Remarks and Replies

VP-Ellipsis Is Not Licensed by VP-Topicalization

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Starting from the observation that the constraints on VP-ellipsis (VPE) closely match those on VP-topicalization (VPT), Johnson (2001) proposes a movement account for VPE: in order for a VP to be deleted, it must first undergo topicalization. We show that although this proposal is attractive, making VPE dependent on VPT is problematic because VPE and VPT are not distributionally equivalent. While VPT targets the left periphery and consequently is subject to constraints on movement, VPE is not so restricted. We outline some alternatives for capturing the observed parallelism in the licensing of VPT and VPE.

Keywords: VP-ellipsis, VP-topicalization, left periphery, main clause phenomena, ellipsis licensing, restrictions on movement

1 Introduction: Aim and Scope of the Article

The phenomenon of English VP-ellipsis (VPE) has been widely studied in the generative literature (Zagona 1988a,b, Lobeck 1995, Johnson 2001, Kim 2003). It has been noted that the contexts in which VPE is allowed are constrained in two ways: (a) the content of the ellipsis site must be recoverable from the discourse (see Johnson 2001 for a survey), and (b) the ellipsis site must be syntactically licensed (Zagona 1988a,b, Saito and Murasugi 1990, Lobeck 1995, 1999). We will not be concerned with the former constraint; instead, we will focus exclusively on the latter. Early discussion of the descriptive generalizations that will be the focus of the discussion are to be found in Bresnan 1976 and especially Lobeck 1995. The examples in (1) show that English VPE depends on the availability of an auxiliary as its licenser (see Lobeck 1995:141–163, and also Zagona 1988a, Johnson 2001). VPE is also licensed by infinitival *to*; see (1d–f).[1]

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[1] For the seminal discussion of VPE in *to*-infinitives, see Lobeck 1995:165–191. We have simplified Johnson's (2001) discussion somewhat for expository reasons. See also footnote 8 for more discussion.

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(1) a. Jane doesn't eat rutabagas and Holly doesn't Ø either.
b. Jane wouldn't eat rutabagas and Holly wouldn't Ø either.
c. Jane hasn't eaten any rutabagas and Holly hasn't Ø either.
d. John is considering eating rutabagas and Holly definitely wants to Ø.
e. Mag Wildwood wants to read Fred's story, and I also want to Ø.
(Johnson 2001:440, (5d))
f. John wants to go on vacation, but he doesn't know when to Ø.
(Johnson 2001:441, (9a); from Zagona 1988a:101, (21))

In the absence of such licensing heads, VPE is illicit: a finite lexical verb such as *started* cannot license VPE in the absence of infinitival *to*, as (2c–d) illustrate.

(2) a. I can't believe Holly Golightly won't eat rutabagas. I can't believe Fred won't Ø, either.
b. *I can't believe Holly Golightly won't eat rutabagas. I can't believe Fred Ø, either.
(Johnson 2001:439, (4))
c. *Sally Tomato started running down the street, but only after José started Ø.
(Johnson 2001:440, (7))
d. Sally Tomato started running down the street, but only after José started to Ø.

For a survey of the analyses put forward to account for the restrictions on VPE, see the discussion in Johnson 2001 and also more recently in Aelbrecht 2010a.

In this article, we evaluate the (at first sight, attractive) proposal elaborated in Johnson 2001, which capitalizes on the parallelisms between VPE and VP-topicalization (VPT). Starting from the observation that the syntactic constraints on VPE closely match those on VPT, Johnson proposes a movement account for VPE: in order for a VP to be deleted, it must first undergo topicalization.

Our article is organized as follows. In section 2, we survey the similarities between the licensing of VPE and the licensing of VPT, which form the basis for Johnson's (2001) movement account. In section 3, we discuss problems for the movement account, showing that VPE is available in a range of contexts in which VPT is unacceptable. In section 4, we present some alternative accounts that link the licensing of VPE to VP-movement in different ways. We also outline one way in which Merchant's (2001) account of ellipsis licensing using an ellipsis feature can be adapted to capture the parallelisms. Section 5 is a brief conclusion.

2 VP-Ellipsis as VP-Topicalization: Johnson 2001

In this section, we summarize Johnson's (2001) approach according to which VPE is derived through VPT. Johnson shows that the licensing condition on VPE displays striking parallelisms with the licensing conditions on the trace/copy of VPT (see Johnson 2001, Kim 2003, and Authier 2011 for extensive references).[2] This is illustrated by the contrasts between (3) and (4).[3] As is

[2] For discourse conditions on VPT, see among others Ward 1988, 1990.
[3] We represent the copy of movement by *t* for reasons of legibility.

the case for VPE, VPT is licensed by an auxiliary and by infinitival *to*; see (3). In the absence of such a licensing head, VPT is not allowed; see (4).

(3) Madame Spanella claimed that . . .
  a. *eat rutabagas*, Holly wouldn't *t.*
  b. *eaten rutabagas*, Holly hasn't *t.*
  c. *eating rutabagas*, Holly should be *t.*
  d. *eat rutabagas*, Holly wants to *t.*
  (Johnson 2001:444, (17))

(4) Madame Spanella claimed that . . .
  a. **would eat rutabagas*, Holly *t.*
  b. **hasn't eaten rutabagas*, Holly *t.*
  c. ?**eating rutabagas*, Holly started *t.*
  (Johnson 2001:444, (18))[4]

Johnson concludes that ''this is a pretty close fit, and it encourages thinking of the licensing condition on (VP) Ellipsis in terms of the licensing condition on traces'' (2001:444).[5] To account for the parallelism, Johnson proposes that the syntax of VPE be partly assimilated to the syntax of VPT. He argues that ''for a VP to elide, it must first topicalize'' (2001:446) and says that ''[t]his proposal, then, gives VP Ellipsis an analysis parallel to the Topic Drop phenomenon that Huang (1984), among others, discusses'' (2001:447).[6]

[4] Observe that while VPT is ungrammatical in (ia), VPE in the same context seems at first sight licit.

(i) a. ?**Eat rutabagas*, Holly made me *t*.
  (Johnson 2001:444, (18))
  b. Why did you eat those rutabagas? Holly made me.

In such examples, VPE seems to be licensed by a lexical verb. A similar instance is given in (ii).

(ii) a. ?*Eat rutabagas, he wouldn't let me.
  b. Why did you not eat the rutabagas? He wouldn't let me.

Thanks to Philip Miller (pers. comm.) for bringing these data to our attention. We have nothing to say about such cases here.

[5] Two notes are in order here. First, the match is not perfect, as Johnson (2001:444) himself admits:

> What's left unmatched is the prohibition on ellipsis following an *ing* form, a prohibition that is not recapitulated in VP topicalization [see (i)], and the ability of a small clause to elide following *not*, an ability not shared by VP topicalization [see (ii)].

(i) Madame Spanella claimed that . . .
  a. ?*discussed widely*, Holly is being *t*.
  b. ?*discussed widely*, I remember Holly being *t*.

(ii) *Madame Spanella claimed that *intelligent*, I consider Holly not *t*.

See also Kim 2003:278 and Authier 2011 for relevant discussion.

Second, for Russian and Polish VPE, Szczegielniak (2004) distinguishes ''bare VPE,'' which is derived by topicalization of a VP and is not available in English, from ''nonbare VPE,'' which is derived by in-situ deletion of destressed material and is available in English. Since Szczegielniak assumes that VPE in English is not derived by VPT, his findings are in line with our discussion. We have nothing to say about the possibility that ''bare VPE'' in Russian and Polish is derived by VPT.

[6] Authier (2011) builds on Johnson's proposal in his analysis of French modal ellipsis (i) and derives ellipsis of the complement of modal verbs by VPT followed by PF deletion.

As a consequence of this analysis, the VPE site is in fact the trace/copy of a moved VP, and it will thus be syntactically licensed under the conditions that govern the licensing of copies/traces. On the basis of observations in Lobeck 1995:165–191, Johnson (2001) argues that VPE under infinitival *to* (see (5)–(6)) provides further evidence for this proposal. In adjunct (5a) or subject (5b) infinitivals and in infinitival complements of N (5c–e), VPE is unacceptable;[7] in indirect questions (5f), its status varies; and in complement clauses (6), VPE is grammatical.

(5) a. *Mag Wildwood came to read Fred's story, and I also came to Ø.
(Johnson 2001:445, (22a))

b. *You shouldn't play with rifles because to Ø is dangerous.[8]
(Johnson 2001:445, (22b))

c. *Lulamae Barnes recounted a story to remember because Holly had also recounted a story to Ø.
(Johnson 2001:445, (24b))

d. ?*Madame Spanella questioned Mag's desire to eat rutabagas, but only after I had questioned Sally's desire to Ø.
(Johnson 2001:445, (24c))

e. ?*Sally explained the attempt to arrest Holly, but only after I had denied the decision to Ø.
(Johnson 2001:445, (24d))

f. ??Ron wanted to wear a tuxedo to the party, but Caspar couldn't decide whether to Ø.
(Johnson 2001:445, (22c))

(i) Elle joue avec qui elle peut.
she play.3SG with who she can.3SG
'She plays with whoever she can.'
(Authier 2011:177, (3b))

For reasons of space, we do not go into this point in detail here; for a full discussion of the data, see Authier's article.

In relation to his topicalization analysis of French modal ellipsis, in his section 4.2 Authier briefly addresses some of the intervention effects that we discuss here in section 3.2 in relation to English. Using Bošković's (2011) rescue-by-PF-deletion approach, Authier (2011:212) proposes that the asymmetry between VPE and VPT is accounted for if one assumes that an illicit fronting of the FP is rescued by ellipsis. Anticipating the discussion below, the rescue-by-PF-deletion approach hinges on syntactic intervention; such an approach is not at first sight easily applicable to the domains discussed in sections 3.3.3 (null complementizer clauses) and 3.3.4 (subject deletion in finite clauses), which also display an asymmetry between VPE and VPT. For problems with a movement analysis of subject deletion, see Haegeman 2008.

See Aelbrecht 2010a for an alternative account of modal ellipsis (in Dutch) that does not necessitate a movement derivation.

[7] Philip Miller (pers. comm.) also points out that there may be variation in judgments. For instance, for him (5d) is ''fine'' and (5e) is not completely unacceptable.

[8] As Lobeck (1995:173, (22a)) has already shown, the negative counterpart of (5b) would be acceptable.

(i) Mary wants to try to get a raise, because not to [$_{VP}$ e] would be silly.

See Lobeck 1995:174 and Johnson 2001:447, (30). Thanks to Philip Miller (pers. comm.) for drawing our attention to these data.

(6) a. Mag Wildwood wants to read Fred's story, and I also want to Ø.
b. You shouldn't play with rifles because it's dangerous to Ø.
c. It's possible for you to play with rifles, and it's possible for me to Ø too.
(Johnson 2001:445, (23))

If VPE is derived through VP-movement, then VPE is predicted to be illicit in the same contexts in which VP-movement is illicit. Johnson's data in (5) and (6) follow from a movement analysis of VPE because the contexts in (5) that are seen to be incompatible with VPE are syntactic islands (see Sag 1976, however, and section 3 below). On the movement derivation of VPE, the unacceptability of (5a–f) is then parallel to that of (7a–e) in which VPT has illicitly extracted the VP from an island. These observations are also in line with the interpretation of VPE as topic drop, which is also derived by movement of a constituent to the left periphery. Raposo (1986: 381–384) shows that topic drop in European Portuguese is sensitive to islands.[9]

(7) a. *You shouldn't play with rifles because [play with rifles] to *t* is dangerous.
(Johnson 2001:447, (29a))
b. *Lulamae Barnes recounted a story to remember because [remember] Holly had recounted a story to *t*.
(Johnson 2001:447, (29c))
c. ?*Madame Spanella questioned Mag's desire to eat rutabagas, but only after [eat rutabagas] I had questioned Sally's desire to *t*.[10]
d. ?*Sally explained the attempt to arrest Holly, but only after [arrest Holly] I had denied the decision to *t*.

Johnson (2001:475ff.) suggests that the licensing ability of negation may be related to other environments in which negation can license ellipsis—for example, predicate ellipsis, illustrated in (ii). For the difference between VPE and predicate ellipsis, see also Lobeck 1995.

(ii) Mag left, and *(not) Sally.
(Johnson 2001:474n12, (i)–(ii))

An anonymous reviewer points out that adding negation is not the only way to render (5b) acceptable. Insertion of *for*+SUBJ would also lead to an acceptable VPE sentence; see (iiia). The counterpart with VP-fronting, on the other hand, remains unacceptable, whether this places the VP to the right (iiib) or to the left (iiic) of the complementizer *for*.

(iii) a. For adults to play with guns is just stupid, but [$_{CP}$ for kids to Ø] is downright dangerous.
b. *For adults to play with guns is just stupid, but [$_{CP}$ for [play with guns] kids to *t*] is downright dangerous.
c. *For adults to play with guns is just stupid, but [$_{CP}$ [play with guns] for kids to *t*] is downright dangerous.

The reviewer points out that the contrast between the VPE examples with negation or *for*+SUBJ and the ones without might be due not to a restriction on VPE itself; rather, it could arise if *to* is a [+aux] clitic that needs a host. Ellipsis in the subject clause would then only be possible if such a host were present—that is, in the presence of negation or the ECM (exceptional case-marking) subject (see Baker 1971 for more on the effects of stress on auxiliary behavior and ellipsis; also see Zagona 1988a,b, Lobeck 1995, Johnson 2001, and Aelbrecht 2010a for more discussion of such an account).

[9] Raposo himself discusses the difference between European Portuguese topic drop, which is island-sensitive, and VPE, which is not. See the cited paper for discussion.

[10] Examples (7c) and (7d) have the added problem that topicalization in a temporal adverbial clause is also excluded; see section 3.2.2.

e. ??Ron wanted to wear a tuxedo to the party, but [wear a tuxedo to the party] Caspar couldn't decide whether to *t*.
(Johnson 2001:447, (29b))

Johnson concludes:

> So the island effects we've seen for VPs elided in infinitival clauses can now be traced back to the fact that VPs in infinitival clauses are forced to move out of that infinitival clause, and this movement is subject to island constraints. Moreover, the somewhat variable effects that we have seen in indirect questions . . . might be traced back to the fact that the *wh*-island constraint is itself quite variable. (Johnson 2001:447)

Observe that for (7b–d) there is no landing site for the moved VP inside the infinitival clause, as shown in (8). This is so because, as Johnson states (2001:446), ''topicalized VPs cannot land inside an infinitival clause in the way that they can in finite clauses,'' as in (9).[11]

(8) a. *Lulamae Barnes recounted a story to remember because Holly had recounted a story [remember] to *t*.
b. ?*Madame Spanella questioned Mag's desire to eat rutabagas, but only after I had questioned Sally's desire [eat rutabagas] to *t*.
c. ?*Sally explained the attempt to arrest Holly, but only after I had denied the decision [arrest Holly] to *t*.

(9) a. ?Lulamae decided that *eating rutabagas*, she should be *t*.
b. *Lulamae decided *eating rutabagas*, to be *t*.
(Johnson 2001:446, (27a–b))

Johnson does point out that as it stands, the movement analysis does not fully cover the data. For instance, the role of negation in rendering VPE acceptable (see (10)) goes unaccounted for (see footnote 9), and the analysis does not predict the ungrammaticality of VPE in the complement of *being* (see (11), and see Bresnan 1976 for this observation).

(10) a. Mag Wildwood came to introduce the barkeep but I came (precisely) not to Ø.
b. You should unload rifles because not to Ø is dangerous.
c. If Ron knows whether to wear a tuxedo, and Caspar knows whether not to Ø, do they know different things?
d. Lulamae recounted a story to remember because Holly had recounted a story not to Ø.
(Johnson 2001:447, (30))

[11] A relevant observation here is that in terms of Hooper and Thompson's (1973) proposal, VP topicalization patterns with main clause phenomena (MCP), which are not available in what they call ''reduced clauses'' (p. 485), that is, nonfinite clauses that are incompatible with fronting operations such as topicalization.

(i) a. *It bothers me that big cigar, for the mayor to smoke it.
b. *That book for me to read would be impossible.
(Hooper and Thompson 1973:485, (155) and (156))

See Emonds 1970, 1976, 2004 for discussion of the syntax of such MCP (or root transformations, as he labels them). See also Haegeman 2010a,b for recent discussion.

(11) a. *Doc Golightly is being discussed and Sally is being Ø too.
b. *I remember Doc being discussed, but you recall Sally being Ø.
(Johnson 2001:442, (12a–b))

In the next section, we raise additional problems for the movement derivation of VPE that cast doubt on its viability.[12]

3 VP-Ellipsis versus VP-Topicalization

If VPE is to be derived by VPT, then, following the logic of Johnson's (2001) own discussion of VPE in the context of infinitival clauses (see (5)–(7)), we would expect VPE to be unacceptable in all contexts in which VPT is disallowed, since the latter feeds the former. Put differently, contexts incompatible with VPT are predicted to be incompatible with VPE. We will show that this prediction is incorrect, illustrating a range of contexts in English in which (VP) topicalization is illicit and in which VPE remains perfectly acceptable.

We first discuss island (in)sensitivity in both VPT and VPE; the descriptive generalization there is that where VP-movement out of an island is illicit, VPE is fully acceptable inside the island. Next, we look at (VP) topicalization *within* certain clauses and we show that although there are clauses where such movement is not possible, VPE is still perfectly acceptable.

3.1 Island (In)sensitivity

As just mentioned, topicalization cannot extract a constituent from an island.[13] As shown in (12), topic extraction from a *wh*-island is ungrammatical.

[12] Kim (2003:278) discusses the difference between the constituent that undergoes movement in VPT and the one that is elided under VPE. He observes that while VPE is grammatical in (i), VPT is not, as shown in (ii).

(i) Lee might have been taking heroin, and
a. Sandy might have been ____ too.
b. Sandy might have ____ too.
c. (?)Sandy might ____ too.
(Kim 2003:280, (44))

(ii) They swore that Lee might have been using heroin, and
a. using heroin he might have been ____!
b. *been using heroin he might have ____!
c. *have been using heroin he might ____!
(Kim 2003:278, (36), citing Akmajian, Steele, and Wasow 1979)

See Kim 2003 for additional discussion.

[13] This is a simplification: weak islands may allow for topic fronting.

(i) a. ?This paper, I wonder whether they will accept.
b. ?Fix the car, I wonder whether he will.
(Den Dikken 2006:709)

Observe that the difference between strong and weak islands has no effect on VPE: VPE remains equally acceptable in both contexts, suggesting that the phenomenon does not interact with extraction.

(ii) (They'll ask him to sign the contract.) I wonder whether he will Ø.

(12) a. *I know that one of my students presented Johnson's article about VPE in my class but [that article], I cannot remember [which of my students presented *t*].
b. *I know that some students presented Johnson's article about VPE in my class but [that article], I cannot remember the students [who presented *t*].

In the same way, VPT cannot extract a VP from such islands.

(13) a. *I knew that some students presented this article in my class but [present the article] I couldn't recall [which of the students didn't *t*].
b. *I know that some students presented this article in my class but [present the article] I can't recall the students [who didn't *t*].

However, VPE is unproblematic in *wh*-islands, as also noted by Sag (1976).[14]

(14) a. I knew that some students presented this article in my class but I couldn't recall [which of the students didn't Ø].
b. I know that some students presented this article in my class but I can't recall the students [who didn't Ø].

The same holds in other types of syntactic islands, such as the complex DP island in (15). Here, the nominal head takes a clausal complement, which constitutes a strong island for argument topicalization (15a). Again, VPT is also unacceptable (15b), as expected, but VPE is acceptable (15c).

(15) a. *[This article] he made [the claim that he had elaborated *t* on his own].
b. *[Elaborate the analysis on his own] he made [the claim that he did *t*].
c. He made [the claim that he did Ø].

3.2 Topicalization within Certain Clauses

3.2.1 Topicalization inside a Wh-*Clause* A first type of clause in which VPT is illicit in English could be broadly defined in terms of the domain of *wh*-extraction (see Emonds 1976 for the data).

The ungrammaticality of argument topicalization in (16a–b) is usually ascribed to an intervention effect: the fronted topicalized constituent *this article* blocks fronting of the *wh*-constituent. The example in (16a) illustrates this for an interrogative *wh*-clause, while (16b) displays a relative *wh*-clause.

[14] Sag (1976) also discusses a movement derivation of VPE and discards it in the light of the island insensitivity of VPE, in contrast to VP-movement. The examples in (i) serve to show that VPE can occur within an island.

(i) a. John didn't hit a home run, but I know a woman who did ____.
b. That Betsy won the batting crown is not surprising, but that Peter didn't know she did ____ is indeed surprising. (Sag 1976:13)

(16) a. *I couldn't recall which student [this article] would present *t* in my class.
b. *I still remember the student who [this article] presented *t* in my class.

As (17) illustrates, VPT within such a *wh*-clause is unacceptable as well. (17a) illustrates this for *wh*-interrogatives and (17b) for relatives.

(17) a. *I knew that one student presented this article in my class but I can't recall now [which of the students [present this article] did *t*].
b. *I know that one student presented this article in my class but I can't recall the student [who [present this article] did *t*].

Unlike VPT, VPE is allowed in both *wh*-interrogatives and *wh*-relatives (as was shown above as well).

(18) a. I knew that some students presented this article in my class but I couldn't recall [which of the students didn't Ø].
b. I know that some students presented this article in my class but I can't recall the students [who didn't Ø].

Such examples can be multiplied. Emonds (1976) cites the VPT in (19a) as unacceptable. The corresponding VPE pattern in (19b) is fully licit.

(19) a. *John hoped that Mary would find his hat, but I wonder how [find it] she ever could *t*. (Emonds 1976:32, (29))
b. John hoped that Mary would find his hat, but I wonder how she ever could Ø.

The examples of VPE in (20) illustrate the same point. They too show that VPE is unproblematic in a *wh*-interrogative and a *wh*-relative.

(20) a. I know which book Max read, and which book Oscar didn't Ø.
b. This is the book of which Bill approves, and this is the one of which he doesn't Ø. (Fiengo and May 1994:229, (99a,c); cited in Johnson 2001:457, (61a–b))
c. Dulles suspected everyone who Angleton did Ø. (Johnson 2001:459, (72))

It is impossible to create an acceptable VPT source for these examples. We illustrate this in (21) for example (20a).

(21) a. *I know which book Max read, and which book [read t_{wh}] Oscar didn't *t*.
b. *I know which book Max read, and [read t_{wh}] which book Oscar didn't *t*.

The sentence in (22a), cited as marginally acceptable by Johnson, in which an active VP (*fired Max*) serves as an antecedent for an elided passive one, does not have a plausible VPT source either: clefting is incompatible with VPT (see (22b)).

(22) a. ?John fired Max, although it was Bill who should have been Ø. (Johnson 2001:470, (116); based on Fiengo and May 1994:203n10)
b. *John fired Max, although it was Bill who [fired] should have been *t*.

As a final example, English VPT is also unacceptable in the context of argument fronting, as shown by (23a–b). Plausibly this is also due to an intervention effect (see Emonds 1976, Haegeman 2010a,b, Haegeman and Ürögdi 2010a,b).[15]

(23) a. *. . . and [increase in value] the old house he was sure would *t*.
b. *. . . and the old house [increase in value] he was sure would *t*.
(Emonds 2004:95)

Once again, VPE is allowed in this context.

(24) She doubted whether the new house might increase in value, but [the old house] she was sure would Ø.

3.2.2 Topicalization inside an Adverbial Clause (VP) topicalization is usually considered a root transformation (Emonds 1970, 1976, 2004) or an instance of main clause phenomena (MCP; Hooper and Thompson 1973). Various proposals have been put forward to account for the constraints on such phenomena, which we will not go into here, but there seems to be agreement that in English, MCP are banned from occurring inside temporal adverbial clauses (see Hooper and Thompson 1973:496, (251)–(255), Emonds 1970, 1976, 2004, Heycock 2006, and Haegeman 2006, 2010a,b for discussion and accounts). This is illustrated in (25) for argument topicalization—which is also an instance of MCP—and in (26) for VPT.

(25) a. *After [this baker] I discovered *t*, I never went anywhere else.
b. *Before [this baker] I discovered *t*, I always ate toast.
c. *When [this baker] I discovered *t*, I was thrilled.
d. *As soon as [this baker] I discovered *t*, I stopped going elsewhere.

(26) Mary wanted to move to London
a. and [move to London] she did *t*.
b. *and after [move to London] she did *t*, her life changed entirely.
c. *Before [move to London] she did *t*, she was totally unmotivated.
d. *and when [move to London] she did *t*, her life changed entirely.
e. *and as soon as [move to London] she did *t*, her life changed entirely.

[15] An anonymous reviewer points out another problem for an analysis according to which ellipsis is licensed through movement: namely, cases where a constituent that resists topicalization or displacement altogether can undergo ellipsis. In English, for instance, TP-ellipsis is quite an acceptable and widespread phenomenon; under Merchant's (2001) analysis, sluicing involves ellipsis of the TP in the complement of a *wh*-C head (see (ia)).

However, English does not allow TPs to topicalize (see (ib)). Moreover, *wh*-clauses resist topicalization, as discussed in section 3.2.1 (see especially (16a–b)).

(i) a. I have forgotten something, but I don't know what ~~I have forgotten~~.
b. *[$_{TP}$ He will come] he told me [$_{CP}$ that [$_{TP}$ ~~he will come~~]].

It is therefore highly implausible that sluicing as in (ia) can be derived through movement of the TP prior to deletion: topicalization of the TP itself is illicit, and even if the problem could be circumvented, the required topicalization of the TP *I have forgotten* inside the *what*-clause would be unacceptable (see (7)), and extraction out of the *what*-clause will lead to an island violation (see section 3.1). Johnson (2001) himself acknowledges that extending the topicalization approach to other types of ellipsis, such as NP-ellipsis or sluicing, poses a challenge, and he mentions Saito and Murasugi's (1999) attempt to solve this problem (see also Aelbrecht 2010b).

While VPT is unacceptable in such adverbial clauses, VPE is perfectly acceptable.

(27) Mary wanted to move to London
  a. and eventually she did Ø.
  b. and after she did Ø, her life changed entirely.
  c. Before she did Ø, she had been totally unmotivated.
  d. and when she did Ø, her life changed entirely.
  e. and as soon as she did Ø, her life changed entirely.

VPT is also illicit in purpose clauses, while VPE is once again allowed.

(28) a. *John intends to make a table, and I'll get the materials so that [make one] he can *t*. (Emonds 1976:32, (29))
  b. John intends to make a table, and I'll get the materials so that he can Ø.

Johnson (2001:468) himself provides (29a), his (103a), which illustrates the acceptability of VPE in an adverbial clause that is incompatible with MCP. As (29b–c) show, it is impossible to devise a VPT source for this example: in (29b), the VP is fronted inside the adverbial clause; in (29c), it is extracted to the matrix clause; and in both cases, the result is unacceptable.[16]

(29) a. Rusty_1 talked about himself_1 only after Holly_2 did Ø.
  b. *Rusty talked about himself only after [talk about herself] Holly did *t*.
  c. *[Talk about herself] Rusty talked about himself only after Holly did *t*.

The examples in (30) and (31), adapted from Johnson's (2001) (110) and (112), illustrate the same point: VPE is possible in a *before*-clause and in a *when*-clause (see (30)), contexts in which VPT is unacceptable (see (31)).

(30) a. Fred talked about the war before Rusty did Ø.
  b. David Begelman laughs very often, and when he does Ø, his eyes crinkle at you the way Lady Brett's did in *The Sun Also Rises.*

(31) a. *Fred talked about the war before [talk about the war] Rusty did *t*.
  b. *[Talk about the war] Fred talked about the war before Rusty did *t*.
  c. *David Begelman laughs very often, and when [laugh] he does *t*, his eyes crinkle at you.
  d. *David Begelman laughs very often, and [laugh] when he does *t*, his eyes crinkle at you.

It can be argued (Haegeman 2010a,b, Haegeman and Ürögdi 2010a,b) that adverbial clauses are derived by operator movement to the left periphery. Under this analysis, the incompatibility

[16] Johnson uses example (29a) in discussing binding possibilities. As the grammaticality of (i) shows, this point is tangential to our discussion.

(i) Rusty started the linguistics course only after Holly did Ø.

with (VP) topicalization will be ascribed to intervention and in fact follows from the incompatibility of (VP) topicalization with *wh*-movement discussed in section 3.2.1. This point is, however, tangential to our discussion.

3.2.3 Factive Complements A third kind of clause in which VPT cannot occur is the complement clause of a factive verb. It is well-known that such clauses resist MCP (see Haegeman and Ürögdi 2010a,b for recent discussion). Example (32a) shows that the ban extends to VPT. Once again, VPE is unproblematic (32b).

(32) a. *John intended to make a table, and we were glad that [make one] he did *t*.[17] (Emonds 1976:32)
b. John intended to make a table, and we were glad that he did Ø.

Haegeman and Ürögdi (2010a,b) propose that complements of factives be derived by operator movement to the left periphery. Under this analysis, the incompatibility with (VP) topicalization is again due to intervention and these data further illustrate the effect of *wh*-movement noted in section 3.2.1. As before, this point is tangential to our discussion.

3.2.4 Subject Clauses Many authors have observed that subject clauses resist MCP.[18] VPT is equally unacceptable in subject clauses (33b), but VPE remains fully acceptable (34).

(33) a. *That [Mary], our antics would upset *t*, I didn't expect. (Alrenga 2005:179, (15d))
b. *I thought he might invite them, but that [invite them] he actually *t* did surprised me.

(34) I thought he might invite them, but that he actually did Ø surprised me.

3.3 Some Additional Contexts

In sections 3.1 and 3.2, we have illustrated a number of contexts in which VPT is known to be excluded in English, while VPE remains freely available. In this section, we note some more environments that illustrate the same contrast. Our aim is not to provide an exhaustive list of such contexts, but merely to show that VPE is not subject to the same constraints as VPT.

3.3.1 Yes/No *Questions* Just like the argument fronting in (35a), VPT is degraded in root *yes/no* questions with subject-auxiliary inversion (35b). VPE, on the other hand, is fine in the same context (36), given the appropriate discourse environment.[19]

[17] Thanks to an anonymous reviewer for help with these data.

[18] There actually is a debate about whether subject clauses exist. We do not go into this issue here, as it is tangential to our discussion. See Alrenga 2005 for a survey of the arguments, and also Davies and Dubinsky 1998, 2000.

[19] Observe that if *yes/no* questions involve movement of a question operator to the left periphery (Larson 1985), then these cases fall under the patterns discussed in section 3.2.1.

(35) a. *[That book about shrimp], did you actually read *t*?
(Sobin 2003:194)
b. *[Passed his exams], has he *t*?[20]

(36) ''He found out today whether he has passed his exams.'' – ''And? Has he Ø?''

3.3.2 Imperative Clauses Although the judgments are admittedly not as sharp, for many speakers argument fronting is degraded in the context of imperatives (see (37a); for discussion, see Jensen 2007, Postma and Van der Wurff 2007) and so is VPT (see (37b)). The VPE example in (38), on the other hand, remains fully acceptable.

(37) a. *[Your essay], leave *t* in my pigeonhole this afternoon.
b. *You may want to paint the bedroom yellow but I tell you: ''[Paint the bedroom yellow], don't *t*.''

(38) ''I'm going to paint the bedroom yellow!'' – ''Oh no! Please don't Ø!''

3.3.3 Null Complementizer Clauses A further context in which topicalization is unacceptable for many speakers is the case of a complement clause that lacks an overt complementizer (39a). Once again, VPT is also unacceptable (39b), but VPE is not (40).

(39) a. John believes *(that) [Bill], Mary doesn't like *t*.
(Nakajima 1996:147, (8))
b. John believes *(that) [talk to Mary], you shouldn't *t*.

(40) John believes (that) you shouldn't Ø.

3.3.4 Subject Deletion in Finite Clauses In finite clauses, subject ellipsis is available in two contexts. The first, illustrated in (41a), concerns coordinated clauses. As (41b) shows, argument fronting in the second conjunct of a finite coordinated clause is incompatible with subject ellipsis (see Wilder 1994 for discussion and analysis; see also Te Velde 2005 on coordination).

(41) a. The prime minister met the striking teachers last week and ____ will meet the administrative staff tomorrow.
b. *The prime minister met the striking teachers last week and [the administrative staff] ____ will meet *t* tomorrow.

Unsurprisingly by now, VPT is also incompatible with subject deletion in the second conjunct (42a–b). VPE, on the other hand, remains available (42c).

(42) a. John hasn't applied for the job at this point but [apply for it] he should *t* any day now.
b. *John hasn't applied for the job at this point but [apply for it] ____ should *t* any day now.
c. John hasn't applied for the job at this point but ____ should Ø any day now.

[20] Note that this example has an acceptable reading in which *has he* is the tag to a sentence with null subject and auxiliary; see (i). This reading is not relevant to the discussion.

(i) (He has) passed his exams, has he?

Subject deletion is also available in specific abbreviated registers such as diary writing, as illustrated by the attested examples in (43). See Thrasher 1977, Haegeman 1997, 1999, 2002, 2008, and Haegeman and Ihsane 1999, 2002 for extensive discussion and analyses.

(43) a. ____ Finished, almost, story of Shadow.
(Plath 1982:287)
b. ____ Have done 110 pages.
(Woolf 1985:33)
c. Origo rather contorted: ____ says Italy is blind red hot devoted patriotic; ____ has thrown her wedding ring into the cauldron too. ____ Anticipates a long war . . .
(Woolf 1985:6)

When the subject is preceded by a fronted argument, as in (44) for (43a), no ellipsis is possible in English; such examples are unattested and native speakers reject them. See also Thrasher 1977 for the same observation.

(44) *Story of Shadow, ____ finished last night.

In the same context, VPT is unacceptable as well; see (45a–b). VPE, however, remains fully licit, as expected; see (45c).

(45) a. ____ Refused to talk to the students.
b. *Talk to the students, ____ refused to *t*.[21]
c. Jim asked her to talk to the students again. ____ Didn't want to Ø.

3.3.5 Conclusion In this section, we have provided some additional contexts in English that disallow VPT but allow VPE. We conclude that in addition to the problems signaled by Johnson (2001) himself and pointed out at the end of section 2, other issues arise if one amalgamates the derivation of VPE with that of VPT: VPE cannot be derived by fronting the VP first.

