Operator Islands and the Intermediate Step Corollary

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1. Overview

Claim:
Maraudage (Georgi, Heck & Müller (2009), Georgi (2009, 37)) derives the selective nature of certain operator islands (= A-bar islands: *wh*-islands, topic islands) without recourse to a constraint like Relativized Minimality (RM; Rizzi (1990)) or the Minimal Link Condition (MLC; Chomsky (2001)).

Proposal:
Wh-islands and topic islands do not instantiate an intervention effect; neither does the operator block an escape hatch (Chomsky (1977; 1986)). Rather, the item that is to be long-distance moved marauds the set of A-bar-related features on C *before* C can attract a *wh*-phrase or topic that would erect the island. The option for such a maraudage arises under an approach in which intermediate steps of successive-cyclic movement do not target the outermost specifier of C; this follows from the theory of locality in Müller (2008), more specifically, the *Intermediate Step Corollary*.

(1) *Intermediate Step Corollary*:
Intermediate movement steps to specifiers of X (as required by the PIC) must take place before a final specifier is merged in XP.

2. Background

2.1 Wh-Islands: The Problem

(2) *Wh-Islands*:
a. ?*[$_{DP_1}$ Which book] do you wonder [$_{CP}$ [$_{PP_2}$ to whom] John gave t_1 t_2] ?
b. *How$_1$ does she know [$_{CP}$ [$_{DP_2}$ which car] Mary fixed t_2 t_1] ?

Standard accounts:
(i) RM accounts for the illformedness of (2-ab) because movement of XP_1 crosses an intervening XP_2 that occupies a position of the same structural type (A-bar).
(ii) The MLC can account for *wh*-island effects if it is assumed that the *wh*-item in the embedded SpecC position (i.e., the position that creates the island) still has a feature [wh] that may block attraction of the lower *wh*-phrase by the matrix interrogative C head even though this feature has been checked in the final landing site.

Problems for MLC/RM analyses:
(i) There is no reason to limit the number of specifiers of a head to one.
(ii) Given the PIC, successive-cyclic movement must systematically be able to target specifiers of phase heads, even if there is already another specifier around.
(iii) Under a multiple specifier/PIC approach, there is no obvious reason why an intermediate movement step of a *wh*-phrase to an outer specifier of an interrogative C (with another *wh*-phrase acting as an inner specifier) should be blocked: The former *wh*-phrase that is on its way out of the CP does not want to see a [wh] feature (yet); it just wants to see what all items want to see that leave the clause, viz., an edge feature.

(3) *Simple cases of successive-cyclic movement via an additional Specv*:
a. (I wonder) [$_{CP}$ what$_1$ C [$_{TP}$ she$_2$ T [$_{vP}$ t'_1 [$_{v'}$ t_2 said-v [$_{VP}$ t_V t_1]]]]]
b. (Ich frage mich) [$_{CP}$ was$_1$ C [$_{TP}$ [$_{vP}$ t'_1 [$_{v'}$ Fritz [$_{VP}$ t_1 t_V] denkt-v]] T]]
I wonder what Fritz thinks

An ad hoc solution:
(i) One can stipulate that an edge feature cannot be inserted on an interrogative C.
(ii) This would then make it possible to derive *wh*-island effects under both an MLC and a RM account.

Conceptual problems (Müller (2009, ch. 2)):
(i) MLC/RM approaches typically require additional concepts like equidistance.
(ii) MLC/RM approaches require massive search space in derivations; however, in a local derivational approach, search space should be minimized. Something is wrong with the very idea of intervention from this perspective.

2.2 Previous Structural Approaches Without Intervention

Distant relatives:

- The Tree Adjoining Grammar approach to *wh*-islands developed in Kroch (1989) and Frank (2002) is a *structural* analysis that does not rely on the idea of intervention.
- The optimality-theoretic approach to *wh*-islands in Legendre, Smolensky & Wilson (1998) is another *structural* analysis that does not rely on the idea of intervention.
- There are *non-structural* semantic/pragmatic analyses of certain islands (incl. operator islands). See Szabolcsi & Zwarts (1993), Szabolcsi & den Dikken (2003) on certain kinds of weak (operator-induced) islands, Beck (1997) and Kim (2002) on intervention effects induced by quantifiers or focussed items, and Truswell (2007) on exceptions to the Adjunct Condition that seem to be semantically conditioned.

2.2.1 Tree Adjoining Grammar

Ref.: Kroch (1989), Frank (2002)
Assumption:
All long-distance dependencies must be brought about by (counter-cyclic) insertion of so-called auxiliary trees that pump up the local tree structure generated thus far ('elementary trees'); e.g., (4-a) is derived by inserting (4-b) (where *think* subcategorizes for a C′ category) into the C′ node of (4-c), which only has local movement to the minimal SpecC position.

(4) *Long-distance movement in Tree Adjoining Grammar*:
a. Who$_1$ do you think she likes t_1 ?
b. [$_{C'}$ do you think C′] (auxiliary tree)

c. [$_{CP}$ who$_1$ [$_{C'}$ C she likes t$_1$]] (elementary tree)

Consequence:
A *wh*-island construction like (5-a) would require inserting ('adjoining') an auxiliary tree like (5-b) into the elementary tree (5-c); and the problem is that a non-multiple-*wh*-movement language like English does not permit trees of the type in (5-c) that would be required to feed a *wh*-island construction.

(5) *Wh-Islands in Tree Adjoining Grammar*:
a. ?*What book$_1$ did John ask whom you had given t$_1$?
b. [$_{C'}$ did John ask C$'$]
c. *[$_{CP}$ what book$_1$ [$_{C'}$ whom$_2$ [$_{C'}$ C you had given t$_2$ t$_1$]

2.2.2 Optimality Theory

Ref.: Legendre, Smolensky & Wilson (1998)

Assumption:
(i) All instances of extraction from a CP (even a complement CP) are assumed to violate locality constraints (most phrases are local domains), but such constraint violation is possible if it is (a) minimal, and (b) forced by higher-ranked constraints.
(ii) The constraint that forces *wh*-movement (e.g., Wh-Crit) cannot play this role: It is ranked lower than the locality constraint (Loc) that an item (more precisely, an adjunct) violates when it undergoes extraction from an object CP.
(iii) However, a third constraint (Sel) that is highest-ranked (in effect: inviolable) demands that (lexically determined) selection requirements are respected. One such requirement is that a V that selects an interrogative CP finds a *wh*-item in the embedded SpecC (or C) position.

(6) *Wh-Islands: Optimality Theory*:
a. How$_1$ do you think [$_{CP}$ Mary fixed the car t$_1$] ?
b. *How$_1$ does she know [$_{CP}$ [$_{DP_2}$ which car] Mary fixed t$_2$ t$_1$] ?

