Improper Movement in Tough Constructions and Gapped Degree Phrases

Ruth Brillman
ruth_b@mit.edu

Improper Movement in Tough Constructions and Gapped Degree Phrases

Improper Movement in *Tough* Constructions and Gapped Degree Phrases

R.J. Brillman*

1 Introduction

This paper concerns two movement constructions, *tough-constructions* (TCs, 1) and *gapped degree phrases* (GDPs, 2), and their relationship to each other.

(1) Ian is *tough* for Anneke to talk to __.

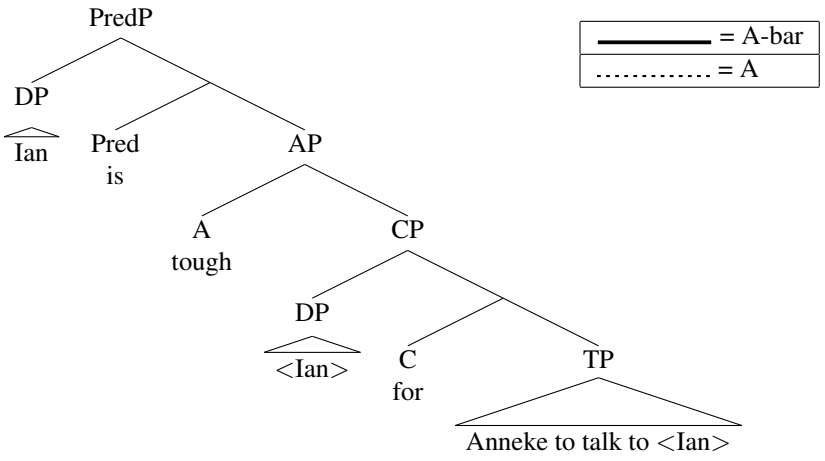
(2) Ian is *too shy* for Anneke to talk to __.

Broadly, this paper proposes that both TCs and GDPs are improper movement constructions, where an $\bar{A}$-movement step precedes an A-movement step in the same movement chain. However, TCs and GDPs are not identical constructions. TCs involve (improper) movement of an overt DP from the embedded clause into the matrix clause, while GDPs involve (improper) movement of a null operator within the embedded clause[1].

This paper is devoted to demonstrating that both TCs and GDPs contain both an A and an $\bar{A}$ movement step. Tests for an $\bar{A}$ movement step in both constructions are given in Section 2. Tests for an A movement step in both constructions are given in Section 3. Specifically, Section 3 describes how Hartman (2009) tests for A movement in TCs can be extended to diagnose A movement in GDPs. Section 4 gives evidence in support of the claim that TCs and GDPs involve the movement of a different element; that TCs involve the movement of an overt DP while GDPs are null operator movement constructions.

The final proposed structure for TCs is given in (3), while the final proposed structure for GDPs in given in (4). The GDP structure is based on Nissenbaum and Schwarz (henceforth N&S, 2011), who also analyze GDPs as null operator constructions. The structure in (4) mirrors N&S's proposed structure for GDPs[2] at LF.

(3) TC syntactic structure:

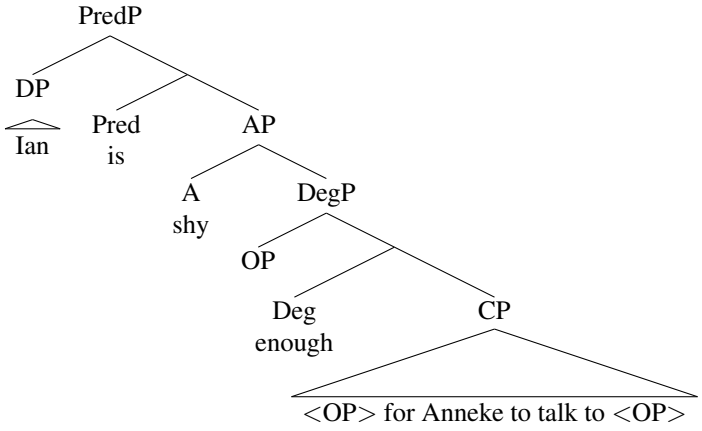


*Thanks to David Pesetsky, Norvin Richards, Stephanie Harves, Sabine Iatridou, Kai von Fintel, Danny Fox, Aron Hirsh, and Chris OBrien for helpful discussion. All mistakes are mine.

