Extraposition and Antisymmetry*

Abstract

'Extraposition' is a cover term for two distinct phenomena (cf. also Fox & Nissenbaum 1999; Kiss 2005). The first, which I assume to be derived by parallel construal (following Koster 2000), targets only RCs, blocks reconstruction of the extraposed constituent to the base position of the source, and as such has the effect of bleeding condition C. The second, which I claim is derived via scattered deletion, targets post-head complements/modifiers, triggers obligatory reconstruction of the source+complement/modifier to base-position and leaves extraposed complements open to subextraction, all else being equal. The scattered deletion of spec+head and complement is argued to be derived from Uriagereka's (1999) simplification of the LCA, and the copy theory of labelling (cf. Sheehan 2010).

Keywords: linearisation, extraposition, multiple spell-out, LCA, labelling, reconstruction, relative clause, complement PP, scattered deletion

1. Introduction

'Extraposition' most commonly denotes the placement of (sometimes, though not always, heavy) constituents at the right periphery of a clause (cf. Mallinson 1986), as in all of the following examples:

(1) He gave to his sister [the book that he had just finished reading].

(2) I can see someone in the bushes [wearing a Macintosh].

(3) A new film has just come out [that everyone wants to see].

(4) A new book has just come out [with a great front cover].

(5) A new picture has just been published [of Madonna].

(6) It's obvious [that it's going to rain].

(7) It appears [that it's going to rain].

(8) I regret it [that I didn't arrange to attend that seminar].

(9) I regret wholeheartedly [that I didn't arrange to attend that seminar].

A stricter definition of extraposition takes it to denote only the rightward positioning of reduced and non-reduced relative clauses (RCs) (2-3), PP adjuncts (4) or complements (5) from a source NP and the rightward placement of subject or object CPs (6-9). In this paper, I will put to one side heavy NP shift (1), and use the terms 'extraposition' and 'rightward placement' interchangeably in the initial discussion to describe the phenomena in examples (2-5), though no theoretical implications should be read into this terminology.[1,2] The discussion will focus on extraposition from NP, but it is hoped that the analysis can be extended to cases of CP-extraposition in (6-9). Based on a number of diagnostics, it will be proposed that two distinct types of extraposition can be identified. The first involves the rightward placement of (full and reduced) RCs, the second, the extraposition of PP/CP complements (or modifiers) of N.

The structure of the paper is as follows. Section 2 provides an overview of previous analyses of extraposition and the problems which they face, giving a very brief overview of the extensive literature on this topic. It is claimed that Koster's (2000) analysis, based on parallel construal, is the most promising account of RC extraposition. In Section 3, however, I show that complement extraposition is highly problematic for Koster's account both empirically and conceptually. In fact, the properties of complement extraposition differ to such an extent from those of RC extraposition that the two phenomena demand distinct analyses. Section 4

provides an account of complement extraposition based on scattered deletion, deriving it from a simplified version of the LCA. Section 5 considers the empirical support for such an account and Section 6 reconsiders the objections to Kayne's stranding analysis in relation to the scattered deletion approach. Finally, Section 7 concludes, raising some issues for future research.

2. Previous analyses of extraposition

2. 1 Extraposition vs. A-bar movement

Traditionally, extraposition is treated as rightwards movement (cf. Ross 1967; Akmajian 1975; Guéron 1980; Guéron & May 1984; Reinhart 1980; Baltin 1981, 1983, 1984 and Büring & Hartmann 1997). However, years of research on extraposition have shown that rightward 'movement', does not adhere to the same rules as leftwards A-bar extraction. On the one hand, it has been known since Ross (1967) that extraposition is far more locally constrained than leftward movement, the former being subject to the 'right roof constraint' (RRC), and disallowing successive cyclic movement.[3] Thus the wh-phrase in (10) can be separated from its trace by multiple clause-boundaries, but the same is not true of the extraposed RC in (11):

(10) [**Who** do you think [that John said [that Mary saw **t**]]]?

(11) a.[[The fact [that **the book** has arrived **that I ordered**]] is great].

b.*[[The fact [that **the book** has arrived]] is great **that I ordered**].

