly effects LF phenomena such as binding and quantifier scope. Further, it remains unclear how to fit in the interaction of scrambling with a range of discourse, stylistic and pragmatic effects. These interactions alone have led to strong claims about the shape of the grammar, and I return to these debates briefly in the closing section.

Let me first touch upon some important areas of scrambling research that this survey cannot cover, due to space limitations. One is the acquisition of scrambling, which has been studied quite a bit, in particular with respect to Japanese scrambling in the work of Otsu (1992) and others. There is also a growing body of experimental work on processing

and scrambling, in particular on Slavic and Germanic, including the work of Sekerina (1996, 1999, in press) and Schlewesky and his colleagues at Potsdam (Schlewesky et al in press). I will not discuss historical change with regard to scrambling (ignoring, for example, in the discussion of Russian scrambling the well-known fact that 18th century Russian allowed much more word order permutation than modern Russian does, although most other historical changes leading to modern Russian, including changes in the case system, were already in place by the 18th century.) Lastly, I will limit the discussion to constituent scrambling, and will mostly leave aside other scrambling phenomena such as split scrambling (but see Ionin ...) , DP-internal scrambling, and downward or rightward scrambling, insofar as it is attested. If these exclusions seem extreme, one might get the feeling we are left with too narrow a range of leftward constituent reorderings in a limited set of languages. But the issues underlying analysis of these admittedly limited cases of scrambling alone are quite extensive, and require careful handling. Indeed we will discover that even within this limited set of processes there may be reason to exclude some of them from the core notion of scrambling and correlate them with syntactic processes known form non-scrambling languages, such as Object Shift, the EPP and others, a possibility to which I return.

1. A Brief History of Scrambling: Mechanics.

Early discussion of scrambling was concerned primarily with demonstrating that free word order phenomena were the product of movement, and debates surrounded the *mechanics* of that movement.

1.1 Ross and free word order.

In his 1967 dissertation, *Constraints on Variable in Syntax,* Ross first proposed the Scrambling Transformation, shown in (2):

2) The original Scrambling rule: (from Ross 1967)

Scrambling

X	—	{ NP, VP, N, V, Adj, Adv }	—	{ NP, VP, N, V, Adj, Adv }	—	Y		
→	1		2		3		4	
	1		3		2		4	

Condition: S-i dominates 2 if and only if S-i dominates 3

The stated condition on the transformation in effect limited scrambling to the local clause (and thus would not have allowed for well-attested cases of "Long-Distance" scrambling). Ross also said little about the *kind* of movement involved (as Standard Theory transformations often did not), and in fact relegated the process to the "stylistic" component of the grammar. This last notion was maintained in the Move-α approach to scrambling in the Government and Binding era, and has been the most common conclusion reached about

the properties of clause-level reordering processes, as analyzed in the work of Saito and many others (Saito 1985, 1986, 1989, 1992, etc). In the next section we look briefly at the main characteristics of the Move-α approach

1.2. Move-α and Government and Binding Theory.

Government and Binding (GB) Theory (Chomsky 1981, Chomsky and Lasnik 1993) takes as primitives the various modules of grammar, and limits the sets of possible (movement) transformations to one (Move-α). Restrictions on operations are built not into the operations themselves but rather into the system of (universal) constraints. Within GB, there was general consensus that scrambling was a syntactic movement process, hence an instance of Move-α. The central debates concerning the mechanics of scrambling revolved around the *nature* of the movement involved -- does it pattern with A-movement processes such as Raising and Passive or with A'-movement processes such as WH-movement and Topicalization? There were advocates of both the A'-movement approach and the A-movement approach, thought the latter were in the minority.

1.2.1 A'-movement Evidence.

Much of the early literature on the mechanics of scrambling concerned Japanese. In (1989), Mamoru Saito published one of the field's seminal articles on scrambling within the GB framework, "Scrambling as Semantically Vacuous A'-Movement" in which he argued that scrambling was A'-movement, but without the semantic import of other known A'-movement processes such as WH-movement and Topicalization. Saito argued as follows: Examples of long-distance scrambling, such as (3), show that it can be analyzed as a successive-cyclic adjunction process, similar to English Topicalization:

3) **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**.'

Evidence for the A'-nature of scrambling was taken from significant similarities between Japanese scrambling and English WH-movement in terms of the effects of the Proper Binding Condition. Thus in cases of multiple scrambling, which is generally licit, and possible with an NP and a CP scrambling, if a CP containing an already scrambled NP is itself scrambled, the resulting configuration is ungrammatical, as the Proper Binding Condition would predict. The relevant example from Saito 1989 is shown in (4) (his (28)):

4) *[Mary-ga **t**$_1$ yondo to]$_2$ **sono hon-o**$_1$ [John-ga [**t**$_2$] itta] (koto)
Mary-Nom read COMP that bok-Acc John-Nom said (fact)
'John said that Mary read **that book**.'

In (4), CP-2 contains a trace of the previously scrambled NP-1. $\mathbf{t_i}$ is thus not properly bound. English WH-movement behaves in a similar manner:

5) *Mary thinks that [$_{np}$the man that bought what]$_2$, John knows who$_1$ t_1 likes t_2

In (5), we see that overt movement of a larger constituent (NP-2) containing an element that must end up in a lower LF position causes a Proper Binding Violation. Thus we have vidence that Scrambling is overt A'-movement, just like WH-movement. Further, Hoji

(1985) demonstrated that scrambling in Japanese can save a weak crossover violation, a known property of A'-movement.

The discussion of scrambling in other languages also presented significant parallels in the constrained behavior between scrambling and known cases of A'-movement, especially WH-movement. These are documented in great detail for German in Webelhuth (1989) and for Russian in Bailyn (1995) and for various other languages in Grewendorf and Sternefeld (1990). In chapter 6 of his dissertation (pp. 327-425), Webelhuth (1989), for example, provides extensive empirical documentation of the fact that scrambling, although he does not use that term, is subject to the usual movement constraints -- The Left Branch Condition, Specificity Constraint, the Coordinate Subject Constraint etc., and that it both licenses parasitic gaps and remedies weak-crossover. An example from Webelhuth (1989) is given in (6):

6) The Coordinate Structure Constraint: (a) WH-Movement; (b) Scrambling

a. *Wen$_i$ hat jemand [t_i und Maria] angemeldet
whom-Acc has somebody and Maria registered
*'Who did somebody register and Maria?'

b. *weil **Hans$_i$** jemand [t_i und Maria] angemeldet hat
because Hans somebody and Maria registered has
*'because Hans somebody has registered and Maria'

In (6a) the Coordinate Subject Constraint is violated by WH-movement, in (6b) by what Webelhuth calls "Free word order movement", that is, scrambling. Similar examples are provided for a wide range of syntactic movement constraints active in German. In Bailyn (1995), I provided much of the same kind of evidence for Russian. Due to space constraints, I will simply list the relevant constraints relevant to Russian scrambling. The interested reader can refer to the literature for more details on other languages:

7) List of principles constraining scrambling: (from Bailyn 1995)

	Structure (kind of extraction)	WH-Movement	Scrambling
1.	PP complement from internal DP	+	+
2.	PP compl. from subject DP	-	-
3.	from **čtoby** comp	+	+
4.	from **čto** comp	-	-
5.	internal argument specifier	+	+
6.	**čtoby** embedded internal arg. spec.	-	-
7.	**čtoby** embedded subject specifier	-	-
8.	PP modifier	-	-
9.	nominative comparative after **čem**	-	-
10.	genitive comparative	+	+
11.	Preposition Stranding	-	-
12.	from coordinate structure	-	-

The reader will note that they are exactly parallel. Thus it is clear that scrambling is a movement process subject to the usual constraints, and that mechanically it is not significantly different from WH-movement, except in that it creates an adjunction structure, whereas most instances of (single) WH-movement are thought to be substitution into SpecCP. (For more discussion on the issue of landing sites, see Section 1.3 below).