[1]I assume the embedded clause of a GDP includes the DegP layer directly above CP, in addition to the CP layer itself.

[2]Other processes will extrapose the CP standard. The structure in (4) is the correct word-order for *enough*-type GDPs, and there's some evidence that *too*, but not *enough*, might move into the AP, cf. *Enough to see again, that's how good the movie was* vs. **Too to see again, that's how boring the movie was*. Additionally, obligatory extraposition theories of comparatives would negative word-order concerns, regardless of whether or not *too* moves.

(4) GDP syntactic structure:



Note the final landing site of the null operator in (4): spec-DegP, above spec-CP. N&S give a semantic motivation for this movement step, based on general claims about the semantics of null operators proposed in Nissenbaum (2000). An important contribution of this paper comes in Section 3, which gives syntactic evidences that corroborates this movement step.

2 Ā movement in TCs & GDPs

This section argues that both TCs and GDPs contain an Ā movement step, as illustrated in the partial schema in (5-6).

(5) __ is tough [$_{CP}$ Ian C [$_{TP}$ for Anneke to [$_{vP}$ talk to <Ian>.]] (TC)

(6) Ian is [$_{AP}$ shy [$_{DegP}$ too [$_{CP}$ OP [$_{TP}$ for Anneke to [$_{vP}$ t$_{op}$ talk to t$_{op}$.]]] (GDP)

Both TCs and GDPs show hallmarks of Ā movement, in the sense of Chomsky (1977). Both constructions involve movement that takes advantage of intermediate spec-CP positions, and does not appear to be driven by ϕ-features. For example: embedded objects in both TCs and GDPs can move across an intervening argument—in this case, the embedded subject—without causing a minimality violation. Both TCs and GDPs contain gaps sites that can be separated from their fillers by a clause boundary (7), but not an island boundary (8).

(7) Gaps separated from fillers by clause boundaries
   a. Ian is tough [CP for Anneke to say [CP that she has talked to __]]
   b. Ian is too reculsive [CP for Anneke to say [CP that she has talked to __]]

(8) Gaps separated from fillers by island boundaries
   a. * Ian is tough [CP for Anneke to talk about [DP the book written by __]]
   b. * Ian is too reclusive [CP for Anneke to say [CP that she has talked to __]]

TCs and GDPs also mirror other Ā constructions in a number of ways. Both constructions can license parasitic gaps (9, c.f., Engdahl 1983). Both constructions also resist movement from the higher position in a double object construction (10, first noted in Lasnik and Fiengo 1974). Finally, both TCs and GDPs have a related form that overtly contains a *wh*-word (11)[3], though the structural nature of these constructions and their precise relationships with TCs and GDPs is not examined in this paper.

[3]The existence of the related TC form was first observed in Chomsky (1977). The observation that GDPs also have this relative is, to the best of my knowledge, novel to this paper.

(9) Parasitic gaps
   a. That candidate was easy to hire *t* [without interviewing *pg*]. (TC)
   b. That candidate was too young to hire *t* [without interviewing *pg*]. (GDP)
   c. Which candidate did you hire *t* [without interviewing *pg*]? (*wh*)

(10) DOC extraction
   a. * Ian was tough to give *t* this book. (TC)
   b. * Ian was too smart to give *t* this book (GDP)
   c. * Who did you give *t* this book? (*wh*)

(11) Overt *wh*-words in TCs and GDPs
   a. This is *a tough chair on* **which** *to sit* (TC)
   b. This is *too small a hook on* **which** *to hang his coat*. (GDP)

3 A Movement

The previous section showed that both TCs and GDPs contain (at least) an Ā movement step in their derivations, and that this Ā movement step targets the embedded spec-CP as a landing site. This section shows that both GDPs and TCs contain an A movement step in their derivations, as schematized in (12-13).