4 Speculations

We have shown that the syntactic contexts licensing VPE are much wider than those licensing VPT, a finding that presents a challenge to Johnson's (2001) proposed movement analysis. It could be objected that in fact, the violations incurred by VPT are somehow undone or repaired as the result of VPE (see Authier 2011:212 for an analysis of French along such lines). However, this type of approach potentially destroys the symmetry between VPT and VPE that Johnson underlines, and it would also undermine Johnson's own argument (outlined in section 2) concerning the restrictions on VPE in infinitival clauses. If VPE repairs/undoes the problems raised for VPT, then the contrast in acceptability of VPE in (5) and (6) is unexpected. An account in which

[21] As Peter Matthews remarks (pers. comm.), (45b) is possible if the fronted VP is reinterpreted as an independent utterance. But this only goes to confirm the observation that (i) is an example of VPE.

(i) Talk to the students? ____ Refuses to Ø.

VPE repairs problems of extraction thus needs to be able to distinguish between cases in which ellipsis does repair illicit patterns and those in which it does not (see also footnote 6).

It is clear that VPE and VPT do have some properties in common (see also Kim 2003, in a different theoretical framework), but it is not obvious that movement of the VP to the clausal CP is at the basis of VPE. We do not want to provide a full account for these similarities here, but we will sketch some possible ways of deriving the patterns. As a baseline, whichever account is elaborated will have to (a) bring out the commonality of the syntactic licensing between VPT and VPE, while (b) ensuring that the asymmetry in distribution between the two phenomena can be accounted for.

4.1 Cliticization to Infl

One way of preserving the movement analysis of VPE while avoiding the problems encountered by a VPT analysis is to assume that ''elided VPs are null clitics, which have moved to adjoin to the Infl associated with the licensing Aux. As a consequence, VP-Ellipsis invokes a trace in the position where we would expect to find the missing VP, thereby causing the Empty Category Principle's invocation'' (Johnson 2001:445).

An approach along these lines has been proposed by Lobeck (1999). She argues that VPE is licensed by a tensed auxiliary in T (as, for instance, also proposed in Lobeck 1995). Under her analysis, the VPE site is a null proform *pro*, which is minimal and maximal at the same time (following Chomsky 1995:402–403); and this null VP *pro* must move to Spec,TP, thus being assimilated to clitics in French under her approach (Lobeck 1999:117). Cliticization accounts of ellipsis are also found in Lightfoot 2006:111–112 and Kim 2006. We do not go into the details of the different implementations here.

Under one interpretation of the cliticization view of VPE, namely, if clitics leave traces, the ellipsis site is a copy/trace, and the commonality with VP-movement is expected. Differently from Johnson's (2001) proposal, however, the cliticization accounts do not lead to the prediction that VPE should be subject to the same distributional restrictions as VPT; for one thing, the latter targets the left periphery of the clause, while the former does not. We also observe that the contexts listed above that are incompatible with VPT remain fully compatible with cliticization in Romance. To show this, we provide some examples from French. First, (46) illustrates cliticization in *wh*-movement contexts: (46a) illustrates interrogatives and (46b) relatives. Cliticization is also compatible with clefting, as in (46c), and with clitic left-dislocation, as in (46d).

(46) a. Je ne sais pas qui l' a dit.
I NE know not who CL has said
'I don't know who told me that.'
b. Je ne connais pas l' étudiant qui l' a dit.
I NE know not the student who CL has said
'I don't know the student who told me that.'
c. C' est cet étudiant qui l' a dit.
it is this student who CL has said
'It's this student who told me that.'

d. À Jean, je ne le lui conseille pas.
to Jean I NE CL CL advise not
'To Jean, I would not recommend it.'

Moreover, French clitic placement is not a main clause phenomenon, so it is freely available in adverbial clauses and in the complement of factive verbs.

(47) a. Quand il l' a dit, j' étais furieuse.
when he CL has said I was furious.FEM.SG
'When he told me that, I was furious.'
b. Je regrette que je ne l' aie pas vu.
I regret that I NE CL have.SUBJ not seen
'I regret that I didn't see it.'

Similarly, *yes*/*no* questions and imperatives pose no problem for cliticization.

(48) a. Le veux- tu?
CL want you
'Do you want it?'
b. Dis- le!
say.IMP CL
'Tell me!'

Finally, cliticization is unproblematic in the second conjunct of coordinated clauses in which the subject has been deleted: (49a) illustrates subject ellipsis in French, while (49b) shows that cliticization remains available in that context. Cliticization is also compatible with diary-style null subjects in French, as (49c) shows.

(49) a. Le premier ministre a interrogé les instituteurs en grève hier
the prime minister has interviewed the teachers on strike yesterday
et ____ rencontrera les professeurs la semaine prochaine.
and ____ will.meet the professors the week next
'The prime minister interviewed the striking teachers yesterday and will meet the university professors next week.'
b. Le premier ministre a interrogé les instituteurs en grève hier
the prime minister has interviewed the teachers on strike yesterday
et ____ les rencontrera aussi la semaine prochaine.
and ____ CL will.meet also the week next
'The prime minister interviewed the striking teachers yesterday and will also meet them next week.'
c. ____ Me dit que l' architecte Perret est désireux de passer un moment avec moi.
____ CL says that the architect Perret is desirous of spend a moment with me
'Says that the architect Perret wishes to spend a moment with me.'
(Paul Léautaud, *Journal particulier*, p. 44: 6.2.133; from Haegeman 1996:136, (5b)).

The property that crucially distinguishes cliticization (in French) from argument fronting and VPT in English is that cliticization does not target the clausal left periphery and hence can freely apply regardless of the properties of the CP layer.

One obvious disadvantage of the cliticization approach, however, is that it takes the VPE site to be a null clitic, that is, a proform.[22] Because extraction from a VPE site is possible in English (for discussion, see Schuyler 2002, for instance), VPE has been analyzed as involving deletion of a full-fledged syntactic verb phrase (see Johnson 2001, Merchant 2001, 2008, Aelbrecht 2010a). A proform analysis such as Lobeck's (1995, 1999) will not easily capture the extraction facts.[23]

4.2 VP-Movement to a Low Periphery?

In this section, pursuing one particular approach to the syntax of cliticization, we speculate about a different take on the cliticization analysis of VPE. In some analyses, cliticization is taken to be derived in two steps: first the constituent that is to be cliticized moves leftward as a maximal projection (presumably a DP) to a specifier position in a low functional domain (Spec,AgrP or Spec,PartP), and then the head of the moved XP (presumably the D head) undergoes head movement to the Infl position.

This two-step derivation of cliticization was invoked to account for (among other things) the agreement between the past participle and the object clitic in French (Kayne 1989, Rizzi 2000, Belletti 2001b; for problems with this approach, see Rocquet 2010). Consider (50): when the complement of *écrit* 'written' is postverbal (50a,c), the participle has the nonagreeing form. When the object is cliticized (50b,d), the participle agrees with the clitic. The clitic on the finite auxiliary *ai* 'have' triggers agreement on the participle: *écrite* 'written' is feminine singular,

[22] This was already the position of Lobeck (1995), who takes the ellipsis site to be a null pronominal.

[23] It might be tempting to try to assimilate the derivation of VPE to that of clitic left-dislocation in French (see (ia)), which implicates a constituent in the left periphery. However, this is not the right direction to take. Though French clitic left-dislocation does have a wider distribution than argument fronting in English (Haegeman 2006, 2010a,b) and is also available, for instance, in imperatives (see (ib)), it is degraded with subject ellipsis in abbreviated registers (see (ic)) and incompatible with subject ellipsis in coordination (see (id)).

(i) a. Ce livre- ci, je ne le veux pas.
this book here I NE CL want not
'This book, I don't want.'

b. Ce livre- ci, ne l' achète pas.
this book here NE CL buy.IMP not
'Don't buy this book here!'

c. ?Rencontre avec mes parents. Ma mère, l' ai trouvée triste.
meeting with my parents my mother CL have found.FEM.SG sad.FEM.SG
'Meeting with my parents. Found my mother sad.'

d. *Le premier ministre a interrogé les instituteurs en grève hier et les professeurs, ____ les rencontrera la semaine prochaine.
the prime minister has interviewed the teachers on strike yesterday and the professors ____ CL will.meet the week next
'The prime minister interviewed the striking teachers yesterday and will meet the university professors next week.'

whereas *écrites* is feminine plural. The agreement is related to the movement of the clitic: in (50a,c), in which there is no movement, the participle appears as the unmarked form *écrit* despite having a feminine complement. A schematic derivation is given in (50e): the clitic on the finite auxiliary in (50b,d) originates as a DP complement in the VP; it enters into a specifier-head relation with the participial head hosting the participle; and this specifier-head relation triggers the agreement between clitic and participle.

(50) a. J' ai écrit la lettre.
I have written the.FEM.SG letter
b. Je l' ai écrite.
I CL have written.FEM.SG
'I have written it.'
c. J' ai écrit les lettres.
I have written the.PL letters
d. Je les ai écrites.
I CL have written.FEM.PL
'I have written them.'
e. $[_{PartP}\ [_{DP}$ les$]\ [_{part}$ écrit es$]\ t_{DP}]$

In a slight adaptation of these approaches to cliticization, one might reinterpret the proposed intermediate landing site of the first step of the movement in (50e) as the specifier of a TopP in a lower vP periphery. Movement to the low periphery has been proposed by, among others, Jayaseelan (2000, 2001), López and Winkler (2000), Belletti (2001a, 2004, 2009), Butler (2004), Konietzko and Winkler (2010), and Molnár and Winkler (2010).

The movement analysis of VPE could then be reconciled with the intuition that VPE is similar to cliticization if one were to assume that VPE shares with cliticization the first step of the movement, illustrated in (50e). One might reinterpret this approach to mean that VPE is derived via VP-movement to a discourse-related vP periphery, rather than to the clausal left periphery. This proposal would exploit movement to the low periphery along the lines of Johnson's (1996, 2009) proposal for gapping. If the latter movement targets a lower TopP, the derivation would syntactically encode the discourse-givenness of the deleted VP, along the lines of recent cartographic work (Belletti 2001a, 2004, 2009). One might thus propose that VPE *is* VPT, in agreement with Johnson (2001), but that contrary to his proposal, the relevant topicalization does not target the ''high'' CP periphery—rather, it targets a ''low'' vP-related periphery.[24]

VP-movement to the low periphery has been proposed for English in different contexts. In an antisymmetric perspective (Kayne 1994, Cinque 1999), for instance, it has been proposed that

[24] Depending on the precise articulation of the functional domains of the clause, which are not fully explicit in the paper, Lobeck's (1999) proposal that VPE involves movement to Spec,TP might also be reinterpreted in terms of such VP-movement to the middle field.

the variation in position of the adjunct *recently* and the VP in (51) is derived through leftward VP-movement (see also, e.g., Cinque 1999, 2004, Schweikert 2005, Belletti and Rizzi, to appear).

(51) a. John has recently [joined the department].
b. John has [joined the department] recently [~~joined the department~~].

Adopting and adapting Johnson's (2001) approach, VPE could be analyzed as involving (low) VP-movement, followed by deletion (as in (51c)). See also Kayne 2005:296 for similar suggestions.

(51) c. John has [~~joined the department~~] recently [~~joined the department~~].

The kind of VP-movement to the lower periphery illustrated in English (51b) does not interfere with *wh*-movement (52a) and is generally available in all clause types (52b–e).

(52) a. The student who finished this text recently . . .
b. The fact that he finished this text only recently . . .
c. When he contacted me more recently, . . .
d. That he contacted me recently was quite a surprise.
e. I believe (that) he contacted her recently.

However, for this approach to work, the contexts in which low VP-movement is licit should be the same as those for VPT to the left periphery. At first sight, this is not the case, and the parallelisms captured by Johnson's account between VPT and VPE are lost. Recall from (2) and (4) that VPE and VPT are illicit in the absence of an auxiliary. As shown in (53b), VP-movement across an adjunct is fine without an auxiliary. This means that if ''middle field'' VP-movement licensed VPE, it would be a necessary but not sufficient licensing condition.

(53) a. John recently [joined the department].
b. John [joined the department] recently [~~joined the department~~].

The same conclusion can be drawn on the basis of the data in (54): while middle field VP-movement would be required to derive the sentence-final position of the adjuncts in the infinitival subject clauses, VPE in the infinitival subject clauses would still not be licensed.[25]

(54) a. [To brush too frequently] can cause gum damage.
b. [To eat rapidly] is dangerous.

At this point, it is not clear to us that rephrasing Johnson's proposal in terms of the low VP-movement analysis will be able to rescue the movement account of VPE in a straightforward way.[26] While the locality problems are solved, the problems with licensing reemerge. We intend to explore this avenue in future work.

[25] This point was brought to our attention by an anonymous reviewer.

[26] Combining Johnson's proposal with the suggestion we make here, Funakoshi (2012) develops an account of ellipsis involving VP-fronting either to Spec,CP or to Spec,vP. See Funakoshi's article for his solution to the specific problems of implementation that we raise.

4.3 VP-Ellipsis and Agree

An alternative account for capturing the similarity between VPE and VPT would be to dispense with a movement account of VPE as such and return to the intuition initially captured by the Empty Category Principle as implemented in Rizzi 1986. An ECP account for ellipsis, and in particular for VPE, was developed by Lobeck (1995)[27] and by Zagona (1988a,b). According to Rizzi (1986), the same syntactic constraints apply to all null categories, movement traces, *pro*, and ellipsis sites alike. Indeed, assuming that (a) traces are lower copies that are not spelled out, and (b) VPE is analyzed as deletion of the VP, the unpronounced lower copy of a moved VP is in fact a VPE site. Such an account turns Johnson's (2001) proposal around: instead of regarding ellipsis sites as traces of movement, it considers movement traces to be ellipsis sites. This hypothesis has recently been put forward by Aelbrecht (2010b), who argues that VPT and VPE are syntactically licensed by the same mechanism.

Inspired by Merchant's (2001) analysis of ellipsis according to which it is triggered by the presence of an [E] feature, Aelbrecht (2010a) develops an account in which VPE is licensed by an Agree relation between the [E] feature on an ellipsis-licensing head and the head selecting the ellipsis site as its complement.[28] To express the commonality between VPE and VPT, Aelbrecht (2010b) proposes that VPT is licensed by this Agree relation as well. The underlying intuition is that the same Agree relation triggers nonpronunciation of either the original VP—in the case of ellipsis—or the lower copy of a moved VP—in the case of VPT. Only in environments where the Agree relation can be established (i.e., where there is a licensing auxiliary or infinitival *to*) can ellipsis or topicalization take place. The account thus captures the similarities between VPE and VPT mentioned by Johnson (2001). The differences between the two phenomena are due to the fact that, unlike under Johnson's (2001) approach, VPE does not involve movement. Consequently, VPE is not restricted in the same way as VPT, which does involve movement to the left periphery. For instance, intervention effects that are relevant for the movement component of VPT will not be relevant for VPE. For the complete analysis, see Aelbrecht 2010b.

5 Conclusion: VP-Ellipsis Is Not VP-Topicalization

The goal of our remark was to evaluate the VPT derivation of VPE as proposed by Johnson (2001). We have shown that although it has certain merits in capturing the similarities between VPE and VPT, an analysis of VPE in terms of VPT raises several problems. A central consideration in any account in terms of movement must be the observation that while VPT targets the left periphery and as a result is subjected to various constraints on movement to the left periphery, VPE is not so restricted. Any syntactic derivation of VPE must account for this asymmetry.

[27] As mentioned, Lobeck (1995) assumes that the deletion site is a null proform, but since the ECP applies to both traces and proforms, her approach could be reinterpreted in terms of the deletion account sketched here.

[28] The Agree relation between heads could be seen as replacing the head government relation.

References

Aelbrecht, Lobke. 2010a. *The syntactic licensing of ellipsis.* Amsterdam: John Benjamins.

Aelbrecht, Lobke. 2010b. VP ellipsis and VP fronting: The common core. Paper presented at the Colloquium on Generative Grammar, Università di Roma, April.

Akmajian, Adrian, Susan Steele, and Thomas Wasow. 1979. The category AUX in Universal Grammar. *Linguistic Inquiry* 10:1–64.

Alrenga, Peter. 2005. A sentential subject asymmetry in English and its implications for complement selection. *Syntax* 8:175–207.

Authier, J.-Marc. 2011. A movement analysis of French modal ellipsis. *Probus* 23:175–216.

Baker, C. L. 1971. Stress level and auxiliary behavior in English. *Linguistic Inquiry* 2:167–181.

Belletti, Adriana. 2001a. ''Inversion'' as focalization. In *Subject inversion in Romance and the theory of Universal Grammar*, ed. by Aafke Hulk and Jean-Yves Pollock, 60–90. Oxford: Oxford University Press.

Belletti, Adriana. 2001b. (Past) participle agreement. Ms., University of Siena.

Belletti, Adriana. 2004. Aspects of the low IP area. In *The structure of CP and IP*, ed. by Luigi Rizzi, 16–51. Oxford: Oxford University Press.

Belletti, Adriana. 2009. *Structures and strategies.* New York: Routledge.

Belletti, Adriana, and Luigi Rizzi. To appear. Moving verbal chunks. In *Functional heads*, ed. by Laura Brugè, Anna Cardinaletti, Giuliana Giusti, Nicola Munaro, and Cecilia Poletto. Oxford: Oxford University Press.

Bošković, Željko. 2011. Rescue by PF deletion, traces as (non)interveners, and the *that*-trace effect. *Linguistic Inquiry* 42:1–44.

Bresnan, Joan. 1976. On the form and interpretation of syntactic transformations. *Linguistic Inquiry* 7:3–40.

Butler, Jonny. 2004. Phase structure, phrase structure and quantification. Doctoral dissertation, University of York.

Chomsky, Noam. 1995. *The Minimalist Program.* Cambridge, MA: MIT Press.

Cinque, Guglielmo. 1999. *Adverbs and functional heads.* Oxford: Oxford University Press.

Cinque, Guglielmo. 2004. Issues in adverbial syntax. *Lingua* 114:683–710.

Davies, William, and Stanley Dubinsky. 1998. Sentential subjects as complex NPs: New reasons for an old account of subjacency. In *CLS 34-1: Papers from the Main Session*, ed. by M. Catherine Gruber, Derrick Higgins, Kenneth S. Olson, and Tamra Wysocki, 83–94. Chicago: University of Chicago, Chicago Linguistic Society.

Davies, William, and Stanley Dubinsky. 2000. Why sentential subjects do so exist. Paper presented at the Southeastern Conference on Linguistics (SECOL), University of Mississippi, April.

Dikken, Marcel den. 2006. *Either* float and the syntax of co-ordination. *Natural Language and Linguistic Theory* 24:689–749.

Emonds, Joseph. 1970. Root and structure-preserving transformations. Doctoral dissertation, MIT, Cambridge, MA.

Emonds, Joseph. 1976. *A transformational approach to English syntax.* New York: Academic Press.

Emonds, Joseph. 2004. Unspecified categories as the key to root constructions. In *Peripheries*, ed. by David Adger, Cécile De Cat, and George Tsoulas, 75–121. Dordrecht: Kluwer.

Fiengo, Robert, and Robert May. 1994. *Indices and identity.* Cambridge, MA: MIT Press.

Funakoshi, Kenshi. 2012. On headless XP-movement/ellipsis. *Linguistic Inquiry* 43:519–562.

Haegeman, Liliane. 1996. Verb second, the split CP and null subjects in early Dutch finite clauses. *Geneva Generative Papers*. Available at http://ling.auf.net/lingBuzz/001059.

Haegeman, Liliane. 1997. Register variation, truncation and subject omission in English and in French. *English Language and Linguistics* 1:233–270.

Haegeman, Liliane. 1999. Adult null subjects in non *pro*-drop languages. In *The acquisition of syntax*, ed. by Marc-Ariel Friedemann and Luigi Rizzi, 129–169. London: Addison, Wesley and Longman.

Haegeman, Liliane. 2002. Non-overt subject pronouns in written English. In *Language, context and cognition: Papers in honour of Wolf Dietrich Bald's 60th birthday*, ed. by Sybil Scholz, Monika Klages, Evelyn Hantson, and Ute Römer, 135–149. Munich: Langenscheidt, Longman.

Haegeman, Liliane. 2006. Argument fronting in English, Romance CLLD and the left periphery. In *Cross-linguistic research in syntax and semantics: Negation, tense and clausal architecture*, ed. by Raffaella Zanuttini, Héctor Campos, Elena Herburger, and Paul H. Portner, 27–52. Washington, DC: Georgetown University Press.

Haegeman, Liliane. 2008. Subject omission in present-day written English: On the theoretical relevance of peripheral data. *Rivista di Grammatica Generativa* 32:91–124.

Haegeman, Liliane. 2010a. The internal syntax of adverbial clauses. In *Exploring the left periphery*, ed. by Kleanthes Grohmann and Ianthi Tsimpli, special issue, *Lingua* 120(3):628–648.

Haegeman, Liliane. 2010b. The movement derivation of conditional clauses. *Linguistic Inquiry* 41:595–621.

Haegeman, Liliane, and Tabea Ihsane. 1999. Subject ellipsis in embedded clauses in English. *Journal of English Language and Linguistics* 3:117–145.

Haegeman, Liliane, and Tabea Ihsane. 2002. Adult null subjects in the non-pro drop languages: Two diary dialects. *Language Acquisition* 9:329–346.

Haegeman, Liliane, and Barbara Ürögdi. 2010a. Referential CPs: An operator movement account. *Theoretical Linguistics* 36:111–152.

Haegeman, Liliane, and Barbara Ürögdi. 2010b. Operator movement, referentiality and intervention. *Theoretical Linguistics* 36:233–246.

Heycock, Caroline. 2006. Embedded root phenomena. In *The Blackwell companion to syntax*, vol. 2, ed. by Martin Everaert and Henk van Riemsdijk, 174–209. Oxford: Blackwell.

Hooper, Joan, and Sandra Thompson. 1973. On the applicability of root transformations. *Linguistic Inquiry* 4:465–497.

Huang, C.-T. James. 1984. On the distribution and reference of empty pronouns. *Linguistic Inquiry* 15: 531–574.

Jayaseelan, K. A. 2000. A Focus Phrase above vP. In *Proceedings of the Nanzan GLOW*, ed. by Yasuaki Abe, Hiroshi Aoyagi, Masatake Arimoto, Keiko Murasugi, Mamoru Saito, and Tatsuya Suzuki, 195–212. Nagoya: Nanzan University.

Jayaseelan, K. A. 2001. IP-internal topic and focus phrases. *Studia Linguistica* 55:39–75.

Jensen, Britta. 2007. In favour of a truncated imperative clause structure: Evidence from adverbs. *Working Papers in Scandinavian Syntax* 80:163–185.

Johnson, Kyle. 1996. In search of the English middle field. Ms., University of Massachusetts, Amherst.

Johnson, Kyle. 2001. What VP-ellipsis can do, and what it can't, but not why. In *The handbook of contemporary syntactic theory*, ed. by Mark Baltin and Chris Collins, 439–479. Oxford: Blackwell.

Johnson, Kyle. 2009. Gapping is not VP-ellipsis. *Linguistic Inquiry* 40:289–328.

Kayne, Richard. 1989. Facets of Romance past participle agreement. In *Dialect variation in the theory of grammar*, ed. by Paola Benincà, 85–104. Dordrecht: Foris.

Kayne, Richard. 1994. *The antisymmetry of syntax.* Cambridge, MA: MIT Press.

Kayne, Richard. 2005. On parameters and on principles of pronunciation. In *Organizing grammar: Linguistic studies in honor of Henk van Riemsdijk*, ed. by Hans Broekhuis, Norbert Corver, Riny Huybregts, Ursula Kleinhenz, and Jan Koster, 289–299. Berlin: Mouton de Gruyter.

Kim, Jong-Bok. 2003. Negation, VP ellipsis and VP fronting in English. A construction HPSG analysis. In *The Korean Generative Grammar Circle*, 271–282. Seoul: Hankwuk.

Kim, Young-Sun. 2006. Deletion as cliticization and stress in English VP-ellipsis construction. *Studies in Generative Grammar* 16:535–553.

Konietzko, Andreas, and Susanne Winkler. 2010. Contrastive ellipsis: Mapping between syntax and information structure. *Lingua* 120:1436–1457.
Larson, Richard. 1985. On the syntax of disjunction scope. *Natural Language and Linguistic Theory* 3: 217–264.
Lightfoot, David. 2006. Minimizing government: Deletion as cliticization. *The Linguistic Review* 23:97–126.
Lobeck, Anne. 1995. *Ellipsis: Functional heads, licensing, and identification*. Oxford: Oxford University Press.
Lobeck, Anne. 1999. VP ellipsis and the Minimalist Program: Speculations and proposals. In *Fragments: Studies in ellipsis, conjunction, and gapping*, ed. by Shalom Lappin and Elabbas Benmamoun, 98–123. New York: Oxford University Press.
López, Luis, and Susanne Winkler. 2000. Focus and topic in VP-anaphora constructions. *Linguistics* 38:623–664.
Merchant, Jason. 2001. *The syntax of silence: Sluicing, islands, and the theory of ellipsis.* Oxford: Oxford University Press.
Merchant, Jason. 2008. An asymmetry in voice mismatches in VP-ellipsis and pseudogapping. *Linguistic Inquiry* 39:169–179.
Molnár, Valéria, and Susanne Winkler. 2010. Edges and gaps: Contrast at the interfaces. *Lingua* 120: 1392–1415.
Nakajima, Heizo. 1996. Complementizer selection. *The Linguistic Review* 13:143–164.
Plath, Sylvia. 1982. *The journals of Sylvia Plath.* Ed. by Ted Hughes and Frances McCollough. New York: Ballantine.
Postma, Gertjan, and Wim van der Wurff. 2007. How to say *no* and *don't*. In *Imperative clauses in generative grammar*, ed. by Wim van der Wurff, 205–249. Amsterdam: John Benjamins.
Raposo, Eduardo. 1986. On the null object in European Portuguese. In *Studies in Romance linguistics*, ed. by Osvaldo Jaeggli and Carmen Silva-Corvalan, 373–390. Dordrecht: Foris.
Rizzi, Luigi. 1986. Null objects in Italian and the theory of *pro*. *Linguistic Inquiry* 17:501–557.
Rizzi, Luigi. 2000. Reconstruction, weak island sensitivity, and agreement. Ms., University of Siena.
Rocquet, Amélie. 2010. Past-participle agreement in French: A matter of phases and case-accessibility. Ms., Ghent University.
Sag, Ivan. 1976. Deletion and Logical Form. Doctoral dissertation, MIT, Cambridge, MA.
Saito, Mamoru, and Keiko Murasugi. 1990. N′ deletion in Japanese: A preliminary study. In *Japanese/Korean Linguistics 1*, ed. by Hajime Hoji, 285–301. Stanford, CA: CSLI Publications.
Saito, Mamoru, and Keiko Murasugi. 1999. Subject predication within IP and DP. In *Beyond principles and parameters*, ed. by Kyle Johnson and Ian Roberts, 167–188. Dordrecht: Kluwer.
Schuyler, Tamara. 2002. *Wh*-movement out of the site of VP ellipsis. Master's thesis, University of California, Santa Cruz.
Schweikert, Walter. 2005. *The order of prepositional phrases in the structure of the clause*. Amsterdam: John Benjamins.
Sobin, Nicholas. 2003. Negative inversion as nonmovement. *Syntax* 6:183–222.
Szczegielniak, Adam. 2004. VP ellipsis and topicalization. In *NELS 35*, ed. by Leah Bateman and Cherlon Ussery, 603–614. Amherst: University of Massachusetts, Graduate Linguistic Student Association.
Thrasher, Randolph. 1977. *One way to say more by saying less: A study of so-called subjectless sentences*. Tokyo: Eihosha.
Velde, John R. te. 2005. *Deriving coordinate symmetries*. Amsterdam: John Benjamins.
Ward, Gregory. 1988. *The semantics and pragmatics of preposing*. New York: Garland.
Ward, Gregory. 1990. The discourse functions of VP preposing. *Language* 66:742–763.
Wilder, Chris. 1994. Some properties of ellipsis in coordination. *Geneva Generative Papers* 2:23–61.
Woolf, Virginia. 1985. *The diary of Virginia Woolf*. Vol. 5: *1936–1941*. Ed. by Anne Olivier Bell, assisted by Andrew McNeillie. Middlesex: Penguin Books.

Zagona, Karen. 1988a. Proper government of antecedentless VPs in English and Spanish. *Natural Language and Linguistic Theory* 6:95–128.
Zagona, Karen. 1988b. *Verb Phrase syntax: A parametric study of English and Spanish*. Dordrecht: Kluwer.

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Quantificational Binding Does Not Require C-Command

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Some version of the following claim is almost universally assumed: a quantifier must c-command any pronoun that it binds. Yet as I show, the evidence motivating this claim is not particularly strong. In addition, I gather here a wide variety of systematic counterexamples, some well-known, others new. I conclude that c-command is not relevant for quantificational binding in English (nor is any refinement or extension of c-command).

Keywords: c-command, binding, quantification, scope, Reinhart's Generalization

1 Introduction

At least since Reinhart 1983, the standard wisdom has been that a quantificational expression must c-command any pronoun that it binds.

(1) Everyone$_i$ loves his$_i$ mother.

For instance, on the indicated interpretation, the quantificational expression *everyone* in (1) both binds and c-commands the pronoun *his*. Usually there is an additional requirement that a quantificational expression can only bind from an A-position. Since the subject position in (1) is an A-position, the binding in (1) is correctly predicted to be grammatical.

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I review the evidence in favor of the c-command requirement and suggest that many examples argue not for a c-command requirement, but for a scope requirement.

(2) *Scope requirement* (following Safir 2004b:chap. 2)
A quantifier must take scope over any pronoun that it binds.

We will see that the scope requirement is by no means a complete characterization of the conditions under which a quantifier can bind a pronoun. However, it certainly is a necessary condition for quantificational binding.

Once the scope requirement is in place, the evidence in favor of a c-command requirement is not particularly strong. I will present a number of systematic counterexamples to the c-command requirement, including not only well-known cases such as binding from possessors, inverse linking, binding out of prepositional phrases, binding within double object constructions, binding into adjuncts, connectivity effects, donkey anaphora, and reconstruction, but also some less well-known cases, including binding out of adjuncts and binding out of tensed clauses. Given this evidence, I will suggest that c-command is not a requirement on quantificational binding, at least not in English.

Although as of this writing the standard wisdom remains firmly in place, the claim that quantificational binding does not obey a c-command constraint has a number of predecessors. There is a minority tradition suggesting that c-command is not adequate for characterizing quantificational binding, both pre–Reinhart 1983 (including Postal 1971, Wasow 1972, Jacobson 1972, Higginbotham 1980, 1983) and post–Reinhart 1983 (including Gawron and Peters 1990:162, Bresnan 1994, 1998, Safir 2004a,b, Barker 2005, Jäger 2005, Shan and Barker 2006, Barker and Shan 2008, Barker 2009).

There are also a few works that remain agnostic about the c-command constraint, notably Szabolcsi 2010:18. Likewise, in the psycholinguistics literature, Carminati, Frazier, and Rayner (2002) were unable to observe any processing cost when quantifiers bind pronouns they do not c-command. Bresnan (1994, 1998) surveys weak crossover in a variety of languages and concludes quantificational binding is sensitive both to hierarchical structure and to linear order. Jäger (2005) (see below, section 5.2) argues against c-command and in favor of a linear order constraint, specifically for English.

Safir (2004a,b) develops a particularly thorough and probing reconsideration of the role of c-command in anaphora. He argues that there is no positive requirement that a quantifier must c-command its pronoun, only a negative requirement that the pronoun must not c-command the quantifier. Although Safir discusses some quantificational examples, he mainly discusses ellipsis, *wh*-constructions, and other nonquantificational examples, and he does not present the full range of counterexamples given here to the c-command restriction. This remark, then, can be viewed as an in-depth case study compatible with Safir's larger program.

In much of my own work, including Shan and Barker 2006, Barker and Shan 2008, and Barker 2009, to appear, quantificational binding must obey an evaluation order constraint, which says that a quantifier must be evaluated (in a specific technical sense) before any pronoun that it binds. Descriptively, evaluation order closely approximates reconstructed linear order (as dis-

cussed below in section 5): after reconstruction, a quantifier must precede any pronoun that it binds.

2 The Standard Wisdom and Its Origin

A node A c-commands a node B iff

> neither A nor B dominates the other, and
> every branching node dominating A also dominates B.

There are many variations on c-command that have been argued to be relevant for some aspect of the description of natural language, including Langacker's (1969) command (minimal clause), Reinhart's (1983) segment-sensitive refinement of command (discussed below), and Chomsky's (1986) max-command (first maximal projection), to name just three. (See Barker and Pullum 1990, Kayne 1994, and Frank and Vijay-Shanker 2001 for theoretical discussions of command relations.) I will discuss some variations on c-command in section 3. Although each of these variations accounts for different patterns of the data given below, none of them provides a complete solution.

If my main claim is correct (that c-command is irrelevant for quantificational binding), it is somewhat surprising that the c-command requirement should have been so widely and unquestioningly accepted for so long. It is therefore worthwhile to review some of the original arguments in favor of a c-command requirement. I will suggest that most of this evidence supports only a scope requirement, not a c-command requirement. Then part of the explanation for the robustness of the c-command belief follows from the fact that scope and c-command overlap in a large number of cases.

One key factor in the acceptance of a c-command requirement for quantificational binding is that Reinhart (1983:14) provides compelling arguments that c-command is relevant for what she calls definite anaphora, by which she means anaphora in which a pronoun takes a name or a definite description as its antecedent.

(3) She_i *denied that Rosa*$_{*i}$ *met the shah.*

(4) The man who traveled *with* her_i denied that Rosa_i met the shah.

In (3), the pronoun c-commands the italicized material, including the name *Rosa*, and it is not possible to interpret the pronoun as referring to the same person as the name. In contrast, in (4), the pronoun c-commands only the preposition *with.* It does not c-command the name, and coreference is possible. Reinhart (1983:43) therefore proposed the following generalization:

(5) *Reinhart's constraint on definite anaphora*
A given [DP, e.g., *she* in (3)] must be interpreted as non-coreferential with any distinct non-pronoun [e.g., *Rosa*] in its c-command domain.

In the years since Reinhart 1983, the work of this constraint has been divided up into various other principles (on some theories, Principles B and C; see Safir 2004a or Büring 2005 for

comprehensive discussions). What is important here is that the evidence that supports this claim makes it plausible that c-command is relevant for at least one constraint on anaphora.

Reinhart (1983:34–35) goes on to explicitly argue that linear order is not relevant for definite anaphora.

(6) In her$_i$ bed, Zelda$_i$ spent her sweetest hours.

(7) In Zelda$_i$'s bed, she$_{*i}$ spent her sweetest hours.

These examples suggest that having the antecedent linearly precede a pronoun is neither necessary nor sufficient for definite anaphora. If so, Reinhart argues, then a purely hierarchical constraint such as the c-command constraint is the correct way to characterize at least some types of anaphora.