Returning briefly to Webelhuth's (1989) discussion of German scrambling, let us review the evidence that scrambling can save a crossover violation, (arguably reducible, in the given cases, to a Principle C violation). This is shown in (8)-(9):

8) Anti-Crossover Effects (Webelhuth 1989, pp 351-353)

a. *weil er$_i$ [die Behauptungen, die Hans$_i$ während der
because he the claims that Hans during the

Konferez gemacht hatte] zurücknehmen musste
conference made had take-back had-to

*'because he$_i$ had to take back the claims that Hans$_i$ made during the conference'

b. [Welche der Behauptungen, die Hans$_i$ während der
which-of the claims that Hans during the

Konferez gemacht hatte] musste er$_i$ zurücknehmen
conference made had had-to he take-back

'Which of the claims that Hans made during the conference did he have to take back?'

c. weil [manche der Behauptungen, die Hans$_i$ während der
because some-of the claims that Hans during the

Konferez gemacht hatte] er$_i$ zurücknehmen musste
conference made had he take-back had-to

'because some of the claims that Hans made during the conference he had to take back?'

In (8a) we have a standard Principle C violation, in which the pronoun *er* c-commands a coreferent R-expression *Hans*. This situation is rectified by the WH-movement in (8b). (Such constructions are also often referred to as Anti-Reconstruction effects (Huang 1996, Heycock 1995)). Similarly, when scrambling applies, the same improvement is observed, as in (8c). Thus the two kinds of movement share the anti-crossover property as well. Further, there are cases in which the WH-movement does not improve things (Webelhuth's (77G) on p. 352) ands in those cases, as predicted, scrambling fares no better (his (79G), p. 353). Thus the parallelism is intact, and non-movement accounts have a significant empirical burden to account for such restrictions, an issue to which we return below. (9) summarizes Webelhuth's findings on German scrambling:

9) Webelhuth's conclusion about Free Word Order Movement (p. 357)

Free word order structures have the following properties:

- they display the same preposition stranding behavior as WH-movement contexts
- they obey the Left-branch Condition
- they obey the Specificity constraints on extraction from DP
- they obey the Coordinate Structure Constraint
- they obey the Subject Condition
- like WH-movement, they show anti-crossover effects
- they contain parasitic gaps

The parallelism is further supported, in an indirect way, by claims in the recent literature on Slavic that secondary occurrences of apparent WH-movement in some multiple-WH movement Slavic languages are in fact adjunction to IP (Stepanov 1998, Strakhov 2001) and perhaps are motivated by the same factors that motivate scrambling

(Focus) or indeed may not be WH-movement but scrambling itself. Such proposals do not specify the mechanical nature of scrambling, but rather assume what by now is considered the "standard" story, namely that it is IP-adjunction and has the properties of A'-movement. Rather, they invert the standard view of (multiple) WH-movement, claiming that secondary instances are in fact scrambling. Obviously, such a claim loses its strength unless scrambling itself is in fact an A'-movement process. Thus indirectly, regardless of the validity of the claim about WH-movement, those approaches support the A'-movement account of scrambling.

Thus at first, there seemed to emerge a consensus that scrambling was A'-movement. However, at the same time, evidence was mounting that in important instances, scrambling had the properties of A-movement. In the next section we briefly survey this evidence.

1.2.2 A-movement Evidence.

Preliminary A-movement evidence from German is the clause-boundedness demonstrated by German scrambling. However, because this property does not hold in Russian, Japanese and other languages, I will not discuss it further here. Secondly, scrambling can feed A-binding in German, which should only be possible if the landing site is an A-position. Thus in the English example (10), raising to subject position (for case) feeds binding of the reciprocal:

10) They$_i$ seem to each other$_i$ [t_i to be intelligent]

Similarly, on the assumption that Accusative arguments are base-generated lower than Datives, (not an entirely innocuous assumption, see Bailyn 1995, Miyagawa 1997), scrambling of an Accusative over a Dative allows surface binding to obtain:

11) *weil wir* ***die Frauen$_i$*** *einander$_i$ t_i vorgestellt haben*
because we the women-Acc each other-Dat introduced have
'because we have introduced the women to each other.'

Furthermore, scrambling of an object over a subject does not cause a weak crossover violation (8a), which should only hold of A-movement (8b), not A'-movement (8c):

12) a. weil **jeden$_i$** [seine$_i$ Mutter] t_i mag
because each-Acc his mother-Nom likes
'because each likes his mother...'

b. John$_i$ seems to his$_i$ father [t_i to be intelligent]

c. *Who$_i$ does it seem to his$_i$ father that Mary likes t_i?

1.2.3 Evidence for mixed properties.

However, when particular scrambling languages such as German and Hindi were studied in more detail, a picture of a more mixed system began to emerge, whereby Long-Distance scrambling showed the properties of A'-movement, but local scrambling could in some cases be A-movement.

Webelhuth (1989) and Mahajan (1990) independently determined that VP-internal scrambling has both A' and A-properties, a finding unexpected given the adjunction

approach discussed above. As an example, consider sentence (13), from Webelhuth (1989) as quoted in Corver & van Riemsdijk (1994)

13) ?Peter hat **jeden Gast$_i$** [ohne e anzuschauen] seinem$_i$ Nachbard 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). This mixed behavior has become known as "Webelhuth's Paradox". Webelhuth proposes that adjunction positions have mixed properties, and that local scrambling uses such positions. Lee & Santorini (1994) offer a different explanation, in terms of locality, which restates the descriptive situation in terms of domains, but does not really produce a deeper explanation.

Mahajan (1990, 1994), on the other hand, argued that there are simply two kinds of landing sites for the scrambling processes: one, a Spec position, showing A-properties, the other, and adjoined position, showing A'-properties. This appears promising, especially if the former instances can be related to an independently motivated A-movement requirements, an approach that is played out in recent work by Miyagawa (1997, 2000), Bailyn (forthcoming) and elsewhere. It also laid the groundwork for important discussion of landing sites, which is discussed in section 1.3 below.

1.3. Kinds of A-bar Scrambling.

The general consensus emerged that there were certainly instances of A'-scrambling, and that Long-Distance scrambling always had A'-properties. The A vs. A'-movement debate did not die down, but was in a sense superseded by other issues more in the forefront in syntactic theory. For one thing, as the theory of functional categories changed, affecting theories of base-generated positions of arguments, a topic still hotly discussed, and as X'-theory developed, and later gave way to the more derivational theory of Bare Phrase Structure (Chomsky 1995b), the definition of A vs. A'-positions weakened, although it is still generally acknowledged in one form or another. An alternative version of it from later GB days (Chomsky 1986) reduced the position types to L-related and non-L-related positions, keeping the Spec of IP (or TP and AgrP) in the A-position group since T and Agr are related to the lexical category V, whereas all CP slots and IP and CP adjunction spots were defined as non-L-related, replacing former A'-positions. I will continue to use the more generally known original terminology.

However, this far from exhausted the issues being debated within the GB literature. Two major other issues concerned people at the time. First, there was also the issue of what elements could undergo scrambling. Second, there was the all-important question of landing sites beyond the A vs. A'-distinction -- was the movement substitution or adjunction, and how was the choice determined, with what typological implications (for parameterization)?

The general situation is summarized in the introduction to Grewendorf and Sternefeld's *Scrambling and Barriers*, a 1990 volume on movement constraints involved. Grewendorf and Sternefeld provide the following generalizations about scrambling that had then emerged from the literature on scrambling in German:

14) Generalizations about Scrambling: (from Grewendorf and Sternefeld 1990)

1. Scrambling is clause-bounded
2. Scrambling is adjunction to IP, VP, or AP
3. All maximal projections can be scrambled, except IP and VP
4. Scrambling cannot apply to WH-phrases
5. Scrambling cannot apply to focused phrases
6. Scrambling is not allowed to cross over a pronominal subject
7. Scrambling is not allowed to leave the domain of the subject

Unfortunately, these generalizations were primarily drawn from the literature on German scrambling, which clearly does not have properties identical with Japanese, Slavic and other languages. In particular, Generalization 1 appears to be strongly counter exemplified in both Japanese/Korean and Slavic. Generalization 2 concerns landing sites, and will be discussed in 1.3.2 below. Generalizations 3-5 concern what elements can scrambled, and will be discussed immediately below. Finally, generalizations 6-7 involve constraints on the movement involved, which was discussed in section 1.2.