Consequence:
(i) Extraction of the adjunct violates locality constraints on movement (Loc) in exactly the same way in (6-a) and (6-b): There is no intervention effect induced by *which car* in (6-b).
(ii) (6-b) is ungrammatical because it blocked by a competing candidate with a better constraint profile: (7) violates the constraint that would normally trigger *wh*-movement to the matrix clause (Wh-Crit), but since this constraint is ranked lower than the locality constraint violated with extraction from all CPs (Loc), (7) is the optimal candidate.

(7) *Optimal candidate blocking wh-movement from wh-island*:
She knows [$_{CP}$ how$_1$ [$_{DP}$ which car$_2$] Mary fixed t$_2$ t$_1$]

Problem:
(7) does not look like a well-formed English sentence.

Solution:
Given the copy theory of movement, *wh*-in situ may involve multiple *wh*-movement with selective PF realization of copies, such that one of the traces (rather than its antecedent) is PF-realized in English (Pesetsky (2000), Fanselow & Ćavar (2001), Grewendorf (2001).

Problem:
Why is (6-a) possible after all?

Solution:
The matrix verb in (6-a) selects a declarative CP complement, and not an interrogative CP complement; but if the *wh*-phrase *how* stays in the embedded SpecC position, the embedded clause will have to be interpreted as a *wh*-clause. This would violate highest-ranking Sel.

Conclusion:
Structural accounts of *wh*-island effects that do not rely on intervention are available, but they are not compatible with basic minimalist assumptions.

3. The Approach to CED Effects in Müller (2008)

3.1 Context

Question:
How can the effects of the Condition on Extraction Domain (CED; Huang (1982), Chomsky (1986; 1995; 2008), Cinque (1990), Manzini (1992)) be made to follow in the minimalist program?

Claim (Müller (2009, ch. 2)):
(i) The CED itself is not compatible with basic minimalist tenets.
(ii) Existing minimalist attempts at deriving the CED cannot be viewed as fully successful.
(Relevant proposals: Sabel (2002), Rackowski & Richards (2005); Uriagereka (1999), Nunes & Uriagereka (2000), Nunes (2004), Johnson (2003); Kitahara (1994), Takahashi (1994), Boeckx (2003), Gallego & Uriagereka (2006), Stepanov (2007).)

Background:
Chomsky (2000; 2001; 2008): PIC forces successive-cyclic movement via phase edges; such movement is possible because edge features that drive it can be inserted.

(8) *Phase Impenetrability Condition* (PIC):
The domain of a head X of a phase XP is not accessible to operations outside XP; only X and its edge are accessible to such operations (where edge of X = specifier(s) of X).

Claim:
CED effects can be derived from the PIC if the following four assumptions are made:

1. All syntactic operations are driven by features of lexical items.

2. These features are ordered on lexical items.
3. All phrases are phases.
4. Edge features that trigger intermediate movement steps can be added only as long as the phase head is still active.

(9) *Condition on Extraction Domain* (to be derived from the PIC):
   a. Movement must not cross a barrier.
   b. α is a barrier if the operation that has merged α in a phase Γ is the final operation in Γ.

3.2 Assumptions

(i) All syntactic operations are feature-driven

(10) *Two types of features that drive operations*:
   a. Structure-building features (edge features, subcategorization features) trigger (external or internal) Merge: [•F•]
   b. Probe features trigger Agree: [∗F∗].

(ii) Features on lexical items are ordered

(11) a. *Θ-roles*:
   $\Theta_1 \gg \Theta_2 \gg \Theta_3$ (Agent ≫ Theme ≫ Goal)
   b. *Subcategorization features*:
   $[\bullet P\bullet]_3 \succ [\bullet D\bullet]_2 \succ [\bullet D\bullet]_1$

(12) *Last Resort* (LR, revised):
   a. Every syntactic operation must discharge (and delete) either [•F•] or [∗F∗].
   b. Only features on the top of a feature list are accessible.

(iii) All phrases are phases

(13) *Phase*:
   All phrases are phases.

Consequence:
Wh-movement must proceed via every XP edge domain on its way to its ultimate target position (the $C_{[\bullet wh\bullet]}$ node that attracts it), given the PIC.

Note:
This is actually not relevant in the present context since we are only concerned with CP.

(iv) Edge feature insertion

(14) *Edge Feature Condition* (EFC):
   An edge feature [•X•] can be assigned to the head γ of a phase only if (a) and (b) hold:
   a. γ has not yet discharged all its structure-building or probe features.
   b. [•X•] ends up on top of γ's list of structure-building features.

3.3 Deriving the Condition on Extraction Domain

3.3.1 Analysis: Merge

Deriving the CED:

1. If an edge feature [•X•] is to be inserted on a phase head γ, it must go to the top of γ's list of structure-building features. (EFC)
2. γ must contain at least one other feature at this point (otherwise it is inert). (EFC)
3. But then, [•X•] is discharged again immediately (last-in/first-out). (LR)
4. Thus, it is impossible to insert an edge feature for a category α that is merged in Γ as the last operation taking place in Γ. (EFC)
5. Therefore, a moved item in the edge domain of an α merged last in Γ is not accessible anymore outside Γ (assuming a non-recursive notion of edge). (PIC)
6. Consequently, extraction from α is predicted to be impossible. (PIC)
7. Given that (outer) specifiers are last-merged in their projections, they are thus barriers for movement. (CED derived)

(15) *Why specifiers are barriers*:
   α_i is a specifier that is last-merged in its phase.
   a. Edge feature insertion follows specifier feature discharge:
   γ: [•α•]
   → γ: Ø
   → γ: [•X•]
   ⇝ violates (14-a)
   b. Edge feature insertion precedes specifier feature discharge, version 1:
   γ: [•α•]
   → γ: [•α•] ≻ [•X•]
   → γ: [•X•]
   ⇝ violates (14-b)
   c. Edge feature insertion precedes specifier feature discharge, version 2:
   γ: [•α•]
   → γ: [•X•] ≻ [•α•]
   → γ: [•α•]
   ⇝ does not help because of (12-b)

Conclusion:
Specifiers are barriers because of the PIC: There is no way to carry out an intermediate movement step from a last-merged specifier to the specifier of the minimal phase above it.