(12) Tough (improper) movement:
Ian is tough [$_{CP}$ t_I for Anneke to [vP talk to t_I]]

(13) Gapped degree phrase movement:
Ian is shy [$_{DegP}$ OP too [$_{CP}$ t_{op} [$_{TP}$ for Anneke to [$_{vP}$ t_{op} talk to t_{op}]]

A Key:
——— = A-bar
..... = A

Evidence for the structure in (12-13) comes from *defective intervention effects*, which have been independently argued by Hartman (2009) to provide a diagnostic for A movement in TCs. Importantly, this section shows that Hartman's tests yield identical results in GDPs, and that defective intervention effects also diagnose an A movement step in GDPs.

Defective intervention effects provide a fertile testing ground for A movement effects in both TCs and GDPs because both constructions license an oblique argument (an experiencer argument in TCs, and an evaluator argument in GDPs) above their embedded CP. As shown in Section 2, arguments of the embedded clause *can* (Ā) move across other arguments of their embedded clauses. This section shows that arguments of the embedded clause *cannot* (A) move across the oblique arguments introduced outside of the CP.

3.1 Defective Intervention

Defective intervention is the name for a phenomenon claimed to follow in part from the minimality condition (Rizzi 1990) that prevents arguments from A moving over each other, and is a hallmark of ϕ-feature driven movement. Because A movement, and crucially not Ā movement, is assumed to be ϕ-driven[4], defective intervention effects are one of the tools available to help distinguish A movements steps from Ā movement steps.

Cross-linguistically, defective intervention is common. This is illustrated in (14) with an example from French (Hartman 2009), where the experiencer argument can only grammatically appear in the expletive construction (14a), and not when raising has taken place (14b).

[4]Though, of course, there are different kinds of A and Ā movements, and within these subgroups, movement varieties are not necessarily identical.

(14) a. Il semble (au garçon) qu'ell a du talent
EXPL seems (to.the boy) that-she has of-the talent
'It seems to the boy that she has talent.'

b. Elle semble (*au garçon) avoir du talent
she seems (to.the boy) to.have of-the talent
'She seems (*to the boy) to have talent.'

This effect is not specific to French, and has been shown in Italian (Rizzi 1986), Spanish (Torrego 1996) and Icelandic (Holmberg and Hróarsdóttir 2004). Hartman (2009, 2012) shows defective intervention in a number of English constructions, as well. For example, ECM constructions may co-occur with an experiencer argument that appears outside of the embedded clause, as in (15a). ECM constructions can also involve movement of the embedded subject to an exceptional case marking position in the matrix clause, as in (15b). However, the embedded subject cannot move if there is an oblique experiencer present (15c).

(15) Defective intervention effects in ECM verbs
a. The prosecutor proved [PP to the jury] [CP that the defendant was guilty]
b. The prosecutor proved the defendant [TP *t* to be guilty]
c. * The prosecutor proved the defendant [PP to the jury] [CP *t* to be guilty]

In (15), a head such as *v* Probes for the *closest* argument with ϕ-features, and only that argument can Move. In (15b), *the defendant* is the closest argument, and its movement is licensed. However, in (15c), *the jury* is the closest argument to the Probe, and so *the defendant* cannot move.

However, defective intervention effects can be obviated if the oblique argument appears at the left-edge of the matrix clause[5] (16a). Additionally, defective intervention effects are not a linear word-order effect[6]: if an adjunct appears in the linear position of the oblique argument, defective intervention effects do not occur, as the adjunct does not have any ϕ-features that can be Probed (16b).

(16) Defective intervention obviation
a. To the jury, the prosecutor proved the defendant [TP *t* to be guilty]
b. The prosecutor proved the defendant [Adj over the course of the trial] [TP *t* to be guilty]

3.2 Defective Intervention Effects in TCs and GDPs

Like ECM constructions, both TCs and GDPs are sensitive to defective intervention effects. *Tough* predicates can optionally license an oblique experiencer argument, and, when this argument is present, *tough*-movement across the experiencer argument cannot occur. However, when the experiencer argument is absent from the derivation, *tough*-movement is grammatical (17).