1.3.1 What categories can (A')-Scramble?

Grewendorf and Sternefeld (1990) (henceforth G&S) maintain that all maximal projections can scramble except IP and VP. The evidence for the possibility of scrambling of NP/DP, CP, and AP in quite abundant, and I will not review it here. The issue of potential VP scrambling, however is of some importance. G&S maintain that VP-scrambling is impossible in German. This is based on examples such as (15):

15) *die Ratten welche **fangen** Hubert wollte _____
the rats which to catch Hubert wanted
'the rats which Hubert wanted to catch'

Examination of Russian in this regard is quite revealing. The Russian equivalent of (15) is given in (16):

16) ??krysy kotoryx **pojmat'** Ivan xotel _____
rats which to catch Ivan wanted
'the rats which Ivan wanted to catch'

Although (16) is only marginally acceptable in Russian, it may not be that non-extractability of VP is the reason for its marginal status. If the relative pronoun **kotoryx** is pied-piped along with the infinitive, the extraction improves considerably. This is shown in (17):

17) krysy **pojmat'** kotoryx Ivan xotel _____
rats [to catch which] Ivan wanted
'the rats which Ivan wanted to catch'

From examples like (17) it appears that although Russian relativization does not always require that the relative pronoun appear alone in SpecC, VPs can be moved in Russian. An example of this without relativization can be seen in (18):

18) **lovit' takix krys** Ivan točno ne budet _____
[catch such rats] Ivan certainly neg will
'Ivan certainly will not catch such rats'

Yadroff (1992) and Budzhak-Jones (1994) also argue in favor of the extractability of VPs in colloquial Russian, providing examples such as (19) (from Yadroff (1992)):

19) Ja **učit'sja v novoj škole** slyšal, on budet _____
I-Nom [to study in new school]$_i$ heard he will

However, it is not clear that (19), or the equivalent cases in Budzhak-Jones (1994), are in fact cases of VP scrambling, rather than scrambling of a higher clause. There is one kind of structure in which infinitives appear with an overt complementizer in Russian. Such infinitives are inside of **čtoby** purpose clauses, an example of which is given in (20) (**čtoby** optional):

20) Ivan priexal (čtoby) posetit' muzej.
Ivan arrived in order visit-INFIN museum
'Ivan arrived in order to visit the museum.'

However, the **čtoby** purpose clauses in sentences like (20) are, of course, adjuncts, and as such are extraction islands under most versions of the Constraint on Extraction Domains (CED) which states that extraction cannot occur out of adjuncts. Thus we cannot say whether the ungrammaticality of (21) is due to the CED or the inability of VPs to scramble in Russian. (21a) shows that extracting the VP alone is impossible. (21b) shows that finite VPs are no extractable (compare (19)):

21) a. ***Posetit'** **muzej** ja priexal (čtoby) _____
[to visit museum] I arrived in order to
'I arrived in order to visit the museum.'

b. Maša [$_{VP}$učilsja v novoj škole] xočet, čtoby Ivan **t**
Masha study in new school wants that Ivan
'Masha wants that van study in a new school.'

Therefore I see no reason to expand the category of projections that can scramble to include VP since every case of apparent VP scrambling can also be analyzed as a case of CP scrambling. We can thus maintain the two sub-generalizations that only [+N] categories (AP, DP, CP) categories and potential arguments (DP, CP, PP) can be scrambled in Russian (maintaining Grewendorf & Sternefeld's (1990) Generalization that IP and VP are the only maximal projections that cannot be scrambled).

Generalization 4 of G&S claims that WH-phrases cannot be scrambled, which appears to hold for German. However, this is clearly not the case for Japanese, as shown in (23) (Japanese has no overt WH-movement). This contrasts with German, as well as with English WH-movement insofar as (further) Topicalization of the WH-phrase is impossible, as shown in (24) (Saito 1989: p. 183)

23) dono hon- John-ga t katta no
which book John-Nom bought
'Which book did John buy?'

24) *Who said that which book$_i$ John bought t_i?

Thus although categorial status does not appear to differ significantly cross-linguistically as to what elements can scramble, the status of operators in this regard appears to be subject to parameterization. The same appears to apply to landing sites, to which we turn next.

1.3.2 Landing Sites of A'-Scrambling.

Although it was generally agreed upon in the GB literature that scrambling, at least in Long-Distance cases, is A'-movement, discussion soon turned to the *kind* of A'-movement involved. WH-movement, after all, is a substitution process targeting SpecCP. Topicalization, on the other hand, was generally considered to be adjunction to IP. Scrambling appeared not to be directly identifiable with either. Certainly, scrambling can occur within embedded C', as shown in the Russian example in (24), implying an IP-adjunction account.

24) Ivan skazal, [$_{C'}$ čto **knigu$_i$** [$_{IP}$ on xočet, čtoby Anja kupila **t$_i$**]]
Ivan said that book-Acc he wanted that Anya buy
'Ivan said that he wanted Anya to buy a book.'

Thus, scrambling targets an IP-adjoined position, in such cases. Adjunction to VP is also attested, and common. However, these may not be the only possibilities. Müller & Sternefeld (1993), taking data from Yadroff (1992), cite the following example as evidence for adjunction to CP as well:

25) Ja byl [**novuju školu**] gde strojat
I was new school-Acc where build
'I was where they are building a new school.'

Because the dislocated phrase occurs before a WH-word, the phrase must be adjoined to CP, if the WH phrase is in SpecCP. However, Budzhak-Jones (1994) argues against this conclusion, saying that the WH phrase in question might itself be in a lower position. Another possibility is that (25) is a case of Left-Dislocation (or Russian-style Topicalization, both arguably CP-adjoined) the former containing a null resumptive pronoun. If so, this instance does not necessarily constitute scrambling, although the matter of differentiating (Russian) Topicalization from scrambling then becomes murky. The issue of the exact location of Topicalized and Focalized constituents in the Slavic languages is far from resolved, and I will remain agnostic about the possibility of actual scrambling, if it is different from Topicalization, occurring to a CP adjoined position.

In their (1993) article, Müller & Sternefeld carry the A'-movement analysis one step further, claiming that scrambling is a unique kind of A'-movement, distinct from both WH-movement and Topicalization in the kind of trace it leaves, and the possibility for long-distance and multiple application. In particular, they demonstrate that scrambling and WH-movement differ not only in having distinct kinds of landing sites (S-Structure left adjunction for scrambling and SpecC in the case of WH-movement), but also in having a restriction on only being able to move *through* positions of the same kind as the landing site (adjunction positions for scrambling, and Specifier positions for WH-movement). This is captured by their Principle of Unambiguous Binding, which is given in (26):

26) Principle of Unambiguous Binding (PUB) (Müller & Sternefeld, p. 461)

A variable that is α-bound must be β-free in the domain of the head of its chain.
(where α and β refer to different types of positions).

Müller & Sternefeld (1993), henceforth M&S, produce examples that show that Russian long-distance scrambling, but not WH-movement, is possible out of WH-islands, **čto** clauses, and out of embedded subject position over an overt element in Comp. They do

not, however, argue seriously against the possibility that their examples are actually cases of a base-generated left-dislocation process with a null resumptive pronoun, and their facts are misleading with respect to subject extraction (see Bailyn 1995 for more discussion.)

Crucially, M&S note that scrambling out of a **čto** clause, which is impossible in Russian for WH-movement, is possible on the basis of examples such as (27) (their (8)):

27) On skazal, [$_{CP}$ čto [$_{IP}$ **noski** [$_{IP}$ on rad [$_{CP}$ čto kupil __]]]
He said that socks$_i$ he is-glad that bought t$_i$
'He said that he is glad that he bought the socks.'