On the other hand, extraposition is in some ways *less* restricted than leftwards movement, as it targets constituents which are not susceptible to A or A-bar extraction, such as RCs and

other NP-adjuncts (cf. (12)), even where they are quite deeply embedded in the constituent from which they are extraposed (cf. (13)):[4]

(12) a. ***With what colour cover** did you buy **a book** yesterday?

b. *?**Which topic** did you refer **to a film about**?

(13) a. I bought **a book** yesterday **with a bright blue cover**.

b. He referred **to a film** in his essay **that he hadn't even seen.**

Moreover, extraposition can clearly target source NPs in specifier as well as complement positions and as such, appears immune to Huang's (1982) Condition on Extraction Domain (CED), which restricts A-bar subextraction to governed constituents (basically complements).[5]

(14) a.***Of which sports star** has [**a picture** t] caused a commotion?

b. ?**That picture** caused a commotion **that I took last week**, didn't it?

Finally, it is often claimed that extraposition is often (though not always) optional, while A-bar extraction is often (though not always) obligatory. In fact this claim requires qualification: while wh-movement in certain languages is obligatory, processes such as focus movement and topicalisation are sensitive to information structure, and thus may also appear 'optional' in a certain sense. On the other hand, extraposition, where it is possible, is optional in a stronger sense as it is far more subtly connected with information structure.[6] Thus (15a-b) are closer in meaning than (15a) and (15c):

(15) a. I would like to read that book that everyone recommends sometime.

b. I would like to read that book sometime that everyone recommends

c. THAT book that everyone recommends, I would also like to read sometime!

This apparent optionality creates a potential problem for Chomsky's (1993) feature-driven movement hypothesis, if extraposition is analysed as movement (cf. Kaan 1992). As such, extraposition presents a substantial challenge for any attempt to provide a unified movement-based account of rightwards and leftwards syntactic displacement.

2. 2 Rightwards adjunction/movement

On top of these empirical challenges, rightwards movement accounts of extraposition face a more serious conceptual problem, as has been pointed out previously in the literature (Kaan 1992, 1993; Koster 2000; De Vries 2002; Chomsky 2001, 2004). Since Chomksy (1995), a widely held assumption is that narrow syntax has no left or right but rather is 'order-free'. Put another way, the terminals in a syntactic tree are ordered with respect to each other only in terms of height (as defined by c-command), and not in terms of linear order. As such, narrow syntactic movement can never be 'rightwards' or 'leftwards', only be 'upwards' or 'downwards'. In such a model, it is impossible to posit such an operation as 'rightwards movement'.[7]

Similar, though less serious, objections can be raised with respect to analyses based on right adjunction (cf. Culicover & Rochemont 1990, Rochemont & Culicover 1990, Kaan 1992, 1993). In order-free syntax, adjuncts cannot be specified to adjoin to the 'left' or 'right' of a given phrase at the narrow syntactic level. This does not preclude the possibility, though, that

a language is specified to uniformly linearise (certain kinds of) adjuncts to the right of a given phrase *at the mapping to PF*. An empirical question, then, is whether languages displaying extraposition more generally linearise certain kinds of adjuncts to the right of a modified phrase. Superficially, at least, it appears that English does display such a preference. As Haider (2004) notes, English, like several other VO languages, uniformly linearises right-branching adjuncts to the right of a modified phrase (his edge effect). This effect is visible in both the clausal and nominal domains. Consider the fact that left-branching adverbs in English can surface either preceding or following the phrase which they modify:[8]

(16) a. John will [(very) quickly [$_{VP}$ leave the room]].

b. John will [[$_{VP}$ leave the room] (very) quickly]

Where an adverb is right-branching, however, it must be linearised to the right of the phrase in question (cf. Haider 2004; Sheehan, to appear):

(17) a. John has [[$_{VP}$ solved the problem] in a minute]

b. *John has [in a minute [$_{VP}$ solved the problem]]

As such, for English at least, the fact that extraposed CPs surface at the right edge might plausibly stem from a more general principle of linearisation.