(16) *Why complements do not have to be barriers*:
   γ: [•β•] ≻ [•α•]
   → γ: [•α•]
   → γ: [•X•] ≻ [•α•]
   → γ: [•α•]
   → γ: Ø
   ⇝ violates nothing

(16) Edge feature insertion precedes complement feature discharge, version 1:

γ: [•β•] ≻ [•α•]
→ γ: [•β•] ≻ [•X•] ≻ [•α•] ⇝ violates (14-b)
→ γ: [•X•] ≻ [•α•]

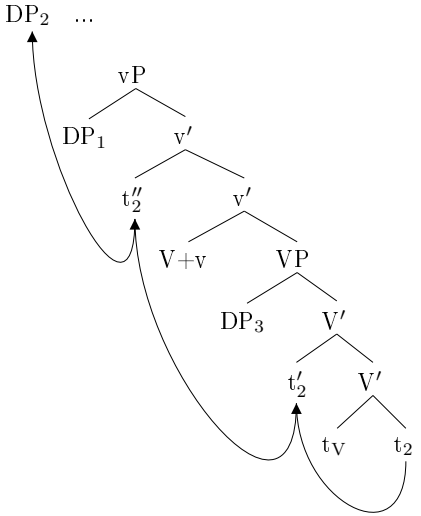
(16) Edge feature insertion precedes complement feature discharge, version 2:

γ: [•β•] ≻ [•α•]
→ γ: [•X•] ≻ [•β•] ≻ [•α•] ⇝ does not help because of (12-b)
→ γ: [•β•] ≻ [•α•]

Conclusion:
Movement out of complements can respect the PIC: There is a stage in the derivation where the complement feature has already been discharged (so that subsequent edge feature insertion can attract an item within the complement), but the specifier feature has not yet been discharged.

Note:
Under this approach, intermediate movement steps to phase edges must take place *before* a (final) specifier is merged. This results in structures that look like (inherently acyclic) *tucking in* (Richards (2001)) has applied; but it hasn't: All movement steps extend the tree.

(17) *Intermediate movement steps*:



Let us call this property the *Intermediate Step Corollary*; it will become relevant later.

(18) *Intermediate Step Corollary*:
Intermediate movement steps to specifiers of X (as required by the PIC) must take place before a final specifier is merged in XP.

Consequences:

- Subjects are barriers (both Specv and SpecT).
- Adjuncts are barriers (assuming that they are last-merged specifiers of special functional projections).
- Indirect objects bearing dative are barriers (assuming that they are last-merged in SpecV).

3.3.2 Analysis: Agree

Problem:
So far, the prediction is that a complement can avoid becoming a barrier in a phase XP only if there is something else (a specifier) that is merged later. This prediction is not borne out; see (19-ab) (examples from German).

(19) *Bridge vs. non-bridge verbs*:

a. Wen$_1$ denkst du [$_{CP}$ dass sie t_1 getroffen hat] ?
whom think you that she met has

b. *Wen$_1$ weisst du [$_{CP}$ dass sie t_1 getroffen hat] ?
whom know you that she met has

Analysis:

- Extraction from a sole complement is possible only if the next higher head undergoes abstract incorporation with the complement's head (Müller (1991)).
- Abstract incorporation is an instance of Agree: Two heads share a feature [∗f∗]/[f].
- Agree requires c-command.
- A bridge verb undergoes Agree (with respect to [∗f∗]/[f]) with C of its complement; a non-bridge verb does not.

(20) *Abstract incorporation as [*f*]/[f] Agree*:

a. [$_{VP}$ $V_{[*f*]}$ [$_{CP}$ α [$_{C'}$ $C_{[f]}$ ...]]] *think that*
b. [$_{VP}$ $V_{[*f*]}$ [$_{CP}$ α [$_{C'}$ $C_{[f]}$ ...]]] *know that*

Note:
This implies that either the PIC is relaxed for Agree, or that Agree can be successive-cyclic. Something to this effect is required independently, under many versions of the PIC (cf., e.g., agreement of T with nominative objects in Icelandic; and the analysis of long-distance agreement in general).

Observation:
Probe features on a phase head can never remove barrier status from a last-merged specifier:

1. A probe feature cannot carry out Agree with (some item in) its specifier (Chomsky (2001; 2008)).

2. A probe feature cannot carry out Agree with (some item in) its complement after a specifier has been merged. (For instance, Agree(v,α in VP) (for accusative case

assignment) must precede Merge(DP_{ext},v′).) This follows from a restrictive version of the *Strict Cycle Condition* (Chomsky (1973)).

(21) *Strict Cycle Condition* (SCC):
Within the current domain α, a syntactic operation may not exclusively apply to positions that are included within another domain β that is dominated by α.

Consequences:
(i) Last-merged specifiers continue to be barriers.
(ii) Non-last-merged specifiers and complements are not barriers (incl. *melting*).
(iii) Last-merged complements are not barriers if the phase head has an additional probe feature for Agree with/into the complement.

(22) *Why last-merged complements do not have to be barriers*:
γ (e.g., V) is merged with α (e.g., DP) and has thereby discharged all its structure-building features.

a. Edge feature insertion follows complement feature discharge, no probe feature:

	γ: [•α•]	
→	γ: Ø	⇝ violates (14-a)
→	γ: [•X•]	

b. Edge feature insertion follows complement feature discharge, with probe feature:

	γ: [•α•]	
	[∗f∗]	
→	γ: [∗f∗]	⇝ violates nothing
→	γ: [•X•]	
	[∗f∗]	

Note:
To avoid a SCC violation (as it would occur with specifiers), the probe feature must be discharged before the structure-building edge feature in (22-b) (this is unproblematic given that the two features are on different stacks).

Clausal heads:
(i) A clausal head (V, v, T, C, ...) *status-governs* (Bech (1955/1957)) the head of its verbal complement.
(ii) This can be viewed as co-indexing of heads (abstract incorporation, hence Agree in the present approach); Sternefeld (1991).
(iii) Consequently, clausal projections are not barriers, even if there is no specifier present (and the projection is thus last-merged).

A further question (Hans van de Koot & Arnim von Stechow (p.c.)):
How can the very first step in the course of successive-cyclic extraction not *from*, but *of* a complement can be brought about in cases where there is no second item that is merged in the same projection as a consequence of the phase head's inherent structure-building features?

An answer (cf. Müller (2009, ch. 4) for alternatives):

- Heads typically undergo various kinds of Agree relations with their complements.
- This accounts for the fact that (last-merged) complements are typically mobile.
- Still, in some cases, where such an Agree relation between a head and its (last-merged) complement might not hold, the complement might in fact be precluded from moving.
- This would amount to a version of a requirement of *lexical government* in a (conjunctive) ECP.

4. Maraudage

(23) *Maraudage* (Georgi, Heck & Müller (2009), Georgi (2009); also see Abels (2003)):
Certain goal features of Agree or Merge operations (among them [person] and [animate]) are checked if the structural conditions for checking are met.

Pattern:
(i) When a head H serves two arguments DP_1 and DP_2, it sometimes happens that the first-merged DP_1 exceeds the feature set that H provides for it.
(ii) In order to satisfy its needs, DP_1 can then access features that H originally provided for DP_2. Thus, DP_1 "marauds" the feature set of DP_2.