To account for the extractions in (27), Müller & Sternefeld propose the following parameter for scrambling adjunction sites: (their # (15))

28) Adjunction site parameter for scrambling positions
English: ---; German: VP, IP; Russian: VP, IP, CP

However, upon further inspection, it turns out that the data are not as clean as Müller & Sternefeld would have it. In (27), the apparently scrambled item, *noski* ('socks'), is glossed as the Accusative direct object of the verb *kupit'* ('to buy'). In fact, this form is ambiguous between the Nominative and Accusative, and as such may represent a left-dislocated topic with a null-resumptive object pronoun. If so, the acceptability of (27) may be unrelated to the properties of scrambling. Additional data from M&S and their proposed derivations, are presented in (29). I present these examples now, because they will be relevant later in discussing the more recent claim of Boškovic & Takahashi (1998) that scrambling is not movement at all, but rather a base-generated process. The data from M&S are intended to show a strong contrast with WH-movement, which there appears to be only if their analysis of the facts is to be accepted. And it has been in much recent literature, therefore it seems appropriate to spend a little time showing that things are not so clear as they make out., Consider (29):

29) a. čto [$_{IP}$ **Petrov** [$_{IP}$ stranno, čto [$_{IP}$ _____ nam pomogal]]]
that Petrov$_i$-NOM is-odd that t$_i$ us-DAT helped
'that it is odd that <u>Petrov</u> helped us' (Müller & Sternefeld # 9b)

b. Ty [$_{VP}$ **doktor** [$_{VP}$ videl kogda [$_{IP}$ _____ pod"ezžal]]]
you doctor$_i$-NOM saw when t$_i$ came
'Did you see when <u>the doctor</u> came?' (M & S #11a, p. 467)

c. Vy [$_{VP}$ **posylku** videli [$_{CP}$ kak [$_{IP}$ zapakovali ____]]]
you package$_i$-ACC saw how (they-) did up t$_i$
'You saw how they did up <u>the parcel</u>.' (M & S #11b, p. 467)

d. Ty znaeš' [$_{CP}$ **Petr Ivanyč** [$_{CP}$ čto [$_{IP}$ ____ uže pod"ezžal]]]
you know Petr Ivanich$_i$-NOM that t$_i$ already came
'Do you know that <u>Petr Ivanich</u> has already come?' (M & S # 13b)

These examples show that Nominatives and Accusatives can appear outside the minimal embedded indicative CP with which they are associated, although such CP domains are opaque to WH-movement in Russian. Again, however, in the cases of fronted Nominatives (29 a,b,d) Müller & Sternefeld have not provided evidence that these are not base-generated structures. These sentences are claimed by M & S to be subject extractions

out of an embedded clause with an overt Comp. However, such constructions should be ECP violations of the *that*-trace variety regardless of the opaque or transparent nature of the particular embedded clauses. Therefore, even if long-distance scrambling **were** an established possibility in Russian, these sentences, if derived by movement, should be ungrammatical for that additional reason. They are, however, fully grammatical, and Müller & Sternefeld's account of their acceptability as scrambling must say something further about why the ECP is not violated in these cases as it clearly is with other subject extractions and WH-movement. These concerns cast more doubt on the movement derivation of these sentences, as do their necessary interpretations as definites. Rather, I claim that these are cases of base-generated left-dislocations with null resumptive pronouns in subject position, thus avoiding the potential ECP violation. (Note that this does **not** mean all apparent scrambling cases should or can be reduced tro base-generation; I return to this issue in discussing (purely) base-generated accounts below.)

However, the situation with (29c) is trickier because it contains an Accusative argument that should have received its case-marking in the embedded clauses before movement and is preferred to the WH-question in (30) which is markedly worse:

30) *?**Čto**$_i$ vy videli [$_{CP}$ kak [zapakovali t_i]] ?
what you saw how (they-)did up
'What did you see how they did up?'

Again, we must wonder how the movement account of (29c) can overcome the apparent Constraint on Extraction Domains (CED) violation, since the extraction there is out of an adjunct CP. We are again tempted to look for a base-generated possibility for (29c). Notice, furthermore, that (29c) and (30) are not exactly parallel. There is a WH-construction more parallel to (29) that is surprisingly acceptable on a movement account of WH-movement, considering that there should be a CED violation. This is shown in (31), in which the topicalized subject pronoun appears *before* the WH-word. (31) is almost completely acceptable to all speakers:

31) ?Vy **čto**$_i$ videli [$_{CP}$ kak [zapakovali t_i]] ?
you what saw how (they-)did up
'What did you see how they did up?'

(31), however, is grammatical on an echo-question or emphatic interpretation, and therefore raises the possibility that (29c) is also some kind of echo construction that would otherwise be impossible. It is possible that there is a base-generated process for structurally-case marked arguments that allows them a kind of cleft-interpretation similar to that of an echo WH-question that allows association with a null resumptive pronoun in original argument position. For present purposes, it is sufficient to say that we have dealt with all apparent examples of WH-movement/scrambling asymmetries presented in Müller & Sternefeld (1993), and can maintain the tight parallelism between the two processes that would be expected under an A'-movement account of scrambling.

2. Current Issues in Scrambling: Features, Optionality and Motivation.

We saw in Part One that much GB scrambling literature was concerned with mechanical parallelisms between scrambling and other types of movement, especially WH-movement. Underneath all of this discussion, however, one crucial difference between scrambling and WH-movement remained, which has taken center stage, so to speak, in post-GB discussion of scrambling, that is, in the climate of Minimalist assumptions about

the economical design of the human linguistic system. I have in mind the observation that scrambling is semantically vacuous -- it appears to set up no relevant Operator-Variable structure, as opposed to (overt) WH-movement (and arguably Topicalization), and it also appears to (always) reconstruct -- that is to participate in Binding relations in the pre-scrambling position.

Mechanically, the reconstruction property of (A') scrambling is not a difficult problem given the Copy Theory of Movement (Chomsky 1995). Under this account, an element is copied from base position to one or more displaced positions and the phonology and semantic components in effect *choose* which of the two copies to interpret. With overt movement PF interprets the higher position; with reconstruction, LF interprets the lower copy. Thus it is not the reconstruction property per se that requires explanation under Minimalist assumptions. Rather, it is the existence of the displacement itself that is at issue, raising two related questions of theoretical significance, which I will call the "feature (or agreement) problem" and the "optionality and motivation problem".

The "optionality and motivation problem" is as follows: Scrambling appears to always be optional. Clearly, this is a significant difference from overt WH-movement or verb-raising in those languages that have it. Given that there appears to be no semantic motivation for the movement, and indeed it behaves inertly with respect to most semantic properties (although not all, see the section on anti-crossover above), in an economical system, scrambling should not exist. And yet it is very common. This leads to an economy issue -- why should it be possible to scramble when there is no **syntactic** reason for such movement, the underlying numerations are presumably the same, and the unscrambled order always takes fewer steps.

The "feature problem" can be schematized as follows: under Minimalist assumptions of economy, everything else being equal, overt phonological material does not move. When it does move (overt WH-movement, overt verb raising, etc), it does so as the result of an "overtness" requirement on an *already existent feature-movement (or agreement) process* (such as the movement of the WH [+Q] feature into the relevant domain.) In WH-movement, [+Q] moves into the CP domain to eliminate a [+Q] feature in that domain (or is "attracted" by that domains featural requirements), and the only language variation involves how much overt material is pied-piped along with the features that move. In this sense, overt movement is parasitic on feature-movement (or agreement), which is the true driving force. In the case of WH-movement, the elements involved have quantificational force, that is, they are necessarily moved to form an appropriate Operator-Variable chain required for proper (LF) interpretation. In essence, they are driven by LF interface considerations. In the case of scrambling, therefore, the question became, what is the relation involved that brings along overt material in scrambling instances, if any? After all, scrambling does not appear to feed any unique Operator-Variable relations. So there appears to be no such motivation, despite the mechanical A'-effects observed (see Section 1.3), and it is not clear why such movement occurs. This is the "feature problem". (On recent theories, such as Chomsky (1999, 2000), feature checking per se is replaced by an extended notion of agreement, which does the work of feature checking in more standard versions of Minimalism. The issues raised for accounts of scrambling remain the same under this conception.)

This section presents major current approaches to these issues, and examines the validity of their claims. In conclusion I put forward a split analysis that addresses the optionality and motivation problem, and the feature problem in part, while showing possible directions for further research.

First I will review several recent approaches to the optionality and motivation proposal, moving from those I find least satisfying to those that appear to hold the most promise for future research, although it should be stated at the outset that all of the

proposals at hand share the understanding of the essential problem of optionality in scrambling and have various merits at least with regard to the languages they are discussing.