The proposal runs into trouble, however in relation to OV languages such as German, as the latter freely allow right-branching adjuncts to precede a modified phrase (cf. Haider 2004):

(18) a. *Sie hat ja [in einer Minute [$_{VP}$ eine Lösung gefunden*]]

she has well in one minute a solution found
"She found a solution in one minute." [German, Haider (2004:789)]

This fact does not, however, rule out extraposition. German, like English, places 'extraposed' material at the right edge and linearisation of this material at the left edge of any phrase is ungrammatical:

(19) **man hatte [der den Befehl überbrachte] den Boten beschimpft,*
one has who the command delivered the messenger insulted
"The messenger was insulted who delivered the command." [German]

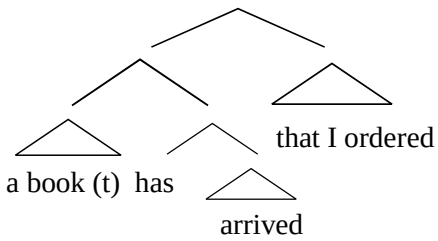
(20) **[der den Befehl überbrachte] hatte man den Boten beschimpft,*
who the command delivered has one the messenger insulted
"The messenger was insulted who delivered the command." [German]

If extraposition were merely adjunction then, the rightward bias would arguably be as expected for English, but not for German, given the differing placement of right-branching adjuncts in the two languages (cf. De Vries 2002:250 for a similar objection).[9] Under the adjunction account then, an additional stipulation is needed to ensure that adjoined 'extraposed' RCs are uniformly linearised to the right of the phrase which they modify. This is in addition to a number of other principles required to make sure that extraposed material is adjoined to the correct phrase and construed with the correct NP (cf. Büring & Hartmann 1997 for details).[10] There are thus a number of challenges facing both the rightwards movement and the right adjunction analyses of extraposition.

2. 3 Antisymmetry and stranding

The challenge posed by extraposition increases further if one adopts Kayne's (1994) Linear Correspondence Axiom (LCA) which states that asymmetric c-command (mediated by dominance) maps to linear precedence. If we also adopt Chomsky's (1993) extension condition, then it follows that movement can only ever be 'upwards' (to the root of the tree), and so 'leftwards'. The two assumptions taken together make it intrinsically impossible for a moved constituent to be linearised to the right of its base position.[11] Moreover, 'rightward' adjunction is also impossible as adjuncts and specifiers are indistinguishable from Kayne's perspective and both precede the head which they modify (because of the version of c-command which he is forced to adopt).[12] As such, a tree along the lines of (21), showing the rightwards movement/adjunction analysis of extraposition would actually be linearised as in (22) according to the LCA, in the absence of further movement:

(21)



(22) *That I ordered a book has arrived.

To deal with this challenge, Kayne (1994: chapter 9) proposes an analysis of RC extraposition suggesting that 'rightmost' does in fact imply 'lowest'. According to Kayne's raising analysis of RCs the (indefinite) head of a RC moves to spec CP. From this position it is free to raise higher, stranding the RC in its base position:

(23) $[_{NP}$ a book$]_i$ has arrived $[_{DP}$ D $[_{CP}$ t_i that I ordered $t_i]$

In these terms, the optionality of RC extraposition stems from the fact that in such contexts the NP can either pied-pipe along its containing DP or not:

(24) $[_{DP}$ D $[_{CP}$ $[_{NP}$ a book$]_i$ that I was expecting $t_i]_j$ has arrived t_j

As Kayne notes, this account avoids many of the conceptual problems associated with the rightwards movement/adjunction analyses and straightforwardly accounts for the right roof constraint: if extraposition is merely stranding then a RC cannot surface to the right of its base position (hence outside the clause in which it originates).

Despite the conceptual appeal of Antisymmetry, a number of objections have been raised to Kayne's stranding analysis (cf. Borsley 1997; Büring & Hartmann 1997; Culicover & Rochemont 1997:Section 4.1; Koster 2000; parts of Bianchi 2000 and de Vries 2002). The most serious challenges can be summarised as follows (based partly on Koster's 2000:6 summary):

a. definite source NPs;

b. complement PPs/CPs;

c. embedded source NPs;

d. subextraction from specifiers;

e. lack of clause-internal stranding;

f. the mirror effect;

g. patterns of VP-preposing/ellipsis;

h. 'higher' extraposed constituents.

I briefly summarise these problems before showing that Koster's (2000) alternative analysis is able to solve many, though not quite all, of them, whilst remaining consistent with the antisymmetry hypothesis.