What about quantificational binding? As Reinhart (1983:113) recognizes, quantificational binding behaves differently than definite anaphora.

(8) The secretary who works for him$_i$ despises Siegfried$_i$.

(9) The secretary who works for him$_{*i}$ despises each$_i$ of the managers.

This minimal pair suggests that quantificational binding is more restrictive than definite anaphora. Reinhart (1983:122) proposes that quantificational binding obeys the following additional constraint (my paraphrase):

(10) A quantified DP must c-command any pronoun that it binds.

At least since the early 1980s, this assumption has been so much taken for granted that most authors do not even state it explicitly. To take examples at random from the literature: ''An element α binds an element β if and only if the two are coindexed and α c-commands β'' (Cormack 1998:20); ''Variable binding is only possible if the antecedent c-commands the pronoun'' (Koornneef, Wijnen, and Reuland 2006:66); ''[T]here can be no binding relation between *every student* and *his*, since the quantifier . . . doesn't c-command the pronoun'' (Huitink 2008: 193); and so on.

In fact, it is easy to get the impression that quantificational binding requires c-command as a matter of definition, that it quite literally could not be otherwise. One reason it may be tempting to think so is that for many logical languages, such as standard predicate logic, binding does require c-command as a matter of definition. This is because in predicate logic, a quantifier takes scope over exactly the proposition it is adjoined to, and there are no syntactic operations capable of separating a quantifier from its scope domain. For instance, the universal in $(\forall x.P(x)) \wedge P(x)$ c-commands the first occurrence of x but not the second, and therefore binds the first but not the second.

But in natural languages, the scope of a quantificational expression can often be quite different from its (surface) c-command domain.

(11) Someone loves everyone. $\forall x \exists y.\textbf{loves}\ x\ y$

For instance, in (11), *everyone* can take scope over *someone*, even though it does not c-command the subject position. Since it is logically possible for quantifiers to bind any pronoun they take

scope over, it follows that the c-command requirement is an empirical claim, and not a matter of definition, at least when we are considering scope and binding in a natural language.

One particularly prominent place where the assumption that quantificational binding requires c-command is carefully spelled out is in this definition in Heim and Kratzer 1998:261:

(12) A DP A semantically binds a non-null DP B iff
A and B are co-indexed
A c-commands B
A is in an argument position (an A-position)
Minimality holds (there is no other node C that semantically binds B and that is closer to B, i.e., is c-commanded by A).

The requirement that the binder be in argument position prevents a quantificational expression from binding a pronoun after the quantifier has been raised to an Ā- (nonargument) position via Quantifier Raising. Roughly speaking, the A-position requirement ensures that the c-command requirement must hold at the level of surface syntax, and not only at LF.

Büring (2004:24, 2005:91) also carefully makes explicit the c-command assumption, which he calls Reinhart's Generalization.

(13) *Reinhart's Generalization*
Pronoun binding can only take place from a c-commanding A-position.

As near as I can tell, the assumption that Reinhart's Generalization holds has been adopted (with only a few exceptions mentioned above) throughout the fields of syntax and semantics.

Reinhart (1983) did not provide detailed arguments in favor of this assumption, and as far as I know, no one else has either. We can, however, adapt Reinhart's evidence given in (3) and (4) relating to definite anaphora by replacing the definite antecedent with a quantificational expression. Although these data may initially appear to support the c-command requirement, on closer examination they support only a scope requirement.

(14) Each_{i} woman *denied that she$_i$ met the shah*.

(15) The man who traveled *with* each_{i} woman denied that $\text{she}_{*\text{i}}$ met the shah.

In (14), the quantificational expression c-commands the pronoun, and a bound reading is possible. In (15), the quantificational expression does not c-command the pronoun, and a bound reading is not possible. These data, then, are at least consistent with Reinhart's Generalization.

However, this contrast is not strong evidence in favor of the generalization. The reason is that there is a separate, weaker constraint that explains the contrast equally well, namely, the scope requirement: that a quantificational expression must take scope over any pronoun that it binds. The quantificational expression in (14) takes scope over the pronoun and can also bind it; but the quantificational expression in (15) cannot take scope over the pronoun.

In order to demonstrate scope possibilities, I will rely here and below on the following diagnostic:

(16) *Operational test for scope*
A quantifier can take scope over a pronoun only if it can take scope over an existential inserted in the place of the pronoun.

Like all transderivational tests, this one should be applied with caution (particularly when polarity-sensitive items are involved), but it can provide useful confirmation for intuitions about possible truth conditions. We can apply this test to (14) and (15) by constructing the following variants in which an existential replaces the pronoun in question:

(17) Each woman denied that someone met the shah.

(18) The man who traveled with each woman denied that someone met the shah.

In (17), there is a reading on which *each* takes scope over *someone*, so that what each woman denies is that anyone met the shah. This supports the claim that *each* can take scope over the pronoun in (14).

However, in (18), there is no reading on which *each* takes scope over *someone.* That is, there is no interpretation on which the man in question makes a potentially different denial corresponding to each woman. Since *each* cannot take scope over the matrix verb phrase, it certainly cannot bind a pronoun in the verb phrase: it simply isn't possible to state the truth conditions of a bound reading unless the universal has scope over the variable contributed by the pronoun. (However, it is possible for a variable to appear to covary with a universal through some semantic mechanism other than direct binding; see section 4.2 for a discussion of donkey anaphora.)

Whenever it is possible to demonstrate that the quantifier in question cannot take scope over the pronoun position, we will not have any compelling evidence that c-command is in play, since the scope requirement alone is sufficient to explain the facts. The only evidence that would argue for a c-command constraint, then, involves situations in which the quantifier can take scope over the pronoun yet cannot bind it.

There is a name for such configurations: crossover.

(19) Someone loves everyone. *everyone* > *someone* possible

(20) He_{*i} loves everyone_i. strong crossover

(21) His_{*i} mother loves everyone_i. weak crossover

In (19), *everyone* certainly can take scope over the subject position, since *Someone loves everyone* has a reading on which the universal takes wide scope over the existential. Therefore, the scope requirement is met. Yet (20) shows that *everyone* cannot bind a pronoun in subject position. Nor can it bind a pronoun embedded within the subject position, as illustrated in (21). These crossover situations are cases in which the scope requirement alone does not explain the lack of bindability, but a c-command requirement correctly predicts no binding.

Thus, crossover is the only evidence I am aware of that supports a c-command restriction over and above the scope requirement. Certainly any approach that rejects the c-command require-

ment (e.g., Safir 2004b, Jäger 2005, Shan and Barker 2006) must offer an explanation for cross-over, as discussed in section 5.

By the same token, any account that endorses the c-command restriction must explain the data in the following section.

3 Counterexamples to the C-Command Requirement

This section makes an empirical case that c-command is not a requirement for quantificational binding.

Many of these example types have been discussed in the literature, but always as isolated problems for the c-command hypothesis. Here I present them in succession, adding a few new ones.

3.1 Possessors

Perhaps the best-known and most exceptionlessly productive class of counterexamples involves quantificational possessors. As noted by Higginbotham (1980), followed by Reinhart (1983: 177–178), quantificational possessors can effortlessly bind pronouns outside their possessive hosts.

(22) a. [Everyone$_i$'s mother] thinks he$_i$'s a genius.
b. [No$_i$ one's mother-in-law] fully approves of her$_i$.
c. [Each$_i$ student's advisor] paid his$_i$ gambling debts for him$_i$.
d. [[[Everyone$_i$'s mother]'s lawyer]'s dog] likes him$_i$.

Even the most deeply embedded possessor can bind a pronoun external to the subject. And, in accord with the scope requirement, in each case the quantifier can take scope over an existential in the place of the pronoun (e.g., *No one's mother-in-law fully approves of an unemployed son-in-law*).

In view of examples like those in (22), Reinhart tentatively revises her definition of c-command so that possessors can c-command whatever their possessive hosts c-command.

Kayne (1994:23–24) suggests a more principled modification of c-command: that specifiers in general can c-command whatever phrase they are the specifier of c-commands. Like Reinhart, Kayne assumes that in adjunction structures, mothers and daughters with the same syntactic label count as a single multisegment node. The idea is that in [[*John's*] [*mother*]$_{DP}$]$_{DP}$, the top DP label is only one-half of a multisegment DP node and therefore does not dominate the possessor.

In addition, Kayne proposes that all specifiers are adjoined to their host projections. It follows that a possessor automatically c-commands everything that its host DP c-commands.

3.2 Inverse Linking

Whatever the virtues of Kayne's (1994) refined notion of c-command, it does not immediately extend to other well-known example types, such as inverse linking (May 1985).

(23) a. [Someone from every$_i$ city] hates it$_i$.
b. [One page in every$_i$ book] had something written on it$_i$.

To be sure, inverse linking is notoriously sporadic: *Most people from every city hate it* does not have an interpretation on which *every* takes scope over *most*, let alone a reading on which *every* binds the pronoun. But for present purposes, if any good inverse linking example allows a quantifier to bind a pronoun that the quantifier does not c-command, it constitutes support for the claim that c-command is not a requirement for quantificational binding.[1]

3.3 Binding out of Nominal Arguments

Other refinements and extensions of c-command are possible. Hornstein (1995:108) proposes a variation compatible with Kayne's (1994) notion of c-command that Hornstein calls ''almost c-command'': a node A almost c-commands a node B just in case A c-commands B or the projection that dominates A dominates B. This definition is intended to capture an apparent asymmetry between adjuncts and arguments.

(24) a. At least one picture of every senator$_i$ graced his$_i$ desk.
b. A small part of every article$_i$ undermined it$_i$.

Hornstein judges the binding interpretations given in (24) as ungrammatical. He claims that the reason the binding in (23) is grammatical, but the binding in (24) is not, is that in (23) the prepositional phrases are adjuncts, but in (24) they are complements of the head nominal.

However, even if we accept Hornstein's judgments for (24), it is unlikely that the source of the binding difficulty is an argument/adjunct asymmetry.

(25) a. The policemen turned a citizen of each$_i$ state over to it$_i$s governor. (Gawron and Peters 1990:163)
b. [A friend of each$_i$ contestant] stood behind her$_i$.
c. [The cost of each$_i$ item] was clearly marked on it$_i$s label.

In (25), the quantificational DPs are part of a nominal argument, yet they can still bind a pronoun external to the subject DP.

In fact, it is fairly easy to find naturally occurring examples (collected using a Google search), especially when the container DP is definite (see also the treatment of functional relative clauses in Sharvit 1999).

[1] DP is often taken to be a scope island (notably May 1985, Büring 2004). If so, then the relationship between the quantifiers and the pronouns in (23) is not a true binding relationship; on Büring's account (discussed below in section 4.2), it is a form of donkey anaphora. On the other hand, Sauerland (2005) argues that DP is not an island, though Charlow (2010) defends the scope island claim against Sauerland's arguments. Unfortunately, this complicated issue cannot be settled here.

(26) a. This shows that [the fate of every$_i$ individual] is decided by his$_i$ inner ego.
b. [The scope of each$_i$ book] has expanded on that of it$_i$s predecessor.
c. Since [the name of every$_i$ thing] expresses it$_i$s essence . . .
d. [The weighting of each$_i$ attribute] expresses it$_i$s relative importance.
e. . . . [the Number of each$_i$ Overtone] expresses it$_i$s wavelength as a fraction of the fundamental wavelength . . .
f. [The work of each$_i$ student] will be reviewed at the end of every semester in order to determine his/her$_i$ progress and the advisability of continuing graduate studies.

Indeed, variations on Hornstein's own examples allow the quantifier to bind out of complement position (all embedded within a containing DP) fairly gracefully.

(27) a. We need to get hold of (at least) [one picture of every$_i$ senator] before he$_i$ leaves town for the summer.
b. [A small part of every article$_i$] is always inconsistent with it$_i$s main conclusions.

A referee notes that it is difficult to give the universal widest scope when replacing the pronoun in (27a) with an existential (e.g., replacing *he* with *a page*), but that the desired scoping can be forced by including a pronoun in the existential (*a page of his*).

In any case, it appears that it is possible for a quantifier to bind out of the possessor of a DP, as well as from other positions in the DP, whether those positions are within adjuncts or within complements.

3.4 Binding Transitivity

Ruys (2000:517) unifies possessive and inverse linking cases under a single generalization, which he calls the *transitivity* property of bound anaphora (the formulation of the generalization is my paraphrase).

(28) *Binding transitivity*

[Everyone$_A$'s mother]$_B$ loves him$_C$.

If a DP A is contained within some larger DP B, and B can potentially bind a pronoun C, then [as long as A takes scope over C] A can bind C.

Note that the container must itself be a potential binder (i.e., a DP). That is, Ruys requires that in order to transmit binding power, the container must itself be capable of binding the pronoun in question. The prediction, then, is that quantificational DPs will be able to bind out of containing DPs, but there is no prediction about other sorts of containers. This means that if quantifiers can bind out of containers that are not DPs, binding transitivity will not automatically generalize to such cases.

In sections 3.5–3.8, I will show that quantificational DPs appear to be able to bind out of containers of essentially any syntactic category, and therefore that binding transitivity is at best an incomplete explanation of the full pattern of binding facts.

3.5 Binding out of a PP

In these naturally occurring examples, quantifiers embedded inside prepositional phrases bind pronouns that they do not c-command.

(29) a. [In everyone$_i$'s own mind], they$_i$ are the most important person in the world.
b. [After the name of every$_i$ student] will be added his$_i$ place of residence.
c. John gave [to each$_i$ participant] a framed picture of his$_i$ mother.
d. [Under each$_i$ picture] was the verse in the poem it$_i$ was intended to represent.
e. Our staff keeps a watchful eye [on every$_i$ situation] and on it$_i$s developments.

The examples include prepositions that are semantically transparent case-marking prepositions, as well as prepositions with lexical content.

Barbiers (1995) suggests modifying c-command so that (roughly) DP objects command whatever their prepositional phrase host c-commands. However, like Reinhart's (1983) and Kayne's (1994) versions of c-command discussed above, this extension would still provide far from a complete picture of all the ways that c-command has to be adjusted in order to cover the full set of data.

3.6 Binding out of a VP

Examples of binding out of VP are common in the linguistics literature, (30a–e), and naturally occurring examples are easy to come by, (30f–i).

(30) a. We [will sell no$_i$ wine] before it$_i$s time.
[syntax lore (ad for Paul Masson)]
b. John [left every$_i$ party] angry at the person who had organized it$_i$.
(Kayne 1994:71)
c. Sue [spoke to each$_i$ employee] about his$_i$ paycheck.
(Pesetsky 1995:161)
d. A book [was given to every$_i$ boy] by his$_i$ mother.
(Harley 2003:64)
e. John [visited each$_i$ student] on his$_i$ birthday.
(Shan and Barker 2006:117)
f. She [copied each$_i$ book] without hurting it$_i$.
g. . . . the elders [called each$_i$ student to the front] and prayed for [him or her]$_i$ individually . . .
h. Despite its record sales (300 million and counting), [reading each$_i$ book] moments after it$_i$s simultaneous worldwide release feels as intimate as . . .
i. I then [caught each$_i$ fish], measured it$_i$, and placed it$_i$ in the plastic container.

Clearly, a quantifier embedded within a verb phrase can bind a pronoun outside of that verb phrase.

3.7 Binding out of an Adjunct

These naturally occurring examples involve a prepositional phrase functioning as an adverbial adjunct:

(31) a. [After unthreading each$_i$ screw], but before removing it$_i$, make sure to hold the screw in place while seperating [*sic*] the screw from the driver.
b. . . . [after seeing each$_i$ animal] but before categorizing it$_i$ on the computer or recording it$_i$ on their response sheet.
c. . . . [after fetching each$_i$ pointer], but before dereferencing it$_i$.
d. These processors use branch prediction techniques to forecast the code path that will be followed [after each$_i$ branch instruction], but before it$_i$s execution.

Note that the object of *after* can be a gerundive VP as well as a DP.

3.8 Binding out of a Tensed Clause

Supposedly, a universal never takes scope outside of a tensed clause.

(32) a. [That Mary seems to know every boy] surprised someone.
b. [That Mary seems to know every$_i$ boy] surprised his$_{*i}$ mother.

Because *every* is embedded in a (tensed) sentential subject, it cannot take scope over the indefinite in (32a). As a result, it certainly cannot bind a pronoun outside of the sentential subject, as shown in (32b).

However, as Szabolcsi (2011) notes, unlike *every*, *each* often can take scope outside of a tensed clause. In fact, it is even possible for *each* to bind outside of its container when it is embedded in a tensed relative clause.

(33) The grade [that each$_i$ student receives] is recorded in his$_i$ file.
(Lauri Karttunen, via James McCloskey, pers. comm.)

The naturally occurring data in (34) further support the claim that *each* can take scope outside of a tensed clause.

(34) a. It ended and the amount of Wealth [that each$_i$ person had] was added to their$_i$ overall score.
b. But the actual thinking seems to be [that each$_i$ person owns his own body], and that he$_i$ may not alienate his own body, by selling it, and that no one may buy . . .
c. [That each$_i$ person is a unique individual] and that he$_i$ alone can work out his own individuality?
d. It is only nowadays, when strife prevails [that each$_i$ person needs his neighbour], and that he$_i$ [n]eeds to pray for peace.

It is especially easy to find naturally occurring examples of quantificational binding out of tensed-clause containers when the container is in the first element of an *after . . . before* construction.

(35) a. The extra credit, then, is this: [after $each_i$ word has been read in] (but before it_i is inserted or updated in the list), convert it_i to lowercase and . . .
b. [After $each_i$ defendant was adjudicated], but before he_i was sentenced, the judges would read or refer to their court order . . .
c. Consider using a holdable cursor when your application needs to query a user [after it fetches $each_i$ row], but before it modifies it_i.
d. [After the growth of $each_i$ structure was completed], but before it_i was removed from the reactor, it_i was annealed.
e. Called [after $each_i$ bus is probed], but before it_is children are examined.
f. SNePS will pause just [after $each_i$ input is read], but before it_i is executed.
g. . . . function gets called [after $each_i$ record is read], but before doing anything with it_i . . .

3.9 Summary of Data So Far

To summarize: A quantifier can be embedded arbitrarily deeply within a container and yet still robustly bind a pronoun outside the container. In well-known cases involving possessives or inverse linking, the container can be a DP. But the container can also be a PP, a VP, an adjunct, a gerundive VP, even a tensed S. Given the long list of possible containers, the strategy of extending or adjusting c-command is unlikely to prove adequate. In other words, the data suggest that a quantifier need not c-command a pronoun in order to bind it.

4 Other Potential Classes of Counterexamples

There may be situations in which a quantifier appears to bind a pronoun without c-commanding it, yet that we should not count against Reinhart's Generalization. This will be the case if there is good reason to believe that the appearance of binding is due to some semantic mechanism other than ordinary quantificational binding.

4.1 Copular Connectivity Effects

It has been known since Higgins 1973 that certain copular sentences display what appears to be quantificational binding without c-command.

(36) a. [The person $everyone_i$ loves the most] is his_i mother.
b. What [$everyone_i$ hates most] is to have his_i mother insulted.

Some naturally occurring examples:

(37) a. [The goal of $every_i$ man] was his_i own salvation.
b. [$Every_i$ country's most precious resource] is it_is young people.
c. [The criterion of the intelligence of $every_i$ newcomer] was his_i opinion of Bricho's articles.

There are analyses on which connectivity effects do not involve ordinary binding (see, e.g., Jacobson 1994, 2003, Sharvit 1999, Winter 2004). On these theories, the two DPs denote certain sets of individuals or sets of functions, and the relationship between the two denotations creates the semantic illusion of binding.

Other types of connectivity, including question-answer connectivity, might also belong in this category.

(38) Q: Who does every$_i$ Englishman love?
A: His$_i$ mother.

Just as with copular connectivity, the apparent binding relationship between this question and its answer may not be an example of true quantificational binding.

Whatever the correct analysis, copular examples and the question-answer examples are at the very least consistent with my main claim, that c-command is not required for quantificational binding.

4.2 Donkey Anaphora

By definition, a donkey pronoun is a pronoun that covaries with an antecedent that does not c-command it.

(39) a. If [a farmer owns a$_i$ donkey], he beats it$_i$.
b. Every farmer [who owns a$_i$ donkey] beats it$_i$.

For each choice of a farmer, the pronoun *it* varies with the corresponding donkey. If we view the indefinite as quantificational (contra Heim 1982 and most work in Discourse Representation Theory), and if we view the covariance as the result of the pronoun's being bound by the indefinite, then donkey anaphora stands as a systematic class of counterexamples to Reinhart's Generalization.

It is natural to wonder whether most or all of the counterexamples in section 3 might be assimilated to donkey anaphora. However, there are significant obstacles to generalizing donkey anaphora in this way. In donkey anaphora, a pronoun (*it*) covaries along with an indefinite (*a donkey*) that does not c-command it. But in traditional donkey anaphora, there is always crucially a third element that supplies some kind of universal quantificational force, and that does c-command the pronoun. In (39a), the universal force is supplied by the conditional construction, which is interpreted as saying that every situation that satisfies the antecedent will also satisfy the consequent; in (39b), it is the quantifier headed by the determiner *every*, which clearly c-commands the donkey pronoun.

(40) Everyone$_i$'s mother called him$_i$.

In contrast, in the binding-out-of-a-possessor case in (40), there is no source of quantification other than the alleged donkey antecedent *everyone*, which does not c-command the pronoun. This means that the usual accounts of donkey anaphora will not extend to (40).

To emphasize the difficulty, if the relationship between *everyone* and *him* in (40) were of the same nature as the relationship between *a donkey* and *it* in (39a), then we should expect to be able to insert the universal in place of the indefinite in the donkey sentence.

(41) If a farmer owns every$_i$ donkey, he beats it$_{*i}$.

But of course, this isn't remotely possible.

In fact, it is precisely in order to avoid mistaking donkey anaphora for true violations of Reinhart's Generalization that the examples in section 3 all involve the universal quantifiers *every*, *each*, or *no*.

Despite these theoretical obstacles to generalizing donkey anaphora, Büring (2004) extends a donkey anaphora account to binding by universals in possessor cases and in inverse linking. Quantifiers within DP adjoin to their container DP, as advocated by May (1985) and as discussed by Heim and Kratzer (1998:197); the adjoined quantifier undergoes a semantic type shift (in order to reconcile semantic types); a special binding operator introduces a situation variable for the container; and pronouns denote E-type definite descriptions as in Heim 1990 and Elbourne 2005, which allows them to capture a contextually salient functional meaning that maps a situation onto an individual contained within the situation. For instance, Büring's analysis of (40) depends on there being a salient contextually supplied function from each situation involving a mother to some unique son in that situation (see Barker 2005 for additional discussion).

Crucially, however, just as for Ruys's (2000) binding transitivity discussed in section 3.4 (one of the inspirations for Büring's (2004) approach), the quantificational DP in question must adjoin to a DP container (in Büring's analysis, for semantic reasons). Therefore, it is unclear how to extend Büring's analysis to cases involving binding out of other sorts of containers (PPs, VPs, adjuncts, etc.).

Now, there are other, somewhat more flexible situation-based systems in which pronouns can covary with some quantificational operator through the mediation of some situation variable rather than through direct binding (e.g., Schwarz 2009). To the extent that such systems require only that the pronoun be within the scope of the quantificational operator, it is unclear how they will handle crossover. Nevertheless, many cases that appear to involve binding without c-command may turn out to involve situation-mediated covariation.

Since we do not currently know how to reliably tell the difference between genuine quantificational binding and situation-mediated covariation, we have one more reason for being cautious about drawing conclusions about c-command relations from examples that appear to involve binding. But in any case, given the limitations of our current state of knowledge, I will assume here that donkey anaphora and binding without c-command are independent problems.

4.3 Clausal and Gerundive Subjects

There remain some cataphoric examples that may or may not involve quantificational binding.

(42) That people hate him$_i$ disturbs every$_i$ president.

This example is from Reinhart 1983:180 (see also Williams 1994:238). Binding in such examples should presumably follow somehow from the syntactic properties of ''psych'' predicates like *disturbs*.

Another type of example, due to Higginbotham (1980:688), is known as a PRO gate.

(43) Having to make his_i mother breakfast kept $everyone_i$ in the kitchen.

If these examples do involve genuine binding, they constitute yet another class of counterexamples to Reinhart's Generalization.

5 If Not C-Command, Then What?

If c-command is not relevant, then just how should quantificational binding be managed?

In this section, I will informally describe what various strategies for handling quantificational binding might look like. I will discuss three strategies, in order of increasingly accurate approximation of the data: scope, scope plus linear order, and scope plus reconstructed linear order.

5.1 The Scope Requirement Alone

One obvious strategy would be to simply allow a quantifier to bind any pronoun that it takes scope over. The scope theory improves on Reinhart's Generalization in that it handles the many cases in which the quantifier does not c-command a pronoun that it binds. However, assuming that scope alone is enough to characterize quantificational binding makes no distinction between weak or strong crossover on the one hand and cases in which binding is possible on the other. One crucial requirement of a viable system, then, is that it must have something principled to say about crossover.

5.2 Scope Plus Linear Order

The next most obvious candidate would be to combine the scope requirement with an additional requirement that a quantifier must linearly precede any pronoun that it binds.

The scope-plus-linear-order strategy is adopted in Barker 2005 and Jäger 2005. This approach correctly rules out many basic cases of weak and strong crossover. However, because it relies entirely on linear order, it fails to account for any of the cases (some of which are discussed immediately below) in which a quantifier can bind a pronoun that linearly precedes it.

Reinhart (1983:119) explicitly argues that linear order is not required for quantificational binding on the basis of examples like these:

(44) a. In his_i own way, however, $each_i$ man is petitioning for the same kind of administration.
b. Near his_i child's crib $nobody_i$ would keep matches.
c. Thinking about his_i problems, $everyone_i$ got depressed.

Jäger (perhaps justifiably) calls into question the grammaticality of (44b). Therefore, it is worthwhile providing some similar, naturally occurring examples of quantificational cataphora.

(45) a. Unless he_i's Mr. T, no_i straight man should be wearing much more than one, or maybe two, small subtle pieces of jewelry (watches not included).
b. Unless she_i has had sex without her_i consent, no_i woman has to become a single mother.
c. Unless he_i's been a bandit, no_i man can be an officer; unless she_j's been a trollop, no_j woman can be a noble lady.
d. Unless he_i enter the gate, no_i man can see the beauty of the Ancestral Temples, the wealth of the hundred officers.
e. Unless he_i's some desperate pervert no_i man in their right mind would say that.

In each case here, the quantifier almost c-commands the bound pronoun, in accord with Reinhart's Generalization (where *almost* is the difference between something like max-command versus strict c-command). Therefore, one salient possibility that may be worth pursuing is a disjunctive condition: a quantifier can bind a pronoun if it either (almost) c-commands the pronoun or precedes it.

Whether c-command is necessary for this type of backward quantificational binding depends on the grammaticality of examples similar to these:

(46) a. Unless he_i is cruel, [no_i man's wife] truly hates him_i.
b. Unless she_i is famous, [the fate of no_i woman] fascinates the media for long.
c. Unless he_i is rich, universities admit no_i student whose grades are bad.

Although I haven't found any natural examples, I am inclined to believe that sentences like these are grammatical.

In any case, it is clear that under certain circumstances it is possible for a quantifier to bind a pronoun that precedes it, and therefore that a simpleminded linear order requirement on quantificational binding is not adequate.

5.3 Scope Plus Reconstructed Linear Order

If simple linear order is not the right additional requirement, we can try adjusting linear order. The clearest way to motivate this strategy is with so-called reconstruction examples.

(47) a. Which of his_i relatives does $every_i$ man love ____ the most?
b. the relative of his_i that $every_i$ man loves ____ the most

These constructions are widely accepted as grammatical, even though the quantifier follows the pronoun that it binds.

On the usual reconstruction accounts, at least part of the fronted *wh*-phrase in cases like (47a)—crucially, including at least the pronoun—moves downward into the position of the *wh*-trace (marked here with ''____''). Alternatively, on a copy theory of movement, the trace position contains a silent full copy of the *wh*-phrase. Likewise, in relative clause examples like (47b), some portion of the head nominal reconstructs into the trace position in the relative clause.

Along similar lines, it has been well-known since, for example, Lebeaux 1991:231 that syntactic A-movement may fail to trigger weak crossover.

(48) [His$_i$ mother]$_t$ seems to every$_i$ boy ____$_t$ to be a genius.

If the semantics of raising requires us (or at least allows us) to interpret (evaluate) the subject *his mother* in the trace position ____$_t$ (i.e., in the position of the embedded subject), then the grammaticality of (48) is predicted on the scope-plus-reconstructed-linear-order approach.

Crucially for the main question, the reconstructed position can be bound by any of the non-c-commanding quantificational binders scouted in section 3. A small selection of examples will illustrate the point.

(49) a. Which of his$_i$ relatives does everyone$_i$'s mother hate?
b. Which of it$_i$s pages did some reader of each$_i$ book remove?
c. Which of her$_i$ questions did John praise each$_i$ student for asking?

In each case, the quantifier does not c-command the pronoun either before or after reconstruction.

At this point, we should briefly return to the adjunct examples given in section 5.2. Reinhart (1983) argues that the examples in (44) involve fronting of a prepositional phrase. If the *unless*-phrases in (45) and (46) can be given a fronting analysis as well, then they can potentially receive the same explanation as the reconstruction examples.

5.4 A Formal Implementation

In a series of related papers (Shan and Barker 2006, Barker and Shan 2008, Barker 2009, to appear), a formal system is developed that delivers scope plus reconstructed linear order for quantificational binding. Quantifiers take scope by projecting into a separate layer of composition involving *continuations* (Barker 2002). Pronoun binding also occurs in the continuation layer. Because the continuation layer is independent of the hierarchical function/argument layer, there is no need for the quantificational binder to c-command a pronoun in order to bind it.

Crossover is accounted for by a left-to-right bias in the method for composing constituents. As a result, a quantifier can bind a pronoun only if the quantifier is *evaluated* (in a specific technical sense imported from the theory of programming languages) before the pronoun.

(50) a. Which of his$_i$ relatives does everyone$_i$ love ____?
b. *Which of his$_i$ relatives ____ loves everyone$_i$?

Regarding reconstruction, an independently motivated account of *wh*-question formation automatically predicts that the evaluation of material in the fronted *wh*-phrase will be *delayed* (once again, in a specific technical sense) until the evaluation of the *wh*-trace. This means that (50a) can receive a bound reading without any special stipulation, even though the quantifier linearly follows the pronoun that it binds. The account also correctly predicts that (50b) is a crossover violation, since the *wh*-trace (and therefore the reconstructed material) will be evaluated before the quantifier.

A complete presentation of the concepts and the formal details would require too much space to include here. See Barker and Shan 2008 for an introduction to the system, including quantification, binding, and simple cases of crossover; and see Barker 2009, to appear for an exploration of the predictions concerning reconstruction.

6 Conclusions

Standard wisdom says that when a quantificational expression binds a pronoun, the binder must c-command that pronoun. This belief is so universally accepted that it is often treated as if it were a definition rather than an assumption vulnerable to empirical evidence.

Examples that appear to be inconsistent with the c-command requirement typically prompt three kinds of reactions. The first kind of reaction is to adjust or extend the definition of c-command, the strategy (as discussed above) of Reinhart (1983), Kayne (1994), Barbiers (1995), Hornstein (1995), and Ruys (2000), among others. The second kind of reaction is to adjust the syntactic structures over which quantificational binding occurs in order to arrange for the c-command requirement to be fulfilled, as in Larson's (1988) ''rightward-is-downward'' VP-shell analysis and its many extensions and variations. The third kind of reaction is to propose some radically different mechanism to explain the appearance of binding through some indirect means that circumvents the c-command requirement without technically violating it, as in Büring's (2004) generalization of donkey anaphora.

However, when we gather all the exceptions together, both the well-known ones and the less well-known ones, they begin to pile up. We should consider a fourth reaction: perhaps we were wrong all along, and c-command is not in fact required for quantificational binding.

No doubt we could continue to construct exceptions and special mechanisms with various degrees of independent motivation that would explain away some (or, perhaps, someday even all) of the data presented above. But even if this is possible, what will we have accomplished? That is, why should we try to save the c-command restriction? I have also called into question the original evidence for positing the c-command restriction in the first place. That evidence is not strong. I suspect that much of the original inclination to accept Reinhart's Generalization comes from an implicit assumption that quantificational binding probably behaves like other types of anaphora for which c-command requirements are better motivated. But it is quite clear that quantificational binding is different from other types of anaphora.

Let me emphasize that I have not said anything about whether c-command might still be relevant for characterizing other aspects of anaphora. For instance, the difference between strong crossover and weak crossover is precisely whether the pronoun in question c-commands its quantificational binder. Building on Higginbotham 1983, Safir (2004b) proposes the Independence Principle, which has for a corollary that if a pronoun is bound by a quantifier, that pronoun cannot c-command the quantifier. Safir (2004b:chap. 3) discusses in detail the relevance of the Independence Principle for crossover.

Let me also emphasize that I have not said anything about languages other than English. Languages differ in important ways that bear on the status of the c-command constraint. For instance, in Chamorro, possessors are not able to bind out of their DP hosts (Chung 1998:77).

There may even be languages in which Reinhart's Generalization holds. However, English is not one of them. I take it that the evidence presented above shows that in English, quantificational binding does not require c-command.

References

Barbiers, Sjef. 1995. *The syntax of interpretation*. The Hague: Holland Academic Graphics.

Barker, Chris. 2002. Continuations and the nature of quantification. *Natural Language Semantics* 10: 211–242.

Barker, Chris. 2005. Remark on Jacobson 1999: Crossover as a local constraint. *Linguistics and Philosophy* 28:447–472.

Barker, Chris. 2009. Reconstruction as delayed evaluation. In *Theory and evidence in semantics*, ed. by Erhard Hinrichs and John Nerbonne, 1–28. Stanford, CA: CSLI Publications.

Barker, Chris. To appear. More on reconstruction as delayed evaluation. In *Reconstruction effects in relative clauses*, ed. by Manfred Krifka, Rainer Ludwig, and Mathias Schenner. Munich: Oldenbourg Academic Publishers.

Barker, Chris, and Geoffrey K. Pullum. 1990. A theory of command relations. *Linguistics and Philosophy* 13:1–34.

Barker, Chris, and Chung-chieh Shan. 2008. Donkey anaphora as in-scope binding. *Semantics and Pragmatics* 1:1–42.

Bresnan, Joan. 1994. Linear order vs. syntactic rank: Evidence from weak crossover. In *CLS 30: Papers from the 30th Regional Meeting of the Chicago Linguistic Society*. Vol. 1, *The main session*, ed. by Katharine Beals, Jeannette Denton, Bob Knippen, Lynette Melnar, Hisami Suzuki, and Erika Zeinfeld, 57–89. Chicago: University of Chicago, Chicago Linguistic Society.