(17) Defective Intervention Effects in TCs
a. It was entertaining [PP for John] [CP for his daughter to eat strawberries]
b. * Strawberries were entertaining [PP for John] [CP for his daughter to eat *t*]
c. Strawberries were entertaining [CP for John to eat *t*]

GDPs can license an oblique argument: an evaluator argument, which evaluates the likelihood of the *standard* relative to their own belief worlds, as in (18).

(18) CONTEXT: Chris needs his advisor's approval to run an experiment that will only succeed if performed in dry weather.
It's too humid [PP **for his adviser**] [CP for Chris to run the experiment]

[5] I remain agnostic as to whether the oblique argument is base-generated or moved to this position.

[6] See Bruening (2012) for an alternative claim regarding these facts, though not an alternative account of the data.

As with experiencer arguments of TCs, the distribution of evaluators in GDPs is limited. Evaluators can co-occur with degree phrases that involve no movement (e.g., "gapless" degree phrases with expletive matrix subjects, as in 18), but cannot occur in GDPs, which obligatorily involve movement of the null operator into the left periphery of the embedded clause. This is shown in (19), parallel to (17).

(19) Defective Intervention Effects in GDPs
   a. * Ian is too shy [PP for Olivia] [CP for Anneke to talk to __]
   b. Ian is too shy [CP for Anneke to talk to __]

Further evidence that the contrast in (19) is truly a movement effect is given in (20). In (20a), a degree phrase occurs with a gapless embedded clause and an experiencer argument. However, (20b), which features null operator movement, is ungrammatical.

(20) a. This experiment is too simple [PP for Chris] [PP for Mary to use it as one of her exam questions]
   b. * This experiment is too simple [PP for Bob] [CP for Chris to run _]

As with ECM constructions, defective intervention effects in TCs and GDPs can be obviated (19), and are not an artifact of linear word-order. *Tough*-movement can co-occur with the presence of an oblique evaluator, if the evaluator argument is introduced at the left-edge of the matrix clause. Additionally, adjuncts, which lack ϕ-features and so cannot be Probed, can linearly intervene between a *tough*-predicate and embedded clause.

(21) a. For John, strawberries were entertaining [CP for his daughter to eat *t*]
   b. Strawberries were enjoyable [PP last summer] [CP for John to eat *t*]

The same facts hold for GDPs (22): a GDP cannot involve both movement and an oblique evaluator, if the experiencer is in a position to cause a defective intervention effect (19). However, the defective intervention effects retreat if the experiencer appears at the left edge of the matrix clause (22b), or is a linearly intervening adjunct that does not contain ϕ-features necessary to establish a Probe-Goal relationship (22c).

(22) a. Ian is too shy [CP for Anneke to talk to __].
   b. For Olivia, Ian is too shy [CP for Anneke to talk to __.
   c. Ian was too shy [PP last year] [CP for Anneke to talk to __].

This argument hinges on the fact that oblique experiencers and evaluators are true arguments of TCs and GDPs, not merely adjuncts in the matrix clause or subjects of the embedded clause. Arguments for distinguishing experiencers from embedded subjects in TCs comes from examples like (23), modified from Hartman (2009), where the experiencer argument is introduced by a preposition other than *for* (the preposition that introduces infinitival subjects). In these cases, when *tough*-movement occurs, only the argument introduced by the preposition *for* can grammatically remain (24).

(23) a. It was hard [PP **on** Mary] [CP for her boyfriend to give up sugar]
   b. It is enjoyable [PP **to** John] [CP for his daughter to eat strawberries]

(24) a. Sugar was hard **for/*on** Mary to give up *t*.
   b. Strawberries are enjoyable **for/*to** John to eat *t*.

Evidence that experiencers and evaluators are arguments—and not adjuncts—of *tough*-predicates and degree words comes from two sources: *wh*-question and partial control. Adjuncts cannot readily be *wh*-extracted from many constructions, but experiencers can be grammatically *wh*-extracted from TCs (25) and evaluators can be grammatically *wh*-extracted from GDPs (26).