2.3.1 Definite source NPs. One of the objections to Kayne's stranding analysis of extraposition is that it appears to require movement of a non-constituent, once data from languages like German and Dutch are considered. Focusing on English, Kayne makes a distinction between the definite article, which he takes to be a D-head and indefinite articles, quantifiers and numerals, which he takes to have a different status. Following Smith (1964), Kayne proposes that D selects for CP directly, as supported by the apparent link between the presence of D with proper names and the presence of a RC:

(25) The Paris *(that I love)

This makes the structure of RCs with definite and indefinite articles as follows:

(26) $[_{DP}$ the $[_{CP}$ $[_{NP}$ book$]_i$ that $[_{IP}$ Bill bought t_i $]]]$

(27) $[_{DP}$ D $[_{CP}$ $[_{NP}$ a book$]_i$ that $[_{IP}$ Bill bought t_i $]]]$

Kayne further notes, following Ziv and Cole (1974), that in English extraposition is severely degraded where the source nominal contains the definite article and this, according to him, follows from the core assumption that only constituents can move. In (27), the NP *a book* is a constituent and so is free to move, stranding the RC, whereas in (26), *the book* is not a

constituent, hence cannot move as such. More must obviously be said, under this analysis, to block the movement of NP in (26), giving rise to the ungrammatical (28):

(28) *Book$_i$ has appeared the t_i that Bill bought

Assuming this can be ruled out, Kayne's analysis accounts for the basic definiteness effect in English.

A problem arises, though, in German and Dutch, both of which freely allow extraposition from definite source NPs (Koster 2000; de Vries 2002; Kiss 2005):

(29) *Hij heeft de vrouw gezien die Wim genoemd had*
he has the woman seen who Wim mentioned had
"He has seen the woman who Wim mentioned." [Dutch]

This is problematic for Kayne's analysis, assuming that the definite article in Dutch/German and English is always a D head. However, Kayne (1994:125) explicitly admits that this cannot always be the case, even for English, because of sentences such as the following:

(30) **The very man** just walked in **that I'd been telling her about**. (Kayne 1994:124)

In relation to (30), he proposes that the definite article, where it has roughly the semantics of a demonstrative can actually form a QP constituent with the raised NP:

(31) [$_{DP}$ D[$_{CP}$ [$_{QP}$ the very man] that I'd been telling her about]]

It is therefore possible that the definite article in Dutch and German might be a constituent of QP, rather than being a D head. In terms of the stranding analysis, then, the fact that definite NPs can be the sources for RC extraposition is a serious but not insurmountable problem for the general approach.

2.3.2 Complement PPs/CPs. The fact that complement PPs/CPs can also be extraposed raises a further problem for Kayne's analysis as, in these cases, the determiner and head noun do not form a constituent to the exclusion of the complement (according to standard assumptions):

(32) a. A picture has been issued of the suspect.

b. [a [picture [of the subject]]]

In such cases, additional movements would need to be posited to make *a picture* into a derived constituent. This would presumably involve extraction of the complement PP/CP, followed by remnant movement of DP (meaning that the PP/CP is not, strictly speaking, stranded).

2.3.3 Extraposition from embedded positions. A further problem arises from the fact that extraposition from embedded positions is also possible in German and Dutch (and to a lesser extent also in English, as Kayne once again acknowledges):

(33) *Hij heeft [$_{PP}$ met [$_{DP}$ de moeder [van [$_{NP}$ de vrouw]]]] gesproken [die*

he has with the mother of the woman talked who

alles wist]]

all knew

"He talked with the mother of the woman who knew everything."

[Dutch, Koster (2000:9, citing Koster 1978:47-58)]

(34) *Man hat die Frau des Boten beschimpft, der den Befehl überbrachte*.

one has the wife of.the messenger insulted who$_{MASC}$ the command delivered

"The wife of the messenger was insulted who delivered the command."

[German, Kiss (2005:285)]

(35) John is going to talk **to someone** tomorrow **who he has a lot of faith in**

[Kayne (1994:126)]

In such cases, the PP or complex NP which would have had to have moved to strand the RC again represents a non-constituent:

(36) a. *[$_{DP}$ die Frau [$_{DP}$ des Boten der den Befehl überbrachte]]*

b. [$_{PP}$ to [$_{DP}$ D [$_{CP}$ [$_{QP}$ someone]$_i$ that he has a lot of faith in t$_i$]]]

These data are a more serious problem for Kayne's analysis, and he is forced to posit the existence of several additional movements so that *to someone* becomes a derived constituent and can move as such. While this is in principle possible, it reduces the explanatory value of the account somewhat.