Bresnan, Joan. 1998. Morphology competes with syntax: Explaining typological variation in weak crossover effects. In *Is the best good enough? Optimality and competition in syntax*, ed. by Pilar Barbosa, Danny Fox, Paul Hagstrom, Martha McGinnis, and David Pesetsky, 59–92. Cambridge, MA: MIT Press.

Büring, Daniel. 2004. Crossover situations. *Natural Language Semantics* 12:23–62.

Büring, Daniel. 2005. *Binding theory*. Cambridge: Cambridge University Press.

Carminati, Maria Nella, Lyn Frazier, and Keith Rayner. 2002. Bound variables and c-command. *Journal of Semantics* 19:1–34.

Charlow, Simon. 2010. Can DP be a scope island? In *Interfaces: Explorations in logic, language and computation. ESSLLI 2008 and ESSLLI 2009 student sessions, selected papers*, ed. by Thomas Icard and Reinhard Muskens, 1–12. Berlin: Springer.

Chomsky, Noam. 1986. *Barriers*. Cambridge, MA: MIT Press.

Chung, Sandra. 1998. *The design of agreement: Evidence from Chamorro*. Chicago: University of Chicago Press.

Cormack, Annabel. 1998. *Definitions: Implications for syntax, semantics, and the language of thought*. New York: Garland.

Elbourne, Paul. 2005. *Situations and individuals*. Cambridge, MA: MIT Press.

Frank, Robert, and K. Vijay-Shanker. 2001. Primitive c-command. *Syntax* 4:164–204.

Gawron, Jean Mark, and Stanley Peters. 1990. *Anaphora and quantification in situation semantics*. Stanford, CA: CSLI Publications.

Harley, Heidi. 2003. Possession and the double object construction. In *Linguistic variation yearbook 2*, ed. by Pierre Pica and Johan Rooryck, 31–70. Amsterdam: John Benjamins.

Heim, Irene. 1982. The semantics of definite and indefinite noun phrases. Doctoral dissertation, University of Massachusetts, Amherst.

Heim, Irene. 1990. E-type pronouns and donkey anaphora. *Linguistics and Philosophy* 13:137–177.

Heim, Irene, and Angelika Kratzer. 1998. *Semantics in generative grammar*. Oxford: Blackwell.

Higginbotham, James. 1980. Pronouns and bound variables. *Linguistic Inquiry* 11:679–708.

Higginbotham, James. 1983. Logical Form, binding, and nominals. *Linguistic Inquiry* 14:395–420.

Higgins, F. R. 1973. *The pseudo-cleft construction in English*. New York: Garland.
Hornstein, Norbert. 1995. *Logical Form: From GB to minimalism*. Oxford: Blackwell.
Huitink, Janneke. 2008. Modals, conditionals, and compositionality. Doctoral dissertation, Radboud Universiteit, Nijmegen.
Jacobson, Pauline. 1972. Crossover and some related phenomena. Master's thesis, University of California, Berkeley.
Jacobson, Pauline. 1994. Binding connectivity in copular sentences. In *Proceedings of SALT 4*, ed. by Mandy Harvey and Lynn Santelmann, 161–178. Available at elanguage.net/journals/salt/issue/view/287.
Jacobson, Pauline. 1999. Towards a variable-free semantics. *Linguistics and Philosophy* 22:117–184.
Jacobson, Pauline. 2003. Direct compositionality and VFS: The case of binding into heads. In *Proceedings of SALT 12*, ed. by Brendan Jackson, 144–163. Available at elanguage.net/journals/salt/issue/view/295.
Jäger, Gerhard. 2005. *Anaphora and type logical grammar*. Dordrecht: Springer.
Kayne, Richard. 1994. *The antisymmetry of syntax*. Cambridge, MA: MIT Press.
Koornneef, Arnout, Frank Wijnen, and Eric Reuland. 2006. Towards a modular approach to anaphor resolution. In *Ambiguity in Anaphora Workshop proceedings*, ed. by Ron Artstein and Massimo Poesio, 65–72. University of Essex.
Langacker, Ronald. 1969. On pronominalization and the chain of command. In *Modern studies in English*, ed. by David Reibel and Sanford Schane, 160–186. Englewood Cliffs, NJ: Prentice-Hall.
Larson, Richard. 1988. On the double object construction. *Linguistic Inquiry* 19:335–391.
Lebeaux, David. 1991. Relative clauses, licensing, and the nature of the derivation. In *Perspectives on phrase structure*, ed. by Susan Rothstein, 209–239. Syntax and Semantics 25. New York: Academic Press.
May, Robert. 1985. *Logical Form: Its structure and derivation*. Cambridge, MA: MIT Press.
Pesetsky, David. 1995. *Zero Syntax: Experiencers and cascades*. Cambridge, MA: MIT Press.
Postal, Paul. 1971. *Cross-over phenomena*. New York: Holt, Rinehart and Winston.
Reinhart, Tanya. 1983. *Anaphora and semantic interpretation*. Chicago: University of Chicago Press.
Ruys, E. G. 2000. Weak crossover as a scope phenomenon. *Linguistic Inquiry* 31:513–539.
Safir, Ken. 2004a. *The syntax of anaphora*. Oxford: Oxford University Press.
Safir, Ken. 2004b. *The syntax of (in)dependence*. Cambridge, MA: MIT Press.
Sauerland, Uli. 2005. DP is not a scope island. *Linguistic Inquiry* 36:303–314.
Schwarz, Florian. 2009. Two types of definites in natural language. Doctoral dissertation, University of Massachusetts, Amherst.
Shan, Chung-chieh, and Chris Barker. 2006. Explaining crossover and superiority as left-to-right evaluation. *Linguistics and Philosophy* 29:91–134.
Sharvit, Yael. 1999. Functional relative clauses. *Linguistics and Philosophy* 22:447–478.
Szabolcsi, Anna. 2010. *Quantification*. Cambridge: Cambridge University Press.
Szabolcsi, Anna. 2011. Scope and binding. In *Semantics: An international handbook of natural language meaning, vol. 2*, ed. by Klaus von Heusinger, Claudia Maienborn, and Paul Portner, 1605–1641. Berlin: Mouton de Gruyter.
Wasow, Thomas. 1972. Anaphoric relations in English. Doctoral dissertation, MIT, Cambridge, MA.
Williams, Edwin. 1994. *Thematic structure in syntax*. Cambridge, MA: MIT Press.
Winter, Yoad. 2004. Functional quantification. *Research on Language and Computation* 2:331–363.

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Classifiers and DP

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Wu and Bodomo (2009) argue against claims made in Cheng and Sybesma 1999. Gebhardt (2011) has contested their arguments related to the status of classifiers and the question whether all nouns in Chinese are mass. In this reply, we discuss some of the points Wu and Bodomo raise, arguing that (a) sortal classifiers are not lexical elements; (b) generic interpretation is not the same as kind interpretation; (c) demonstrative noun phrases do not have the same distribution and interpretation as definite noun phrases in Mandarin and Cantonese; and (d) the DP structure that Wu and Bodomo propose runs into serious problems with phrasal possessors. Finally, we discuss an alternative approach to the structure of the nominal domain in Chinese languages.

Keywords: classifiers, DP, Chinese

Wu and Bodomo (W&B) (2009) argue against the claim allegedly made in Cheng and Sybesma (C&S) 1999 that classifiers are determiners.[1] In this contribution to the discussion, we argue point by point why W&B's arguments against C&S 1999 do not stand up to scrutiny.[2] After a brief summary of the main points of C&S 1999, we discuss the status of classifiers and a number of issues related to the interpretation of noun phrases in Mandarin and Cantonese. In the final section, after pointing out some problems with the structure of DP proposed by W&B, we discuss an alternative approach.

1 Summary of the Main Points of C&S 1999

C&S 1999 constitutes an attempt to understand the distribution and interpretational variability of bare nouns and [Cl(assifier) + N(oun)] phrases in Sinitic, taking Cantonese and Mandarin, and the variation they display, as the empirical starting point. The attempt was made against the background of theoretical discussions on the structure of the noun phrase in languages of the world more generally, in which ''D'' played (and still plays) an important role (Stowell 1989, Longobardi 1994, Szabolcsi 1994). As Sinitic languages have no determiners, they lack an obvious candidate for D-ship. Still, the languages in this family feature noun phrases with, for example, definite reference: in Mandarin these are bare Ns and in Cantonese they are [Cl-N] phrases, both of which, however, can also be interpreted as indefinite. Both the variation among the different languages and the variability in interpretation of one and the same surface form made the attempt to understand what is going on all the more challenging. Another part of the background was

We thank the reviewers for their comments, questions, and suggestions. We also thank Jenny Doetjes for discussing many issues with us.

[1] In fact, we do not really make this claim; see footnotes 5 and 20.

[2] We will only address the more serious misunderstandings.

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formed by the discussion on questions relating to the basic denotation of nouns in Sinitic languages (Maybe they are all mass nouns? Or kind-referring?), and the function of classifiers in relation to this (Chierchia 1995, 1998). Aside from the just-mentioned works by Chierchia, and works such as Paris 1981, 1989 and Tang 1990, not much theoretical research had been done on these issues in 1999.

As to the mass/count question, in C&S 1999 we made the point (following Croft (1994); more on this below) that the sortal classifiers that are used with nouns in Chinese languages when counting (among other contexts) are elements that do not *create* a unit, which is what measure expressions (*kilo*, *bottle of*) do; instead, they merely *name* the unit that is already part of the semantic denotation of the noun. We reasoned that if a noun has individual units in its semantic denotation, it should be considered a count noun. This way, cooccurrence with a sortal classifier is a diagnostic for count-noun-hood.[3]

With respect to distribution and interpretation, we proposed two structures, one for all indefinite noun phrases (1a) (p. 529, (39)) and one for all definites (1b) (p. 529, (40)) (in both Cantonese and Mandarin).

(1) a. Indefinite: $[_{\text{NumeP}}\ \text{Nume}^0\ [_{\text{ClP}}\ \text{Cl}^0\ [_{\text{NP}}\ \text{N}^0]]]$
b. Definite: $[_{\text{ClP}}\ \text{Cl}^0\ [_{\text{NP}}\ \text{N}^0]]$

Thus, definite bare nouns in Mandarin have the structure in (1b), as do definite [Cl-N] phrases in Cantonese. Similarly, all indefinites—bare Ns, [Cl-N] phrases, and [Numeral-Cl-N] phrases alike—will have the underlying structure in (1a). What seems to be happening here, we said, is that the Numeral Phrase (NumeP) layer in (1a) has the effect of undoing the definiteness of the ClP. The Numeral (Nume) head can be, but does not have to be, overtly filled.

In C&S 1999, we argued that the definiteness is taken care of differently in the two languages. Following Chierchia (1998), we took there to be two ways to implement the necessary operation to get a definite interpretation: overtly and covertly (a last resort option, according to Chierchia). English uses its definite article *the* to realize this, and we proposed that Cantonese uses the classifier. In Mandarin, the use of the classifier is blocked, as a result of which this language must resort to the covert option, which involves insertion of the so-called iota operator. To lexically support this operator, N-to-Cl movement takes place. As a result, in both languages the Cl^0 position is filled in definite noun phrases: in Cantonese by the classifier, in Mandarin by the head noun.

The use of the classifier is blocked in Mandarin for reasons we did not understand when writing C&S 1999,[4] but we did point at the generalization that in Mandarin the classifier and the numeral always go together. And since the numeral is associated with indefiniteness, the classifier is not available for the role it plays in marking definiteness in Cantonese.

[3] For another diagnostic, also mentioned in C&S 1999, see Cheng and Sybesma 1998. For discussion of these diagnostics, see Tang 2005 and Li 2011. For more on the question of mass and count in Chinese languages, see Cheng, Doetjes, and Sybesma 2008 and Li, Dunham, and Carey 2009, among others.

[4] Sybesma (2007) presents a detailed comparison of the use of the classifier in Mandarin and Cantonese and concludes that classifiers in Mandarin are only used in counting. It is the numeral, and not the noun, that requires the presence of the classifier, as a result of which the one is basically never seen without the other.

In sum, in C&S 1999 we developed analyses to account for the variability in interpretation of identical surface forms and for the variation between Cantonese and Mandarin.

2 Sortal and Mensural Classifiers, Functional and Lexical Elements

W&B state that C&S 1999 and subsequent work of ours offer arguments for the claim that classifiers are determiners, and the whole purpose of W&B 2009 is to show that classifiers and definite articles are not the same.[5]

W&B claim that classifiers cannot possibly be determiners because classifiers are contentful morphemes, while determiners are functional elements (p. 488).[6] To show that classifiers have semantic content, they give the following Mandarin examples (their (1) and (2); tones added), noting that different classifiers create ''different cognitive effects'' (p. 488) when used with one and the same noun.

(2) a. yī běn shū/yī bāo shū/yī luò shū/yī xiāng shū
one CL:volume book/one CL:bag book/one CL:pile book/one CL:box book
'a book/a bag of books/a pile of books/a box of books'

b. yī lì mǐ/yī wǎn mǐ/yī tǒng mǐ/yī guō mǐ
one CL:grain rice/one CL:bowl rice/one CL:barrel rice/one CL:wok rice
'a grain of rice/a bowl of rice/a barrel of rice/a wok of rice'

As Gebhardt (2011) points out, W&B do not take into account the relevance of the important difference between sortal and mensural classifiers, a difference that is well-established (Lyons 1977, Croft 1994) and to which a whole section is devoted in C&S 1999 (section 2.1.1).[7] Mensural classifiers, also called ''measure expressions,'' include basic measures such as *kilo*, as well as container measures such as *a box of* and *a handful of*. These are very common in languages of the world. They are contentful, because they create, or provide, arbitrary measures for masses and pluralities of countable things. Since ''a boxful'' is a different measure from ''a pile,'' which

[5] W&B (p. 487) quote C&S 1999:522 as saying, ''[B]oth [Mandarin and Cantonese] have the equivalent of a definite article, namely, classifiers,'' and the title of their article is ''Classifiers ≠ Determiners.'' First, we must acknowledge that *D*, *determiner*, and *definite article* are not three different terms for the same thing. ''D'' is the head of DP, which can, but does not have to, be filled by a ''determiner,'' and ''definite articles'' belong to the category of determiners. And since D^0 can also be occupied by other elements, not everything found in D^0 is a determiner or a definite article. This means that saying that ''Cls are equivalent to a definite article'' does not automatically lead to the claim that ''Cl = D,'' and vice versa. This point is glossed over by W&B. Furthermore, the quotation is taken out of context. In C&S 1999, it is preceded by a passage discussing the use of the iota operator as a last resort operation to determine definiteness (see section 1 above). Following a quotation from Chierchia 1998:360, which says that if a language has ''a determiner D whose meaning is a particular type shifting, then use of [the covert iota] operation as an automatic type-changing functor is blocked,'' the text of C&S 1999 continues as follows (p. 522): ''Neither Cantonese nor Mandarin has a definite article. However, both languages have the equivalent of a definite article, namely, classifiers''—which must obviously be read as 'these two languages also have an element that can be put to use to perform different functions generally associated with D/determiners'. In that sense, (definite) determiners and classifiers are ''equivalent.''

[6] Incidentally, what W&B say about determiners is also not correct: ''[D]efinite articles are devoid of semantic content and solely contribute definite status to their associated noun'' (p. 488). For instance, in view of the fact that in some languages (e.g., German), number, gender, and Case are expressed and/or reflected on the definite article, clearly they may do much more.

[7] In their footnote 1, W&B simply state that they follow the Chinese tradition in not distinguishing between the two, without explaining why the traditional Chinese view is more insightful.

is in turn different from ''a bagful,'' all being different from reference to singular or simple plural instantiations, there are bound to be different ''cognitive effects'' depending on whether a speaker uses one or the other. A sortal classifier like *běn* in (2), however, ''does not contribute semantic content to the expression,'' as Gebhardt (2011:127) phrases it.

As discussed in C&S 1999 (see above), with reference to Croft 1994, sortal classifiers do not *create* a measure, as mensural classifiers do; instead, they simply *name* the unit that is already present in the semantic denotation of the noun. Their use is *grammatically* necessary. Consequently (without semantic contribution, with grammatical function), they are functional elements, just as determiners are functional elements. There is a ''lexical'' aspect to the sortals as well, as not all nouns combine with the same sortal; there are collocational restrictions. But this does not mean that sortal classifiers contribute meaning to the phrase as a whole. In fact, sortals offer very little room to play around with. Zhang (2007) gives a number of examples where the use of a different classifier with one and the same noun leads to highlighting a different aspect of the noun (a sheep as just an animal or a sheep as a domestic animal); but examples like these are rare, and even in such cases the choice of classifier is limited to a small preestablished set. One cannot use the classifier for animals in referring to the pursuers of one's daughter, for instance. In short, that ''meaningfulness can be said to be one of the defining properties of classifiers'' (W&B 2009: 488) is simply not true.

W&B further claim that, in contrast to definite articles, ''classifiers in Chinese constitute an *open word class*'' (p. 490). They refer to Zhang 2007:50 for this, but Zhang explicitly says that ''weight units and mass noun classifiers [Zhang's term for measure words; see Zhang 2007:45] are extrinsic to the head noun and belong to an open-ended class.'' Zhang says nothing about sortal classifiers.[8] The examples that W&B give suggest the same thing: the open-endedness is limited to the nonsortal classifiers. In fact, as functional elements, sortals are often regarded as closed-class elements (e.g., Barner, Inagaki, and Li 2009), just like determiners.[9] Zhang does point out that some sortals can also be used as nonsortals (see also Erbaugh 2006). The element *tiáo*, for instance, is a sortal for *yú* 'fish', *shé* 'snake', and *shéngzi* 'rope' and can arguably be regarded as a nonsortal in (3). The fact that some elements play a dual role does not make the class of sortals an open class.

(3) *Mandarin*
sān tiáo zhǐ
three slip paper
'three slips of paper'

Another argument for why sortal classifiers should be looked upon as grammatical elements that are required for grammatical reasons rather than for content can be deduced from their use by children and aphasics. When subjects (children and aphasics) are aware that a classifier is obligatory in a certain position in the sentence but do not know which is the appropriate one to use,

[8] Zhang (2007) does refer to the classifier system as an ''open system,'' without implying that sortal classifiers form an ''open class'' in the morphological sense; see Zhang 2007:57.

[9] Erbaugh (2006:40) says that sortals belong to an open class, but on page 42 she states that there are ''about 75'' of them, which does not seem to indicate an open class.

they use another one (often the general one). This means that they make a collocational (or lexical) mistake rather than a grammatical one (Erbaugh 1986, Ahrens 1994).

In short, contrary to the claim in W&B 2009, there are many good reasons for taking sortal classifiers to be primarily functional rather than lexical/contentful elements.[10]

3 Form and Interpretation

W&B make a number of statements regarding the interpretation of nominal phrases in Mandarin and Cantonese. Some of them are incorrect, while others present too simple a picture. We will discuss a number of these cases here.

First, in C&S 1999 we emphasize the individualizing function of sortal classifiers. In particular, the presence of classifiers yields singularities, as a result of which, we claim, they are incompatible with kind denotation. W&B state that our claim is ''easily falsified'' by data ''where an indefinite singular NP of the form [*yi*-Cl-N] is interpreted universally'' (p. 492); these data are given here (W&B's (5), tones added).

(4) *Mandarin*

a. yī jiā fēijī de sùdu bǐ yī sōu lùnchuán de sùdu kuài
one CL plane 's speed COMP one CL ship 's speed fast
'An airplane's speed is faster than a ship's.'

b. yī ge zhànshì yào suíshí zhǔnbèi wèi guó xīshēng zìjǐ
one CL soldier should anytime prepare for country sacrifice self
'A soldier should prepare to sacrifice himself anytime for his country.'

c. yī wèi hǎo lǎoshī bù jǐnjǐn jiāo xuéshēng zěnme xuéxí
one CL good teacher not just teach student how study
'A good teacher doesn't just teach students how to study.'

Aside from the fact that ''kind denoting'' and ''having universal quantification'' are not quite the same thing, we would like to point out that this is the wrong characterization of these sentences, in any event. These are sentences that Krifka et al. (1995) and many others call ''characterizing sentences,'' which are different from sentences with a universal quantification. The core problem here is that W&B do not consider the distinction between generic readings that come about through the binding of an indefinite noun phrase by a generic operator, and kind-referring noun phrases without such a generic operator. A clear-cut test, as indicated in Krifka et al. 1995, is the use of kind predicates, which favor a kind-referring interpretation, as indicated in (5) (examples from Krifka et al. 1995:10).

[10] W&B discuss whether or not all Chinese nouns are mass, and what role the classifier plays. Gebhardt (2011:128) notes that ''W&B's assumptions about the mass/count denotations of nouns are unclear'' and that they ''misread'' the claims in this domain in C&S 1999 as well as ''mischaracterize'' a number of points made in Borer 2005. There is no need, then, to go into what W&B say about the mass/count question. We simply want to point out one thing, which can easily lead to misunderstandings regarding the referentiality of nouns in Mandarin. W&B approvingly cite other works (Denny 1986:298, cited in Aikhenvald 2000:318) as saying that in Chinese, ''[t]he noun refers to some kind of mass and the classifier gives a unit of this mass'' (p. 488). The empirical problem with this kind of statement is that in Mandarin, though not in Cantonese, the noun does not need an overt classifier to refer to individual units, as is clear from the fact that bare nouns can have definite reference.

(5) a. The lion will become extinct soon.
b. Lions will become extinct soon.
c. *A lion will become extinct soon. (nontaxonomic reading)
d. Bronze was invented as early as 3000 BC.

Only kinds can die out or be invented. In English, as the data in (5) show, definite noun phrases and bare plurals can be used with kind predicates, while an indefinite noun phrase such as *a lion* cannot, even though an indefinite noun can obtain a generic reading under other circumstances (see Krifka et al. 1995). Now, consider sentences in Mandarin and Cantonese with kind predicates. Compare the Mandarin bare noun cases in (6a,c) with the [*yi*-Cl-N] cases in (6b,d), and the Cantonese bare noun cases in (7a,c) with the [*jat*-Cl-N] cases in (7b,d).

(6) *Mandarin*
a. shīzi hěn kuài jiù huì juézhǒng
lion very quick then will be.extinct
'Lions will be extinct very soon.'
b. *yī tóu shīzi hěn kuài jiù huì juézhǒng
one CL lion very quick then will be.extinct
'*A lion will be extinct very soon.'
c. fēijī shì Wright-xiōngdì fāmíng-de
airplane be Wright-brothers invent-DE
'Airplanes were invented by the Wright brothers.'
d. *yī jiā fēijī shì Wright-xiōngdì fāmíng-de
one CL airplane be Wright-brothers invent-DE
'*An airplane was invented by the Wright brothers.'

(7) *Cantonese*
a. si^{1}zi^{2} hou^{2} faai^{3} zau^{6} wui^{5} zyut^{6}zung^{2}
lion very quick then will be.extinct
'Lions will be extinct very soon.'
b. *jat^{1} zek^{3} si^{1}zi^{2} hou^{2} faai^{3} zau^{6} wui^{5} zyut^{6}zung^{2}
one CL lion very quick then will be.extinct
'*A lion will be extinct very soon.'
c. fei^{1}gei^{1} hai^{6} Wright-hing^{1}dai^{6} fat^{3}ming^{4}-ge^{3}
airplane be Wright-brothers invent-GE
'Airplanes were invented by the Wright brothers.'
d. *jat^{1} ga^{3} fei^{1}gei^{1} hai^{6} Wright-hing^{1}dai^{6} fat^{3}ming^{4}-ge^{3}
one CL airplane be Wright-brothers invent-GE
'*An airplane was invented by the Wright brothers.'

From (6a,c) and (7a,c) it is clear that in both Mandarin and Cantonese, bare nouns can be used with kind predicates; in other words, bare nouns can be used as kind-referring noun phrases. In contrast, (6b,d) and (7b,d) show that indefinite noun phrases with the form ['one'-Cl-N] cannot be used with kind predicates. As indicated in C&S 1999, this is due to the fact that the presence

of the classifier yields individuality, which results in a reading that is not compatible with a kind predicate.[11]

This is not a surprising result, since crosslinguistically, indefinite NPs are not considered as kind-referring, as Krifka et al. (1995) clearly show. The generic interpretation that arises in (4a–c) and (8a–c) (from Krifka et al. 1995:12, 18, 17) is probably due to the nature of the sentences: these qualify as characterizing sentences.

(8) a. An Italian drinks wine with his dinner.
b. A lion (usually) weighs more than 200 lbs.
c. Lions are mammals.

The interpretation of these sentences can be accounted for by positing a generic operator, which binds the indefinite noun phrase. Example (4c) (repeated here as (9a)) can thus have the interpretation represented roughly in (9b).

(9) *Mandarin*
a. yī wèi hǎo lǎoshī bù jǐnjǐn jiāo xuéshēng zěnme xuéxí
one CL good teacher not just teach student how study
'A good teacher doesn't just teach students how to study.'
b. GEN [x; y] (x is a teacher & y are students; if x is good, x does not just teach y how to study)

The sentence is interpreted as 'in general, if a teacher is good, he or she does not just teach students how to study'. It is not a universal interpretation, as W&B claim, but a generic one.

Second, W&B raise two objections against claims made in C&S 1999 concerning Cantonese classifiers. The first objection has to do with the ''variable interpretation'' of Cantonese classifiers, the second with the role played by context in determining a definite interpretation of Cantonese [Cl-N] phrases. We look at these objections now.

With regard to the ''variable interpretation,'' compare (10a) and (10b), the former a typical case showing a definite reading of [Cl-N] phrases in Cantonese, the latter an existential sentence with an indefinite. Example (10a) is originally (19a) in C&S 1999; (10b) is provided by W&B (their (11)) (both given here with tones).

(10) *Cantonese*
a. gaa^{3} ce^{1} zo^{2}-zyu^{6} go^{3} ceot^{1}hau^{2}
CL car block-CONT CL exit
'The car is blocking the exit.'
b. jau^{5} (jat^{1}) gaa^{3} ce^{1} zo^{2}-zyu^{6} go^{3} ceot^{1}hau^{2}
have (one) CL car block-CONT CL exit
'There is a car blocking the exit.'

[11] The marking of individuality is not incompatible with the occurrence of numerals higher than 1, if numerals are multipliers rather than counters.

While acknowledging that [Cl-N] phrases can be definite in Cantonese, W&B claim that ''the definite interpretation of a classifier phrase is contextually constrained'' (p. 495).[12] They go on to explain that (10a) is appropriate only in a context in which some car has already become the topic of conversation, and both speaker and hearer know the referent of the noun in question. ''Otherwise, a word like *jau*^{5} 'exist, have' would have to be used before the classifier phrase'' (p. 496). To illustrate, they give the existential sentence in (10b).

This is quite puzzling. If the interpretation of a phrase is wholly determined by the (pragmatic) context, why is *jau*^{5} 'exist, have' needed to make the phrase indefinite? One of the points of C&S 1999 was to explain why one surface string ([Cl-N] in the case of Cantonese, bare nouns for Mandarin) can have a definite as well as an indefinite interpretation. In section 3.2.2 of C&S 1999, the account offered is the one given in (1) above: ''surface strings of the form [Cl + N] have two different structural representations'' (p. 529); in the case of an indefinite interpretation, [Cl-N] is actually a NumeP, while a definite interpretation corresponds to a ClP (i.e., a ClassifierP). This account may not be correct, but it is a structural account. Replacing this account with an ''account'' which says that definite phrases are definite and can only be used in contexts in which a phrase with definite reference is appropriate and indefinite ones are indefinite and can only be used in contexts in which a phrase with indefinite reference is called for does not seem to lead to greater insight.

Also, the ''constraint'' that W&B describe is the classic ''familiarity theory of definiteness'' (see Heim 1983), and the information status of definite noun phrases has led to active discussion also in relation to definite noun phrases in English, showing that Chinese in fact is not unique in this respect.

Equally problematic is W&B's claim that [Cl-N] and [Dem-Cl-N] in Cantonese are interchangeable. While acknowledging that in English, a phrase with *the* is different from a phrase with a demonstrative, W&B explicitly say that in Chinese, a phrase with a demonstrative ''invariably gives rise to a definite reading'' (p. 498, and elsewhere). However, in Mandarin and Cantonese the closest counterparts of a phrase with *the* in English are a bare noun and a [Cl-N] phrase, respectively. In a context in which a book and a journal are on the table and someone says, ''The book is mine,'' the Mandarin rendering is (11a), with the bare noun, rather than (11b), with a demonstrative and a classifier.[13] In Cantonese, (12a), with [Cl-N], is preferred over (12b). (For discussion, see Sybesma and Sio 2008.)

(11) *Mandarin*
  a. shū shì wǒ-de
     book be 1SG-DE
     'The book/The books is/are mine.'

[12] It should be noted that W&B obscure the discussion by adding parenthesized demonstratives to the [Cl-N] phrases in some of the sentences taken from C&S 1999, like the one given here in (10a). By doing this, they suggest that [Cl-N] phrases and [Dem-Cl-N] phrases are more or less the same, which is not the case (see below). As a consequence, their description on pages 495–496 of the context in which a [Cl-N] phrase is used felicitously is incorrect.

[13] Interestingly, another possibility is [Dem-N]: *nà shū shì wǒ-de* 'that book COP 1SG-DE'—that is, with a demonstrative, but without a classifier.

b. nèi/zhèi běn shū shì wǒ-de
that/this CL book be 1SG-DE
'That/This book is mine.'

(12) *Cantonese*
a. bun^{2} syu^{1} hai^{6} ngo^{5}-ge^{3}
CL book be 1SG-GE
'The book is mine.'
b. li^{1}/go^{2} bun^{2} syu^{1} hai^{6} ngo^{5}-ge^{3}
that/this CL book be 1SG-GE
'That/This book is mine.'

In other words, when W&B say (p. 494) that ''[f]or a bare [Cl-N] phrase in Mandarin to have the same interpretation as a [*the*-N] phrase in English, . . . it must combine with a demonstrative plus the numeral *yi* 'one','' they make a statement that is empirically incorrect (in any case, it is incomplete), as deletion of the Cl would be the preferred option (as in (11a)). Similarly, as mentioned in footnote 12, adding demonstratives to some of the examples from C&S 1999 gives the impression that it makes no difference whether they are there or not, but this is not the case.[14] That the examples with and without the demonstratives are not the same is also clear when we look at sentences such as the one in (13a), involving definite *predicates*. We see that in this case, demonstratives must be used in Cantonese (in contrast with the English counterpart in (13b)), showing that [Dem-Cl-N] and [Cl-N] are not interchangeable. ((13) is taken from Cheng, Heycock, and Zamparelli 2010, which offers a possible account for the fact that [Cl-N] is not felicitous as a definite predicate.)

(13) Context: We have been talking about pupils who will be chosen to meet the prime minister. I have explained that exactly two pupils will be chosen: one boy and one girl.
a. *Cantonese*
John hai^{6} *(go^{2}) go^{3} naam^{4}zai^{2}
John COP DEM CL boy
'John is that boy.'
b. John is the boy.

Another test, helpfully suggested by a reviewer, is to see whether demonstratives and classifiers in Cantonese behave the same in [X boy is tall and X boy is not tall]. In English, if X is a demonstrative, the sentence does not necessarily lead to a contradiction (i.e., *That boy is tall and that boy is not tall*), while if X = *the*, a necessary contradiction results. In Cantonese, using a demonstrative does not lead to a contradiction, while using [Cl-N] does.

[14] W&B's examples taken from news broadcasts do not clarify much, as it is well-known that this is a register very different from colloquial speech.

(14) *Cantonese*

a. go^2 go^3 naam^{4}zai^2 hou^2 gou^1; go^2 go^3 naam^{4}zai^2 m^4 gou^1
that CL boy very tall that CL boy not tall

b. #go^3 naam^{4}zai^2 hou^2 gou^1; go^3 naam^{4}zai^2 m^4 gou^1
CL boy very tall CL boy not tall

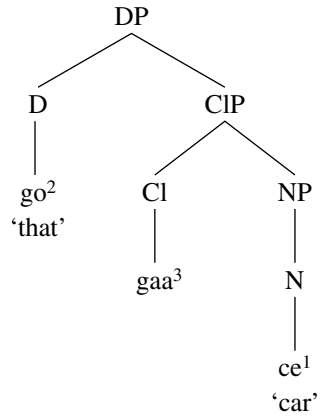
In short, it is incorrect to give the demonstrative in Chinese the same status as the definite determiner in English; and it is incorrect to equate [Cl-N] with [Dem-Cl-N] in Cantonese.

4 The Structure of DP

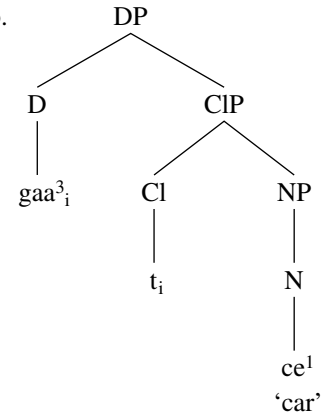
4.1 Wu and Bodomo's Proposal

W&B offer the structures in (15) to account for the definite interpretation of [Cl-N]s in Cantonese (their (16), tones added).

(15) a.



b.



W&B state that ''classifiers, while unable to indicate definiteness by themselves, may be associated with the deictic function by moving to D and being combined with it'' (p. 499).

We would like to make two comments here. First, this proposal comes as a surprise in light of the previous sections of W&B 2009, as it is very much in the spirit of C&S 1999 in the sense that the classifier plays a prominent role in expressing referentiality/definiteness (and W&B make it clear that they see classifiers as contentful, lexical elements, which cannot possibly have anything to do with such a grammatical function).

Second, W&B do not define what they mean by *deictic*, but since in (15a) the D^0 position is occupied by a demonstrative, we assume that they mean demonstrativity, which means that their analysis implies that [Cl-N] phrases are identical to phrases with a demonstrative, which they are not, as we have just shown.

Next, W&B consider that their proposed structure has an additional advantage in view of noun phrases with a possessor. Cantonese possessives can take the form [NP_1-Cl-NP_2], and W&B accommodate the possessor in the D^0 position (see their structure (18), p. 500). However, the possessor can take a phrasal form, as shown here in (16a–b). This being the case, the advantage

turns into a disadvantage, since phrases like *go*^{2}-*go*^{3} *hok*^{6}*saang*^{1} 'that student' or *go*^{2}-*go*^{3} *naam*^{4}-*zai*^{2} 'that boy' can also appear as ''bare possessors'' (i.e., possessors not accompanied by the modification marker *ge*^{3}), and as phrases, they cannot occupy the D^0 position.[15]

(16) *Cantonese*
a. [go^{2} go^{3} hok^{6}saang^{1}] bun^{2} syu^{1}
that CL student CL book
'that student's book'
b. [go^{2} go^{3} naam^{4}zai^{2}] deoi^{3} ngaan^{5}geng^{2}
that CL boy CL^{pair} glasses
'that boy's glasses'

Another problem associated with the structures in (15) is that ''bare possessors'' can also appear above a demonstrative, as illustrated in (17a–b).