Relevant phenomena:
(i) *Ergative displacement in Basque* (cf. Béjar & Řezáč (2009)):
v provides ϕ-features for DP_{int} and DP_{ext}, but only 3.pers. for DP_{int}; DP_{int} is merged first and, if it is local (1./2.) person, marauds v's feature set for DP_{ext}; consequently, a new person feature must be inserted on v (in minimal violation of the Inclusiveness condition), which is spelled out by a special suffixal exponent.
(ii) *Global case splits in Yurok* (cf. Silverstein (1976)):
v provides case features for DP_{int} and DP_{ext} that are based on ϕ-features for these arguments; an unusual (local person) DP_{int} marauds the case features reserved for DP_{ext} (as an instance of differential object marking), which implies that v has fewer features left for DP_{ext}; hence, DP_{ext} can only be 3.pers.

5. Wh-Islands and Topic Islands

5.1 An Asymmetry

Observation (Fanselow (1987), Müller & Sternefeld (1993)):
(i) *Wh-islands* block *wh*-movement but not (argument) topicalization in German.
(ii) *Topic islands* block *wh*-movement and topicalization in German.

(24) *Wh-islands in Italian: relativization vs. topicalization from* (Rizzi (1982)):

a. Tuo fratello [$_{CP_3}$ [$_{PP_1}$ a cui] mi domando [$_{\mathbf{CP}_4}$ [$_{DP_2}$ che storie]
your brother to whom myself I ask which stories
abbiano raccontato t_2 t_1]] era molto preoccupato
they have told was very worried

b. *[$_{DP_1}$ Chi] ti domandi [$_{CP_3}$ [$_{DP_2}$ chi] t_2 ha incontrato t_1] ?
who yourself you ask who has met

(25) *Wh-islands in German: wh-movement vs. topicalization*:

a. *Welches Radio$_1$ weißt du nicht [$_{CP}$ wie$_2$ C [$_{TP}$ man t_1 t_2 repariert]] ?
which radio know you not how one fixes

b. ?Radios$_1$ weiß ich nicht [$_{CP}$ wie$_2$ C [$_{TP}$ man t_1 t_2 repariert]]
radios know I not how one fixes

(26) *Topic islands in German: wh-movement and topicalization*:

a. *Welches Radio$_1$ glaubst du [$_{CP}$ der Maria$_2$ [$_{C}$ hat] [$_{TP}$ er t_2 t_1 gegeben]] ?
which book think you the Mary has he given

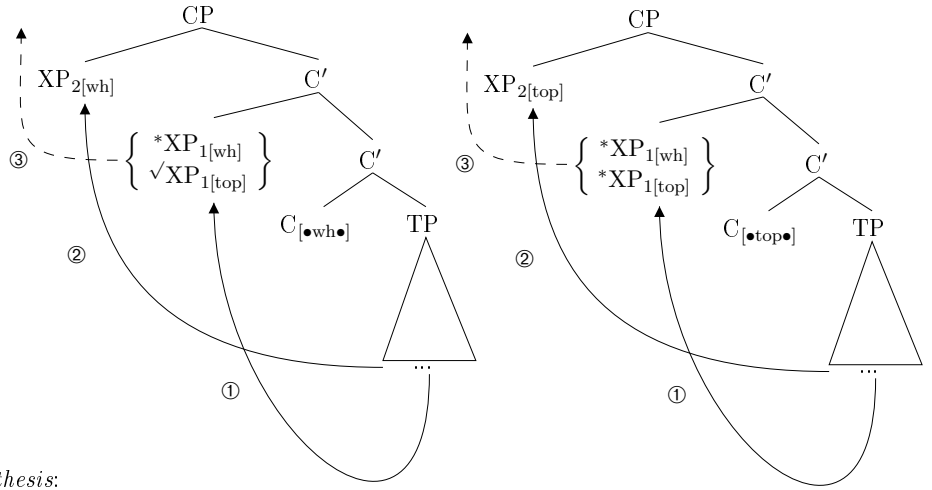
b. *Radios$_1$ glaube ich [$_{CP}$ der Maria$_2$ [$_{C}$ hat] [$_{TP}$ er t_2 t_1 gegeben]]
radios think I the Mary has he given

Note:
The fact that there is an asymmetry between movement types in (25), and no asymmetry in (26), poses problems for a Relativized Minimality (RM) type approach.
(i) A standard RM approach (like Rizzi (1990; 2001)) distinguishes three kinds of interveners: Head, A, A-bar. This would uniformly rule out all sentences in (25) and (26) (given that the moved items are subject to RM).
(ii) A more fine-grained RM approach (like Rizzi (2004): *argumental* (person, number, gender, case) vs. *quantificational* (wh, neg, measure, focus) vs. *modifier* vs. *topic*)) that distinguishes between different kinds of A-bar interveners (topic vs. *wh* in the case at hand) would wrongly predict both (25-b) and (26-a) to be well formed. Thus, if RM is to account for the 3/4 pattern in (25) and (26), further assumptions will be required (see Starke (2001)).

5.2 Analysis: Operator Islands as Maraudage

Observation:
Given the *Intermediate Step Corollary* in (18), the order of rule application with extractions from a *wh*-island and from a topic island must look as in (27-ab), respectively, with the intermediate movement step taking place prior to the one that would create the operator island.

(27) a. *Wh-island* b. *Topic island*



Hypothesis:
Given that the item that undergoes the intermediate movement step reaches the domain of a C head before the item that is supposed to ultimately check the [•F•] of C in this position, it may maraud C's stack of structure-building features, making regular specifier placement impossible. Thus, *wh*-island and topic island effects are due not to *wh*-islands or topic islands, but to the fact that the *wh*-island/topic island cannot be generated in the first place.

Assumption:
Variation in maraudage can be accounted for by postulating a more fine-grained system of A-bar related features (see Starke (2001), Rizzi (2004), Lahne (2007)). Suppose that topicalization (in German) is bare operator movement (cf. its multi-functionality), and *wh*-movement is movement of a certain kind of operator (viz., a *wh*-operator).

(28) *Feature specifications of C, wh-phrase, and topic*:

a. $C_{[wh]}$ = $C_{[\bullet op,wh \bullet]}$
b. $C_{[top]}$ = $C_{[\bullet op \bullet]}$
c. *wh*-phrase = $XP_{[op,wh]}$
d. topic = $XP_{[op]}$

(29) *Maraudage:*
Certain goal features of Agree or Merge operations (among them [op] and [wh]) are checked if the structural conditions for checking are met.

Consequence:
When an item undergoes intermediate movement to a SpecC position, driven by edge feature insertion, it tries to get as many of its operator features ([op], [wh], ...) checked as possible. Operator features thus attach to the newly inserted [•X•], are checked with the moved item, and undergo deletion. Therefore, no feature may be left to trigger subsequent, regular operator movement. This accounts for operator island effects.

5.2.1 Wh-Movement from a Wh-Island

Observation:
Wh-phrases have many operator features; therefore, they accomplish full maraudage in a Spec$C_{[wh]}$ position that they use as an escape hatch in a CP phase, thereby blocking subsequent regular *wh*-movement.