2.3.4 Subextraction from specifiers. As De Vries (1999) points out, RC extraposition can target subjects as well as indirect and direct objects. This creates a problem for the stranding

account in as much as externally merged specifiers are strong islands (as argued by Huang 1982 and Uriagereka 1999):

(37) a. [Someone that I used to know at school] has just bought this shop.

b. [Someone]$_i$ has just bought this shop [t_i that I used to know t_i at school]

Given that examples such as (37b) are clearly grammatical, the implication is that stranding fails to adhere to the same island restrictions as other types of movement.[13] In general, subextraction from externally-merged head-initial specifiers in English and possibly all languages is banned (cf. Uriagereka 1999, Sheehan 2010 summarised in Section 4 below for a potential explanation for this):

(38) *Who$_i$ did [a picture of t_i] cause a problem for you?

This appears to be a more serious challenge for Kayne's stranding account.

2.3.5 Lack of clause-internal stranding. Another property of extraposition which remains unexplained by Kayne's analysis is the fact that extraposed constituents cannot be stranded clause-internally, even when their source nominal is an indirect object or subject (cf. Borsley 1997; Büring & Hartmann 1997; Koster 2000; De Vries 2002). Consider the following ungrammatical example where a RC is stranded in what is standardly taken to be the base position of its source nominal (spec vP):

(39) *[A man]$_i$ has just [$_{vP}$ [t_i who I knew at school] bought this shop].

Rather, extraposed RCs and complements to N always appear in a right peripheral position within their clause of origin:

(40) a. *The fact **[**$_{CP}$ that [a man]$_i$ has[$_{vP}$ [t_i who I knew at school] bought this shop]**]** is weird!

b. The fact **[**$_{CP}$ that [a man]$_i$ has bought this shop [t_i who I knew at school]**]** is weird!

c. *The fact **[**$_{CP}$ that [a man]$_i$ has bought this shop**]** is weird [t_i who I knew at school]!

Kayne suggests that additional movements can be posited to ensure that the extraposed material surfaces in the right clause-peripheral position. However, as Borsley (1997:641) notes, it is not clear why these additional movements are necessary. Once again, then, in the absence of an independent explanation, the lack of stranding in the middle field remains problematic for the stranding approach.

2.3.6 The mirror effect. The stranding analysis leads one to expect that, where multiple RCs are extraposed from the same clause, the order will reflect the hierarchical relations of their source NPs: a subject RC will precede an object RC, for example. In actual fact, where multiple extraposition occurs, in as much as this is acceptable, extraposed constituents surface in the mirror image of the hierarchical relations of their sources (cf. Bianchi 2000; De Vries 2002):

(41) a. *Meer jongens hebben de man gezien die een hoed draagt, dan meisjes.*
more boys have the man seen who a hat wears, than girls

b. **Meer jongens hebben de man gezien dan meisjes, die een hoed draagt.*

[Dutch, De Vries (2002:249)]

(42) a. ?[A man]$_i$ entered [the room]$_k$ last night [that I had just finished painting] [who had blond hair].

b. *[A man]$_i$ entered [the room]$_k$ last night [who had blond hair] [that I had just finished painting]. [English, Bianchi (2000:137)]

Again, additional movements can be posited to derive the correct word order, but these postulations weaken the explanatory value of the account considerably.

2.3.7 Patterns of VP preposing/ellipsis. A further objection to Kayne's stranding analysis stems from the interaction of extraposition with VP-preposing/ellipsis. In Dutch and German, VPs, including remnant VPs, can be fronted to the first position in a V2 clause (data from Koster 2000, citing Den Besten and Webelhuth 1990):

(43) a. [$_{VP}$ *Hem* *het boek* *gegeven]* *hebben wij* [$_{VP}$ *]* [Dutch]
him the book given have we

b. [$_{VP}$ *Het* *boek* *gegeven]* *hebben wij* *hem* [$_{VP}$ *]*

c. [$_{VP}$ *Gegeven]* *hebben wij* *hem* *het boek* [$_{VP}$ *]*

As Den Besten and Webelhuth (1990) show, all of the surface orders in (43) involve VP topicalisation. In (43b, c) one or both arguments of the verb have scrambled out of VP for independent reasons prior to VP-movement. If extraposed RCs are stranded in base position and are unable to scramble (as seems to be the case), then where they are related to a direct object or indirect object the prediction is that they should obligatorily pied-pipe in such cases of VP-topicalisation. However, contrary to this prediction, VP-topicalisation in Dutch, German and English adheres to what has become known as Kaan's generalisation (cf. Baltin