(17) *Cantonese*
a. keoi^{5} go^{2} bun^{2} syu^{1}
he that CL book
'that book of his'
b. Wu^{4}fei^{1} go^{2} bun^{2} syu^{1}
Wufei that CL book
'that book of Wufei's'

These cases show that the bare possessor cannot possibly be in the position that hosts the demonstrative, since the demonstrative is present. This shows that W&B's idea of putting bare possessors in D^0 is incorrect.

Finally (and crucially in view of C&S 1999's comparative point of departure), it is not clear how Mandarin fits into this structure, as bare nouns can be definite in Mandarin. W&B are silent about this point.

4.2 D or No D?

A proposal very similar to W&B's had already been put forth by Simpson (2005). Simpson's proposal is based on an extensive crosslinguistic discussion about the expression of definiteness in relation to the occurrence of bare classifiers. The discussion involves languages like Vietnamese, Hmong, and Nung, which are similar to Cantonese in that noun phrases with bare classifiers can indicate definiteness. Simpson assumes a structure that is headed by D^0, suggesting that when the D projection is occupied (by having something in D^0 or in Spec,DP), its interpretation is definite. More specifically, if demonstratives are in Spec,DP, or if Cl^0 moves to D^0, a definite interpretation results.[16] Crucially, Simpson states that when the numeral is present, it blocks Cl^0

[15] They may occupy the specifier position of D, as a reviewer suggests, but that is not what W&B propose.

[16] See Simpson 2005, as well as Sybesma and Sio 2008 and articles cited therein, for detailed discussion of demonstratives as XPs (and not as a D^0).

from moving to D^0, resulting in an indefinite interpretation. As far as we can tell, Simpson does not assume that $Nume^0$ moves to D^0 to trigger an indefinite reading, from which we can conclude that D^0 is inherently definite. In Simpson's proposal, the definite and indefinite interpretations will thus have the following representations:

(18) a. Indefinite: $[_{DP}\ D^0\ [_{NumeP}\ Nume^0\ [_{ClP}\ Cl^0\ [_{NP}\ N^0]]]]$
b. Definite: $[_{DP}\ D^0\ [_{ClP}\ Cl^0\ [_{NP}\ N^0]]]$

These representations are quite similar to the ones in C&S 1999, given in (1). In Simpson's analysis, both structures are topped by a D projection, which is absent in (1). But note that in both analyses, the NumeP is crucial in determining indefiniteness, leading to an inactive D projection in Simpson's case. The only difference, really, is the place where definiteness is encoded. In Simpson's approach, it is associated exclusively with D^0; in the approach taken in C&S 1999, it is associated with Cl^0.

Independent of the position of the demonstratives, Sio (2006) argues that there is evidence for an additional functional layer on top of NumeP or ClP (see also Sybesma and Sio 2008). In Cantonese, a possessor marked with subordinative marker *ge*^{3} can appear above the [Dem-Cl-NP] sequence, or above NP, but not above [Cl-NP].

(19) *Cantonese*
a. zoeng^{3}saam^1 ge^3 laang^{1}saam^1
Zoeng Saam GE sweater
'Zoeng Saam's sweater(s)'
b. *zoeng^{3}saam^1 ge^3 gin^6 laang^{1}saam^1
Zoeng Saam GE CL sweater
Intended: 'Zoeng Saam's sweater'
c. zoeng^{3}saam^1 ge^3 go^2 gin^6 laang^{1}saam^1
Zoeng Saam GE that CL sweater
'that sweater of Zoeng Saam's'
(= (15a–c) in Sybesma and Sio 2008)

Assuming that the possessor marked with *ge*^{3} is an adjoined phrase, if demonstratives are simply in Spec,ClP, it would be unclear why (19b) is ungrammatical while (19c) is grammatical. Sio thus argues that there is an additional functional projection above the NumeP, which she calls SpecificityP (SP), to which the possessor is adjoined.[17] This is the analysis Sio (2006) proposes:

(20) a. Indefinite: $[_{SP}\ S^0\ [_{NumeP}\ Nume^0\ [_{ClP}\ Cl^0\ [_{NP}\ N^0]]]]$
b. Definite: $[_{SP}\ S^0\ [_{ClP}\ Cl^0\ [_{NP}\ N^0]]]$

Ignoring the labeling, Simpson's (2005) analysis and Sio's (2006) can both be represented as in (21).

[17] See Sio 2006 and Sybesma and Sio 2008 for details and for further evidence provided by Wenzhou.

(21) a. Indefinite: $[_{FP}\ F^0\ [_{NumeP}\ Nume^0\ [_{ClP}\ Cl^0\ [_{NP}\ N^0]]]]$
b. Definite: $[_{FP}\ F^0\ [_{ClP}\ Cl^0\ [_{NP}\ N^0]]]$

However, the role Sio has in mind for the top FP (''SpecificityP'') is very different from the one assigned to it in Simpson's analysis (''DP''). Sio's proposal goes back to the role of the higher D in Hungarian proposed by Szabolcsi (1994). Szabolcsi posits two D-type projections in the noun phrase, mainly because two D-type elements can cooccur in Hungarian. The first one, heading the topmost functional projection in the phrase, is the article; it is either *a(z)* 'the' or *Ø* 'a, some', and Szabolcsi labels it ''D.'' The second one is realized by any of a list of quantificational elements such as *minden* 'every', *kevés* 'few', and *semelyik* 'neither' or the demonstratives *e/eme/ezen* 'this', *ama/azon* 'that'. This second type of D is labeled ''Det'' by Szabolcsi. Szabolcsi argues that D is a ''subordinator,'' just like C: both ''enable the clause and the noun phrase to act as arguments'' (p. 214, (80b)). D mainly has a grammatical function. On the other hand, DetP determines the quantification and the definiteness of the noun phrase. The form realized by the D head (definite/strong *a(z)* or indefinite/weak *Ø*) is determined by a ''concord-like process'' (i.e., agreement) with DetP.

Returning to Mandarin and Cantonese, the question that arises is whether the FP in (21) above the NumeP or ClP encodes (in)definiteness (as in Simpson 2005 and W&B 2009) or reflects the (in)definiteness already determined elsewhere in the phrase. The latter is what Sio opts for, following Szabolcsi. More specifically, Sio argues that F^0 in FP (SpecificityP) agrees with either $Nume^0$ [−def] or Cl^0 [+def] for [±definiteness]. In particular, the F^0 has an uninterpretable [def] feature, which it can check off upon agreeing with an interpretable [±def] feature (with $Nume^0$ having a [−def] value while Cl^0 has a [+def] value).

In short, although the representations in (18) and (20) seem like notational variants of each other, the topmost F^0 is exclusively associated with definiteness in the former, while it is not in the latter, which merely reflects the (in)definiteness already present elsewhere in the phrase.[18]

So, does Chinese have a D? Bošković (2008, 2009, 2010) proposes that determinerless languages in which bare nouns may have both definite and indefinite readings do not have a D projection. How about Chinese, then?

In C&S 1999:513, we distinguish three functions D may have. One is the function we just discussed, which is based on claims by Szabolcsi (1987, 1994:181) (see also Stowell 1989): D turns NPs, which are predicates (or propositions), into arguments; Szabolcsi takes it that in this respect typical Ds like articles are similar to complementizers, and both are ''subordinators.'' Second, D has an individualizing or singularizing function (Longobardi 1994:634): it has the ability to pick out a single instance of whatever is described by the predicative NP (see also

[18] A reviewer points out that the analysis in C&S 1999 is rather cumbersome when it comes to the (in)definite interpretation: the definiteness of the classifier is undone by the indefiniteness of a numeral, and if there is a demonstrative present, it will then switch the interpretation back to (some kind of) definiteness. Kayne (2008:311) points out that in French, *des*, which is arguably the indefinite plural article, involves the same process, since *des* is a contraction of *de* and the definite article *les*.

Higginbotham 1985). This function we took in C&S 1999 to be connected to the third function (similar, yet not identical) that can be performed by D, that of mediating between the description (predication) provided by the NP and whatever specific entity in the real world the description is applied to. We referred to this function (possibly a discourse function), as the *deictic function* of D.[19]

This last function seems to point to a general characteristic of language (C&S 1999:518): for example, the same kind of division of labor exists in the verbal domain between the describing VP and the referring, deictic T, which links the event described in the VP to a particular event associated with a particular point on the time axis. This division of labor may very well be a property of Universal Grammar: some (lexical) entities describe, whereas other entities perform the deictic discourse function of linking the description to some particular object or event in the real world. In languages with articles/determiners, the deictic function in the nominal phrase is taken care of by the article/determiner. However, this should not lead one to conclude that if a language has no articles/determiners, no element performs the deictic function. If the describing/referring dichotomy is indeed part of Universal Grammar, then if a language has no articles/determiners, some other element in the language must perform the deictic function. In C&S 1999, we suggest that in Chinese Cl^0 performs some of the functions performed by D^0, including the deictic function (as defined here).[20]

The question is what is gained by postulating a DP. In view of the fact that there is no empirical reason for it (Chinese languages have no articles), does it make sense to just postulate an empty D for the sake of universality? This is what W&B do (p. 499). They state that since it is generally assumed that arguments are DPs, it must be the case that a [Cl-N] phrase when functioning as an argument is a DP. We would like to raise the question: what is it about D that makes a DP have this function, and is this (whatever it is) *necessarily* and *exclusively* associated with D?

The literature on DP shows that the superstructure of the NP contains a number of functions, some of which are involved in relating the NP to the context (turning NPs into arguments as well as the deictic function discussed above). We also notice that typical D elements, such as articles and determiners, hardly ever do just one thing: they may be involved in the expression of number (French singular *le* vs. plural *les*), in classification (French masculine *le* vs. feminine *la*), and in definiteness (French definite *le* vs. indefinite *un*). Is French *le* primarily a determiner that also performs the other functions, or is it primarily a gender classifier, performing other functions as well? And if the former option is the correct one, does this mean that elements performing these different functions at the same time must necessarily and primarily be determiners? Of course,

[19] W&B 2009 is partly devoted to discussing whether classifiers have a ''deictic function'' or not. We will not go into the points W&B raise, because in evaluating whether classifiers are deictic, they use a different definition of this term than the one given in C&S 1999.

[20] In C&S 1999, we associated Cl with D/determiner in the sense that Cl performs functions that are performed by typical D elements in other languages. This is explicitly stated on pages 520, 534, and 538.

we can look for a determiner in Chinese, but we can also simply acknowledge the fact that the classifier, at least in Cantonese, similarly performs several functions at the same time.

Ultimately, it may all be a matter of definition and terminology. One could simply decide that the topmost layer in the nominal phrase is called ''DP''—by definition, just as the outer layer of the sentence is always ''CP''—without any strong claims as to what it shall do; going by the analysis in (21), Cl will never occupy the head of this DP, in which case Cl is not a D. Alternatively, we can attach the label ''D'' to whatever element is the deictic/referring head, in which case C&S 1999 may be interpreted as saying that $Cl^0 = D^0$ (which, we maintain, is not the same as saying that Cl = determiner; see footnote 5).

References

Ahrens, Kathleen. 1994. Classifier production in normals and aphasics. *Journal of Chinese Linguistics* 22: 202–246.

Aikhenvald, Alexandra. 2000. *Classifiers: A typology of noun categorization devices*. Oxford: Oxford University Press.

Barner, David, Shunji Inagaki, and Peggy Li. 2009. Language, thought, and real nouns. *Cognition* 111: 329–344.

Borer, Hagit. 2005. *In name only*. Oxford: Oxford University Press.

Bošković, Željko. 2008. What will you have, DP or NP? In *NELS 37*, ed. by Emily Elfner and Martin Walkow, 101–114. Amherst: University of Massachusetts, Graduate Linguistic Student Association.

Bošković, Željko. 2009. The NP/DP analysis and Slovenian. In *Proceedings of the University of Novi Sad Workshop on Generative Syntax 1*, 53–73. Novi Sad: Filozofski fakultet u Novom Sadu.

Bošković, Željko. 2010. On NPs and clauses. Ms., University of Connecticut, Storrs.

Cheng, Lisa Lai-Shen, Jenny Doetjes, and Rint Sybesma. 2008. How universal is the Universal Grinder? *Linguistics in the Netherlands* 2008:50–62.

Cheng, Lisa Lai-Shen, Caroline Heycock, and Roberto Zamparelli. 2010. Definitely predicative? Paper presented at the Network Final Conference ''Bantu, Chinese, Romance Nouns and Noun Phrases.'' Leiden University, October 2010.

Cheng, Lisa Lai-Shen, and Rint Sybesma. 1998. Yi-wan tang, yi-ge tang: Classifiers and massifiers. *Tsing-Hua Journal of Chinese Studies*, new series, 28:385–412.

Cheng, Lisa Lai-Shen, and Rint Sybesma. 1999. Bare and not-so-bare nouns and the structure of NP. *Linguistic Inquiry* 30:509–542.

Chierchia, Gennaro. 1995. Plurality of mass nouns and the notion of ''semantic parameter.'' In *Events and grammar*, ed. by Susan Rothstein, 53–103. Dordrecht: Kluwer.

Chierchia, Gennaro. 1998. Reference to kinds across languages. *Natural Language Semantics* 6:339–405.

Croft, William. 1994. Semantic universals in classifier systems. *Word* 45:145–171.

Denny, J. Peter. 1986. The semantic role of noun classifiers. In *Noun classes and categorization: Proceedings of a symposium on categorization and noun categorization, Eugene, Oregon, 1983*, ed. by Colette Craig, 297–308. Amsterdam: John Benjamins.

Erbaugh, Mary S. 1986. Taking stock: The development of Chinese noun classifiers historically and in young children. In *Noun classes and categorization*, ed. by Colette Craig, 399–436. Amsterdam: John Benjamins.

Erbaugh, Mary S. 2006. Chinese classifiers: Their use and acquisition. In *The handbook of East Asian psycholinguistics*. Vol. 1, *Chinese*, ed. by Ping Li, Li Hai Tan, Elizabeth Bates, and Ovid Tzeng, 39–51. Cambridge: Cambridge University Press.

Gebhardt, Lewis. 2011. Classifiers are functional. *Linguistic Inquiry* 42:125–130.

Heim, Irene. 1983. File change semantics and the familiarity theory of definiteness. In *Meaning, use and the interpretation of language*, ed. by Rainer Bäuerle, Christoph Schwarze, and Arnim von Stechow, 164–190. Berlin: Walter de Gruyter.
Higginbotham, James. 1985. On semantics. *Linguistic Inquiry* 16:547–593.
Kayne, Richard S. 2008. Comparative remarks on French and Italian definite articles. In *Foundational issues in linguistic theory: Essays in honor of Jean-Roger Vergnaud*, ed. by Robert Freidin, Carlos P. Otero, and Maria Luisa Zubizarreta, 291–321. Cambridge, MA: MIT Press.
Krifka, Manfred, Francis Jeffry Pelletier, Gregory N. Carlson, Alice ter Meulen, Gennaro Chierchia, and Godehard Link. 1995. Genericity: An introduction. In *The generic book*, ed. by Gregory N. Carlson and Francis Jeffry Pelletier, 1–124. Chicago: University of Chicago Press.
Li, Peggy, Yarrow Dunham, and Susan Carey. 2009. Of substance: The nature of language effects on entity construal. *Cognitive Psychology* 58:487–524.
Li, Xu-Ping. 2011. On the semantics of classifiers in Chinese. Doctoral dissertation, Bar-Ilan University.
Longobardi, Giuseppe. 1994. Reference and proper names. *Linguistic Inquiry* 25:609–665.
Lyons, John. 1977. *Semantics*. Cambridge: Cambridge University Press.
Paris, Marie-Claude. 1981. *Problèmes de syntaxe et de sémantique en linguistique chinoise* [Problems of syntax and semantics in Chinese linguistics]. Paris: Collège de France.
Paris, Marie-Claude. 1989. *Linguistique générale et linguistique chinoise: Quelques exemples d'argumentation* [General linguistics and Chinese linguistics: Some examples of argumentation]. Paris: Université Paris 7, UFRL.
Simpson, Andrew. 2005. Classifiers and DP structure in Southeast Asia. In *Handbook of comparative syntax*, ed. by Guglielmo Cinque and Richard S. Kayne, 806–838. Oxford: Oxford University Press.
Sio, Joanna U.-S. 2006. Modification and reference in the Chinese nominal. Doctoral dissertation, Leiden University.
Stowell, Tim. 1989. Subjects, specifiers, and X-bar theory. In *Alternative conceptions of phrase structure*, ed. by Mark R. Baltin and Anthony S. Kroch, 232–262. Chicago: University of Chicago Press.
Sybesma, Rint. 2007. Běifāng fāngyán hé Yuèyǔ zhōng míngcí de kěshǔbiāojì [Markers of countability on the noun in Mandarin and Cantonese]. *Yǔyánxué Lùncóng* 35:234–245.
Sybesma, Rint, and Joanna U.-S. Sio. 2008. D is for demonstrative: Investigating the position of the demonstrative in Chinese and Zhuang. In ''Syntactic Categories and Their Interpretation in Chinese,'' ed. by Huba Bartos, special issue, *The Linguistic Review* 25(3–4):453–478.
Szabolcsi, Anna. 1987. Functional categories in the noun phrase. In *Approaches to Hungarian 2*, ed. by István Kenesei, 167–190. Szeged: JATE.
Szabolcsi, Anna. 1994. The noun phrase. In *The syntactic structure of Hungarian*, ed. by Ferenc Kiefer and Katalin É. Kiss, 179–274. San Diego, CA: Academic Press.
Tang, Chih-Chen Jane. 1990. Chinese phrase structure and the extended X′-theory. Doctoral dissertation, Cornell University, Ithaca, NY.
Tang, Chih-Chen Jane. 2005. Nouns or classifiers: A non-movement analysis of classifiers in Chinese. *Language and Linguistics* 6:431–472.
Wu, Yicheng, and Adams Bodomo. 2009. Classifiers ≠ determiners. *Linguistic Inquiry* 40:487–503.
Zhang, Hong. 2007. Numeral classifiers in Mandarin Chinese. *Journal of East Asian Linguistics* 16:43–59.

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Flavors of Division

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The theoretical aim of this article is to integrate the singulative into the theory of division proposed by Borer (2005) and other theoretical linguists (e.g., Krifka 1995, Doetjes 1996, 1997, Chierchia 1998, Cheng and Sybesma 1999). To illustrate my claim, I offer a brief case study of Ojibwe, an Algonquian language, which I argue uses gender shift (from inanimate to animate) to mark singulativization. Singulatives, as morphological markers, are primarily known from Celtic, Afro-Asiatic, and Nilo-Saharan languages, but are not a known feature of Algonquian languages. Further support for my claim that the grammar of Algonquian languages embeds a singulative system comes from Fox (Mesquakie).

Keywords: singulative, division, number, gender, Algonquian, Celtic, plural, classifiers

Borer (2005) proposes that all nouns in all languages are in need of being portioned out before they can interact with the count system. In Chinese, this is achieved by (count) classifiers for count nouns and (mass) classifiers for mass nouns (Cheng and Sybesma 1999).[1] In English, plural marking takes the role of classifiers for count nouns, and measure phrases are used in lieu of

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[1] Following Cheng and Sybesma (1999), classifiers can roughly be divided into two groups: classifiers that create a unit of measure, and those that simply name the unit in which the entity denoted by the noun naturally occurs. Cheng and Sybesma refer to the classifiers that create a unit of measure as *massifiers* (short for *mass-classifiers*) and to the ones that simply name the unit of natural semantic partitioning as *classifiers* (short for *count-classifiers*).

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mass classifiers (Sanches and Slobin 1973, Doetjes 1996, 1997).[2] For singular individual nouns in English such as *cat* in *one cat*, the numeral *one* functions both as a divider and as a counter. In Hungarian, Tagalog, and Turkish, this is generalized to all numerals, in which case it is possible for the noun to be free of plural marking (Borer 2005).

I will show that atomization[3] for count nouns in Ojibwe (an Algonquian language)[4] can proceed exactly as in English, namely, by way of the plural. However, in the absence of many measure phrases or productive mass classifiers, Ojibwe uses a singulative system (or the remnants thereof) to perform division that yields unit-of-measure readings (from mass nouns). As is the case in other languages with the singulative, atomization via the singulative in Ojibwe is also used to create individuals from collectives.

The idea that the singulative performs the same function as a classifier goes back to Greenberg (1972),[5] who states that ''[t]he classifier is an individualizer which performs the same function as a singulative affix in languages with the collective/singulative opposition'' (p. 26).[6] Reversing this claim (a singulative affix performs the same function as a classifier) and adding the singulative system to the theory of division is only a logical step that makes the present proposal a very natural one.

The degree to which the content of Div^0 (the locus of individuation according to Borer (2005)) varies is consequently higher than previously thought (see Ritter and Wiltschko 2009 for the idea that the content of functional categories can vary crosslinguistically). The plural, numeral classifiers, and atomizing numerals are all different flavors Div^0 can take, but we must now add the singulative. I will show that the content of the singulative itself varies: in Ojibwe, it comes in the form of gender shift or in the form of the diminutive. Crosslinguistically, gender shift comes in two subflavors: shift from masculine to feminine in Breton, Welsh, Somali, and Arabic,

[2] The idea that number is not about counting but about dividing undivided stuff is most apparent in English in the case of fractions (as originally described by Krifka (1989)). The noun *apple* is systematically pluralized in (i) although there is only one apple involved in each case. This is an effect found in many languages, not just English.

(i) a. 0.2 apples/*apple
b. 0.1 apples/*apple
c. 1.5 apples/*apple
d. 1.0 apples/*apple
(Borer 2005:115)

[3] I use *division*, *individualization*, and *atomization* interchangeably.

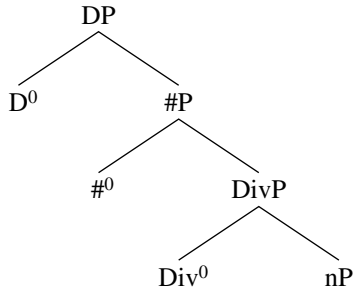
[4] *Ojibwe* encompasses varieties of the language called by different names in English, including Odawa, Ottawa, Chippewa, or Ojibway. While the language is spoken over a vast region of central Canada and in US border states from Michigan to Montana, the varieties of the language used in this study are those described in Valentine 2001: that is, dialects spoken in southern Ontario between the shores of Lake Huron to the east roughly as far as the Ottawa River. Many of the original data used in this article come from fieldwork undertaken with members of The Chippewas of Nawash Unceded First Nation at Cape Croker (Neyaashiinigmiing) on the Saugeen (Bruce) Peninsula. Ojibwe is spoken there; a few individuals speak Odawa. Other data come from published material such as grammars, dictionaries, and articles on the syntax and morphology of the language.

[5] Greenberg's work is, of course, independently a source of inspiration for Borer 2005.

[6] See also Sanches and Slobin 1973.

but shift from inanimate to animate in Algonquian.[7] (1) summarizes the different flavors that Div^0 can take.

(1) a.



{A; B; C; D{a,b}}

b. *Possible content/flavors of Div^0*
A = plural (Number system 1)
B = numeral classifier (Number system 2)
C = numerals (Number system 3)
D = singulative (Number system 4)
a = gender shift
b = diminutive

Since there is evidence that singulative forms can be pluralized, my final claim will be that division is not the sole function of the plural (as in Borer 2005); it can also simply be used as a counter, as taken for granted by traditional grammars and common wisdom. The plural thus has a dual role in the grammar.

In tackling issues related to the count/mass distinction (e.g., the role of number in aboriginal languages or the derived versus default nature of the plural), this article contributes to many current issues in linguistics.

Section 1 incorporates the singulative into Borer's (2005) system of division and discusses known languages that have the singulative as part of their grammars. Section 2 introduces the basic facts about Ojibwe. It also introduces a puzzle: why Ojibwe mass nouns can systematically be pluralized, a problem whose solution will be connected to the singulative. Section 3 gives a full analysis of the Ojibwe singulative, focusing on gender shift from inanimate to animate. Section 4 introduces another means by which the singulative in Ojibwe can be realized: the diminutive. Section 5 concludes.

[7] I take it that while Div^0 is universal, its content is not. The list in (1b) is not meant to be exhaustive: other exponents of Div^0 and of the singulative itself might be discovered. This is why I want to avoid viewing the different flavors of Div^0 as traditional parameters (see, e.g., Newmeyer 2005 and Boeckx 2010 for the idea that parameters are best relegated to outside systems of the grammar).

1 The Singulative

The singulative is a process by which a collective or a mass noun (of a certain kind, depending on the language) is turned into a unit. It is common crosslinguistically for gender shift to mark the singulative. For example, languages like Russian that have remnants of a singulative system (which was once fully productive; Greenberg 1972) use a shift from masculine to feminine by way of a suffix on a mass noun to create a unit-of-measure reading (*lyod* (MASC) 'ice' ~ *l'dina* (FEM) 'block of ice') or a simple unit reading (*grad* (MASC) 'hail' ~ *gradina* (FEM) 'hailstone'). Hebrew also has remnants of a singulative system whereby a mass noun that is masculine is turned into an individual marked as feminine: *se'ar* (MASC) 'hair' ~ *sa'ar-a* (FEM) 'hair' ~ *sa'ar-ot* 'hairs' (Doron and Müller 2011). In that language, it is also possible to shift from feminine to masculine: *alv-a* (FEM) 'foliage' ~ *ale* (MASC) 'leaf' ~ *al-im* (MASC) 'leaves'.

In Breton (a Celtic language, still spoken in some western parts of France), nouns that refer to collections or masses can be portioned out with the help of a feminine suffix, *-enn*, yielding singulative nominals.[8] The feminine is marked and used to distinguish count from mass/collective. Collective nouns, as in (2), are semantically plural, but morphosyntactically singular (examples from Stump 2005:62). The collective is typically used to denote a kind (in contrast, the singulative term is never associated with kinds).

(2)

a.	buzhug	'worms'	~	buzhug-enn	'a worm'
b.	kraon	'walnuts'	~	kraon-enn	'a walnut'
c.	per	'pears'	~	per-enn	'a pear'
d.	logod	'mice'	~	logod-enn	'a mouse'
e.	gwez	'trees'	~	gwez-enn	'a tree'

The resulting singulative form can in turn often be pluralized, as in (3). This shows that the singulative first performs the atomizing operation and that the plural is added only afterward. The plural does not itself perform the dividing function. This, a priori, poses a challenge for Borer's (2005) theory of division; but as we will see, there is a natural solution to this problem. Once we take seriously the idea that the singulative can be a divider, like classifiers and the plural, then we must come to terms with the idea that the role of the plural in this instance is simply that of counting rather than dividing.

(3)

a.	buzhug-enn	'a worm'	~	buzhug-enn-où	'worms'
b.	kraon-enn	'a walnut'	~	kraon-enn-où	'walnuts'
c.	per-enn	'a pear'	~	per-enn-où	'pears'
d.	logod-enn	'a mouse'	~	logod-enn-où	'mice'
e.	gwez-enn	'a tree'	~	gwez-enn-où	'trees'

[8] Old Breton had two singulative endings, *-in* and *-en*, one for each gender value (Hemon 1975:39). Middle and Modern Breton retain only the feminine *-enn*, so that singulative forms are invariably feminine (Acquaviva 2008:243).

The singulative by way of the feminine morpheme *-enn* also targets mass nouns; see (4). These examples (from Trépos 1980:67) show that the function of the singulative consists not only in turning abstract object types (collectives) into identifiable objects, but also in picking discrete entities out of an undifferentiated mass. The mass nouns in (4) are all masculine; the singulative nouns are all feminine.

(4) a. geot ‘grass’ ~ geot-enn ‘blade of grass’
b. plouz ‘straw’ ~ plouz-enn ‘wisp of straw’
c. ed ‘wheat’ ~ ed-enn ‘stalk of wheat’
d. louzou ‘weeds’ ~ louzou-enn ‘blade of weed’

Division by the singulative can also be performed on substances and some liquids, as shown in (5) and (6), respectively ((5a–c) and (6a–b) are from Trépos 1980:67; (5d) is from Ternes 1992: 416).[9]

(5) a. douar ‘earth’ ~ douar-enn ‘plot, terrier [survey of land]’
b. erc’h ‘snow’ ~ erc’h-enn ‘piece of snow’
c. dir ‘steel’ ~ dir-enn ‘lighter’
d. gwer ‘glass’ ~ gwer-enn ‘a glass’

(6) a. dour ‘water’ ~ dour-enn ‘drop of water’
b. glav ‘rain’ ~ glav-enn ‘drop of rain’

Although *-enn* joins very freely with collective nouns (see (2)), it is apparently much more sporadic in its combinations with mass nouns (however, note that in other singulative languages, such as Classical Arabic, not all collectives are the target of the singulative either; Greenberg 1972). In addition, as pointed out by Acquaviva (2008:245), when singulatives are derived from mass nouns, the meaning/value of the massifier varies with the word (*piece* of ice, but *blade* of grass and *drop* of rain). This state of affairs is widespread in languages where the singulative is available. In Syrian Arabic, for example, singulatives are formed by suffixing *-e*/*-a*, both feminine forms.[10] The translated measure word varies according to the noun that is used (here, ‘grain’ or ‘blade’). Examples are from Cowell 2005:298.

[9] ‘‘Il y a *d’autres collectifs* qui sont en réalité des noms de *matière*, ou d’*espèce*’’ (Trépos 1980:67). ‘There are *other collectives* that are in fact names of *matter*, or *kind*’ (my translation).

[10] Three points are worth noting here. First, in Classical Arabic, traditional grammars distinguish two kinds of collectives: nouns of collections (applies to sentient beings), like ‘herd’ and ‘company’, and nouns of collective kinds. The latter applies to animals, plants, and inanimate objects, and comprises many nouns denoting fruits, vegetables, flowers, grains, insects, and birds. These forms serve as the basis for the derivation of singulatives (unit nouns), which in turn can be pluralized.

Second, another way to express semantic packaging in Arabic is through classifiers. Examples from Egyptian Arabic (Cairo dialect) are *hittit lahm* ‘a chunk of meat’, lit. ‘piece meat’, and *hiitit haddiid* ‘a piece of iron’, lit. ‘piece iron’ (Holes 2004:171, cited in Acquaviva 2008:223). This illustrates again different forms for Div^0.

Third, collectives are also the target of the singulative in Syrian Arabic, as shown in (ia). In turn, the singulative can be pluralized, as shown in (ib). Examples are from Cowell 2005:297.

(i) a. dəbbān ‘flies’ ~ dəbbān-e ‘one fly’
b. dəbbān-e ‘one fly’ ~ dəbbān-āt ‘flies’

(7) a. ʔamᵊh ‘wheat’ ~ ʔamᵊh-e ‘a grain of wheat’
b. ɛəšᵊb ‘grass, weeds, herbs’ ~ ɛəšb-e ‘a blade of grass, a weed, an herb’

The singulative is not productive with all mass nouns. In Syrian Arabic, a few mass nouns designating plants, for example, either have no unit derivative at all, or have one that appears very rarely. In such cases, a periphrastic phrase is used instead. An example from Cowell 2005: 298 is *tūm* ‘garlic’ ~ *rās tūm* ‘a garlic bulb’ (*rās* means ‘head’).[11]

The incomplete productivity and the shifting meaning of the singulative are sometimes taken as a sign that although clearly an inflectional process (see footnote 13), it nevertheless has many derivational properties (see, e.g., Acquaviva 2008). However, I wish to abstract away from the inflectional/derivational distinction (following Distributed Morphology; inflectional vs. derivational processes share many properties) and I follow Booij (1993, 1995), who shows that inflectional and derivational morphology are not two different kinds of morphology, but two different processes: inflectional morphology, in particular, can be used contextually—purely syntactically—or inherently. I therefore assume that (a) the absence of certain singularized mass nouns is simply a reflection of accidental gaps, and (b) the exact meaning of singularized nouns is obtained through context (contextual determination of meaning/compositionality being a property of syntax).

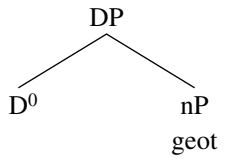
That the context is important for the interpretation of singulativized nouns is clear from the case of nouns that denote substances (see (5)). Sometimes the meaning is the measure reading (‘a piece of’, ‘a blade of’, etc.); sometimes it is the simple unit meaning (‘a lighter’, ‘a glass’). Sometimes the translation of the word varies according to the source: *gwer* ‘steel’ in (5c) is sometimes translated as ‘piece of steel’ in online dictionaries.

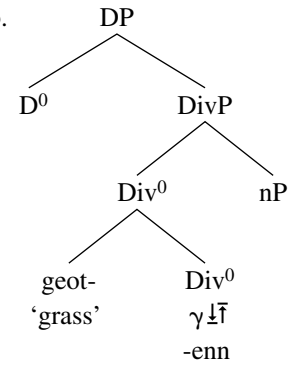
The important point is that the singulative performs *division*: whether it yields a measure reading or a simple unit reading, we obtain an individual. I propose that regardless of the obtained interpretation, the singulative is encoded in Div^0 (the number head proposed by Borer (2005)). There is no need to postulate an additional projection for the measure reading (see footnote 19). This idea is consistent with the facts.

The singulative is an alternative way to create division in the grammar. While classifiers and the plural are well-studied mechanisms for creating individuation (Krifka 1995, Doetjes 1996, 1997, Chierchia 1998, Cheng and Sybesma 1999, Borer 2005), the singulative has not been previously considered a divider in generative grammar. I propose that like classifiers and the plural, a singulative morpheme originates in the head Div^0 and that it is in that position that it creates an individual. By way of illustration, (8) gives the derivations for Breton *geot* ‘grass’, from a mass noun (8a) to a singulative noun (8b).[12] ($\gamma\underline{\downarrow}\overline{\uparrow}$ = gender shift)

[11] Breton also expresses the analogue of a singulative derivation by the use of classifier-like elements, *penn* ‘head’ or *pez* ‘piece’: *moc’h* ‘pigs’ ~ *pennmoc’h* ‘a pig’, *dilhad* ‘clothes’ ~ *pez-dilhad* ‘a garment’ (Trépos 1956:236, cited in Acquaviva 2008:244). These classifiers are in complementary distribution with singulative *-enn*.