2.1 "Cost-Free" Movement Approaches.

First, there is the notion that the optionality of scrambling can be maintained, and is not actually a problem, if it is couched in the proper terms. There are two major approaches of note here: that of Fukui (1993) and that of Poole (1996). Thus Fukui (1993) (and Saito & Fukui (1998)) has proposed that scrambling is simply an available option that falls out of the phrase-structure building component in certain languages. The relevant principle is given in (32):

32) *The parameter value preservation (PVP) measure* (Fukui (1993): 400)

> A grammatical operation (Move α, in particular) that creates a structure that is inconsistent with the value of a particular parameter in a language is costly in the language, whereas one that produces a structure consistent with the parameter value is costless.

The parameter in question involves branching direction. Fukui (1993) analyzes any movement process where canonical head-complement directionality is not disrupted as costless. He adopts the common assumption, contra Kayne (1994), that Japanese and Korean (and German in the relevant respects) are head-final languages, Thus in left-branching languages, where complements are naturally to the left of the heads that select them, leftward adjunction processes are costless to the computational system, and therefore not a challenge to the linguistic system's economical nature. Similarly, in head-initial languages such as English, it is rightward movement that does not violate the PVP and is therefore costless. This accounts for cases of Extraposition and Heavy NP Shift. "This means that in English leftward movement of an object always requires some driving force, thus having "last resort" status, whereas rightward movement need not have a driving force and can be optional. By contrast, In Japanese leftward movement of an object need not have any driving force and can be optional,..." (p. 402)

I will not spend much time discussing this claim about optionality for two reasons. First, as a strong claim that can easily be tested against the directionality and movement possibility of various languages, it is clearly falsified by all of the Slavic languages that allow scrambling (Russian, Czech, Polish, Serbo-Croatian to name a few). There are no serious claims that these languages are head final. And there are also no serious claims that these languages do not have scrambling or Optional Movement to the left. Thus despite Fukui's claim that "to the best of my knowledge, most of the well-known "scrambling" languages [he lists Korean, German, Dutch, Tagalog and Papago]... conform to the pattern predicted by the PVP measure, ..., [and] no instance of "scrambling" in those languages involves movement of a complement over a head" (p. 417) there are obvious counterexamples. Stjepanovic (1998) carefully works out the evidence from Serbo-Croatian to the contrary, and in fact all major works on Slavic word order, regardless of particular claims about the motivation of the free word order movement, assume both right-branching structures and left-scrambling (Witcos 1993, King 1994, Bailyn 1995, Babyonyshev 1996, Sekerina 1996, Lavine 2000, Szscegelniak 2001, just to name a few dealing with Russian and Polish). Second, the optionality parameter suggested by Fukui does not even attempt to solve the "optionality and motivation problem" discussed above, even for those languages where the proposed correlation appears to hold up. That is, all we have, as Fukui admits, is a necessary condition for optionality. Nowhere in the account

is there any discussion of what drives the movement in those instances when it occurs. Given minimalist assumptions, this is perhaps the central question of scrambling research today, and as such must be touched upon by any work today that takes seriously an economy approach to linguistic phenomena.

Poole's "cost-free" approach, which he applies to Icelandic "Stylistic Fronting" and Japanese A'-scrambling, makes quite a different claim. His claim is that economy considerations of the kind that would find a scrambled order less economical than an unscrambled one, apply only to instances of Form Chain (a principle relating a moved element to its trace) but do not apply to simple instances of Move-α, the process that actually moves the element in question, before Form Chain applies. For Poole, then, all instances of displacement involve Move-α, but not all involve Form Chain. The question then becomes, which instances of Move-α do not require Form Chain? His claim reduces to saying that Form Chain is only required of those elements whose movement is forced by semantic (formal) consideration. Thus, his account rests crucially on the assumption that no feature checking is involved in Japanese scrambling or Icelandic Stylistic Fronting. This begs the "feature question" to be discussed below, and in essence reduces to a restatement of the facts, albeit using a nicely conceived distinction between Form Chain and Move-alpha that may be of some theoretical importance. However, as in the other "cost-free" account discussed above, Poole's approach leaves us no closer to an understanding of why scrambling exits at all if it is has no semantic import is not driven by any kind of feature-checking operation, and is always eliminated at LF.

2.2 Non-optionality Approaches.

In this subsection, I turn to some of the various approaches claiming that the apparent optionality of scrambling is in fact apparent, and that when properly analyzed, the movement involved is motivated and obligatory. In this sense, all of these accounts have something to say about the "optionality and motivation" problem, and some also attempt to solve the "feature problem" at the same time.

2.2.1 Base-Generation Approaches.

The possibility that scrambling does not in fact involve movement, in the standard sense, but rather base-generation of the "scrambled" XP, made popular by Haider (1984), Fanselow (1993) and Neeleman (1994), has been revived in recent literature, especially in two works: Bošković & Takahashi (1998) and Fanselow (2001). Both of these works claim that what differentiates "scrambling" languages from non-scrambling languages involves not the wider availability of a certain movement process but rather the wider availability of base-generation possibilities.

2.2.1.1 Bošković & Takahashi (1998).

In Bošković & Takahashi (hereafter B&T), the proposal is made that languages like Japanese allow base-generated IP-adjunction structures whereas languages like English do not. Thus in the traditional scrambling pair given in (1), repeated here as (33), the (b) sentence is not derived from the (a) sentence, contra what is usually assumed in standard scrambling literature.

33)	a.	Mary-ga	sono	hon-o	yonda	(koto)
		Mary-Nom	that	book-Acc	read	(fact)
	b.	sono	hon-o	Mary-ga	yonda	(koto)
		that	book-Acc	Mary-Nom	read	(fact)

'Mary read that book.'

Rather, the (b) sentence exploits a possibility that Japanese has, as the result of a particular parameter setting, namely that the direct object *sono hon-o* can be directly generated into the IP-adjoined position that it occupies in the surface structure. At LF, the account runs, the element in question is lowered into its theta-position, a possibility allowed by Japanese but not English (on their account this results from the relative strength of theta-role "features".) Weak theta-features, in Japanese, allow "late" theta-checking, at LF. This is shown in (34):

34) **sono hon-o** John-ga [Mary-ga **e** katta to] ometteiru
[that book-Acc] John-Nom Mary-Nom bought that thinks

LF Lowering

So, in fact, it is a conspiracy of two parameters that allows Japanese sentences like (33b), (i) base-generated IP-adjunction possibilities, and (ii) "late" theta-checking, whereby arguments can receive their theta-roles after LF lowering rather than at (initial) Merge. The analysis accounts nicely for several facts: first, the movement involved is in no way optional; rather, it is obligatory in all cases in order to check theta-features. Second, there is no optionality of scrambling problem remaining, since there is no (overt) scrambling. Third, the obligatory reconstruction of scrambled elements now falls out from the obligatory lowering process -- the elements must lower at LF (to get their theta-roles) and therefore they must be interpreted in the lowered position.

However, B&T's argument does not hold up to empirical testing, as I argue in Bailyn (2001). There, I identify a set of three predictions to tease apart the base-generation vs. the movement hypotheses. In all three cases, evidence is provided from Russian or Japanese that the evidence supports a movement account. First, the Base-Generation hypothesis disallows any LF chain (so that the Lowering itself is not a violation). In so doing, however, the account also predicts no syntactic constraints on the structural relation between the scrambled (base-generated) position and theta position. But of course such constraints abound, as we saw in detail in section 1.2 in the review of Webelhuth's work on German and similar work for Slavic. Examples of Russian Subjacency violations with WH-movement and scrambling are given in (35a) and (35b) respectively (from Bailyn 2001):

35) a. *Kogo$_i$ ty pozvonil agentu kotoryj ljubit ?
Whom-ACC you-NOM phone spy-DAT who loves
'Whom did you phone a spy who loves?'

b. ***Borisa**$_i$ ty pozvonil agentu kotoryj ljubit **t$_i$** !
Boris-ACC you-NOM phone spy-DAT who loves
'It's BORIS you phoned a spy who loves!'