(30) *Wh-movement from a wh-island*
*Welches Radio$_1$ weißt du nicht [$_{CP}$ wie$_2$ C [$_{TP}$ man t_1 t_2 repariert]] ?
which radio know you not how one fixes

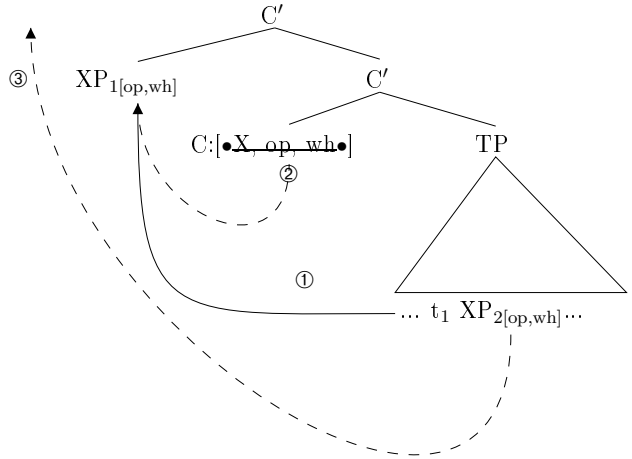
(31) *Wh-movement from a wh-island: complete maraudage*

(i)	C: [•op, wh•]			(→ edge feature insertion)
(ii)	C: [•X•]	≻	[•op, wh•]	(→ movement of *wh*-phrase)
(iii)	C: [•X•]	≻	[•op, wh•]	(→ edge feature discharge)
(iv)	C: [•op, wh•]			(→ further discharge: maraudage)
(v)	C: Ø			(no structure-building features left)

Consequence:
There is no way to get the remaining $XP_{2[op,wh]}$ (the item we would expect to create the *wh*-island) to the edge domain of the embedded CP (C is now inert, which precludes further edge feature insertion). Depending on assumptions about criterial freezing (see Rizzi (2006; 2007)), it may or may not be possible now for the *wh*-phrase to move on into the matrix clause (to satisfy the demands of another $C_{[wh]}$). But this would still violate a visibility requirement for the embedded *wh*-clause; cf. (32). In any case, the prediction is that *wh*-islands are characterized by the property that the *wh*-island cannot be erected.

(32) *A violation of criterial freezing*
*Welches Radio$_1$ fragst du dich [$_{CP}$ t'_1 (dass) [$_{TP}$ man t_1 wie$_2$ repariert]] ?
which radio ask you yourself that one how fixes

(33) *The decisive stage of the derivation – wh-extraction from wh-island*:



5.2.2 Topicalization from a Wh-Island

Observation:
Topics have fewer operator features; therefore, they do not accomplish full maraudage in a Spec$C_{[wh]}$ position that they use as an escape hatch in a CP phase. Consequently, regular *wh*-movement (may be more marked, but) is not blocked.

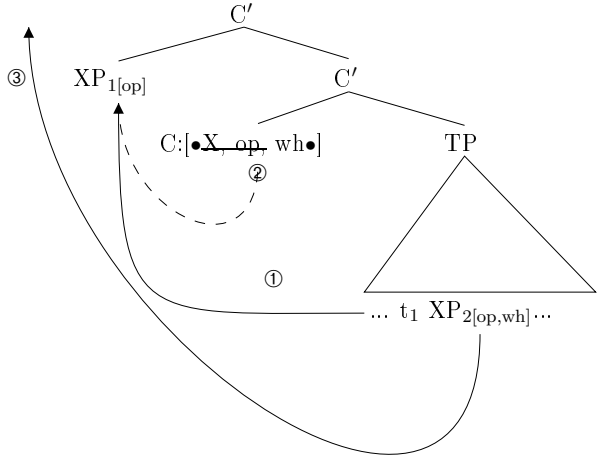
(34) *Topicalization from a wh-island*
?Radios$_1$ weiß ich nicht [$_{CP}$ wie$_2$ C [$_{TP}$ man t_1 t_2 repariert]]
radios know I not how one fixes

(35) *Topicalization from a wh-island: minor maraudage*

(i)	C: [•op, wh•]			(→ edge feature insertion)
(ii)	C: [•X•]	≻	[•op, wh•]	(→ movement of topic)
(iii)	C: [•X•]	≻	[•op, wh•]	(→ edge feature discharge)
(iv)	C: [•op, wh•]			(→ minimal maraudage)
(v)	C: [•wh•]			(→ movement of *wh*-phrase)
(vi)	C: [•wh•]			(→ discharge)
(vii)	C: Ø			(two items in edge domain)

Note:
A-bar-related (operator) goal features on items can ultimately be left unchecked, in contrast to A-related features (see Georgi et al. (2009)).

(36) *The decisive stage of the derivation – topicalization from wh-island*:



5.2.3 Wh-Movement from a Topic Island

Observation:
Wh-phrases are perfect marauders in a Spec$C_{[wh]}$ positions; consequently, it does not come as a surprise that they are just as successful in Spec$C_{[top]}$ positions, where C is characterized by a proper subset of structure-building features.

(37) *Wh-movement from a topic island*:
*Welches Radio$_1$ glaubst du [$_{CP}$ der Maria$_2$ [$_C$ hat] [$_{TP}$ er t_2 t_1 gegeben]] ?
which book think you the Mary has he given

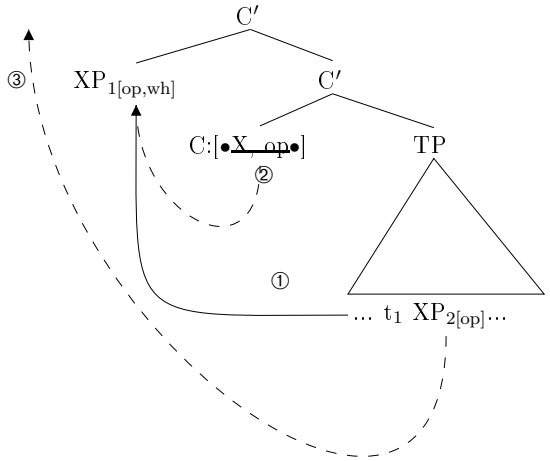
(38) *Wh-movment from a topic island: complete maraudage*
(i) C: [•op•] (→ edge feature insertion)
(ii) C: [•X•] ≻ [•op•] (→ movement of *wh*-phrase)
(iii) C: [•X•] ≻ [•op•] (→ edge feature discharge)
(iv) C: [•op•] (→ further discharge: maraudage)
(v) C: Ø (no structure-building features left)

Consequence:
It is impossible to move the remaining $XP_{2[op]}$ (the item that supposedly creates the topic island) to the edge domain of the embedded CP (C is now inert, which precludes further edge feature insertion). Depending on what one assumes about criterial freezing, the *wh*-phrase may or may not undergo further movement now. The resulting sentence would be something like (39).