[12] It is admittedly more difficult to see gender shift in the case of Breton collectives, since collectives are not listed as masculine or feminine in dictionaries. This must be due to the fact that such nouns are used as kinds without articles, numerals, or quantifiers that might signal masculine or feminine gender; and since the nouns in question refer to kinds, it must be difficult or impossible to refer to them with pronouns, which are marked for masculine and feminine.

(8) a. 

b. 

(Breton)

‘grass’ (masculine) → ‘a blade of grass’ (feminine)

The process is productive and syntactic in the sense that it occurs in exactly the same syntactic contexts as the choice between an ordinary singular noun and its plural counterpart (Stump 2005).[13]

Additional evidence for the idea that the singulative resides in a unique head Div^0 and that it is in complementary distribution with the plural comes from Dagaare, a Gur language spoken in Ghana and Burkina Faso. This language has a type of number marking known as ‘‘inverse’’ or ‘‘polarity’’ number marking (Baerman 2007), whereby the same element marks singularity or plurality depending on the syntactic context. Grimm (2009) shows that the marker *-ri* marks the plural for nouns denoting individual objects (child, dog), while for collective nouns (seeds, insects), *-ri* marks the singular. I assume that in the first case, *-ri* is the regular plural acting as a divider (under Div^0), but that in the second case, *-ri* is used as a singulative (also under Div^0). This shows clearly that the plural is not alone in performing division and that, importantly, in some languages

[13] For example, Stump (2005) shows that the syntactic contexts that determine the choice of the ordinary singular noun *potr* ‘boy’ (lenited form *botr*) and its plural counterpart *potred* ‘boys’ in the following table (from Stump 2005: 63) likewise determine the choice between the singulative noun *sivienn* ‘strawberry’ (lenited form *zivienn*) and its collective counterpart *sivi* ‘strawberries’.

The singulative in Breton is also clearly inflectional in that it appears after inflectional morphemes: for instance, after the plural in examples such as *peskedenn* ‘fish-SINGULATIVE’, whose derivation is *pesk* ‘fish’ → *pesk* + *ed* ‘fish’ + ‘PL’ → *pesk* + *ed* + *enn* ‘fish’ + ‘PL’ + ‘SINGULATIVE’.

	POTR ‘boy’		SIVI ‘strawberries’	
	Singular: *potr*		Singulative: *sivienn*	
Singular contexts	*ur potr bennak* *meur a botr*	‘a certain boy’ ‘many a boy’	*ur zivienn bennak* *meur a zivienn*	‘a certain strawberry’ ‘many a strawberry’
	Plural: *potred*		Collective: *sivi*	
Plural contexts	*un nebeud potred* *kalz potred*	‘some boys’ ‘a lot of boys’	*un nebeud sivi* *kalz sivi*	‘some strawberries’ ‘a lot of strawberries’

the plural and the singulative are one and the same morpheme (examples from Grimm 2010: 169).[14]

(9) a. bíé ‘child’ (individual) ∼ bíírí ‘children’ (plural) (stem = bi-)
b. bìrí ‘seed’ (singulative) ∼ bíè ‘seeds’ (plural) (stem = bi-)

Interestingly, Dagaare also possesses a singulative marker *-ruu*, which is primarily restricted to granular mass terms (‘pepper’, ‘straw’, ‘grass’), designating ‘a piece of’. The use of *-ri* as a singulative is reserved for collective aggregates, such as vegetation, insects, or inherently plural body parts. In this language, it is the form of the singulative, rather than two different positions, that distinguishes the simple unit from the unit-of-measure reading. Examples are from Grimm 2010:176.

(10) a. múó ‘grass’ ∼ múórúú ‘blade of grass’
b. súnnì ‘gum’ ∼ súnnúú ‘piece of gum’

Finally, let me briefly discuss the case of liquids and substances. Grimm (2009) argues that substance and liquid terms in Dagaare are not the target of any individuating operations. He argues that Dagaare is like Welsh in this respect (like Breton, Welsh has a singulative system) and that both languages pattern with English in this regard. Table 1 (adapted from Clausen et al. 2010) summarizes the crosslinguistic variation, adding Breton.

Table 1
Kinds of nouns targeted by the singulative crosslinguistically

Language	Liquids/ Substances	Granular aggregates	Collective aggregates	Individual objects
English	0	0	plural (*-s*)	plural (*-s*)
Breton	0	singulative (*-enn*)	singulative (*-enn*)	plural (*-où*)
Welsh	0	singulative (*-yn*)	singulative (*-yn*)	plural (*-od*)
Dagaare	0	singulative (*-ruu*)	singular (*-ri*)	plural (*-ri*)

[14] Dagaare is not unique in its ability to use the same morpheme in two very different contexts. In Tangga, a language of Papua New Guinea, the same element *an*/*am* denotes not only the plural for count nouns, but also the singulative for noncount nouns. The situation is not unlike that of the Kiowa inverse system, as described in Harbour 2008 (though here only singular and plural values are involved; see Corbett 2000:163). Examples are from Ross 1988:295, 298.

(i) a. fel ‘the house’ ∼ am-fel ‘the houses’
b. man ‘poultry/bird’ ∼ an-man ‘the bird’

This cannot be correct, however. This is because as the examples in (5) and (6) show, it is possible in Breton for substance and liquid terms to be targets of the singulative operation. In fact, in other singulative languages, it is possible for substance *and* liquid terms to be inputs to singulativization. For example, in Classical Arabic, 'wood' and other nongranular aggregates such as 'mud' and 'butter', as well as liquids such as 'buttermilk' and 'wine', can be targets of the singulative.[15] ((11a) is from Greenberg 1972:21; (11b–e) are from Saleh AlQahtani, pers. comm.)

(11) a. khashab 'wood' ~ khashabat 'a piece of wood'
b. teen 'mud' ~ teenah 'a chunk of mud'
c. zubbd 'butter' ~ zubdah 'a portion of butter'
d. laben 'buttermilk' ~ labanah 'a portion of buttermilk'
e. xamer 'wine' ~ xamrah 'an amount of wine'

Table 2 is a revised version of table 1. It now includes both Breton and Arabic. What is clear is that not all singulative languages are the same: some allow substances and liquids to be singulativized, some either substances or liquids, others neither. In section 3, we will see that Ojibwe tolerates the singulativization of substances, but not of liquids.[16]

A natural consequence of the idea that the singulative is a divider is that the plural of a singulativized noun is not a divider, but something else. The question is, what is it?

Table 2
Revised version of table 1. (sing = singulative; sgl = singular)

Language	Liquids	Substances	Granular aggregates	Collective aggregates	Individual objects
English	0	0	0	plural (*-s*)	plural (*-s*)
Breton	sing (*-enn*)	sing (*-yn*)	sing (*-enn*)	sing (*-enn*)	plural (*-où*)
Welsh	sing (*-yn*)	sing (*-yn*)	sing (*-yn*)	sing (*-yn*)	plural (*-od*)
Dagaare	0	0	sing (*-ruu*)	sgl (*-ri*)	plural (*-ri*)
Arabic	sing (*-ah*)	sing (*-ah*)	sing (*-ah*)	sing (*-ah*)	plural (*-t*)

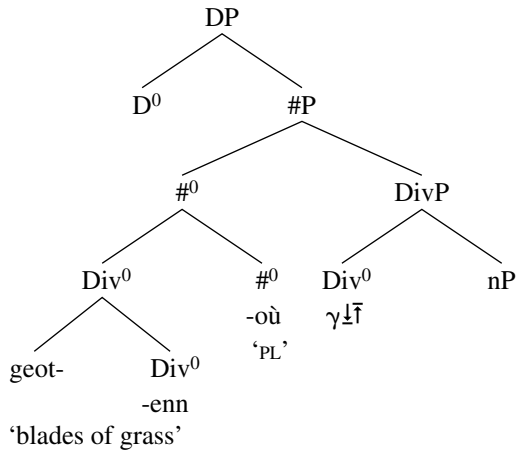
[15] In fact, it appears that even in Dagaare, it is not completely impossible for material terms to be targets of the singulative. For example, Grimm himself shows that *fanfama* 'soap' (general term) can become *fanfanuu* 'a piece of soap' (Grimm 2011).

[16] Relatively closely related languages might also vary in their ability to pair the singulative with substances *and* liquids. Bari and Turkana (Nilo-Saharan languages) both use the singulative, but whereas in Bari it is possible to use the singulative *-tat* as a unit of individuation with the word *le* 'milk' (*litat* 'a drop of milk'), this is not possible in Turkana, where instead a special word for 'drop' must be used (Dimmendaal 2000).

I want to propose that it is in this instance simply a counter. The plural is thus not exclusively tied to division. This follows naturally from the idea that the singulative is used for division and thus is generated under Div^0. We know independently that the plural has other uses: the plurals of modesty and abundance, and the exaggerative, hyperbolic, approximative, and antiassociative plurals (Corbett 2000). The counting plural is different from these, though, since it is completely systematic and not tied to the meaning of the noun (see footnote 29).

That the plural does not have a unique denotation has been proposed by Wiltschko (2008): on her account, in some languages number is a functional head (#, as head of #P) while in others it is a modifier. Another way to express this idea is to claim that the plural is sometimes inflectional and sometimes derivational. In fact, the interpretation we get for a pluralized singulative is exactly that of counting. If in cases such as Breton (12) the plural had a dividing function, then we would expect the derivation *geot-où-enn*, but this is completely ill-formed. The counting interpretation is exactly the one we obtain: *geotennoù* in (12) means 'more than one blade of grass'.

(12) (Breton)



It also follows from this proposal that numerals like 'one' in Breton and other singulative languages are not always dividers. For Borer (2005), the numeral 'one' is special in that it acts both as a divider and as a counter in English and similar languages. However, if division is already performed by the singulative, the counter element 'one' must simply be a counter when used in combination with a singulative. However, when used with an ordinary singular noun (in the absence of the singulative), it does act both as a counter and as a divider.

In summary, in singulative languages, such as Breton, the singulative can target collective nouns and mass nouns with the same kind of effect (individualization of mass and collective terms). The singulative was incorporated into the theory of division and was argued to be a particular flavor of Div^0.

2 The Basic Ojibwe Facts and a Puzzle

On the basis of the fact that in Ojibwe, words such as *mkwam* 'ice' can be pluralized (*mkwamiig* 'ice-PL') and that *mkwam* can equally mean 'ice' (mass), 'a piece of ice' (measure unit), or even

'icicle' (individual), it has been argued in the literature on Algonquian that there is no grammaticized count/mass distinction in Ojibwe (Rhodes 1990:153; see also Corbett 2000:87).[17]

While it is admittedly common in Native North American languages for plural marking to target all sorts of nouns (count or mass) and/or for plural marking and agreement in general to be completely optional (Whorf 1941 for Hopi, Davis and Matthewson 1999 for Lillooet Salish, Wiltschko 2008 for Halkomelem Salish), and while it might be tempting to conclude that the absence of a grammaticized count/mass distinction is a pervasive feature of aboriginal languages, it is not the case that *all* Native North American languages lack such a distinction. For example, as Mithun (1988) points out, all nouns in Taos, Kiowa, Zuni, and the Algonquian languages are inflected for number. In addition, the Ojibwe examples in (13) show that subject and object nominals have to agree with the verb.[18]

(13) a. N-gii-waabm*ag* nenw*ag*.
1SG-PAST-see.3PL men.3PL
'I saw men.'

b. Nenw*ag* n-gii-waabm-*igoog*.
men.3PL 1SG-PAST-see-3PL
'Men saw me.'

As seen in (14), the opposition between singular and plural cuts across the paradigms of nouns, pronouns, and verbs. Agreement is obligatory with all these categories. (Here and later, IN = inanimate, AN = animate.)

(14)	*Singular*	*Plural*	*Gloss*
a.	giin	giinwaa	'thou (SG) ~ you (PL)'
	wiin	wiinwaa	'he ~ they'
	maanda	nanda	'this (one) IN proximal ~ these (ones) IN proximal'
	n- . . . -im	n- . . . -naan	'my ~ our (EXCL)'
b.	giiwe	giiwewag	'go home (PRES 1/2/3 SG) ~ go home (3PL)'

Number is therefore clearly inflectional in Ojibwe (see Mathieu 2012 for details): it is not a modifier (to a nominal root; i.e., derivational) but a functional head (see Wiltschko 2008).

[17] As Corbett and Rhodes put it:

> Or consider the Algonquian language Ojibway (Richard Rhodes 1990:153–4, and personal communications). Nouns which might be expected not to have a plural do in fact form plurals freely, interestingly with the unit reading and not with the sort reading. Thus *mkwam* 'ice' or 'piece of ice', *mkwamiig* (plural) 'pieces of ice'. Rhodes is unable to find a noun that cannot be pluralized in Ojibway. (Corbett 2000:87)

> In Ojibwa there is no grammatical distinction like the mass/count distinction of Indo-European. Thus *mkwam* can equally mean 'ice' or 'a piece of ice'. *Nbiish* can mean 'water' or 'an amount of water'. (Rhodes 1990:153)

[18] Verbal agreement in Ojibwe follows a person hierarchy: 2nd > 1st > animate 3rd > obviative (animate) 3rd > inanimate. This is why the proclitic in (13) is always first person singular. Third person marking is often not pronounced.

The puzzle is thus as follows: why is it possible in some cases for mass nouns in Ojibwe to be pluralized (e.g., *mkwamiig* 'ice-PL') or for singular mass terms to denote individuals (e.g., *mkwam* 'ice/piece of ice/icicle') and even appear with numerals (e.g., *bezhig mkwam* lit. 'one ice')?[19] The answer, I will argue, is related to the fact that Ojibwe lacks productive massifiers and certain measure phrases, but also more generally to the fact that the grammar embeds a singulative system, albeit not always a visible one.

Although Ojibwe admittedly has some massifiers of the Chinese kind in its grammar, their use has diminished in recent years (Valentine 2001:502). They attach to numerals to indicate measure units: *-aatig* is used for wooden, pole-like elements; *-eg* for cloth-sheet-like elements; *-aabik* for metal, glass, plastic, or stone; and *-aabiig* for string-like elements. Some examples appear in (15).

(15) a. niizh-waatig mishi
two-CL firewood
'two sticks of firewood'
b. niizh-weg zenibaa
two-CL silk
'two pieces/sheets of silk'

Other classifiers include *-naagans* 'cupful', *-ooshkin* 'bagful', *-oonag* 'boatload', *-baneninj* 'handful', *-sag* 'barrelful', but some of these are listed as rare in dictionaries (e.g., 'boatful' in Rhodes 1985) and they appear to be no longer productive.[20] Two examples appear in (16).

(16) a. niizh-naagans ziisbaakwad
two-CL sugar
'two cupfuls of sugar'
b. niizh-ooshkin mnoomin
two-CL rice
'two bagfuls of rice'

[19] Ojibwe is not the only Native North American language with plural mass nouns triggering a unit-of-measure reading. Mithun (1999:80) mentions the case of Yup'ik: ''Yup'ik mass nouns such as *uquq* 'oil' and *meq* 'water' often appear with number suffixes to indicate units of substance, such as 'containers of': *uqu-k* 'oil-DUAL' = 'two sealpokes of oil'; *mer'-et* 'water-PL' = 'buckets of water'.'' Yup'ik number appears to have all the properties associated with number in Ojibwe: it is obligatory, disjunctive, transparent, and word-final, yet it allows the pluralization of mass nouns.

Ojibwe has all the properties of a language with inflectional/grammatical number: plural marking is obligatory, it triggers agreement, it is not possible inside compounds, it is not possible inside derivational morphology, and pluralia tantum as well as bare plurals are available (see Wiltschko 2008 for a discussion of this cluster of properties in relation to Halkomelem Salish, a language without, it seems, inflectional number).

[20] Since Ojibwe number is in complementary distribution with mass classifiers (e.g., the noun *naagans* 'cup' in (16a) cannot be pluralized in this context, **niizh-naagansan ziisbaakwad* 'two cupfuls of sugar'; of course, in other nonclassifier contexts, it can be pluralized) and since independently Chinese count classifiers and mass classifiers are in complementary distribution (Fassi Fehri and Vinet 2007), I take it that number and mass classifiers target the same head, namely, Div^0. In English, on the other hand, it is possible for measure phrases to be pluralized: *six pieces of sugar*. Therefore, it may be the case that in English two different heads are needed for this type of construction (see Borer 2005).

Ojibwe not only lacks productive mass classifiers of the Chinese kind, but also appears to lack measure phrases of the English kind (e.g., 'piece of', 'bit of', 'portion of').[21] As Greenberg (1972:16) points out, ''[T]here are a considerable number of Amerind languages . . . which do not have measure constructions [including Ojibwe; Greenberg 1974]. Numerals occur directly both with nouns designating mass as well as countable objects.''

The main empirical fact introduced in this article is that in the absence of measure phrases such as 'piece of', 'bit of', 'portion of', Ojibwe (and Fox) uses a singulative system to denote units of measure. The same mechanism is used to create individuals out of collectives. While the Ojibwe (and Fox) singulative marker is the animate form *-a*, the collective and mass nouns that are the input to the singulative are inanimate forms ending in *-i*.

Ojibwe, like other Algonquian languages, has a productive gender system based on animacy. Some nouns are animate; others are inanimate. The animate/inanimate contrast is grammaticized (like the masculine/feminine gender system of, say, Romance languages): for example, some types of berries are inanimate while others are animate, some body parts are inanimate while others are animate.

A reviewer asks whether animacy and gender are really the same in Ojibwe, citing Wiltschko (2012), who claims on the basis of Blackfoot that animacy is not gender, but nominal aspect. For Ojibwe, the answer is definitely yes: animacy in Ojibwe is unquestionably gender and not nominal aspect. Following Rijkhoff (1991), Wiltschko makes an analogy between the verbal and the nominal domain in terms of boundedness. Bounded events have an inherent endpoint/culmination, beyond which the same event cannot continue (e.g., *walk to the store*), while unbounded events have no inherent endpoint/culmination: the same event can continue over an indefinite period of time (e.g., *play cards*). For the nominal domain, the idea is that mass nouns are unbounded (they are not collections of individuals), while count nouns are bounded (they form collections of individuals). Wiltschko's (2012) idea is that English has a clear grammaticized count/mass distinction; therefore, nominal aspect is instantiated by a bounded versus unbounded distinction. On the other hand, according to Wiltschko, Blackfoot does not have a grammaticized count/mass distinction (Wiltschko cannot find examples of mass terms that cannot be pluralized in that language). This means that the language lacks a nominal aspect instantiated via a bounded versus unbounded contrast. Instead, in Blackfoot nominal aspect is instantiated via animacy. Compare (17a) with (17b).

(17) a. $[DP\ D^0\ [NumP\ Num^0\ [AspP\ Asp^0\ [nP\ n^0\ [\surd N]]]]]$ (English)
$\downarrow$
$[+/-\text{bounded}]$

b. $[DP\ D^0\ [NumP\ Num^0\ [AspP\ Asp^0\ [nP\ n^0\ [\surd N]]]]]$ (Blackfoot)
$\downarrow$
$[+/-\text{animate}]$

[21] A reviewer asks how ''real'' measure words such as 'pound' and 'kilo' work. I have not been able to find a word for 'kilo', but the language uses the word *dibaabiishkoojigan* for 'pound'. Like classifiers, it attaches to numeral roots, as in *ingo-dibaabiishkoojigan* 'one pound' and *ingodwaaso-dibaabiishkoojigan* 'six pounds'.

To support her claim, Wiltschko uses the fact that in Blackfoot, verbs have different forms depending on whether the participants are animate or inanimate (see, e.g., (23) in Ojibwe where *waabam* 'see' = AN and *waabnd* 'see' = IN). She argues that in Blackfoot, Aktionsart is thus not based on [+/−bounded]/telicity; rather, it is based on [+/−animate]. She also argues specifically that animacy in Blackfoot is not like gender. She shows that in German nominalizers are specified for gender but that in Blackfoot they are not: German *die Grammat-ik* 'the grammar' is feminine, whereas *der Lehr-er* 'the teacher' is masculine; the Blackfoot nominalizer *a'tsis* is used for both animate nouns (*saa'kssoya-a'tsis* 'poison ivy') and inanimate nouns (*isoohkama-a'tsis* 'container').

In Ojibwe, the count/mass distinction is clearly grammaticized, as I have shown. For example, not all mass nouns can be pluralized: liquid terms resist pluralization. Also, while it is true that verb stems in Ojibwe end in either animate or inanimate forms, this is completely independent of boundedness. For example, the Ojibwe verb 'be' has two forms: one for animate nouns, *-wi* (18a), and another for inanimate nouns, *-wan* (18b) (see Valentine 2001). As Valentine (2001) points out, verbs such as these can be interpreted not only as 'be' but also as 'become', where a change of state is clearly asserted.

(18) a. Ninii-wi.
man-be
'He is a man.'
b. Oodenaa-wan.
town-be
'It is a town.'

More generally, Ojibwe verbal expressions such as 'walk to the store' are bounded while expressions such as 'play cards' are not. As in English, telicity is therefore a concept very much anchored in the grammar of Ojibwe.

Finally, while it is true that Ojibwe nominalizers are indifferent to whether the noun they merge with is animate or inanimate (e.g., the nominalizer *-gan* can appear with either), it is not clear how this is relevant to distinguishing languages with a grammaticized count/mass distinction from languages without one. In conclusion, there is no reason to treat animacy in Ojibwe as (nominal) aspect instead of the more traditional notion of gender. Everything points to the view that animacy is gender in Ojibwe.

Let us now turn to gender shift in Ojibwe. While it is well-known that it is possible in Algonquian languages to shift gender from inanimate to animate as a mark of elevated status, especially in storytelling (a case of semantic shift (Black-Rogers 1982, Valentine 2001:118) or perspectival marking (Muehlbauer 2008)),[22] it is less well-known that it is also possible to shift

[22] This is a separate phenomenon and, in my view, not the realization of the singulative. Moreover, as Goddard (2002) points out, the use of gender shift in narratives to express 'power' should not be exaggerated. For example, in Fox inanimates seem to be freely assigned the powers of speech, comprehension, and thought without shifting gender (Goddard 2002:208).

gender from inanimate to animate as a way to divide what would otherwise be a mass or collective noun. In this case, a unit is created, either of a simple kind as in (19) (a simple unit reading) or of a measure kind as in (20) (a unit-of-measure reading). The examples are from Fox (Mesquakie) (see Goddard 2002); *-i* is the inanimate ending on nouns while *-a* is the animate ending. Goddard (2002) does not correlate these facts with the notion of the singulative, but I believe this is exactly what is at work here.[23]

(19) a. zhooniyaah*i* 'silver, money' IN ~ zhooniyaah*a* 'a coin, a bill' AN
b. miichipeh*i* 'game' IN ~ miichipeh*a* 'a game animal' AN

(20) a. owiiyaas*i* 'meat, flesh' IN ~ owiiyaas*a* 'a piece/cut of meat' AN
b. owiinenw*i* 'fat (generic)' IN ~ owiinenw*a* 'a piece of fat' AN
c. anakehkw*i* 'bark' IN ~ anakehkw*a* 'a piece of bark' AN
(Goddard 2002:213)

Once singularized, nouns such as *zhooniyaaha* (AN) 'silver, money' can be pluralized (with an animate plural form), giving *zhooniyaaha-ki* (AN) 'coins, bills, money'. The same is true for *miichipehi* (IN) 'game (collective)' → *miichipeha* (AN) → *miichipeha-ki* (AN) 'game animals'.

It is evidently difficult to notice the gender shift that is the spell-out of the singulative in Ojibwe. This is because most singular inanimate nouns in Ojibwe have lost their final *-i* and most animates have lost their final *-a*. There are, nevertheless, residual visible effects of this process in modern Ojibwe, as I will show.

First, let me point out that there is evidence, as Piggott (2007) argues, that number is present in the derivation of every Ojibwe noun. Each of the singular forms in (21a–c) ends in a vowel that is demonstrably not part of the exponent of the root morpheme. For example, the root allomorphy in (21c) [miʃ → mis] results from a palatalization process (s → ʃ) that only applies in a derived environment (Kaye and Piggott 1973). This means that there is a singular suffix *-i* that attaches to inanimate nouns and a counterpart *-a* that attaches to animates.

(21)

	Singular		*Plural*	
a.	nika	'goose'	nika-g	'geese'
b.	makwa	'bear'	makwa-g	'bears'
c.	miʃi	'firewood'	misa-n	'pieces of firewood'

(Piggott 2007:15)

[23] Although rarer, there appear to be cases where the gender shift is from animate to inanimate. Goddard (2002: 211) mentions the following cases: Fox *aamoowa* (AN) 'bee, member of any species of the non-formicid aculeate hymenoptera' versus *aamoowi* (IN) 'honey' and Ojibwe *ishkodekaan* (AN) 'fire-steel' versus *ishkodekaan* (IN) 'lighter.' To quote Goddard (2002:211): ''Usable honey did not exist in North America until the arrival of the European honey-bees, but F[ox] *aamoowa* 'bee' has widespread cognates and is clearly an old word. Therefore, 'honey' must have been named after 'bee' rather than the other way around'' and *ishkodekaan* (AN) 'fire-steel' ''names the older fire-making device (Baraga 1850 . . .), while the inanimate noun names the later one'' (i.e., *ishkodekaan* (IN) 'lighter'; Nichols and Nyholm 1995:69). These cases are clearly not the product of the singulative, since no unit is created. In other languages (e.g., Hebrew; see section 1), however, it appears to be possible to use reverse gender shift to express the singulative.

Since singular number and gender are fused morphologically, it is reasonable to assume that gender is also present in the derivation of every Ojibwe noun. In words where no final *-i* or *-a* surfaces, it is assumed that the vowel has been truncated. However, the vowel can only be truncated if the word meets minimality requirements. If the word is too small (e.g., if it is bisyllabic, as in (21)), the vowel cannot be truncated. As Piggott (2007) argues, the process is therefore systematic and predictable.

For most singular nouns, however, especially those that end with a consonant, it is impossible to tell whether they are animate or inanimate from the endings, creating a situation where the singulative is not morphologically visible. In addition, because some words have lost their final *-i* together with final consonants, inanimate nouns can end in *-a*, which is the mark for animates rather than inanimates (and vice versa).

With this in mind, take the case of the collective noun *zhoonya* 'money' in (22a). It is listed in dictionaries as an inanimate noun (although it ends in *-a*; in Fox, as shown in (19a), it clearly ends in *-i*); but interestingly, in the plural it is listed as animate. The same is true for *mitig* in (22b): it is listed in dictionaries as inanimate when it is interpreted as 'wood/forest' but as animate when it means 'tree'.[24] Although there is no morphological surface difference between *mitig* 'wood' (IN) and *mitig* 'tree' (AN), the change from inanimate to animate is a clear residual effect of the gender shift correlated with the singulative use: from a collective we obtain a simple unit reading via gender shift.

(22) a. zhoonya 'money' IN ~ zhoonya-g 'coins' AN
b. mitig 'wood' IN ~ mitig 'tree' AN

To see that nouns such as *zhoonya* 'money' and *mitig* 'tree' are animate on their individual reading, we can consider them in a sentence. Since Ojibwe has two kinds of verb stems, transitive animate (TA) and transitive inanimate (TI), the verb stem selected will depend on the gender of the noun. Moreover, Ojibwe distinguishes between two third persons in a sentence or a narrative by means of obviation. In the sentence 'John saw Fred', for example, there are two third persons, 'John' and 'Fred'. In such a case, one of the third persons is seen as primary and is called proximate (as if it were somehow closer to the interest of the speaker); the other one is seen as secondary and is called obviative. In Ojibwe, the obviative is marked only on animate nouns. In (23a), *makwa* 'bear' is animate; it takes the obviative form *-n* and the verb stem is TA. In (23b), *jiimaan* 'boat' is inanimate; it takes no obviative form and the verb stem is TI.

[24] According to Valentine (2001:116–117), while in most Ojibwe dialects all terms for money are animate, in Nishnaabemwin (Ojibwe, Odawa) they are consistently inanimate in the singular, but not in the plural, the latter being listed in dictionaries as animate. The term 'money' also clearly takes the animate plural *-ag* (the inanimate plural being *-an*). The singular term *mitig* 'wood' is also listed as inanimate in dictionaries, but its pluralized counterpart is listed as animate (and it surfaces with the animate plural, *-oog* being an allomorph of *-ag*).

(23) a. John o-gii-waabam-aa-*n* makwa-*n*.
John 3SG.SUBJ-PAST-see.AN-3SG.OBJ-OBV bear-OBV
'John saw a bear.'
b. John w-gii-waabnd-aa jiimaan /*jiimaan-*an*.
John 3SG.SUBJ-PAST-see.IN-3SG.OBJ boat boat-OBV
'John saw a boat.'

Turning back to *zhoonya* 'money' and *mitig* 'tree', we see in (24a) that *zhoonya* 'money' is obviative when interpreted as 'coin', and that in this case the verb stem is TA. The same is true for *mitig* when interpreted as 'tree'; see (24b).

(24) a. John o-gii-waabam-aa-n zhoonya-*an* agidisag.
John 3SG.SUBJ-PAST-see.AN-3SG.OBJ-OBV coin-OBV on.floor
'John saw a coin on the floor.'
b. John o-gii-waabam-aa-n mitig-*an*.
John 3SG.SUBJ-PAST-see.AN-3SG.OBJ-OBV tree-OBV
'John saw a tree.'

Turning now to mass nouns that can be turned into units of measure, consider the following examples. The plural versions of the animate mass nouns in (25) are all interpreted as unit-of-measure nominals (pieces of *x*, portions of *x*, blades of *x*—depending on the noun).[25]

(25) a. maandaamin 'corn' ~ maandaamin-ag 'pieces of corn'
b. semaa 'tobacco' ~ semaa-g 'chunks of tobacco'
c. mikwam 'ice' ~ mikwam-iig 'pieces of ice'
d. mnoomin 'rice' ~ mnoomin-ag 'grains of rice'
e. mashkosiw 'grass' ~ mashkosiw-ag 'blades of grass'
f. waabigan 'clay' ~ waabigan-ag 'bits of clay'

We can now see why mass terms can be systematically pluralized in Ojibwe. It is not because the language lacks a grammaticized count/mass distinction, but because in these cases, a gender shift process has operated on the singular to give a plural that is of a different gender from the original mass noun (this is typical of singulative systems). We can also understand why *mikwam*

[25] As shown in (i), it is possible for certain mass nouns to be pluralized with a unit-of-measure reading, even though they are inanimate. These examples show that the singulative system is no longer fully productive morphologically. Some mass terms tend to remain inanimate when pluralized. It must be noted, however, that there is extreme dialectal variation. For example, in some dialects the plural of 'rice' is animate while in others it is inanimate.

(i) a. (a)ki 'earth' ~ (a)ki-in 'bits of earth'
b. azhashki 'mud' ~ azhashki-in 'chunks of mud'
c. bkwezhgan 'bread' ~ bkwezhgan-an 'pieces of bread'
d. aasaakamig 'moss' ~ aasaakamig-oon 'bits of moss'
e. ziinzibaakwad 'sugar' ~ ziinzibaakwad-oon 'pieces of sugar'

can mean ‘ice’ or ‘piece of ice’. There is a gender shift from *mikwam* as mass noun to *mikwam* as unit of measure, although it is no longer spelled out morphologically.

This process is different from so-called coercion in English. As is well-known, although mass nouns cannot normally be pluralized in English, exceptions to that generalization are possible provided that the interpretation of a mass noun is coerced to that of a kind (26a) (via the Universal Sorter) or a standard serving (26b) (via the Universal Packer; see Bunt 1985).

(26) a. There are only three waters available (still, sparkling, and flavored).
b. Bill ordered three waters (i.e., glasses, bottles, etc.).

Count nouns can also be made mass (see David Lewis’s Universal Grinder)—for instance, *There was dog all over the road* (example from Pelletier 1979). It has been argued that the pervasiveness of these effects suggests that count/mass status is not tied to a lexical item but is instead rather free (Pelletier 1979).

In Ojibwe, pluralization of mass nouns is not free; rather, it is dependent on syntactic structure. First, pluralized mass nouns are never interpreted as kinds (Rhodes 1990:153–154). Speakers reject the direct translations of ‘What sugars do you have?’ (in the context of, say, entering a grocery store: castor sugar, brown sugar, Turbinado sugar, etc.).[26] This follows from the fact that in a singulative system, it is the nonindividuated term (the inanimate in Ojibwe) that denotes a kind. This is the situation we find in Breton and other singulative languages where collectives (and mass terms) are used to refer to kinds (recall section 1). Moreover, in most cases the unit-of-measure reading is completely independent of conventions: although one can think of portions of *semaag* ‘tobacco-PL’ as conventionalized, it is impossible to refer to ‘pieces of ice/clay/grass’ as conventionalized units.

I should also point out that some mass nouns in Ojibwe resist pluralization completely (despite what is claimed in the literature; see, e.g., Rhodes 1990:153, Corbett 2000:87). The speakers I consulted rejected pluralization of the nominals in (27), both on the kind reading and on the serving/measure reading, even though it is not difficult to think of standard servings/conventionalized units (or different kinds, for that matter) for oil (27a), milk (27c), or water (27d). Here, Ojibwe clearly differs from Breton and Arabic, where it is possible for liquid terms to be targets of the singulative.

(27) a. bimide ‘oil’ ~ *bimide-n
b. (a)niibiishaaboo ‘tea’ ~ *(a)niibiishaaboo-n
c. doodooshaaboo ‘milk’ ~ *doodooshaaboo-n
d. nbiish ‘water ’ ~ *nbiish-in
e. mini ‘pus’ ~ *mini-n

[26] Ojibwe has a special word that it uses for kinds (call it a *kindifier*), namely, *dnawa* or *dowa* (see Valentine 2001: 593; my consultants used *daawa*).

Nouns referring to abstract things such as qualities and states cannot occur in the plural either. Examples are from Valentine 2001:182.[27]

(28) a. bmaadziwin ‘life’ ~ *bmaadziwin-an
b. aazhdaadwin ‘revenge’ ~ *aazhdaadwin-an
c. gaawendmowin ‘jealousy’ ~ *gaawendmowin-an

Finally, contrary to their Ojibwe counterparts *zhoonyag* ‘coins’ and *mitig* ‘trees’, which have a simple unit reading (see (22)), in English no coercion can achieve this result: *monies* does not mean ‘coins’ and *woods* or *forests* cannot mean ‘trees’.

To summarize, we have seen that (a) the pluralized version of an Ojibwe or Fox mass or collective term is accompanied by a change in the gender class of the noun; (b) gender shift also targets singulars; (c) not all mass nouns can be pluralized in Ojibwe (liquid terms resist pluralization); and (d) the function of gender shift in Ojibwe is to perform individualization. These properties are exactly those found in languages with a singulative system (see section 1). In the next section, I give a full account of the singulative in Ojibwe, with complete derivations.