Second, the base-generation account does not allow for any sensitivity to construction type in terms of the reconstruction property. As we saw in the German examples in (8), reconstruction of scrambled items for interpretation is not 100%, and a lowering-only approach cannot account for this. Third, the account predicts, of course, that only theta-marked elements can scramble, something that does not hold for Russian, as shown in (36):

36) Scrambling of adjunct in Russian:

a. Ja xoču, čtoby oni bystro dopisali kursovye
I want that they quickly wrote papers
'I want them to write their papers quickly.'

b. Ja **bystro** xoču, čtoby oni **t** dopisali kursovye
I quickly want that they write papers
'I want them to write their papers quickly.'

Thus the Base-Generation plus lowering approach, despite its considerable appeal from a theoretical standpoint in moving the optionality out of the movement component, does not hold up in the form presented by B&T. It is also not clear how Economy principles will allow the derivation of base-generation and then lowering when there is the option of using theta-position from the start. If the numeration underlying a scrambled and non-scrambled sentence are the same, we would predict no scrambling to be possible, on their account.

2.2.1.2 Fanselow (2001).

Fanselow's (2001) analysis of German scrambling provides a subtler version of the base-generation claim, with some important differences. Like B&T, Fanselow also allows for base-generation of complements in a position not local to their selecting head. Rather than lower the arguments into theta-positions at LF, however, as B&T do, Fanselow argues that the theta-checking process is parasitic on an already existing feature-checking relation with the head in question (usually a verb), such as Case. Given certain assumptions about head raising and incorporation, based in part on Grewendorf & Sabel (1994), Fanselow concludes that there is no reason theta-roles cannot be assinged by a verb raised into T or Agr (at LF), to an argument in the checking domain of the functional head, if those two elements are already in a checking relation. (We will see shortly that this claim is quite similar to aspects of Miyagawa 1997, 1999). This accounts for why only arguments can scramble in German, because it is only arguments that can receive their theta-roles *in situ* after V-raising as a free side effect of the case checking relationship that exists between the (raised) verb and the (base-generated) object. It also removes the issue of optional movement -- there is no movement in Fanselow's account, as opposed to B&T, who rely on LF lowering to place the elements in true theta-position at LF. Fanselow argues nicely for the theoretical possibility of late theta-checking, so long as there is an independent checking relation available between the elements (limiting it, in effect, to case-marked items). The relation to incorporation picks up on an important theme that is central to the work of Grewendorf and Sabel (1994). And he is careful to take seriously the evidence in favor of a movement account from previous literature. In essence, he debunks various arguments for movement (such as the licensing of parasitic gaps by clause internal scrambling in German) by providing alternate accounts for the data, or showing that movement accounts do not solve certain problems. In the case of parasitic gaps, for example, he claims that the structure at hand is not a true parasitic gap, but rather a certain kind of deletion construction, not dependent on movement. Therefore that particular argument for a movement account of scrambling in German goes away. The argumentation is similar for various other pro-movement arguments. However, the primary argument for movement, namely the significant parallels between WH-movement and scrambling in terms of constraints, is not addressed in the article despite a hint in section 2 that such argumentation is to be found in sections 3 and 4.

Once again, considering the extensive empirical work done pointing to the effect of practically all known movement constraints on the derivation of free word order in

German, in Japanese, and in Russian, the burden of proof appears to be on the base-generation theories to show that they can account for this constrained behavior, which neither of the two leading recent proposals have. And although base-generation of some constituents in non-canonical position is clearly an attested phenomenon, its extension to cover all cases of non-canonical word orders in free word order languages still requires extensive discussion to account for the clear empirical counterexamples. The field should look forward to continued work in this area.

2.2.2 Feature-Driven Approaches.

Of course, solving the feature problem in and of itself is technically simple, in a sense. There could simply be a scrambling feature associated with a particular XP (or XPs) in the numeration, that is attracted by the same feature hosted by a high functional category, perhaps T, perhaps C, or perhaps a Focus or Topic head. This is the approach taken by McGinnis (1998), Grewendorf & Sabel (1999), Kawamura (2001) and others. This is a natural continuation of the GB-style Move-α approach, and it clearly moves the optionality question out of the pure syntax, where if the feature is present the movement obtains, and into the lexicon, as well as into the theory of functional categories. But in those areas of grammar, the purely feature-driven account does little to help us understand the syntactic motivation of scrambling, since most other feature-driven processes are related, in one way or another, to LF-relevant features. (Thus Pesetsky & Torrego (1999) claim that structural Nominative case in the nominal realization of Tense. Various authors have proposed that structural Accusative case is similarly related to Aspect (Ramchand (1997), Svenonius (2001), McClure (2002)). In recent work, Chomsky (1999, 2000) has proposed the eventual reduction of the inventory of functional categories to those that have LF relevance, and has thrown out the purely mediating category of Agreement that drove much of the work in Chomsky (1995). Thus a mechanical feature that simply drives the movement but has no LF relevance would not really solve the problems at hand, as they currently stand. It is interesting to note, however, that the newer base-generated approaches, such as Bošković & Takahashi (1998) and Fanselow (2001) are both feature-driven approaches, and as such a welcome addition to the research agenda, despite the problems noted above.

2.2.2.1 A-Scrambling and Features.

With regard to A-scrambling, however, significant progress has been made in associating the driving force of the movement with another kind of checking, recalling Fanselow's theta-feature approach. The most promising work in this area is that of Miyagawa (1997, 2000, in press) in which he argues that local scrambling is A-movement and that in fact this A-movement is not the same at all as other (A'-) instances of scrambling. Rather, it is driven by the EPP, that is, by an overtness requirement on an independently motivated checking relation, that of structural case (hence the similarities with Fanselow (2001).) The relevant principle and its possible parameterization are given in (37) (from Miyagawa (in press)):

37) a. A-Scrambling is driven by the EPP
    b. Languages that have V-to-T raising and morphological case marking allow EPP-driven scrambling of the object

Given the nature of (37b), Miyagawa argues that the process in question is limited to structurally-marked arguments, that is, to *ga*-marked subjects and *o*-marked accusatives in

Japanese. He claims that other arguments, and all adjuncts, do not scramble (a claim that appears to be possibly too strong for Japanese, see Kawamura (2001) and certainly too strong for Russian, see Bailyn (2001)). Nevertheless, the reduction of A-scrambling to the EPP is promising for future research on Japanese scrambling and A-scrambling in general.

Of course the association of A-scrambling with known A-movement processes (Passive/Raising, EPP, Case movement, Object Shift) is not a new idea in the literature. In particular, the literature on Germanic has often, although not always concluded that apparent cases of VP-level A-scrambling can and should be reduced to Object Shift or other independently motivated A-movement processes (Vikner 1994 claims in particular that Dutch local scrambling is simply Object Shift, whereas German has true clause-internal A'-scrambling). Similarly, Takano (1998) relates Object Shift to what he terms "short" scrambling (to be equated with VP-level adjunction) which he claims is in fact available in all languages in which the object remains inside VP. If one believes that there is a VP-level EPP related to the functional category *v*P, as proposed in Chomsky (2000), then it appears reasonable to extend Miyagawa's approach to the VP domain. And of course, it is inside the VP domain that most of the A-properties of scrambling that confused the A'-movement picture during the GB days are found. Indeed the German and Japanese literature would have very few A-movement cases remaining if the VP-level instances of scrambling were taken care of by a(n independent) A-movement process. This is the essence of the EPP approach on the VP level in addition to the IP level EPP account of Miyagawa (1997, 2000, in press).