(39) *Undetectable criterial freezing*:
Welches Radio$_1$ glaubst du [$_{CP}$ t'_1 [$_C$ hat] [$_{TP}$ er der Maria t_1 gegeben]] ?
which book think you has he the Mary given

Note:
The standard analysis of extraction from verb-second clauses in German requires a weakening (or abandonment) of criterial freezing anyway: A declarative verb-second C head triggers topicalization, and the topicalized item may then move on into the matrix clause, exactly as in (39). Thus, if we just implement standard assumptions about extraction from verb-second clauses in the present approach to movement, extraction from verb-second clauses looks almost exactly as sketched in (38). Differences: (i) An edge feature does not have to be inserted for the *wh*-phrase because the *wh*-phrase, by assumption, *is* also a topic. (ii) There does not have to be some other item around that would act as a topic, so that discharge of the [op] feature by the *wh*-phrase would not technically count as an instance of maraudage. I leave open the question of whether this might actually be an option (given that the same string can be generated in a simpler way, without maraudage). Questions of input optimization arise (see Prince & Smolensky (2004)).

(40) *The decisive stage of the derivation – wh-extraction from topic island*:



5.2.4 Topicalization from a Topic Island

Observation:
Topics have only one operator feature: [op]. However, this suffices to block subsequent topicalization if a topic undergoes movement to an intermediate SpecC position on its way to the left periphery of the matrix clause.

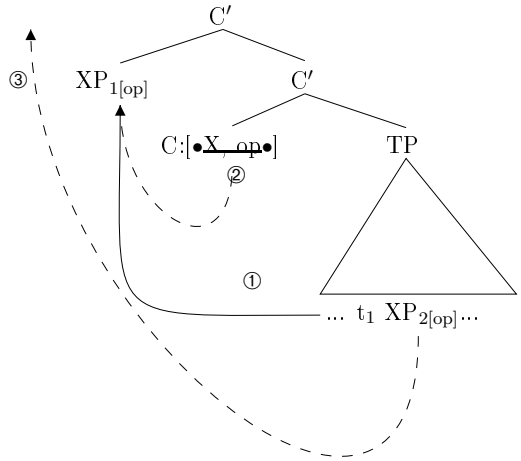
(41) *Topicalization from a topic island*:
*Radios$_1$ glaube ich [$_{CP}$ der Maria$_2$ [$_C$ hat] [$_{TP}$ er t_2 t_1 gegeben]]
radios think I the Mary has he given

(42) *Topicalization from a topic island: complete maraudage*
(i) C: [•op•] (→ edge feature insertion)
(ii) C: [•X•] ≻ [•op•] (→ movement of *wh*-phrase)
(iii) C: [•X•] ≻ [•op•] (→ edge feature discharge)
(iv) C: [•op•] (→ further discharge: maraudage)
(v) C: Ø (no structure-building features left)

Consequence:
A topic island cannot be created. The same issues arise with respect to criterial freezing and input optimization as before.

(43) *Undetectable criterial freezing*:
Radios$_1$ glaube ich [$_{CP}$ t'_1 [$_C$ hat] [$_{TP}$ er der Maria t_1 gegeben]]
radios think I has he the Mary given

(44) *The decisive stage of the derivation – topicalization from topic island*:



6. Conclusion, Consequences, and Extensions

6.1 Conclusion

To sum up:
The present approach to *wh*-islands and topic islands works without invoking the idea that *wh*-elements or topics create islands. More generally, there is no minimality/intervention condition on movement. Rather, an item undergoing long-distance movement targets the same domain and marauds the inventory of movement-inducing features of C before the items that are supposed to show up in SpecC permanently have had a chance to get there. Thus, the crucial factor is *timing*: Which item arrives first in the C domain? Interestingly, the answer needed to derive *wh*-island and topic island effects is one that follows automatically, given the approach to CED effects in Müller (2008); cf. the *Intermediate Step Corollary*: Intermediate movement steps to specifiers of X (as required by the PIC) must take place before a final specifier is merged in XP.

6.2 Consequences

6.2.1 'Whether'-Clauses

Claim (Chomsky (1986, 50)):
"*Whether* yields a much weaker *wh*-island effect than moved *wh*-phrases."

Prediction of the present analysis:
There will be no effect at all if *whether* is the lexical realization of an interrogative C.

Assumption:
At least for adjuncts (and arguably also for arguments), a *wh*-island effect can be detected with extraction from *whether* clauses.

Consequence:
Whether is never base-generated in the position in which it shows up, but undergoes movement to a $C_{[\bullet wh \bullet]}$ head just like other *wh*-items; principles of semantic interpretation will then ensure that there can be no multiple *wh*-questions involving both *whether* and and a regular *wh*-phrase. (Movement of *whether* is in fact proposed in Chomsky (1986), if only for the covert component of LF.)

Additional evidence:
In a language like Dutch, *of* can co-occur with an uncontroversial complementizer *dat* (see, e.g., Zwart (1993, 265)), which, under present assumptions, suggests an approach in terms of *whether*-movement from within TP to SpecC.

Open questions:
(i) Where exactly is *whether* externally merged?
(ii) Why can *whether* not undergo long-distance movement?

6.2.2 Underspecification and Overspecification

Prediction:
(i) Given that topics are specified as [op], and *wh*-phrases as [op, wh], it follows that a topic can never discharge all the A-bar-related features of interrogative $C_{[\bullet op,wh \bullet]}$. Therefore, a moved topic can never eventually satisfy the demands of an interrogative C.
(ii) The case might be different with *wh*-phrases. A *wh*-phrase bearing the features [op, wh] in the specifier of a topic $C_{[\bullet op \bullet]}$ can discharge all of C's features. This means that it might be possible for a *wh*-phrase to ultimately show up in the specifier domain of a non-interrogative C. If there is no other interrogative C head around in the sentence, such a configuration will most likely lead to semantic uninterpretability. However, suppose that the *wh*-phrase has undergone regular, feature-driven *wh*-movement to a specifier of an interrogative C head first. Then, depending (again) on assumptions about criterial freezing, it might or might not be an option for the *wh*-phrase to move on, and discharge a non-interrogative C head's [op] feature in a higher clause. Examples of *wh*-topicalization in German (Reis & Rosengren (1992)) suggest that this option does exist.

(45) *Wh-Imperatives in German*:
a. [$_{CP}$ – Stell dir vor [$_{CP}$ wen$_1$ (dass) ich t$_1$ getroffen habe]] !
imagine who that I met have
b. [$_{CP}$ Wen$_1$ stell dir vor [$_{CP}$ t$'_1$ dass ich t$_1$ getroffen habe]] !
who imagine that I met have

6.3 Extensions

(46) *General implications*:
a. The more A-bar-related (goal) features a moved item is equipped with, the more likely it is that it cannot cross an operator island (i.e., the "operator island" cannot be created in the first place).
b. The fewer A-bar-related (structure-building) features a head is equipped with,

the more likely it is that it creates an operator island that cannot be crossed.