3 An Analysis of the Ojibwe Singulative

In the simplest cases, pluralization in Ojibwe creates a series of discrete individuals. Just like English *nuts*, Ojibwe *bagaanag* ‘nuts’ in (29a) means ‘more than one nut’. (29a–c) are animate nominals while (30a–c) are inanimates.

(29) a. bagaan ‘nut’ ~ bagaan-ag ‘nuts’ AN
b. miigwan ‘feather’ ~ miigwan-ag ‘feathers’ AN
c. maanadikoshens ‘goat’ ~ maanadikoshens-ag ‘goats’ AN

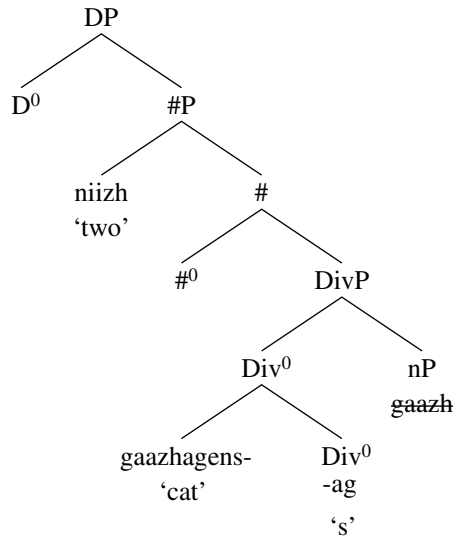
(30) a. akwaandawaagan ‘ladder’ ~ akwaandawaagan-an ‘ladders’ IN
b. ishkwaandem ‘door’ ~ ishkwaandem-an ‘doors’ IN
c. makizin ‘moccasin’ ~ makizin-an ‘moccasins’ IN

Since everything points to the idea that there is a count/mass distinction in Ojibwe (see section 2 and Mathieu 2007, 2012), the category Number (by way of Div^0) is projected in the language. Therefore, the structure of *niizh gaazhagensag* ‘two cats’ must be (31). Division is performed by the plural (as in Borer 2005 for other languages). The noun raises to Div^0 via head movement,[28] and the numeral *niizh* ‘two’ is added as a counter in Spec,#P.

[27] My generalization differs slightly from Valentine’s (2001:182), since he argues that mass terms such as ‘bread’, ‘snow’, and ‘sand’ cannot appear in the plural, contrary to fact: *bkwezhgan-ag* ‘pieces of bread’, *mkwam-ig* ‘pieces of snow’, and *negaw-an* ‘grains of sand’ are all possible.

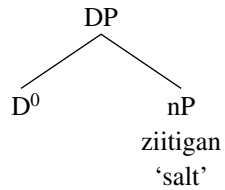
[28] The head movement operation is triggered by the fact that *-ag* ‘PL.AN’ is an affix. Whether head movement is carried out in the narrow syntax (Travis 1984, Roberts 2010) or at PF (Chomsky 2001) makes no difference for my proposal.

(31)



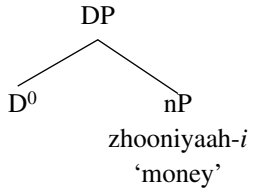
In the absence of a DivP, nouns are always interpreted as mass. So far, this is exactly like English. The meanings of (31) and (32) are read off from the structure (neoconstructionist view; Borer 2005 and many others).

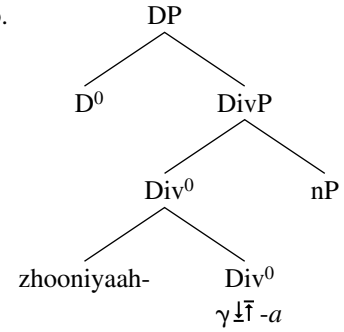
(32)



Where Ojibwe differs from English is in the use of measure phrases. Since Ojibwe has no measure phrases of the type *pieces of*, *bits of*, *portions of* in English, and since Ojibwe also makes less and less use of its mass classifier system, I want to argue that the language uses another system to obtain measure readings: the singulative. In fact, this system is probably very old and must have been in competition with the classifier system for a long time. The singulative system is still fairly productive, but often not visible for independent reasons (loss of final vowels like *-i* and *-a*; see section 2).

In Fox, the gender shift in question is clear: *-i* becomes *-a*. In the collective version of ‘money’, the noun is inanimate (33a) (and is undivided; i.e., no DivP is present), while in the individual version of ‘money’, the noun is animate (33b) (DivP is projected and gender shift operates in Div^0).

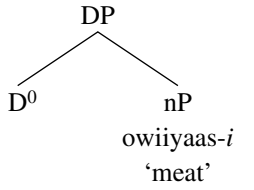
(33) a. 

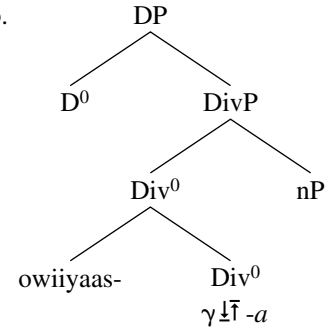
b. 

(Fox)

‘money’ (inanimate) → ‘coin’ (animate)

(34) illustrates the case of a mass noun turned into a unit of measure in Fox. The mass noun ‘meat’ starts undivided and is inflected inanimate (34a). In (34b), the addition of DivP and gender shift under Div^0 creates a unit of measure.

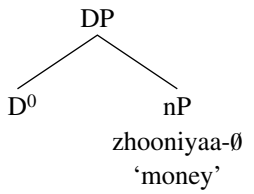
(34) a. 

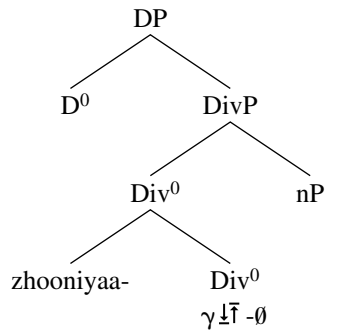
b. 

(Fox)

‘meat’ (inanimate) → ‘a piece/cut of meat’ (animate)

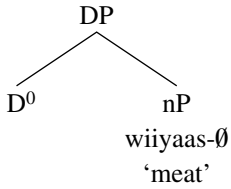
In Ojibwe, exactly the same derivations take place, (35) and (36). The difference between Fox and Ojibwe is that in Ojibwe, gender shift is not morphologically visible for most nouns.

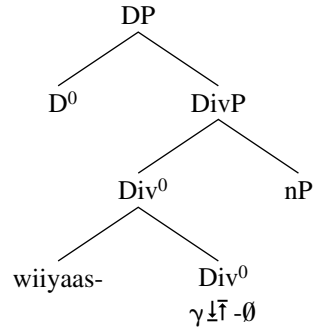
(35) a. 

b. 

(Ojibwe)

‘money’ (inanimate) → ‘coin’ (animate)

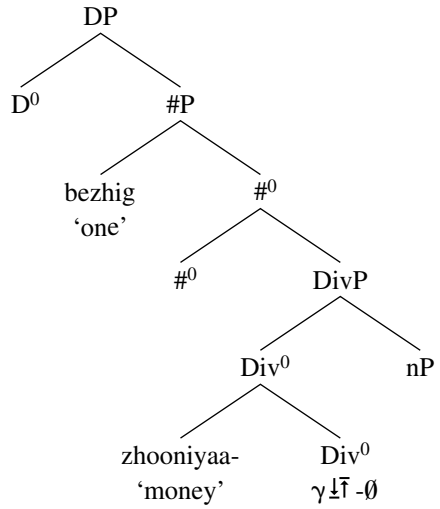
(36) a. 

b. 

(Ojibwe)

‘meat’ (inanimate) → ‘a piece of meat’ (animate)

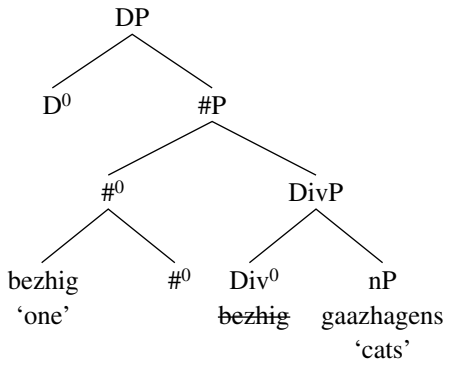
When the numeral ‘one’ is added to the structure in (35b), it is directly inserted in Spec,#P, as shown in (37). This differs from nonsingulative contexts, where in Ojibwe (as in English) the numeral ‘one’ first performs division under Div^0 and then moves to $\#^0$ (as in Borer 2005), as shown in (38).

(37) 

(Ojibwe)

‘one coin’ (animate)

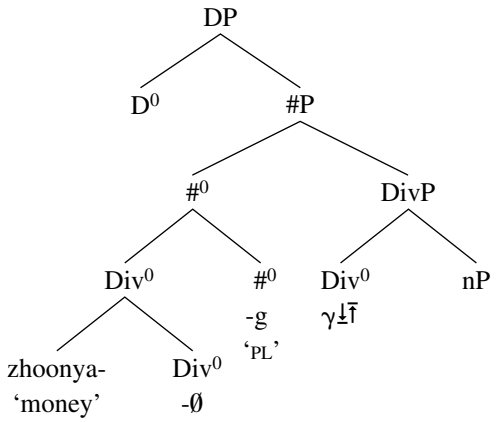
(38) (Ojibwe)



‘one cat’

Let us now turn to the case of pluralized singulatives. Although it may have appeared earlier (when I first introduced mass plurals) that the plural in Ojibwe plays the role, not only of a count classifier, but also of a mass classifier, it should be clear by now that this is only an illusion. The idea is that it is the gender shift prior to plural insertion that performs division. The question thus arises, what is the status and role of the plural in singulative contexts? I want to argue that the plural is in this case not a divider but a simple counter. Its function has changed and it appears under #0, the locus of the counting function.

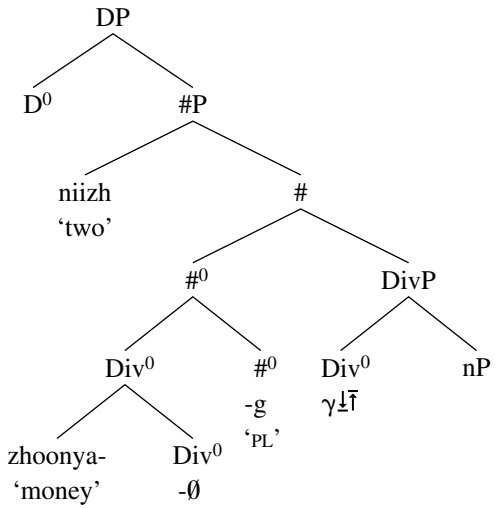
(39) (Ojibwe)



‘coins’ (animate)

Of course, it is always possible to add a numeral in this case, since Spec,#P is available. This is shown in (40).

(40) (Ojibwe)



‘two coins’ (animate)

Morphologically, the counting plural is identical to the dividing plural. It simply behaves differently depending on where it appears in the structure. When in Div^0, the plural behaves as a divider; when in Num^0, the plural behaves as a counter. We know independently that the same morpheme/grammatical element can have two very different functions: for example, *-ri* in Dagaare encodes both singular and plural (see section 1), and ‘one’ in Ojibwe sometimes behaves as a divider, sometimes as a counter ((37) vs. (38)).[29]

Finally, table 3 adds Ojibwe to the picture. Ojibwe is similar to yet different from other singulative languages in that it allows substance terms to be singulativized, but not liquid terms.

In summary, although gender shift has been known to be used in Algonquian languages to signal change of perspective or expression of power (see references in Goddard 2002), what is less well-known is that gender shift in these languages can target mass and collective nouns. This is discussed at length in Goddard 2002 for Fox. What has never been proposed before is that this type of gender shift is a feature of an underlying singulative system.

[29] There also appear to exist plurals that are neither dividing nor counting (plural of modesty; exaggerative, hyperbolic, and approximative plurals; antiassociative plurals; and the plural of abundance; see Corbett 2000). These can often take special forms. For example, in Banyun, a language of the West Atlantic branch of Niger-Kordofanian, spoken in Senegal and Guinea Bissau, the plural of abundance (sometimes called the greater plural) is used when the exact number is impossible to pinpoint or when it is irrelevant, and it surfaces as a different form from that of the dividing plural. In this language, nouns typically have singular and plural forms, distinguished by prefixes, as in (ia) and (ib) (Corbett 2000:31, from Sauvageot 1967:227–228). The greater plural is shown in (ic).

(i)	a. bu-sumɔl	b. i-sumɔl	c. ba-sumɔl
	SG-snake	PL-snake	PL-snake
	‘snake’	‘snakes’	‘snakes’

In the case of the greater plural, I assume that no Div^0 head is present, perhaps not even #P. The plural in this case is probably some kind of modifier (as in Wiltschko 2008).

Table 3
Revised version of table 2 (final version). (sing = singulative; sgl = singular)

Language	Liquids	Substances	Granular aggregates	Collective aggregates	Individual objects
English	0	0	0	plural (*-s*)	plural (*-s*)
Breton	sing (*-enn*)	sing (*-enn*)	sing (*-enn*)	sing (*-enn*)	plural (*-où*)
Welsh	sing (*-yn*)	sing (*-yn*)	sing (*-yn*)	sing (*-yn*)	plural (*-od*)
Dagaare	0	0	sing (*-ruu*)	sgl (*-ri*)	plural (*-ri*)
Arabic	sing (*-ah*)	sing (*-ah*)	sing (*-ah*)	sing (*-ah*)	plural (*-t*)
Ojibwe	0	sing ($i \rightarrow a$)	sing ($i \rightarrow a$)	sing ($i \rightarrow a$)	plural (*-g*/*-n*)

4 The Diminutive as Singulative

In this section, I argue that in addition to gender shift, Ojibwe uses the diminutive as a means to singulativize collective and mass nouns. While the individuating property of the diminutive is well-known (it is widespread crosslinguistically; see Dressler and Barbaresi 1994, Jurafsky 1996), the idea that it is a form of the singulative is, to the best of my knowledge, not often (if ever) entertained. There is a good reason for this: in many cases, the diminutive behaves differently from gender shift in its individualizing capacity. However, I want to show that in Ojibwe there is evidence to treat both types on a par.

On its most basic use, the diminutive process in Ojibwe turns nouns such as *mkisin* 'shoe' into *mkiznens* 'little shoe'. However, as Rhodes (1990:152) points out, ''The highly lexicalized English diminutives frequently used to gloss these forms belie this productivity; any concrete Ojibwa noun can form a diminutive up to the limits of semantic compatibility. This extends even to borrowings.'' Some examples are given in (41).[30]

(41) a. sin 'stone' ~ sin-iins 'pebble'
b. ziibi 'river' ~ ziibi-ins 'brook, creek'
c. miikan 'road' ~ miikna-ans 'path'
d. mBill 'Bill' ~ mBil-iins 'Billy'

When the diminutive ending is attached to the name of an animal, the meaning is the young of that animal (42a–c). The early stages of human life are also marked with the help of the diminutive (42d–e). Examples are from Rhodes 1990:152–153.

[30] The diminutive in Ojibwe has several allomorphs.

(42) a.	mkwa	'bear'	~	mkoons	'bear cub'
b.	nimosh	'dog'	~	nimoons/nimshens	'puppy'
c.	bzhiki	'cow'	~	bzhikiins	'calf'
d.	binoojiinh	'child'	~	binoojiins	'baby'
e.	kwe	'woman'	~	kwezens	'girl'

Interestingly for the present discussion, the diminutive can also help individuate mass or collective nouns as shown in (43). These in turn can be pluralized, as the third column shows (examples from Rhodes 1990:153–154 and Pedchenko, Lippert, and Gambill 2003).

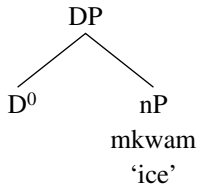
(43) a.	mtig	'wood/ forest'	~	mtigoons	'stick'	~	mtigoons-ag	'sticks'
b.	mkwam	'ice'	~	mkwamiins	'icicle'	~	mkwamiins-ag	'icicles'
c.	zhoonya	'money'	~	zhoonyaans	'coin'	~	zhoonyaan-ag	'coins'
d.	ziisbaakwad	'sugar'	~	ziisbaakdoons	'candy'	~	ziisbaakdoons-ag	'candies'
e.	mshkiki	'medicine'	~	mshkikiins	'pill'	~	mshkikiins-ag	'pills'
f.	semaa	'tobacco'	~	semaans	'cigarette'	~	semaans-ag	'cigarettes'
g.	bkwezhgan	'bread'	~	bkwezhgaans	'cookie'	~	bkwezhgaans-ag	'cookies'

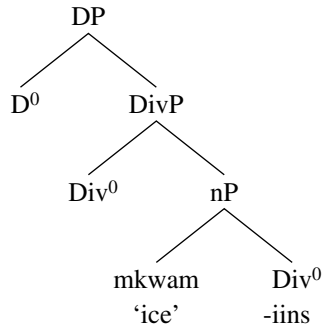
In these examples, we see that the diminutive achieves the same result as gender shift would. Nouns denoting substances, granular aggregates, and collective aggregates are targeted by the diminutive to form an individual. As with the case of gender shift, the diminutive cannot apply to liquid terms, (44a–b).

(44) a.	*nbiishins	intended: 'puddle of water'
b.	*bimidens	intended: 'bit of oil'

Despite the similarities, there is one main difference between gender shift and the diminutive as markers of the singulative: the diminutive tends to yield a simple unit rather than a unit-of-measure reading. For example, in (43d) the diminutivized noun does not mean 'a piece of sugar'; it means 'a candy'. In (43g), the diminutivized noun does not mean 'a piece of bread'; it means 'a cookie'. However, it must be noted that the diminutive targets exactly the same kind of collective and mass nouns as the singulative. In addition, although it is common for mass nouns in singulative languages with gender shift to be ambiguous between the simple unit reading and the measure reading, it appears that in Ojibwe gender shift correlates with unit-of-measure readings while the diminutive correlates with simple unit readings. However, this is not a strict dichotomy. Instead, I speculate that in order to avoid the ambiguity that a term faces when singulativized, the diminutive as divider is used to mark simple units, some of which are specialized ('bread' becomes 'cookie', etc.—although *bkwezhgaans* 'bread-DIM' is in fact ambiguous among 'cookie', 'biscuit', 'roll', 'doughnut', etc.). The difference in meaning is reflected in the context or across dialects.

Since I am not making a difference between the measure reading and the simple unit reading (both are exemplars of Div^0), I propose that the diminutive is another flavor that Div^0 can take. (45) shows the derivation for a mass noun such as *mkwam* 'snow' that becomes singulativized via the diminutive.

(45) a. 

b. 

(Ojibwe)

‘ice’ → ‘a piece of ice, an icicle’

Ojibwe is far from being the sole language to use the diminutive as an individualizer. In many languages, an element that also expresses smallness must be used to achieve individuation (see Rijkhoff 1991 for discussion). Stroomer (1987:87) reports that the singulative affix *-ittii* in Wellegga Oromo (Cushitic) also has a diminutive reading.

In summary, the diminutive is a full individualizer on a par with gender shift. My account applies to Ojibwe and is not meant to apply to other languages where diminutives have been shown to encode atomization independently of a singulative system (absent from the language). For example, in some dialects of German and Dutch, it is possible to individuate a mass noun with the diminutive (Wiltschko 2006, De Belder 2008, 2011, Ott 2011). Borer (2005:92n6) mentions similar examples in passing, attributing the observation to Henk van Riemsdijk. These are sometimes said to pose a problem for her view that classifiers and number are in complementary distribution (De Belder 2008, 2011). It appears that in these languages the diminutive works differently from the diminutive in Ojibwe. In the dialects mentioned, it is not possible to diminutivize granular aggregates.[31]

5 Conclusion

In this article, I argued for integrating the singulative into Borer's (2005) system of division. Division or atomization comes in different flavors cross- and intralinguistically: via the use of classifiers, number, and atomizing numerals, but also, as I have shown, via the use of the singulative. The singulative itself introduces different flavors: gender shift (from masculine to feminine, but also, as I have argued, from inanimate to animate) as well as the diminutive. With a comprehensive view of the singulative, I was able to give an account of why mass nouns in Ojibwe can often be pluralized. One major consequence of my proposal is that the plural has a dual function in the grammar: it can be used as an atomizer (as Borer (2005) argues) but also as a regular counter (as in traditional grammars).

[31] Thanks to a reviewer for pointing this out to me.

References

Acquaviva, Paolo. 2008. *Lexical plurals*. Oxford: Oxford University Press.

Baerman, Matthew. 2007. Morphological reversals. *Journal of Linguistics* 43:33–51.

Baraga, Friderik. 1850. *A theoretical and practical grammar of the Otchipwe language*. Detroit, MI: Jabez Fox.

Black-Rogers, Mary B. 1982. Algonquian gender revisited: Animate nouns and Ojibwa 'power'—an impasse? *Papers in Linguistics* 15:59–76.

Boeckx, Cedric. 2010. What principles & parameters got wrong. Ms., Universitat Autònoma de Barcelona.

Booij, Geert. 1993. Against split morphology. In *Yearbook of morphology 1993*, ed. by Geert Booij and Jaap van Marle, 27–50. Dordrecht: Kluwer.

Booij, Geert. 1995. Inherent versus contextual inflection and the split morphology hypothesis. In *Yearbook of morphology 1995*, ed. by Geert Booij and Jaap van Marle, 1–16. Dordrecht: Kluwer.

Borer, Hagit. 2005. *In name only*. New York: Oxford University Press.

Bunt, Harry. 1985. The formal representation of (quasi-)continuous concepts. In *Formal theories of the commonsense world*, ed. by Jerry Hobbs and Robert Moore, 37–70. Norwood, NJ: Ablex.

Cheng, Lisa Lai-Shen, and Rint Sybesma. 1999. Bare and not-so-bare nouns and the structure of NP. *Linguistic Inquiry* 30:509–542.

Chierchia, Gennaro. 1998. Reference to kinds across languages. *Natural Language Semantics* 6:339–405.

Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: A life in language*, ed. by Michael Kenstowicz, 1–52. Cambridge, MA: MIT Press.

Clausen, David, Alex Djalali, Scott Grimm, Sven Lauer, Tania Rojas-Esponda, and Beth Levin. 2010. Extension, ontological type, and morphosyntactic class: Three ingredients of countability. Ms., Stanford University, Stanford, CA. Available at http://www.stanford.edu/~bclevin/bochum10abst.pdf.

Corbett, Greville. 2000. *Number*. Cambridge: Cambridge University Press.

Cowell, Mark W. 2005. *A reference grammar of Syrian Arabic (based on the dialect of Damascus)*. Washington, DC: Georgetown University Press.

Davis, Henry, and Lisa Matthewson. 1999. On the functional determination of lexical categories. *Revue québécoise de linguistique* 27:30–69.

De Belder, Marijke. 2008. Size matters: Towards a syntactic decomposition of countability. In *WCCFL 27*, ed. by Natasha Abner and Jason Bishop, 116–122. Somerville, MA: Cascadilla Press.

De Belder, Marijke. 2011. A morphosyntactic decomposition of countability in Germanic. *Journal of Germanic Linguistics* 14:173–202.

Dimmendaal, Gerrit J. 2000. Number marking and noun categorization in Nilo-Saharan languages. *Anthropological Linguistics* 42:214–261.

Doetjes, Jenny. 1996. Mass and count: Syntax or semantics? In *Proceedings of Meaning on the HIL*, 34–52. Leiden: HIL/Leiden University.

Doetjes, Jenny. 1997. Quantifiers and selection: On the distribution of quantifying expressions in French, Dutch and English. Doctoral dissertation, Leiden University.

Doron, Edit, and Ana Müller. 2010. The cognitive basis of the mass-count distinction: Evidence from bare nouns. Abstract. The Hebrew University of Jerusalem and University of São Paulo.

Dressler, Wolfgang, and Lavinia Merlini Barbaresi. 1994. *Morphopragmatics: Diminutives and intensifiers in Italian, German, and other languages*. Berlin: Mouton de Gruyter.

Fassi Fehri, Abdelkader, and Marie-Thérèse Vinet. 2007. Number and classifier distributions in Arabic and Chinese and their complementarity. In *Architectures, rules, and preferences: Variations on themes by Joan Bresnan*, ed. by Annie Zaenen, Jane Simpson, Tracy Holloway King, Jane Grimshaw, Joan Maling, and Chris Manning, 167–193. Stanford, CA: CSLI Publications.

Goddard, Ives. 2002. Grammatical gender in Algonquian. In *Papers of the Thirty-Third Algonquian Conference*, ed. by H. C. Wolfart, 195–231. Winnipeg: University of Manitoba.

Greenberg, Joseph H. 1972. Numeral classifiers and substantival number: Problems in the genesis of a linguistic type. *Working Papers on Language Universals* 9:2–39.
Greenberg, Joseph H. 1974. Studies in numeral systems, I: Double numeral systems. *Working Papers on Language Universals* 14:75–89.
Grimm, Scott. 2009. Number marking and individuation: A view from Dagaare. Abstract. Stanford University, Stanford, CA.
Grimm, Scott. 2010. Number and markedness: A view from Dagaare. In *Proceedings of Sinn und Bedeutung 14*, ed. by Martin Prinzhorn, Viola Schmitt, and Sarah Zobel, 168–184. Vienna: University of Vienna, Department of Linguistics.
Grimm, Scott. 2011. Countability in Dagaare. Paper presented at the Department of African Studies, Humboldt University, Berlin, December.
Harbour, Daniel. 2008. *Morphosemantic number: From Kiowa noun classes to UG number features*. Dordrecht: Springer.
Hemon, Roparz. 1975. *A historical morphology and syntax of Breton*. Dublin: Institute for Advanced Studies.
Holes, Clive. 2004. *Modern Arabic: Structures, functions, and varieties*. 2nd ed. Washington, DC: Georgetown University Press.
Jurafsky, Daniel. 1996. Universal tendencies in the semantics of the diminutive. *Language* 72:533–578.
Kaye, Jonathan, and Glyne Piggott. 1973. On the cyclical nature of Ojibwa t-palatalization. *Linguistic Inquiry* 4:345–362.
Krifka, Manfred. 1989. Nominal reference, temporal constitution and quantification in event semantics. In *Semantics and contextual expression*, ed. by Renate Bartsch, Johan van Benthem, and Peter van Emde Boas, 75–115. Dordrecht: Foris.
Krifka, Manfred. 1995. Common nouns: A contrastive analysis of English and Chinese. In *The generic book*, ed. by Gregory N. Carlson and Francis Jeffry Pelletier, 398–411. Chicago: University of Chicago Press.
Mathieu, Éric. 2007. The count/mass distinction and the role of number in Ojibwe. Paper presented at the Workshop on Nominal and Verbal Plurality, Paris, November 9–10.
Mathieu, Éric. 2012. On the mass/count distinction in Ojibwe. In *Count and mass across languages*, ed. by Diane Massam, 172–198. Oxford: Oxford University Press.
Mithun, Marianne. 1988. Lexical categories and the evolution of number marking. In *Theoretical morphology: Approaches in modern linguistics*, ed. by Michael Hammond and Michael Noonan, 211–234. San Diego, CA: Academic Press.
Mithun, Marianne. 1999. *The languages of Native North America*. Cambridge: Cambridge University Press.
Muehlbauer, Jeffrey. 2008. kâ-yôskâtahk ôma nêhiyawêwin: The representation of intentionality in Plains Cree. Doctoral dissertation, University of British Columbia.
Newmeyer, Frederick. 2005. *Possible and probable languages: A generative perspective on linguistic typology.* Oxford: Oxford University Press.
Nichols, John, and Earl Nyholm. 1995. *A concise dictionary of Minnesota Ojibwe*. Minneapolis: University of Minnesota Press.
Ott, Dennis. 2011. Diminutive formation in German: Spelling out the classifier analysis. *Journal of Comparative Germanic Linguistics*. Online.
Pedchenko, Svetlana ''Weshki-ayaad,'' Charlie Lippert, and Guy Gambill. 2003. Freelang Ojibwe-English dictionary and English-Ojibwe dictionary. Available at http://www.freelang.net/dictionary/ojibwe.html.
Pelletier, Francis Jeffry. 1979. Non-singular reference: Some preliminaries. In *Mass terms: Some philosophical problems*, ed. by Francis Jeffry Pelletier, 1–14. Dordrecht: Reidel.
Piggott, Glyne. 2007. Deriving word minimality by phase. Ms., McGill University, Montreal.
Rhodes, Richard. 1985. *Eastern Ojibwa-Chippewa-Ottawa dictionary*. Berlin: Mouton de Gruyter.

Rhodes, Richard. 1990. Lexical hierarchies and Ojibwa noun derivation. In *Meanings and prototypes: Studies in linguistic categorization*, ed. by Savas L. Tsohatzidis, 151–158. London: Routledge.
Rijkhoff, Jan. 1991. Nominal aspect. *Journal of Linguistics* 8:291–309.
Ritter, Elizabeth, and Martina Wiltschko. 2009. Varieties of Infl: Tense, location, and person. In *Alternatives to cartography*, ed. by Jeroen van Craenenbroeck, 153–202. Berlin: Mouton de Gruyter.
Roberts, Ian. 2010. *Agreement and head movement: Clitics, incorporation, and defective goals*. Cambridge, MA: MIT Press.
Ross, Malcolm D. 1988. *Proto Oceanic and the Austronesian languages of Western Melanesia*. Canberra: Pacific Linguistics.
Sanches, Mary, and Linda Slobin. 1973. Numeral classifiers and plural marking: An implicational universal. *Working Papers on Language Universals* 11:1–22.
Sauvageot, Serge. 1967. Sur la classification nominal en baïnouk. In *La classification nominale dans les langues négro-africaines*, 225–235. Paris: Centre national de la recherche scientifique.
Stroomer, Harry. 1987. A comparative study in three southern Oromo dialects in Kenya (phonology, morphology, and vocabulary). Doctoral dissertation, Leiden University.
Stump, Gregory. 2005. Word-formation and inflectional morphology. In *Handbook of word-formation*, ed. by Pavol Štekauer and Rochelle Lieber, 48–71. Dordrecht: Springer.
Ternes, Elmar. 1992. The Breton language. In *The Celtic languages*, ed. by Donald MacCaulay, 371–452. Cambridge: Cambridge University Press.
Travis, Lisa. 1984. Parameters and effects of word order variation. Doctoral dissertation, MIT, Cambridge, MA.
Trépos, Pierre. 1956. *Le pluriel Breton*. Rennes: Imprimerie Réunies.
Trépos, Pierre. 1980. *Grammaire Bretonne*. Rennes: Ouest-France.
Valentine, Randy. 2001. *Nishnaabemwin reference grammar*. Toronto: University of Toronto Press.
Whorf, Benjamin. 1941. The relation of habitual thought and behavior to language. In *Language, culture and personality: Essays in memory of Edward Sapir*, ed. by Leslie Spier, A. Irving Hallowell, and Stanley Newman, 75–93. Menasha, WI: Sapir Memorial Publication Fund 1941.
Wiltschko, Martina. 2006. Why should diminutives count? In *Organizing grammar: Studies in honor of Henk van Riemsdijk*, ed. by Hans Broekhuis, Norbert Corver, Riny Huybregts, Ursula Kleinhenz, and Jan Koster, 669–679. Berlin: Mouton de Gruyter.
Wiltschko, Martina. 2008. The syntax of non-inflectional plural marking. *Natural Language and Linguistic Theory* 26:639–694.
Wiltschko, Martina. 2012. Decomposing the mass/count distinction: Towards a formal typology. In *Count and mass across languages*, ed. by Diane Massam, 146–171. Oxford: Oxford University Press.

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Voiding Island Effects via Head Movement

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I argue that Bošković's (2011c) generalization concerning the island-voiding effect of incorporation can be captured naturally within minimalist bare phrase structure if head movement (a) is a syntactic operation and (b) leaves no trace/copy. É. Kiss's (2008) ''domain-flattening'' phenomena are also expected under the proposed account. Further empirical consequences are discussed.

Keywords: head movement, incorporation, trace, bare phrase structure

1 Introduction

Head movement (HM) has been subject to close scrutiny in recent syntactic theorizing. The reason is that some of its properties appear unusual in the context of the minimalist conception of grammar and its desiderata. As Chomsky (2001) points out, in contrast to XP-movement, HM (a) does not seem to affect interpretation; (b) has no clear triggers; (c) is acyclic; (d) leads to a configuration where the moved element does not c-command its trace; and (e) in long-distance contexts, proceeds in a ''snowball'' fashion, forming increasingly bigger clusters with each step, rather than successive-cyclically as XPs would (in fact, successive-cyclic HM would require excorporation; see Roberts 1991). All of this creates an impression that does not fit easily into the mainstream conception of movement (internal Merge) as an operation that (A) affects interpretation; (B) is triggered; (C) is strictly cyclic; (D) observes the c-command requirement on trace; and (E) is successive-cyclic.

The observed discrepancy regarding HM has generated a number of proposals aimed at achieving greater coherence between HM and what is considered to be good minimalist design. These proposals diverge regarding whether HM should be treated as part of narrow syntax, and they fall roughly into three different types. The first, originally due to Chomsky (2001), takes the above-mentioned properties as a possible indication that HM is not part of the core engine performing syntactic computations, but is subject to requirements at the PF interface. Boeckx and Stjepanović (2001) explore this suggestion in the context of pseudogapping (see also Baltin 2002).[1] Another, more radical view assumes that HM does not exist at all and that its effects are derivable essentially from a series of remnant XP-movements (e.g., Kayne 1994, Koopman and Szabolcsi 2000). Finally, the third approach argues that HM must be retained in core syntax and attempts to incorporate its seemingly unusual properties into the minimalist system via reinterpreting as-

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[1] See also Bayer 2008 for an argument that the verb-second phenomenon in certain varieties of German involves displacement only of a phonological matrix of the verb.

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sumptions pertaining to XP-movement and combining them with certain morphological requirements (Matushansky 2006), exploring the theoretical potential of HM (e.g., Donati 2006, Roberts 2010, Surányi 2008), and strengthening independent evidence that HM indeed has syntactic status (Lechner 2006).

I argue that at least some cases of HM must be treated as part of core syntax by virtue of an important syntactic effect that it produces. These are cases of incorporation of D or P heads into a c-commanding lexical category (e.g., V). That incorporation exists, has long been known (Baker 1988). The currently accumulating evidence suggests that when the incorporating D itself heads a syntactic island (e.g., complex DP), incorporation of that D effectively removes that island, so that a dependency such as *wh*-movement can be formed across the vanished boundary. As I will show, this seemingly surprising effect is in fact not surprising at all, but follows naturally from considerations of endocentricity in combination with the minimalist bare phrase structure.