(25) Who was it hard [PP on *t*] for Mary to give up sugar?

(26) Who as it too humid [PP for *t*] [CP for Chris to run the experiment?]

Additionally, evidence for an A movement step in both constructions comes from partial control. When a sentence contains a *tough* predicate, an experiencer argument, and an expletive matrix subject, partial control is possible (27a). However, TCs (involving movement of the embedded object) cannot appear in partial control constructions (27b). Again, this contrast is mirrored in GDPs: partial control degree phrases are grammatical when there is no movement through the embedded clause, and ungrammatical when null operator movement is necessary (28).

(27) a. It's tough [PP for Mary] [CP PRO to meet on the bridge]

b. * The bridge is tough [CP for Mary to meet on __]

(28) a. It's too cold [PP for Mary] [CP PRO to meet on the bridge]

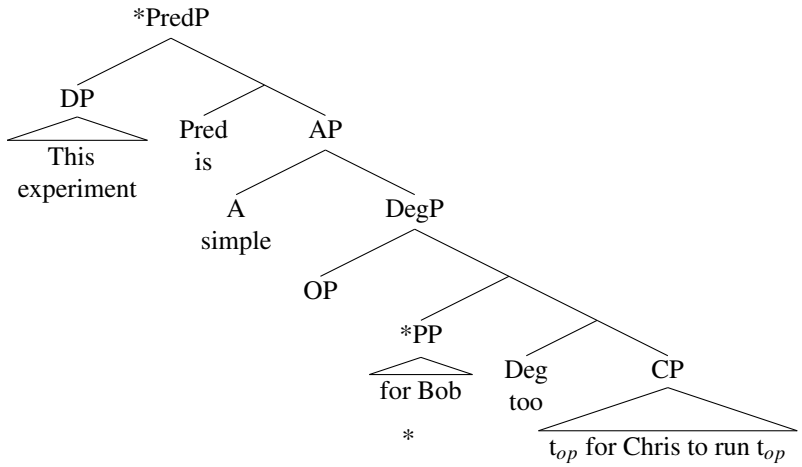
b. * The bridge is too cold [CP for Mary to meet on __]

The data in (27-28) follows if the experiencer argument in (27a) and the evaluator argument in 28a) controls the subject PRO in the embedded clause. In (27b) and (28b), defective intervention requires that the optional experiencer or evaluator argument be absent, and so a partial control structure is impossible[7].

The presence of defective intervention effects in TCs would be mysterious if TC subjects are base-generated in the matrix subject position or only involve $\bar{A}$ movement. Recall that $\bar{A}$ movement is not ϕ-driven, and so cannot trigger defective intervention effects. However, these contrasts are easily explained if *tough*-movement involves an A-movement step following its $\bar{A}$-movement step.

Likewise, the presence of defective intervention effects in GDPs would also be mysterious if GDPs did not also involve an A movement step. These defective intervention effects in GDPs also show us where evaluator argument of the DegP must be introduced: internal to the DegP, below the highest specifier of Deg (the landing site for null operator movement; recall that the null operator must move to the highest specifier of DegP). If the evaluator were introduced elsewhere in the derivation, it would not be in a position to cause defective intervention effects, and the contrast shown in (19) would be unexplained. This is illustrated in the tree in (29)[8].

(29)



3.3 Interim Summary

The defective intervention evidence in this section, coupled with the $\bar{A}$ movement evidence in Section 3, suggest that *both* TCs and GDPs are improper movement constructions. In TCs, the movement step from the embedded spec-CP to matrix spec-TP is **A** movement. In GDPs, the movement

[7] Thanks to David Pesetsky, p.c., for bringing these facts to my attention.

[8] Introducing the evaluator in this position is additionally consist with the semantic literature regarded Degree Phrases and their arguments, particularly N&S (2011) and Meier (2003).

step from embedded spec-CP to spec-DegP is **A** movement. We have long known that spec-TP occupies an A position, but, previously, we didn't know much about the properties of spec-DegP. N&S 2011 showed that null operator movement to spec-DegP is semantically necessary, and the defective intervention effects noted in this section suggest that spec-DegP is an **A** position.