Hypothesis 1:
(46-a) offers a new outlook on argument/adjunct asymmetries with extraction from islands (*weak islands*; see, e.g., Koopman & Sportiche (1986) on Vata).

Deriving an argument/adjunct asymmetry with extraction from wh- islands:

- Moved adjuncts are inherently characterized by more A-bar-related features than moved arguments.
- As operators, adjuncts maraud the feature structure of a C head whose domain they enter in the course of successive-cyclice (edge feature-driven) movement more drastically than arguments.
- An intermediately moved argument may leave further structure-building features on a C head; an intermediately moved adjunct "eats up" all structure-building features, and thus makes the regular movement operation to be carried out for this head impossible.

Generalization (for many languages):
There is a split between "referential" and "non-referential" adjuncts (*when, where* vs. *how, why*; Aoun (1986, 125); also Harbert & Pet (1988) on *alon* 'where' vs. *halika* 'how' in Arawak).

Situation in German:

- Topic islands are strict throughout.
- *Wh*-islands are transparent if the moved item is
  (i) a topic; and
  (ii) not a non-referential adjunct.

(47) *Topicalization from wh-islands in German*:

a. *Deshalb$_1$ weiß ich nicht mehr [$_{CP}$ wer$_2$ C t$_2$ t$_1$ gekommen ist]]
therefore know I not anymore who came

b. ??In Hannover$_1$ weiß ich nicht [$_{CP}$ wie$_2$ C [$_{TP}$ man t$_2$ t$_1$ das sagt]]
in Hannover know I not how one that says

Analysis:
All *wh*-phrases and non-referential topics bear the feature [wh] in addition to [op].

A problem?
Non-referential adjunct topics do not morphologically look like *wh*-phrases, and behave differently in the syntax.

Solution:

- The primitive [wh] feature is not the same as the standard *wh*-feature; given that, say, topics can behave "*wh*-like" in at least certain respects (see Chomsky (1977)), this is straightforwardly captured by postulating features that are common to both but not other categories – i.e., by postulating a natural class via shared features (Bierwisch (1967)).
- As for differences between non-referential adjunct topics and *wh*-phrases, this is then captured by assuming additional features that distinguish between the two types of categories; again, a standard procedure in feature-based approaches.
- Alternatively, one may postulate a feature like [nonref] instead of [wh] (*wh*-phrases are inherently non-referential).

Situation in English (simplified):

- Topic islands are strict throughout (but cf. Culicover (1991)).
- *Wh*-islands are transparent if the moved item is an argument.

Analysis:

- Interrogative C has two A-bar-related structure-building features (e.g., [•op, wh•]).
- Topic C has only one A-bar-related structure-building feature (e.g., [•op•]).
- All adjuncts (topics and *wh*-phrases) have the complete set of A-bar-related features (e.g., [op, wh]).
- All arguments have only one (e.g., either [op] or [wh]).

Hypothesis 2:
(46-b) offers a new outlook on the variable effects incurred by different types of intervening C heads.

Movement type asymmetries:

- Topic vs. *wh*-islands: An interrogative C is equipped with more features than a declarative C that triggers topicalization.
- In the same way, other asymmetries between movement types can be addressed (see, e.g., Bayer & Salzmann (2009) on the different behaviour of relativization in comparison to other movement types, and Müller & Sternefeld (1993) on asymmetries between topicalization, *wh*-movement, and scrambling.
- A further extension: finite/non-finite asymmetries in extraction.

Note:
This analysis leaves sufficient room for parametrization.
(i) Particular types of moved items (arguments, adjuncts, *wh*-phrases, topics, etc.) may not be characterized by exactly the same kinds of A-bar-related features in different languages.
(ii) Particular movement operations (topicalization, *wh*-movement, relativization, scrambling) might also not be cross-linguistically homogeneous as far as the A-bar-related features that are involved in them are concerned.

Bibliography

Abels, Klaus (2003): Successive Cyclicity, Anti-Locality, and Adposition Stranding. PhD thesis, University of Connecticut, Storrs, Connecticut.

Aoun, Joseph (1986): *Generalized Binding*. Foris, Dordrecht.

Bayer, Josef & Martin Salzmann (2009): That-Trace Effects and Resumption as the Result of Improper Movement. Ms., Universität Konstanz.

Bech, Gunnar (1955/1957): *Studien über das deutsche Verbum Infinitum*. Niemeyer, Tübingen. Reprint 1983.

Beck, Sigrid (1997): Wh-Constructions and Transparent Logical Form. PhD thesis, Universität Tübingen.

Béjar, Susana & Milan Řezáč (2009): Cyclic Agree, *Linguistic Inquiry* 40, 35–73.

Bierwisch, Manfred (1967): Syntactic Features in Morphology: General Problems of So-Called Pronominal Inflection in German. In: *To Honor Roman Jakobson*. Mouton, The Hague/Paris, pp. 239–270.

Boeckx, Cedric (2003): *Islands and Chains. Resumption as Stranding*. Benjamins, Amsterdam.

Chomsky, Noam (1973): Conditions on Transformations. In: S. Anderson & P. Kiparsky, eds., *A Festschrift for Morris Halle*. Academic Press, New York, pp. 232–286.

Chomsky, Noam (1977): On Wh-Movement. In: P. Culicover, T. Wasow & A. Akmajian, eds., *Formal Syntax*. Academic Press, New York, pp. 71–132.

Chomsky, Noam (1986): *Barriers*. MIT Press, Cambridge, Mass.

Chomsky, Noam (1995): *The Minimalist Program*. MIT Press, Cambridge, Mass.

Chomsky, Noam (2000): Minimalist Inquiries: The Framework. In: R. Martin, D. Michaels & J. Uriagereka, eds., *Step by Step*. MIT Press, Cambridge, Mass., pp. 89–155.

Chomsky, Noam (2001): Derivation by Phase. In: M. Kenstowicz, ed., *Ken Hale. A Life in Language*. MIT Press, Cambridge, Mass., pp. 1–52.

Chomsky, Noam (2008): On Phases. In: R. Freidin, C. Otero & M. L. Zubizarreta, eds., *Foundational Issues in Linguistic Theory*. MIT Press, Cambridge, Mass., pp. 133–166.

Cinque, Guglielmo (1990): *Types of A-bar Dependencies*. MIT Press, Cambridge, Mass.

Culicover, Peter (1991): Topicalization, Inversion, and Complementizers in English. In D. Delfitto (et al.), eds., *Going Romance, and Beyond*.

Fanselow, Gisbert (1987): *Konfigurationalität*. Narr, Tübingen.

Fanselow, Gisbert & Damir Ćavar (2001): Remarks on the Economy of Pronunciation. In: G. Müller & W. Sternefeld, eds., *Competition in Syntax*. Mouton de Gruyter, Berlin, pp. 107–150.

Frank, Robert (2002): *Phrase Structure Composition and Syntactic Dependencies*. MIT Press, Cambridge, Mass.