1981; Kaan 1992, Koster 2000), which states that “VPs with optionally extraposed elements are syntactically inert unless they contain the source of the extraposition” (Koster 2000:12). Consider the following contrasts in Dutch, also from Koster (2000:12):

(44) a.	*Ik heb*	*[een man t]*	*gezien*	*uit*	*India*	[Dutch]
	I have	a man	seen	from	India	
b.	*[VP	*Gezien*	*uit India]$_i$*	*heb ik*	*[een*	*man t] [VP]$_i$*
		seen	from India	have I	a	man
c.	[VP *Een man gezien*		*uit India]$_i$*	*heb*	*ik*	*niet [VP]$_i$*
	a	man seen	from India	have	I	not

This pattern is unexplained under a stranding analysis. Given that the scrambling of a source nominal is not incompatible with either (i) VP-topicalisation or (ii) extraposition, and that extraposed material purportedly occupies the base position of the source, examples like (44b) are wrongly predicted to be fully grammatical, as Koster (2000) notes.

A similar effect can be observed with patterns of VP-ellipsis. Again, if extraposition always involves stranding then where the source NP is a direct or indirect object, the prediction is that VP-ellipsis should obligatorily include any extraposed constituents. Here again though, whether the extraposed constituent is included in the ellipsis site appears to depend on the *surface* position of the source, rather than its *base* position (cf. Baltin 1981, 2006). Consider the following contrasts:

(45) a. Although no articles [$_{VP}$ came out] [which interested *me*], one did [$_{VP}$] [which interested *you*].

b. *Although I [$_{VP}$ saw an article yesterday [which interested *me*]], you didn't [$_{VP}$] [which interested *you*]

c. Although nobody has [$_{VP}$ been successful] [who went to school with *me*], someone has [who went to school with *you*].

The contrasts in (45) based on examples in Baltin (2006) show that where the source of an extraposed constituent is VP-internal, then any extraposed material must be elided with VP. On the other hand, where the source NP originates in or has raised to a (subject) position, outside VP, then any extraposed material associated with it need not be elided with VP. In both the movement and the ellipsis context, this effect is highly problematic for Kayne's stranding analysis, which predicts that all material extraposed from direct or indirect objects will remain inside VP.

2.3.8 'High' extraposed constituents. Perhaps the most serious problem for Kayne's stranding approach stems from the cases where rightmost 'extraposed' constituents are clearly *not* lowest in the clause, and in fact sometimes appear to occupy a position higher than that of their non-extraposed counterparts (cf. Culicover & Rochemont 1997; Fox & Nissenbaum 1999):

(46) a. *John lent her$_1$ a book that Mary$_1$ had asked him for.

b. ?John lent her$_1$ a book last semester that Mary$_1$ had asked him for.[14]

In (46b), extraposition of the object RC appears to bleed the condition C effect for many speakers, suggesting that the extraposed RC is not c-commanded by the preceding indirect object pronoun. From an antisymmetric perspective, in order for the RC in (46b) to occupy a

higher position than that in (46a), (46b) would have to involve remnant movement. This would presumably involve subextraction of the RC and then remnant movement to a higher position of some constituent containing the indirect object. This kind of analysis is problematic, however, as RCs are not generally susceptible to A-bar extraction.[15]

2. 4 An alternative: parallel construal

After discussing many such objections to the stranding account, Koster (2000) proposes an alternative to Kayne's stranding, which is also compatible with antisymmetry. His proposal stems from certain observed similarities between extraposition and types of co-ordination and specification. In Dutch and English, it is possible to extrapose second conjuncts, for example:

(47) I saw John yesterday and Mary.