In GDPs, then, the improper movement step is contained entirely within the embedded clause. In fact, within the embedded clause, it appears that GDPs contain something of a *tough*-movement "core", with Deg^0 playing the role of the *tough*-predicate.

4 What Moves in TCs & GDPs

This paper has shown that both TCs and GDPs are improper movement constructions. It has also claimed that the constructions are not identical. Though both constructions involve an improper movement chain, a *different element* undergoes movement in TCs, compared to GDPs. In TCs, and overt DP moves, while GDPs involve the movement of a null operator[9].

This claim makes at least two predictions about the ways which TCs and GDPs will differ from each other. First, it predicts that there should be a Θ-role asymmetry between TCs and GDPs. GDPs should have an additional Θ-role (assigned to the matrix subject) that TCs lack. This is borne out in (30-31). The contrast in (30) shows that GDPs require that a Θ-role be assigned to their matrix subject, while TCs do not have this restriction. Similarly, (31) shows that TCs do, in fact, lack a possible Θ-role to assign to the matrix subject; in contrast to (31b), (31a) appears to fail precisely because there is no Θ-role assigned to the matrix subject *Olivia*.

(30) a. It's tough for Ian to talk to Anneke. (TC)
b. * It's too shy for Ian to talk to Anneke. (GDP)

(31) a. * Olivia is tough for Ian to talk to Anneke. (TC)
b. Olivia is too smart for Ian to reject her. (GDP)

Second, this distinction predicts that TCs will be ill-formed when they occur with split-antecedent matrix subjects, while GDPs will be grammatical with split-antecedent matrix subjects. Because GDPs do not involve movement into the matrix clause, GDPs are predicted to be grammatical with split-antecedents: the split antecedent subject can be base-generated in the matrix clause, and will be bound to the null operator via the semantic operation COMPOSE, after the null operator has moved to spec-DegP. However, because TCs do involve movement into the matrix clause, they are predicted to be ungrammatical with split-antecedents—base-generating the split antecedent in the embedded clause and moving it into the matrix clause would constitute a binding theory violation. This contrast is shown in (32).

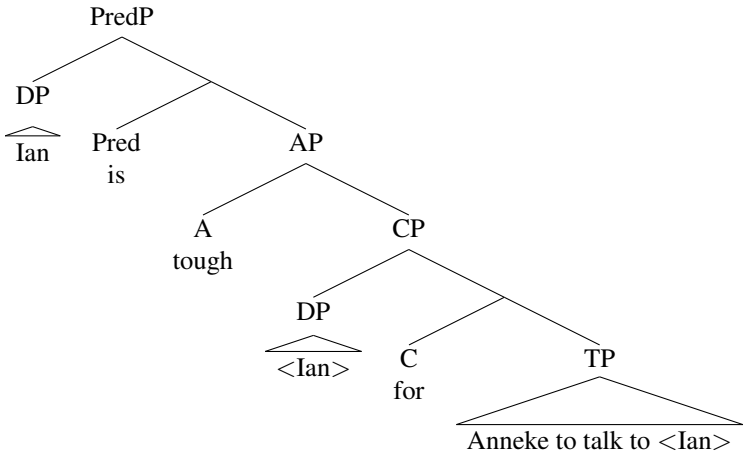
(32) a. Lars is friendly enough and Chris is compassionate enough to introduce __ to each other. (GDP)
b. * Lars is easy and Chris is tough (for me) to introduce __ to each other. (TC)

[9] See Hicks (2009) for an alternative account, claiming that TCs involve the movement of a special kind of null operator. Additionally, see Chomsky for arguments that TCs involve the movement of a standard kind of null operator.