Gallego, Ángel & Juan Uriagereka (2006): Sub-Extraction from Subjects. Ms., Universitat Autónoma de Barcelona.

Georgi, Doreen (2009): Local Modelling of Global Case Splits. Master's thesis, Universität Leipzig.

Georgi, Doreen, Fabian Heck & Gereon Müller (2009): Maraudage. Ms., Universität Leipzig. (Talk at the Repairs Workshop of the DGfS conference 2009, Osnabrück, and at the Potsdam/Leipzig Workshop on Movement and Morphology, Leucorea, April 2009).

Grewendorf, Günther (2001): Multiple Wh-Fronting, *Linguistic Inquiry* 32, 87–122.

Harbert, Wayne & William Pet (1988): Movement and Adjunct Morphology in Arawak and Other Languages, *International Journal of American Linguistics* 54, 416–435.

Huang, Cheng-Teh James (1982): Logical Relations in Chinese and the Theory of Grammar. PhD thesis, MIT, Cambridge, Mass.

Johnson, Kyle (2003): Towards and Etiology of Adjunct Islands, *Nordlyd* 31(1), 187–215.

Kim, Shin-Sook (2002): Intervention Effects are Focus Effects, *Japanese/Korean Linguistics* 10.

Kitahara, Hisatsugu (1994): A Minimalist Analysis of Cross-Linguistically Variant CED Phenomena. In: *Proceedings of NELS*. Vol. 24, Amherst: GSLA, pp. 241–253.

Koopman, Hilda & Dominique Sportiche (1986): A Note on Long Extraction in Vata and the ECP, *Natural Language and Linguistic Theory* 4, 357–374.

Kroch, Anthony (1989): Asymmetries in Long Distance Extraction in a Tree Adjoining Grammar. In: M. Baltin & A. Kroch, eds., *Alternative Conceptions of Phrase Structure*. University of Chicago Press, Chicago, pp. 66–98.

Lahne, Antje (2007): A Multiple Specifier Approach to Left Peripheral Architecture. Ms., Universität Leipzig. To appear in *Linguistic Analysis*.

Legendre, Géraldine, Paul Smolensky & Colin Wilson (1998): When is Less More? Faithfulness and Minimal Links in Wh-Chains. In: P. Barbosa, D. Fox, P. Hagstrom, M. McGinnis & D. Pesetsky, eds., *Is the Best Good Enough?*. MIT Press and MITWPL, Cambridge, Mass., pp. 249–289.

Manzini, Rita (1992): *Locality. A Theory and Some of Its Empirical Consequences*. MIT Press, Cambridge, Mass.

Müller, Gereon (1991): Abstrakte Inkorporation. In: S. Olsen & G. Fanselow, eds., *DET, COMP und INFL*. Niemeyer, Tübingen, pp. 155–202.

Müller, Gereon (2008): On Deriving CED Effects from the PIC. Ms., Universität Leipzig. To appear in *Linguistic Inquiry* 14:1. (www.uni-leipzig.de/∼muellerg/mu217.pdf).

Müller, Gereon (2009): *Constraints on Displacement. A Phase-Based Approach*. Book ms., Universität Leipzig.

Müller, Gereon & Wolfgang Sternefeld (1993): Improper Movement and Unambiguous Binding, *Linguistic Inquiry* 24, 461–507.

Nunes, Jairo (2004): *Linearization of Chains and Sideward Movement*. MIT Press, Cambridge, Mass.

Nunes, Jairo & Juan Uriagereka (2000): Cyclicity and Extraction Domains, *Syntax* 3, 20–43.

Pesetsky, David (2000): *Phrasal Movement and Its Kin*. MIT Press, Cambridge, Mass.

Prince, Alan & Paul Smolensky (2004): *Optimality Theory. Constraint Interaction in Generative Grammar*. Blackwell, Oxford.

Rackowski, Andrea & Norvin Richards (2005): Phase Edge and Extraction, *Linguistic Inquiry* 36, 565–599.

Reis, Marga & Inger Rosengren (1992): What do Wh-Imperatives Tell Us About Wh-Movement?, *Natural Language and Linguistic Theory* 10, 79–118.

Richards, Norvin (2001): *Movement in Language*. Oxford University Press, Oxford.

Rizzi, Luigi (1982): *Issues in Italian Syntax*. Foris, Dordrecht.

Rizzi, Luigi (1990): *Relativized Minimality*. MIT Press, Cambridge, Mass.

Rizzi, Luigi (2001): Relativized Minimality Effects. In: M. Baltin & C. Collins, eds., *The Handbook of Contemporary Syntactic Theory*. Blackwell, Oxford, pp. 89–110.

Rizzi, Luigi (2004): Locality and Left Periphery. In: L. Rizzi, ed., *The Structure of CP and IP. The Cartography of Syntactic Structures, vol. 2*. Oxford University Press.

Rizzi, Luigi (2006): Criterial Freezing, EPP, and Asymmetries. Ms., Siena University.

Rizzi, Luigi (2007): On Some Properties of Criterial Freezing, *CISCL Working Papers on Language and Cognition* 1, 145–158.

Sabel, Joachim (2002): A Minimalist Analysis of Syntactic Islands, *The Linguistic Review* 19, 271–308.

Silverstein, Michael (1976): Hierarchy of Features and Ergativity. In: R. Dixon, ed., *Grammatical Categories in Australian Languages*. Australian Institute of Aboriginal Studies, Canberra, pp. 112–171.

Starke, Michal (2001): Move Dissolves Into Merge: A Theory of Locality. PhD thesis, University of Geneva.

Stepanov, Artur (2007): The End of CED? Minimalism and Extraction Domains, *Syntax* 10, 80–126.

Sternefeld, Wolfgang (1991): *Syntaktische Grenzen. Chomskys Barrierentheorie und ihre Weiterentwicklungen*. Westdeutscher Verlag, Opladen.

Szabolcsi, Anna & Frans Zwarts (1993): Weak Islands and an Algebraic Semantics for Scope Taking, *Natural Language Semantics* 1, 235–285.

Szabolcsi, Anna & Marcel den Dikken (2003): Islands. In: L. Cheng & R. Sybesma, eds., *The Second GLOT International State-of-the-Article Book*. Mouton de Gruyter, Berlin, pp. 213–240.

Takahashi, Daiko (1994): Minimality of Movement. PhD thesis, University of Connecticut.

Truswell, Robert (2007): Locality of Wh-Movement and the Individuation of Events. PhD thesis, University College London.

Uriagereka, Juan (1999): Multiple Spell-Out. In: S. Epstein & N. Hornstein, eds., *Working Minimalism*. MIT Press, Cambridge, Mass., pp. 251–282.

Zwart, Jan-Wouter (1993): Dutch Syntax. A Minimalist Approach. PhD thesis, Rijkuniversiteit Groningen.