EPP-driven accounts of the derivation of various non-canonical word orders in Russian have been proposed in the recent Slavic formal literature enough to warrant some attention here. Babyonyshev (1996) analyzes Russian Locative Inversion, in a manner similar to Collins (1997) for English, as an instances of the IP-level Extended Projection principle (EPP) being fulfilled by a locative PP argument. For Collins, the PP bears a D-feature, an assumption that will prove to be of some importance shortly. Further, Lavine (1998, 2000) argues that Russian "adversity impersonals" are instances of Accusative marked objects moving into subject position to fulfill the EPP. Of course in these instances, the EPP in question is an older version than that intended by Miyagawa (1997, 2000) and Chomsky (1999, 2000) in that it remains simply an overtness requirement on the highest A-position in the sentence and does not require another checking process (such as case or agreement) to mediate between the raised XP and the head of the functional category hosting the EPP feature. If such a move is allowed, it opens up the possibility that EPP constructions encompass many varieties of non-Nominative first constructions, and as such Dative Experiencers, stylistic inversions, and various others can be analyzed as EPP constructions (this is the basic approach taken in Preslar (1999) and Bailyn (in press, forthcoming). Under this view, a parameter setting in languages like Russian and Icelandic allows non-Nominative subjects to fulfill the IP-level EPP, which is typically done in English by Nominative subjects only, although locative inversion is probably another instance. This account interacts nicely with the parameterization of the EPP proposed in Alexiadou & Anagnostopoulou (1998) who allow for XP checking of the EPP in SpecI by various arguments, but also allow for head raising to satisfy the EPP in *pro*-drop and VSO languages. The typological predictions show that the overtness EPP may in fact be on the right track, and if so, the problem of identifying the correct feature driving scrambling, and understanding the optionality and motivation picture, may be reduced to the EPP, *in A-scrambling cases*. This restricts the attention to A'-cases only in continuing to search for an answer to the issue of optionality and motivation. Here, feature-driven movement also remains a possibility, especially given the systematic interaction between A'-scrambling and discourse factors.

2.2.2.2 A'-Scrambling and Features.

Feature-driven accounts of A'-scrambling fall into two groups. First, there are those accounts that associate a syntactic feature with an item in the lexicon, which then forces its movement to the appropriate functional checking domain (see discussion above). Grewendorf and Sabel (1999) and Kawamura (2001) are accounts of this sort. These accounts provide the feature but in a sense address the optionality question by forcing the movement in those instances where the feature is present. Scrambling itself is not then what is optional -- what is optional is the attachment of the scrambling feature to the particular lexical item. Certain questions come up immediately. Can we apply the scrambling feature freely? Can we apply it more than once in a given Numeration? (we must be able to, or there would be no multiple scrambling, which is attested) If so, what constrains it? How many items carry the feature? Does the movement of each of these XPs not interfere with the derivation? How *do* we account for the radical reconstruction property? What also remains unanswered in these accounts is the motivation of scrambling.

The second kind of feature-driven account of A'-scrambling runs parallel in logic to Miyagawa's EPP account of A-scrambling: the process must be the result of some independently motivated agreement process, driven by features that are presumably associated with discourse factors that have yet to be fully understood. Recall the economy problem presented by a basic word order pair such as (1) from Japanese. On any analysis, if the two have the same numeration, one of the two derivations should be eliminated as less economical (the scrambled one). Feature-driven accounts, of course, have the advantage that the numerations associated with the scrambled and non-scrambled orders are not identical. One numeration contains the relevant feature driving the scrambling and the other does not. As we just saw, if these features exist purely to expedite scrambling, we have simply redefined the problem, and moved it, in a sense, into the lexicon or into the process of selecting a numeration. So we must try to independently identify some kind of systematic difference between scrambled and non-scrambled sentences, to find the relevant features driving the movement and can imagine distinct numerations. The relation with discourse functions is a good place to start, and this is clearly hinted at in some accounts of scrambling, such as Miyagawa (1997), who says that A'-scrambling must be associated with something like Focus, but does not elaborate. Rudin (1985) was an early attempt to tie in a TopicP and FocusP, and therefore presumably features hosted by these categories, with the movement deriving free word order. Haider & Rosengren (1998) is probably the most complete attempt to tie discourse featurss into a formal scrambling system for German. Other attempts with Topic and Focus features exist, but often without the technical rigor of a formal syntactic account of the constrained behavior discussed above. For Haider & Rosengren the features are formalized, this provides distinct numerations for what will become the scrambled and non-scrambled sentences, and the economy problem discussed above is thereby eliminated. This approach is the most promising for A'-scrambling to be feature-driven, because it finds a role for the discourse correlations well-documented in traditional grammars of free word order languages.

2.2.3 Non-feature Driven Last Resort.

Non-feature driven accounts of scrambling, especially those instances showing clear A'-properties, abound. And it is clear, given central minimalist assumptions, why this should be the case. For once thing, scrambling does not appear to conform to principles such as Shortest Move and Relativized Minimality. Clearly, for example, there are instances where what has scrambled is not the closest available XP to the target

position. This should violate Shortest Move. However, if the movement is not driven by feature-checking, all bets are off on this score, as Poole (1996) essentially argued (although it is not entirely clear why this should be the case) But if one allows the movement to be feature driven by a "scrambling" feature, as in Grewendorf & Sabel (1999) or Kawamura (2001), it is not clear why relativized Minimality is not violated in every instance of multiple scrambling. Further, because of the obligatory reconstruction property of scrambling, it seems that whatever the feature driving scrambling might be, it would not have LF-relevant status, at least in the traditional sense, or the XP in question would behave, for binding purposes, as if it were in scrambled position at LF, which it typically does not. And under the strongest minimalist assumptions, such a feature, with no LF relevance, should not even participate in a derivation without additional motivation.

The relevant connection is with discourse structure, although the formal nature of the connection is certainly not agreed upon. Before turning to what I find to be the most promising recent approach to the issue of reconstruction, let me address an approach to subject postposing in Romance presented in Zubizarreta (1998) which has natural extendibility to scrambling phenomena and is very promising.

Zubizarreta's (1998) take is to say that there are some movements, and A'-scrambling would qualify, although it is not specifically mentioned, that are not feature-driven per se, but are subject to the overarching principle of Last Resort, whereby the movement is required to save the derivation. In her system, this comes about when the phonological requirements of the language are in conflict, with the requirements of the Assertion Structure (AS), or discourse/information structure. In her view, such a situation occurs when the subject of a sentence in Romance is a focus, but not a contrastive focus, (nor is it a topic). The intonational system therefore requires that it be the final constituent in its intonational domain, which it is canonically not, since it is a subject getting case outside of VP and therefore to the left of the verb. In those languages with a subject-postposing movement available, this option must be chosen in such instances to avoid a clash between the PF requirements and the AS requirements. The result is an instance of Last Resort "P(prosodic)-Movement" which saves the derivation. Thus subject post-posing in Romance is an instance of P-movement saving the derivation because of the PF and AS requirements of the sentence. This view requires, of course, that there be linguistically significant AS principles of grammar, and a level devoted to the Discourse/Informational structure of the sentence, as Zubizarreta proposes, following a long line of similar proposals. This brings the issue of free word order and its discourse status directly into the spotlight, which is where it should be, because the discourse/syntax interface in fact is the locus of free word order movement. Some schools have focused on the discourse aspects, and some on syntactic aspects of free word order, and the time has come to determine exactly how the two components of grammar interact. Scrambling is the focal area of such research.

After all, it is well known that non-canonical orders differ from canonical ones fairly systematically in terms of discourse status. And there is a large body of work, in both traditional and modern linguistics, devoted to analyzing these differences, that goes back at least to the early Prague School and Mathesius (1939), and runs through the work of Petr Sgall and Eva Hajičová in the modern Prague school including Adamec (1966), Isačenko (1966, 1967, 1968), Hajičová (1973, 1984), Sgall (1984), Sgall, Hajičová, and Benesová (1973), Hajičová & Sgall (1975, 1987), Firbas (1992), Kovtunova (1976), Gundel (1974, 1978) and many others. Other works that include a central place for discourse factors include Prince (1983, 1984), Yokoyama (1986), Kuno (1972, 1987), Dik (1980), Sirotina (1965), Within the generative tradition, the idea that Topic/Focus structure and the syntax discourse interface is related to the scrambling phenomenon is either assumed or worked out from various perspectives in the following works: É. Kiss

(various works, see bibliography), Rochemont (1986), Jackendoff (1973), Culicover & Rochemont (1986), Fowler (1987), Karimi (in press), Jelinek et al (in press), Reinhart (1998), Partee (1991), Meinunger (1995, 2000), Junghanns & Zybatov (1997), Haider & Rosengren (1998), Lambrecht (1994), Kidwai (2000), Horvath (1986), King (1994), Bailyn (1995, 2001), Erteschik-Shir (1997), Vallduví (1990), Rudin (1985), Butt (1994), Butt et al (1994), and many others (apologies to anyone whose work I have forgotten or overlooked).