2 Islands Headed by Traces

Bošković (2011c:16) proposes the following generalization (see also Bošković 2005):

(1) A phrase that is normally a barrier to movement ceases to be a barrier if headed by a trace.

At issue here is an unusual situation where islandhood of a phrase is voided when that phrase is headed by a trace. Consider some relevant data.

2.1 Voiding DP Islands

Uriagereka (1988, 1996) shows that argument (2) and adjunct (3) *wh*-extraction from inside the DP in Galician are possible only if determiner incorporation into the selecting verb has taken place (examples from Uriagereka 1996:270–271; emphasis mine).

(2) a. (?)De quén liche-*los* mellores poemas de amigo?
of whom read.2SG-the best poems of friend
'Who did you read the best poems of friendship by?'
b. cf. *De quén liches *os* mellores poemas de amigo?
of whom read.2SG the best poems of friend

(3) a. De que zonas liche-*los* mellores poemas de amigo?
of what areas read.2SG-the best poems of friend
'What areas did you read the best poems of friendship from?'
b. cf. *De que zonas liches *os* mellores poemas de amigo?
of what areas read.2SG the best poems of friend

Such incorporated determiners act as ''gates'' for extraction from islands. Interestingly, D-incorporation in Galician is possible not only out of DP objects, but also out of subjects (4) and adjuncts (5). Bošković (2011b) claims that D-incorporation out of an adjunct in (5) opens the adjunct gate for extraction (see also below and footnote 3).

(4) Merda fixested-los fachas!
shit did-the fascists
'You fascists did nothing!'
(Uriagereka 1988:243)

(5) a. *Chegamo-la* semana pasada.
arrived-the week last
'We arrived last week.'
b. ?De que semana *chegastede-lo* Luns?
of which week arrived.2PL-the Monday
'Of which week did you guys arrive on the Monday?'
(Bošković 2011b:2)

In essence, after D-incorporation the remaining phrase behaves, with respect to extraction, very much like a bare NP in languages without the category Determiner. A number of authors have shown that in languages that do not have strong overt determiners such as definite articles, the category D is not realized (Bošković 2008, Corver 1992, Stjepanović 1998), and instead of DP these languages feature just bare NPs (possibly with some additional functional structure, though never a DP; see Bošković 2011a). Such bare NPs allow *wh*-extraction out of them.

(6) a. [Iz kakogo goroda]$_i$ ty videl [$_{NP}$ devušek t_i]? (Russian)
from which city you saw girls
'Girls from which city did you see?'
b. cf. *[From which city]$_i$ did you see [$_{DP}$ girls t_i]?
(Stjepanović 1998)

Bošković (2005) argues that D-less languages are also those that allow left branch extraction.

(7) a. Krasnuju$_i$ ja kupil [$_{NP}$ t_i mašinu]. (Russian)
red I bought car
'It is a red car that I bought.'
b. cf. *Red$_i$ I bought [$_{DP}$ a t_i car].

Left branch specifiers can be extracted from bare NPs, not from DPs. This suggests that in D languages, after D-incorporation, DPs behave like NP with respect to extraction, an observation that will become relevant in the following discussion. The generalization in (1) captures that intuition while making use of the notion of HM trace, along the lines of (8) (cf. (2)).[2]

[2] Uriagereka's (1988) original account of (2)–(3) is different from Bošković's (2005) in that it does not appeal to traces; for Uriagereka, any phonologically null head fails to project a barrier.

(8) a. (?)De quén$_j$ liche-*los*$_i$ [$_{DP}$[$_{D'}$ t$_i$ [$_{NP}$ mellores poemas de amigo t$_j$]]]?
of whom read.2SG-the best poems of friend
'Who did you read the best poems of friendship by?'
b. *De quén$_j$ liches [$_{DP}$[$_{D'}$ *os* mellores poemas de amigo t$_j$]]?
of whom read.2SG the best poems of friend

2.2 Voiding PP Islands

P(reposition)-stranding languages provide another well-known illustration of the voiding effect—for example, in pseudopassives and *wh*-questions.

(9) This book$_i$ has been frequently [referred to] t$_i$.

(10) What$_i$ did he [talk about] t$_i$?

Assuming PPs to be generally islands (cf. Van Riemsdijk's (1978) Head Constraint), a special rule of reanalysis was proposed in early Government-Binding Theory to account for P-stranding (Hornstein and Weinberg 1981). This rule reanalyzes the PP, whereby the preposition becomes part of the selecting predicate. Pseudopassivization and *wh*-movement are possible only out of reanalyzed PPs.

(11) *This city$_i$ was frequently traveled [to t$_i$].

(12) *Which piece$_i$ did John fall asleep [during t$_i$]?

Even though conditions regulating reanalysis remain somewhat poorly understood, HM is a very good candidate to be part of the explanation of the relevant phenomena. Bošković (2011c) relates P-stranding to the generalization in (1) on the basis of a larger sample of crosslinguistic examples involving P-incorporation, many of which again involve incorporation out of an adjunct.[3] If a preposition incorporates into a verb, then its complement behaves like a bare NP and can be either A- or Ā-moved. Once again, incorporation somehow frees the structure, removing the island boundary.

[3] This includes, for instance, P-incorporation out of manner adverbials in Kinyarwanda (i), but also the possibility of N/P-incorporation in reason adverbials in Chichewa, and passive *by*-phrases in Southern Tiwa and other languages, discussed in Baker 1988.

(i) a. Umugabo a-ra-*som*-a ibaruwa *n*'-iibyiishiimo.
man SP-PRES-*read*-ASP letter *with*-joy
'The man is reading a letter with joy.'
b. Umugabo a-ra-*som*-*an*-a ibaruwa iibyiishiimo.
man SP-PRES-*read*-*with*-ASP letter joy
'The man is reading a letter with joy.'
(Baker 1988:471)

Bošković (2011b) uses these data to argue, contra Baker, that HM/incorporation out of islands, including adjuncts, is in fact possible, and that the previous explanations banning this kind of HM overlooked certain intervening factors. Note that among other things, this opens a potential way of accounting for stranding of an adjunct preposition under *wh*-movement in terms of the P-incorporation analysis of P-stranding (cf. *Who did you come with?*).

2.3 ''Repair-by-Deletion''

Bošković (2011c) offers an interpretation of (1) via the ''repair-by-PF deletion'' strategy. The original ''repair-by-deletion'' account of Chomsky (1972) was concerned with the important observation made by Ross (1969) that ellipsis voids island effects. Starting from Merchant 1999, the issue has received renewed attention in the literature (cf., e.g., Lasnik 2001 and Merchant 2008). This is illustrated in (13) (deletion is indicated with overstrikes).

(13) a. *That he will hire someone is possible, but I will not divulge who$_i$ [[$_{\text{Island}}$ that he will hire t_i] is possible].
b. That he will hire someone is possible, but I will not divulge who$_i$ [[~~$_{\text{Island}}$ that he will hire t_i] is possible~~].
(Ross 1969:277)

Chomsky originally suggested putting a # on an island crossed by a movement operation. If the # remains in the final structure, a violation occurs. However, if some later operation such as ellipsis erases the #, then no information about a possible violation is retained in the final representation. Bošković (2011c) explores this idea in the context of copy deletion and suggests that (1) can be reduced to the ''repair-by-deletion'' scheme if one assumes that the # (Bošković and other authors use a star * instead) is assigned not to an island boundary (e.g., CP) but to its head. In particular, in (13b) the star is placed on t_i upon *wh*-movement. PF operations delete t_i, which actually is a silent copy of the moved head, thus avoiding incurring a violation.

Attributing the voiding effect to the ''repair-by-deletion''-like scenario captures obvious similarities between ellipsis and deletion of copies, but the resulting picture is unnecessarily complicated in the minimalist context, while requiring a fair amount of stipulation. It is not clear whether both syntactic and PF components should have to be involved here. Importantly, the star-assigning convention violates the Inclusiveness Condition (the ban on introducing entities not present in the numeration), a fundamental piece of the minimalist architecture.[4] In addition, the account bears on rather technical issues concerning where the star is assigned, which are difficult to substantiate. Below, I outline an alternative explanation of the island-voiding effect that avoids the complicating #/*-assigning convention altogether.

3 Islands Not Headed by Traces

(1) is based on the underlying assumption that HM leaves a trace/copy in the base position. The trace assumption is carried over from the Government-Binding framework and reflects general considerations of phrase structure preservation and derivational history. In particular, if some head α has projected to a phrase αP and then moved away from its phrase to adjoin to head β, the trace/copy symbol ensures that the derivation retains the information that αP is a projection of α.

(14) $[_{\beta P} \ldots \alpha + \beta \ldots [_{\alpha P} \ldots t_\alpha \ldots]]$

[4] See Lasnik 2001 for a proposal dealing with this problem under minimalist assumptions.

Several points about this analysis are noteworthy. Apart from the issues pointed out in section 1, a major difference between HM and XP-movement is that under HM, the element that moves is also the one that leaves behind a phrase carrying its label. In a sense, after movement head α belongs in two places simultaneously: αP and βP. This intuition was recognized a while ago and was encoded in the Government-Binding framework. One prominent example is Baker's (1988) Government Transparency Corollary, whereby a lexical category with an item incorporated into it is assumed to govern everything that the incorporated item governed in its original structural position.

A similar intuition may in principle be reformulated in minimalism, if HM leaves a trace/copy behind (see Den Dikken 2007 and Gallego 2010 for recent, relevant discussion). Consider, however, the possibility that it does not. First, the entire line of thought attributing HM to the PF component implicitly entails that HM traces do not play a significant syntactic role. Second, previous discussion of the relation between the traces of moved elements and their LF interpretation—in particular, in the context of reconstruction—has concentrated mostly on XPs. Chomsky (1995:chap. 3) notes that reconstruction is a general property of Ā-movement creating operator-variable chains. With respect to A-movement, Chomsky notes the absence of reconstruction effects in general and suggests that traces of A-movement, unlike those of Ā-movement, are ignored by interpretive components such as LF. Lasnik (1999) further explores this argument, evaluating it on a wide range of relevant constructions, and suggests that the lack of reconstruction effects with A-movement indicates the absence of relevant traces/copies of A-movement altogether. This move is also appealing given the minimalist consideration of conceptual necessity: if an element plays no role in the computation, it may not be there at all.[5]

This reasoning is relevant in the case of HM to the extent that base copies of HM do not play in a role in LF interpretation either. Two cases of HM have recently been claimed to have an effect on LF interpretation (see also Lambova 2004 for the claim that heads can undergo focus movement). One case concerns licensing negative polarity items (NPIs) under HM (Kayne 2000: 44, Roberts 2011), as illustrated in (15).

(15) a. *Which one of them does anybody not like?
b. Which one of them does*n't* anybody *t* like?

Under the standard assumption that NPIs must be c-commanded by their licensers at LF, movement of negation changes c-command relations in a way that yields a well-formed LF representation. The other case concerns positioning of certain modals with respect to clausemate quantifiers, discussed in detail by Lechner (2006) and illustrated in (16).

(16) Not every pearl can be above average size. $\neg\Diamond > \forall$
'It is not possible that every pearl is above average size.'

[5] See also Fox 1999. Fox argues that A-movement does reconstruct (and lower copies are interpreted) in some cases. He proposes that A-movement leaves a trace (not a copy) only in those cases. For present purposes, even this weaker version of A-movement reconstruction theory will suffice. Boeckx (2001) argues that cases of apparent reconstruction with A-movement can be accounted for by literal lowering, rather than interpreting the lower copy.

In (16), the modal can take scope over the quantifier, resulting in the inverse scope configuration. Lechner further argues that the position in which the quantifier is interpreted ($\mathbf{t_{QP}}$ in (17)) is above the base-generated position of the modal.

(17) . . . QP . . . Mod . . . $\mathbf{t_{QP}}$ . . . $\mathbf{t_{Mod}}$ . . . t_{QP}

It follows that the modal must be interpreted in the derived position. Note, however, that in both these cases what gets interpreted under this analysis is the higher copy of the moved head. The lower copy that would correspond to the trace/copy still plays no role for LF interpretation.[6]

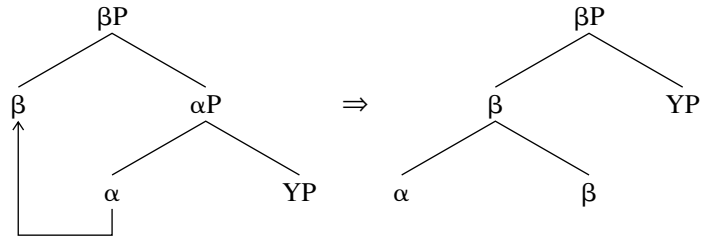
Let us then suppose that syntactic HM does not leave a trace/copy at all.[7] Then, instead of the situation depicted in (14), we should have something like (18).

(18) $[_{\beta P} \ldots \alpha + \beta \ldots [_{\alpha P} \ldots]]$

But this configuration simply cannot arise, because it violates the fundamentally endocentric character of phrases. Unlike the case of A-movement, which originates from a specifier or complement position of some head α heading a phrase αP (i.e., from a nonprojecting position), traceless HM of head α does affect the core head-centered skeleton of αP in a fatal way: it ceases to exist. This is straightforward in the bare phrase structure framework, where labels (if they exist at all) are relationally determined. If α projects, the label of the resulting object is identical to the label of the head (i.e., α). When α moves away, the projection of α in the base position collapses, along with its label.

Consider abstractly what this implies for the structure of the vanishing phrase. Suppose a head α takes YP as a complement, forming αP, which is then selected by another head β. β probes for α, and α raises. αP collapses, and YP becomes a complement of the conglomerate head, as depicted in (19).[8]

(19)



[6] Note also that work on the semantics of incorporation in the framework of transparent LF suggests that it is the incorporated, not base, positions that are interpreted for semantic purposes—in particular, in the context of theories of indefinites (Van Geenhoven 1998, Wharram 2003). As an *LI* reviewer points out, Lechner (2006) also notes instances such as *You can always [can] count on me* where, as he claims, the wide scope of *always* with respect to *can* cannot be derived by raising *always* at LF. Whether the scope of adverbials like *always* can be reliably derived via their LF movement in the first place is not entirely clear, but instances like these should be taken into account in any case when ultimately delimiting the extent to which HM may be traceless.

[7] Platzack (1986) and Thráinsson (1986) have previously considered the possibility that V-movement does not leave a trace in Scandinavian languages.

[8] An *LI* reviewer points out that the result of collapsing αP in (19) is very similar to the treatment of restructuring/nominative objects in Japanese by Saito and Hoshi (1998), which for these authors involves direct head merger.

HM of α to β may proceed either as simple head adjunction as in (19) or by formation of a complex α + β cluster and possible relabeling of the phrase, (α + β)P. The choice between these options in each particular case is possibly constrained by considerations of selection, feature sharing, θ-role assignment, and so on. For the moment, this is immaterial. The crucial point is the disappearance of αP. If αP happens to be an island—in particular, a DP or a PP island—then the island-voiding effect follows directly from the traceless HM.

In the end, Bošković's (2011c) account of the voiding effect in (1) converges on the same conclusion: that traces do not head islands. But while for Bošković this results from a series of manipulations involving both syntax (leaving the trace, inspecting the island, assigning a star to its head) and the PF component (deleting the trace and the star), I suggest that it may not be necessary to use this set of conceptual tools to create a trace and then delete it. Rather, the voiding effect with HM largely follows from endocentricity and the relational character of labels in bare phrase structure, a minimal assumption if bare phrase structure reflects an optimal language design. The voiding effect arises exactly in those cases of HM that leave no trace (perhaps all), thus make no use of alleged lower copies.

Recall that properties (d) and (e) of HM mentioned in section 1 as oddities for minimalist syntax have to do with traces that it supposedly leaves: they are not c-commanded by the moving element, and they are not licensed (violating the Head Movement Constraint or the Empty Category Principle, depending on one's view) in excorporation contexts that would otherwise appear to be natural HM counterparts of successive-cyclic XP-movement. If syntactic HM does not leave a trace/copy at all, then properties (d) and (e) may no longer be relevant in light of minimalist guidelines, and can be removed from the list of oddities for syntactic HM altogether.

There are reasons to think that the same can be said about the remaining properties (a)–(c). Property (a) is challenged by the ''gate-opening'' character of incorporation, illustrated in basic cases like (2) and (3) (as already pointed out by Uriagereka (1988)), as well as by Roberts's (2011) and Lechner's (2006) cases of NPI-licensing and modals, respectively. Concerning (c), note that there is no acyclicity problem from the probe-goal perspective, since the probing head c-commands the head it is probing (see Epstein 2001). Finally, the triggers argument (b) can be questioned as well. For instance, one may imagine postulating a trigger for syntactic V-to-T movement (e.g., T- or V-feature), which does not seem to be an obviously worse mechanism than, for instance, the [+ wh] feature for *wh*-movement.

4 Residual *Wh*-Scope Marking

Stepanov and Stateva (2006) suggest an account much along the lines of (19) in their theory of successive-cyclic *wh*-movement in long-distance *wh*-questions as in (20) (possibly extendable to other Ā-movement contexts).

(20) Who_i do you believe t_i Peter likes t_i?

Stepanov and Stateva propose that the successive-cyclic property of long-distance *wh*-movement in languages like English is due to a residual *wh*-scope-marking structure in these languages. Consider the following typical *wh*-scope-marking question:

(21) [$_{CP}$ Was glaubst du [$_{CP}$ wen$_i$ Maria gesehen t_i hat]]? (German)
what think you whom Maria seen has
'Who do you think Maria saw?'

In (21), there are two clause-bound *wh*-dependencies, one of which is headed by the ''*wh*-scope marker'' *was* 'what', which, as the translation of (21) suggests, appears to mark the high (matrix) scope of the other *wh*-phrase. Under the analysis known as *indirect dependency*, however, the ''*wh*-scope marker'' is an independent contentful *wh*-phrase itself. Under some versions of indirect dependency, the *wh*-scope marker is a *wh*-head W that forms a constituent with the embedded *wh*-clause at D-Structure (and has a semantic type function that takes the embedded question as an argument at LF; see, e.g., Dayal 1996, 2000, Mahajan 2000, Stepanov 2000), as illustrated in (22).

(22) [$_{CP[+Q]}$ . . . V [$_{WP}$ W [$_{CP[+Q]}$ wh$_i$ . . . t_i . . .]]]

Note that the structure of WP is closely reminiscent of a complex DP island and is also in line with the views treating finite complementation in terms of an NP/DP-shell (Bayer 1996, Müller and Sternefeld 1995, Stepanov 2001). The main relevance of this type of question in the context of successive cyclicity is that in constructions such as (21) all CPs are marked [+Q], which provides a potentially relevant context for successive checking of all [+Q] features by a single *wh*-phrase, rather than locally by different elements (e.g., a *wh*-phrase and a *wh*-scope marker). The challenge is thus to circumvent the island. Stepanov and Stateva suggest that the D-Structure in *wh*-scope-marking languages as well as in ''long-distance *wh*-movement'' languages is basically the same, namely, that in (22). In the course of the derivation, W can either overtly move to the matrix CP domain, as in German, Russian, and Hungarian; stay in situ, as in Hindi; or incorporate into the selecting V (propositional attitude verb), as in English and other long-distance movement languages. Whether W incorporates into V or not depends on the morphological status of W: if W is an affix, it incorporates; if not (like German *was*), it does not. The incorporation option is realized along the lines of (19). In particular, with the derivation of (20) proceeding from the bottom up, an embedded-question CP is formed and local *wh*-movement takes place.

(23) [$_{CP[+Q]}$ who$_i$ Peter likes t_i]

Then a W (in English, phonologically null) merges, taking the CP in (23) as a complement, forming a WP; and the matrix V merges. At this point, W undergoes traceless HM, incorporating into V and forming a complex predicate. The WP ceases to exist.

(24) believe [$_{WP}$ W [$_{CP[+Q]}$ who$_i$ Peter likes t_i]] →
[$_{VP}$ believe + W [$_{CP[+Q]}$ who$_i$ Peter likes t_i]]

The *wh*-phrase in the specifier of the embedded CP can now take a further step to the matrix Spec,CP (Stepanov and Stateva assume that the *wh*-phrase can check its [+wh] feature more than once). Successive checking of [+Q] features of Cs along the way is thus responsible for the successive-cyclic effect. The main advantage of this island-voiding perspective of successive cyclicity is that it allows one to unify seemingly unrelated types of interrogative constructions

such as *wh*-scope-marking and long-distance *wh*-questions under a common derivational history and associate general principles of structure building with language-specific morphology (namely, the makeup of W), deriving the relevant patterns across a wide range of crosslinguistic material (see Stepanov and Stateva 2006 for details).[9]

5 Specifiers, Adjuncts, and Flattening Constituent Structure

One further consequence of traceless HM has to do with an interesting phrase-structural effect concerning disappearance of a phrase after incorporation of its head. Note that when the original αP in (19) collapses, the YP—the complement of α—automatically becomes a complement of the new conglomerate head that I designated as α + β. The question now arises, what happens in a more complex case when the original αP has a richer structure including not only a complement YP, but also specifier(s) and/or adjoined XPs?

These more complicated cases naturally fall into the ''domain-flattening'' account proposed by É. Kiss (2008) (though not directly into the generalization in (1)). É. Kiss proposes the following generalization:

(25) When a V is moved into a functional head, the maximal constituents in its internal domain become freely permutable sister nodes.
(É. Kiss 2008:459)

In line with Chomsky 1995, the internal domain of a V-chain includes the complement of V, the specifiers of intermediate verbal projections, and anything adjoined to intermediate verbal projections (but not subdomains thereof). (25) allows for a straightforward account of the otherwise puzzling patterns in Hungarian whereby word order is fixed in the preverbal domain but is free postverbally. Furthermore, É. Kiss shows that the free postverbal order correlates with a flat structure of verbal constituents that can be probed, in particular, by Condition C.[10] É. Kiss argues that raising the verb as high as T (the verbal particle being in Spec,TP) leaves a verbal projection (PredP for É. Kiss) headless and causes its collapse; as a result, its major constituents are linearized at random in the syntactic component.[11]

[9] Translated into the framework making use of traces of HM, the residual *wh*-scope-marking phenomenon thus further strengthens the generalization in (1) (though Bošković (2011c) does not discuss this phenomenon).

[10] For instance, the Hungarian counterpart of *John$_i$'s mother loves him$_i$* does not allow the indicated coreference, suggesting that the genitive specifier and verbal object c-command each other. The same is true of various V′ adjuncts. However, when a verb-related constituent is focused by moving it to a special Focus position preverbally, the usual asymmetric tests for constituent structure hold.

[11] É. Kiss argues, more precisely, that when syntax does not force a particular linear order of constituents, the latter are ordered in Hungarian by increasing phonological weight. See É. Kiss 2008 for details. Note also that the domain-flattening account of V-to-T movement appears in line not with the more traditional ''configurational'' view of θ-role assignment (in this case, by V), but with the alternative perspective seeing θ-roles as features (e.g., Hornstein 2001, Lasnik 1995) that can be checked, for instance, prior to V-movement.

(26) a. [$_{TP}$ Össze [$_{T'}$ vesztek [$_{PredP}$ a fiúk egymással]]].
out fell the boys each-other-with
'The boys fell out with each other.'
b. [$_{TP}$ Össze [$_{T'}$ vesztek [$_{PredP}$ egymással a fiúk]]].
out fell each-other-with the boys
(É. Kiss 2008:459, (54))

É. Kiss further suggests that (25) is a property of phases and proposes generalizing (25) to (27).

(27) *Domain flattening*
When the head of a phase is moved into the head position of the next higher phase, the silent copies of the moved head and their projections are pruned.
(É. Kiss 2008:462)

Pruning is an extra operation, an add-on to bare phrase structure similar to PF deletion in Bošković's (2011c) system. But under the proposed traceless HM, introduction of this operation, thus stipulating either (25) or (27), can be avoided without loss of generality, since there is trivially no need to worry about silent copies. The proposal I outline here thus unifies É. Kiss's domain-flattening account and Bošković's generalization in (1). Furthermore, if DPs and PPs can be shown to be phases, as they are often claimed to be (see, e.g., Abels 2003, Chomsky 2007, Svenonius 2004, Van Riemsdijk 1978), then É. Kiss's conjecture about the relevance of phases can be straightforwardly reinterpreted so as to pertain to traceless HM in general. This seems a promising avenue for further exploration.

6 Concluding Remarks

At least some cases of HM can be beneficially viewed as part of narrow syntax. This claim, under the bare phrase structure encoding of endocentricity and the idea that syntactic HM does not leave traces/copies, provides a natural account of collapsing XP domains responsible for the island-voiding effect. Put in other words, the island-voiding effect, seen in conjunction with the domain-flattening effect, suggests that if HM exists in the syntax, it may very well be traceless.

The question arises why other V-raising languages do not display the domain-flattening effect, similarly freeing the order of their constituents (É. Kiss tentatively mentions Scandinavian in this regard; an anonymous *LI* reviewer also mentions French). É. Kiss suggests that in those languages, unlike in Hungarian, nominative case checking requires the subject to move to Spec,IP/TP, which ensures that it will occupy a structurally higher position even after the flattening. Pursuing this line further, we may in principle conceive a similar scenario for direct and/or indirect objects, at least some of which must evacuate the VP, moving into higher functional projections (e.g., Agr-related) that are themselves hierarchically ordered, as for example in earlier minimalist conceptions of clause structure. See also Hoffman 1995 for a theory of scrambling along lines similar to that of É. Kiss.

References

Abels, Klaus. 2003. Successive cyclicity, anti-locality, and adposition stranding. Doctoral dissertation, University of Connecticut, Storrs.

Baker, Mark. 1988. *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.

Baltin, Mark. 2002. Movement to the higher V is remnant movement. *Linguistic Inquiry* 33:653–658.

Bayer, Josef. 1996. *Directionality and Logical Form*. Dordrecht: Kluwer.

Bayer, Josef. 2008. What is verb second? Ms., University of Konstanz.

Boeckx, Cedric. 2001. Scope reconstruction and A-movement. *Natural Language and Linguistic Theory* 19: 503–548.

Boeckx, Cedric, and Sandra Stjepanović. 2001. Head-ing toward PF. *Linguistic Inquiry* 32:345–355.

Bošković, Željko. 2005. On the locality of left branch extraction and the structure of NP. *Studia Linguistica* 59:1–45.

Bošković, Željko. 2008. What will you have, DP or NP? In *NELS 37*, ed. by Emily Elfner and Martin Walkow, 101–114. Amherst: University of Massachusetts, Graduate Linguistic Student Association.

Bošković, Željko. 2011a. On NPs and clauses. Ms., University of Connecticut, Storrs.

Bošković, Željko. 2011b. Rescue by PF deletion, intervention effects, and head movement. Paper presented at the 34th GLOW Colloquium, University of Vienna, April.

Bošković, Željko. 2011c. Rescue by PF deletion, traces as (non)interveners, and the *that*-trace effect. *Linguistic Inquiry* 42:1–44.

Chomsky, Noam. 1972. Some empirical issues in the theory of transformational grammar. In *Goals of linguistic theory*, ed. by Stanley Peters, 63–130. Englewood Cliffs, NJ: Prentice-Hall.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.

Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: A life in language*, ed. by Michael Kenstowicz, 1–52. Cambridge, MA: MIT Press.

Chomsky, Noam. 2007. Approaching UG from below. In *Interfaces + recursion = language? Chomsky's minimalism and the view from syntax-semantics*, ed. by Uli Sauerland and Hans-Martin Gärtner, 1–29. Berlin: Mouton de Gruyter.

Corver, Norbert. 1992. On deriving certain left branch extraction asymmetries: A case study in parametric syntax. In *NELS 22*, ed. by Kimberley Broderick, 67–84. Amherst: University of Massachusetts, Graduate Linguistic Student Association.

Dayal, Veneeta. 1996. *Locality in WH quantification: Questions and relative clauses in Hindi*. Dordrecht: Kluwer.

Dayal, Veneeta. 2000. Scope marking: Cross-linguistic variation in indirect dependency. In Wh-*scope marking*, ed. by Uli Lutz, Gereon Müller, and Arnim von Stechow, 157–193. Amsterdam: John Benjamins.

Dikken, Marcel den. 2007. Phase extension: Contours of a theory of the role of head movement in phrasal extraction. *Theoretical Linguistics* 33:1–41.

Donati, Caterina. 2006. On *wh*-head movement. In Wh-*movement: Moving on*, ed. by Lisa Lai-Shen Cheng and Norbert Corver, 21–46. Cambridge, MA: MIT Press.

Epstein, Samuel David. 2001. Deriving the Proper Binding Condition. Paper presented at the workshop ''Tools in Linguistic Theory,'' LOT Summer School, Utrecht University, July.

Fox, Danny. 1999. Reconstruction, binding theory, and the interpretation of chains. *Linguistic Inquiry* 30: 157–196.

Gallego, Ángel J. 2010. *Phase theory*. Amsterdam: John Benjamins.

Hoffman, Joel. 1995. Syntactic and paratactic word order effects. Doctoral dissertation, University of Maryland, College Park.

Hornstein, Norbert, and Amy Weinberg. 1981. Case theory and preposition stranding. *Linguistic Inquiry* 12:55–91.
Hornstein, Norbert. 2001. *Move! A minimalist theory of construal*. Oxford: Blackwell.
Kayne, Richard S. 1994. *The antisymmetry of syntax*. Cambridge, MA: MIT Press.
Kayne, Richard S. 2000. *Parameters and universals*. Oxford: Oxford University Press.
É. Kiss, Katalin. 2008. Free word order, (non)configurationality, and phases. *Linguistic Inquiry* 39:441–475.
Koopman, Hilda, and Anna Szabolcsi. 2000. *Verbal complexes*. Cambridge, MA: MIT Press.
Lambova, Mariana. 2004. On information structure and clausal architecture: Evidence from Bulgarian. Doctoral dissertation, University of Connecticut, Storrs.
Lasnik, Howard. 1995. Last resort and Attract F. In *Proceedings of the Sixth Annual Meeting of the Formal Linguistics Society of Mid-America*, ed. by Leslie Gabriele, Debra Hardison, and Robert Westmoreland, 62–81. Bloomington: Indiana University Linguistics Club.
Lasnik, Howard. 1999. Chains of arguments. In *Working minimalism*, ed. by Samuel David Epstein and Norbert Hornstein, 189–215. Cambridge, MA: MIT Press.
Lasnik, Howard. 2001. When can you save the structure by destroying it? In *NELS 31*, ed. by Minjoo Kim and Uri Strauss, 301–320. Amherst: University of Massachusetts, Graduate Linguistic Student Association.
Lechner, Winfried. 2006. An interpretive effect of head movement. In *Phases of interpretation*, ed. by Mara Frascarelli, 45–70. Berlin: Mouton de Gruyter.
Mahajan, Anoop. 2000. Towards a unified treatment of *wh*-expletives in Hindi and German. In Wh-*scope marking*, ed. by Uli Lutz, Gereon Müller, and Arnim von Stechow, 317–332. Amsterdam: John Benjamins.
Matushansky, Ora. 2006. Head movement in linguistic theory. *Linguistic Inquiry* 37:69–109.
Merchant, Jason. 1999. The syntax of silence: Sluicing, islands, and identity in ellipsis. Doctoral dissertation, University of California, Santa Cruz.
Merchant, Jason. 2008. Variable island repair under ellipsis. In *Topics in ellipsis*, ed. by Kyle Johnson, 132–153. Cambridge: Cambridge University Press.
Müller, Gereon, and Wolfgang Sternefeld. 1995. Extraction, lexical variation and the theory of barriers. In *Lexical knowledge in the organization of language*, ed. by Urs Egli, Peter E. Pause, Christoph Schwarze, Arnim von Stechow, and Götz Wienold, 35–80. Amsterdam: John Benjamins.
Platzack, Christer. 1986. COMP, INFL and Germanic word order. In *Topics in Scandinavian syntax*, ed. by Lars Hellan and Kirsti Koch Christensen, 185–234. Dordrecht: Reidel.
Riemsdijk, Henk van. 1978. *A case study in syntactic markedness*. Dordrecht: Foris.
Roberts, Ian. 1991. Excorporation and minimality. *Linguistic Inquiry* 22:209–218.
Roberts, Ian. 2010. *Agreement and head movement: Clitics, incorporation, and defective goals*. Cambridge, MA: MIT Press.
Roberts, Ian. 2011. Head movement and the Minimalist Program. In *The Oxford handbook of linguistic minimalism*, ed. by Cedric Boeckx, 195–219. Oxford: Oxford University Press.
Ross, John Robert. 1969. Guess who? In *Papers from the Fifth Regional Meeting of the Chicago Linguistic Society*, ed. by Robert I. Binnick, Alice Davison, Georgia M. Green, and Jerry L. Morgan, 252–286. Chicago: University of Chicago, Chicago Linguistic Society.
Saito, Mamoru, and Hiroto Hoshi. 1998. Control in complex predicates. Ms., Nanzan University, Nagoya, and SOAS, London.
Stepanov, Arthur. 2000. *Wh*-scope marking in Slavic. *Studia Linguistica* 54:1–40.
Stepanov, Arthur. 2001. Cyclic domains in syntactic theory. Doctoral dissertation, University of Connecticut, Storrs.

Stepanov, Arthur, and Penka Stateva. 2006. Successive cyclicity as residual *wh*-scope marking. *Lingua* 116: 2107–2153.
Stjepanović, Sandra. 1998. Extraction of adjuncts out of NPs. Paper presented at the Comparative Slavic Morphosyntax Workshop, Indiana University, May.
Surányi, Balázs. 2008. Cyclic spell-out and reprojection in head movement. In *Sounds of silence: Empty elements in syntax and phonology*, ed. by Jutta M. Hartmann, Veronika Hegedűs, and Henk van Riemsdijk, 293–337. Amsterdam: Elsevier.
Svenonius, Peter. 2004. On the edge. In *Peripheries: Syntactic edges and their effects*, ed. by David Adger, Cécile De Cat, and George Tsoulas, 259–287. Dordrecht: Kluwer.
Thráinsson, Höskuldur. 1986. On auxiliaries, AUX and VPs in Icelandic. In *Topics in Scandinavian syntax*, ed. by Lars Hellan and Kirsti Koch Christensen, 235–265. Dordrecht: Reidel.
Uriagereka, Juan. 1988. On government. Doctoral dissertation, University of Connecticut, Storrs.
Uriagereka, Juan. 1996. Determiner clitic placement. In *Current issues in comparative grammar*, ed. by Robert Freidin, 257–294. Dordrecht: Kluwer.
Van Geenhoven, Veerle. 1998. *Semantic incorporation and indefinite descriptions*. Stanford, CA: CSLI Publications.
Wharram, Douglas. 2003. On the interpretation of (un)certain indefinites in Inuktitut and related languages. Doctoral dissertation, University of Connecticut, Storrs.

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