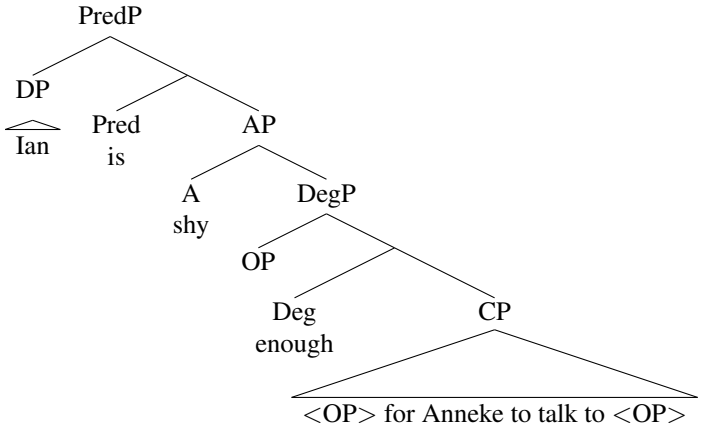
5 Conclusions

The structures proposed for TCs and GDPs in this paper are presented in (33-34), repeated from Section 1, and indicating both A and $\bar{A}$ movement steps.

(33) *Tough* construction:



(34) Gapped degree phrase:



The trees in (33-34) shows that TCs and GDPs are both improper movement constructions. In TCs, an overt DP moves, while GDPs are null operator constructions. The movement chain in TCs spans the entire clause; the movement chain in GDPs is DegP-internal. Thus, GDPs are structurally "larger" than TCs and GDPs can be described as containing a TC "core," with Deg playing the role of the *tough*-adjective.

The relationship between TCs and GDPs have consequences for our theory of improper movement more generally. This paper advocates for a theory of grammar that *sometimes* allows improper movement constructions, and adds GDPs to the slowly growing roster of improper movement constructions (TCs, Icelandic "Existential Accusatives" cf. Wood (2013), certain constructions in the Bantu language Kilega cf., Obata and Epstein (2011)). The problem now is determining *when* improper movement can(not) be licensed (and why).

References

Bruening, B. (2012). No such thing as "Defective Intervention". Manuscript, available online: http://udel.edu/ bruening/Downloads/DefectiveIntervention1.pdf.

Chomsky, N. (1977). On *wh*-movement. In Culicover, P., Wasow, T., and Akmajian, A., editors, *Formal Syntax*, pages 71–132. Academic Press.

Engdahl, E. (1983). Parasitic gaps. *Linguistics and Philosophy*, 6:5–34.

Hartman, J. (2009). Intervention in *tough* constructions. In *Proceedings of the 39th Meeting of the North East Linguistics Socierty (NELS)*.

Hartman, J. (2012). (Non-)Intervention in A-movement: some cross-constructional and cross-linguistic consequences. *Linguistic Variation*, 1(2):121–148.

Hicks, G. (2009). *Tough*-constructions and their derivations. *Linguistic Inquiry*, 40:535–566.

Holmberg, A. and Hróarsdóttir, T. (2004). Agreement and movement in Icelandic raising constructions. *Lingua*, 114:651–673.

Lasnik, H. and Fiengo, R. (1974). Complement object deletion. *Linguistic Inquiry*, 5(4):535–571.

Meier, C. (2003). The meaning of *too*, *enough*, and *so...that*. *Natural Language Semantics*, 11:69–107.

Nissenbaum, J. (2000). *Investigations of covert phrase movement*. PhD thesis, MIT.

Nissenbaum, J. and Schwarz, B. (2011). Parasitic degree phrases. *Natural Language Semantics*, 19:1–38.

Obata, M. and Epstein, S. D. (2011). Feature-splitting Internal Merge: Improper Movement, Intervention and the A/A' Distinction. *Syntax*, 14(2):122–147.

Rizzi, L. (1986). On chain formation. In Borer, H., editor, *The Grammar of Pronominal Clitics*. New York: Academic Press.

Rizzi, L. (1990). *Relativized Minimality*. MIT Press.

Torrego, E. (1996). Experiencers and raising verbs. In Freidin, R., editor, *Current Issues in Comparative Grammat*. Dordrecht: Kluwer Academic Press.

Wood, J. (2013). Moving dependent accusatives into the subject position. In *25th Scandinavian Conference on Linguistics*, Workshop 10.

R.J. Brillman
Department of Linguistics
32 Vassar Street
Massachusetts Institute of Technology
Cambridge, MA 02139
ruth_b@mit.edu