The discourse factor for some linguists is reducible to a quantificational Topic/Focus configuration, which may be too coarse of a generalization. However, syntactic accounts at least allowing for such interpretive effects to be part of relevant LF information are taking a strong step in the direction of uniting the discourse effects of free word order with its syntactic characteristics. Saito (2001) is a move in this direction, and this is the work whose approach I would like to highlight in concluding this survey.

2.3 The Derivational Approach.

Epstein et al (1998) propose a purely derivational approach to syntactic relations whereby there are no constraints on representations at all, but rather all principles of grammar apply in an on-line manner as the derivation progresses. This is a controversial stance, and one that has many problems yet to solve. However, the overall picture stems from the Bare Phrase Structure idea of Chomsky, whereby there is no independent module of X'-theory, and each partial syntactic object is built out of smaller ones in a particularly constrained fashion. The approach is extended to interpretation, where the following principle is added:

38) Items are interpreted as they become interpretable in the course of the derivation

In particular, NPs are interpreted (and enter into binding relations) at the moment their uninterpretable case features are checked and deleted (or, alternatively, in the highest A-position). On this account, movement consists of copying relevant features to the higher position, subject to interpretation once these conditions are met.

Saito (2001) is the first attempt to my knowledge to take the derivational approach and apply it to scrambling. His paper has various goals. First, it attempts, following Tada (1993), to eliminate any kind of configurational distinction between scrambling types (the former A vs. A'-distinction) but rather to derive the apparently mixed nature of the process from aspects of the derivational history. That is, given the relationship with other kinds of feature checking going on between the scrambled argument and the functional head in whose domain it ends up, the XP in question is either interpreted in scrambled position (thus showing A-movement properties) or in pre-scrambled position (the reconstruction property). (This requires stipulating that the uniform position is a potential binding position, which the mixed position account does not. I do not take a stand on whether the assumption of uniformity is required.) Further, Saito's account attempts to derive the fact that Long-Distance scrambling (into a higher clause across a CP boundary) always shows A'-properties. Due to space limitations, I can only summarize the assumptions Saito makes and the resulting analysis. I leave the potential application of the derivational approach to thornier problems of scrambling and to capturing cross-linguistic differences to future discussion.

First, Saito assumes that Principle A of the Binding Theory is an everywhere condition, that is, if an anaphor is bound at some point in the derivation, its future history cannot undo its legitimacy. To be bound, however, the potential binder must be interpreted in the position it binds from, therefore this must be a spot where it checks Case. This is

why Long-Distance binding has the A'-property of never feeding binding relations -- the higher position is not where the NP in question checks case, and therefore not a spot from which binding can take place. Thus the apparent reconstruction property with respect to Principle A reduces in most cases to the anaphor being bound *before* the scrambling takes place. In other cases, scrambling can feed anaphor binding, although only if the scrambling leaves it in a position where the NP is interpreted, again as the result of being associated with Case movement. In this sense, the account is quite similar to that of Miyagawa (2000, in press) in that both assume that structural case checking of either subjects or objects in Japanese can take place in the TP domain. Local scrambling to TP therefore has A-properties because case is checked there and hence for Saito the NP is interpreted at that moment, allowing it to participate in binding processes there. Thus in (39) the direct object can scramble to the left of the subject, have its case checked in the TP domain, be interpreted there, and bind the anaphor contained in the subject: (from Saito, 2001: 8)

39)	[Karera-o$_i$	[[otgai-no	sensei]-ga	t_i	hihansita	]]	(koto)
	they-Acc	each other-Gen	teacher-Nom		criticized		fact

'Them$_i$, each other$_i$'s teachers criticized'

The A'-property of Long-Distance binding follows directly. Further movement in such cases will not change the binding relations because interpretation takes place at the location of case checking, which is necessarily in the lower clause.

In fact, the condition on interpretation is a bit more complex. Saito assumes the Copy Theory of Movement, following Chomsky (1995). In particular, he assumes that an NP has a D feature, all overt material has a P feature related to its phonology, and operators have an O-feature. The D feature in a WH-phrase, therefore, acts as its variable, and the O feature as the operator. Thus the individual features of an element can (and must in some cases) end up in a different place in the derivation, something that is crucial to the analysis of scrambling at hand. Deletion can occur only where a feature is selected. Thus the D-feature can remain in the selected position or in the scrambled position if that is where case checking occurs. The O feature can be deleted (and interpreted) only in the high (operator) position. (The P feature is deleted in the PF component, and therefore is located at the highest place in the derivation to which movement takes place.) Hence the feature make-up of the structure in (39) is shown in (40) at the point when scrambling has occurred:

40)	[**Karera-o**	[[otgai-no	sensei]-ga	**karera-o**	hihansita	]]
	[P, D]			[P. D]		

The D-feature will later get deleted, but at this point in the derivation it c-commands the anaphor *otgai-nop*, allowing for anaphor binding. Later, it is deleted (the D feature is retained only where it is selected) just as the lower P feature is deleted, yielding (41), with anaphor binding intact, as shown:

41)	[**Karera-o**	[[otgai-no	sensei]-ga	**Karera-o**	hihansita	]]
	[P, Ð]			[Þ. D]		

It is possible, further, to extend this kind of analysis to cases of binding by non-structurally case-marked elements. Assume that something like my account of Inversion in Bailyn (forthcoming) is correct and that the EPP drives movement of various kinds of elements into SpecI (that is, assume a broad version of Miyagawa's claim that A-scrambling is driven by the EPP). If we take the common assumption that the EPP itself reduces to a D feature (see Collins 1997), then we will produce a similar result to Saito's, in that all elements raised into SpecI by this version of the EPP, whether they are structurally case-marked or not, will be able to serve as binders for anaphors they c-command from the

moved position. However in those instances where adjunction is involved, they will be predicted not to acquire binding ability, which is exactly what we find in Long Distance cases. Thus with the minor extension of the Case condition to any kind of D feature checking (in particular, the EPP), we should be able to derive the binding ability of Dative experiencers, accusative themes, locatives and so on, all of which is documented in Bailyn (forthcoming), while maintaining a derivational account. An example is shown in (42) where an inverted Dative experiencer can bind an anaphor embedded in a Nominative theme argument that it only c-commands as the result of raising into SpecI to fulfill the EPP. We can now reduce the "subject condition" on anaphor binding to a purely configurational condition, and maintain a strong derivational approach to scrambling.

42) **Maše$_i$** nravitsja svoja$_i$ rabota
Masha-Dat pleases [self's work]-Nom
'Masha likes her work.'

Saito's paper provides similar accounts for Principle C effects, bound variable interpretation and various other facts of Japanese scrambling. It remains to be seen whether this approach will be fruitful in extension to other free word order languages.

In conclusion, it appears that the direction of recent scrambling research can be unified in the following way: because of the anomalous optional character of what mechanically has been clearly demonstrated to be a syntactic operation, the process of scrambling must be related to other aspects of the grammar and not, in the final analysis, a core grammatical operation with no further explanation. Its mixed character is most likely the result of linguists previously lumping together 2 or more processes that ought to be considered separately. Miyagawa's direction in claiming that A-scrambling reduces to the EPP is the strongest and most promising claim in this regard. The A'-cases presumably involve the discourse/informational component in some way; this much is generally agreed upon. What is not agreed upon, however, and what must remain at the forefront of scrambling research, is the proper place of discourse factors in the overall architecture of the grammar -- is there a distinct level devoted to discourse/information structure, as argued by Zubizarreta (1998), Heycock and Kroch (1999), Vallduví (1992) and various others, or is it in some sense part of relevant LF information. if so, how is the optional nature of scrambling to be reconciled with the obligatory nature of WH-movement and Quantifier Raising (obligatory, that is, at least by LF), and can these differences be explained solely in terms of interface conditions that allow our description of human language to remain economical and explanatory? These appear to be major questions for future scrambling research, and because of their global nature, aspects of the future direction of linguistic research may well be determined by findings in the area of free word order and movement.

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