This cannot be the result of movement given the very strong evidence that subextraction from coordinate structures is universally banned (with the exception of across-the-board extraction, Ross 1967). It follows then, that there must be some way of establishing co-ordination in examples such as (47). Koster proposes that in much the same way that movement allows pied-piping, co-ordination of a category X with another category can also target a larger category Y containing X. More specifically, he proposes that the features of X can percolate to any containing constituent (up the level of the containing clause):

(48) *Ik heb* $[_{\&P}$ $[_{VP}$ $[$ *met* $[_{DP}$ *Jan]] gesproken]* *en* $[_{DP}$ *Marie]]*

I have with John talked and Mary

"I talked with John and Mary." [Dutch]

His proposal is essentially that the DP *Marie* is semantically coordinated with the DP *Jan* but that the features of *Jan* have percolated up to the level of VP, so that syntactically DP is actually coordinated with VP. Koster extends this analysis to RC extraposition, which, he proposes is a kind of specifying co-ordination in a colon phrase ':P' (cf. also De Vries 2002, for a similar analysis):[16]

(49) [$_{:P}$ [$_{VP}$ [*een man t*] gezien] : [*uit India*]]
a man seen from India

This analysis avoids many of the empirical problems facing Kayne's stranding account as well as the conceptual challenges associated with proposals based on rightwards movement/adjunction, though Koster does not illustrate this.[17] First, parallel construal does not involve movement so the objections discussed in 2.3.1-2.3.4 do not arise. Second, the lack of clause-internal stranding follows from the structure of :P. Third, the mirror effect also follows from parallel construal, assuming that the features of one source NP cannot percolate higher than those of a c-commanding NP because of Relativised Minimality (Rizzi 1990) (cf. also De Vries 2002:250):

(50) a. [$_{:P1}$ [DO V] : [RC$_{DO}$]]

b. [$_{P1}$ *S* Aux [$_{:P2}$ DO V] : [RC$_{DO}$]] : [*RC*$_{S}$]]

Fourth, the RRC is captured by the stipulation that features can percolate up to the clause level. Although this remains a stipulation, it might plausibly be linked to Grimshaw's notion of extended projection or Chomsky's phasal architecture. Fifth, parallel construal accounts

for Kaan's generalisation. In all cases, an extraposed constituent must be co-ordinated with a constituent containing the source NP. If this constituent is VP (or something contained in VP) then VP-preposing will necessarily pied-pipe along the extraposed constituent, as part of the co-ordination :P (cf. 49). In instances of scrambling, the extraposed constituent will necessarily be co-ordinated with some larger constituent (XP in 51). The co-ordinate structure constraint will then block extraction of either VP or XP in such cases:

(51) [$_{TP}$ Ik heb [$_{:P}$ **[$_{XP}$[$_{DP}$** ***een man*]$_i$ [$_{VP}$ t$_i$** **gezien]**]: [*uit* *India*]]

I have a man seen from India

In order to understand the patterns of VP-ellipsis in the same way, it is necessary to posit a further constraint on ellipsis, which I will not seek to explain here, but which appears to be empirically well motivated:

(52) **Co-ordinate ellipsis constraint**: while it is possible to elide subconstituents of co-ordinated phrases, it is not possible to elide only one complete co-ordinated phrase.

This constraint is operative in the following examples:

(53) a. [I bought a red car] and [John bought a green one [$_{NP}$]]

b. *I [$_{VP}$ worked] and [$_{VP}$] to pass the exam.

Where the surface position of a source nominal is VP-external, parallel construal will necessarily target a phrase larger than VP, and so VP-ellipsis will not delete extraposed material (54). If, on the other hand, the source is inside VP, then it is impossible to elide VP

(one complete co-ordinate), without also eliding the extraposed RC (the other co-ordinate) (55):[18]

(54) Although [$_{:P}$ [$_{IP}$ no articles [**$_{VP}$ appeared**]] : [which interested *me*]], [$_{:P}$ [$_{IP}$ one did **[$_{VP}$]**] : [which interested *you*].

(55) *Although I **[$_{:P}$ [$_{VP}$ saw an article]** : [which interested *me*]], you didn't [$_{:P}$ **[$_{VP}$]** : [which interested *you*]

2. 5 Remaining problems facing parallel construal

While Koster's analysis of extraposition appears to be more attractive than Kayne's stranding account, it is not completely without problems. The claim that the features of a nominal can percolate up to any dominating phrase (up to the clause level) cannot be quite right, given that the surface position restricts potential attachment sites of the RC (example (56) is from Baltin 2006, citing Culicover & Rochemont 1997):

(56) a.*He$_i$ [$_{VP}$ [$_{VP}$ invited several girls to the party] [$_{CP}$ that John$_i$ dated in high school]].

b. How many girls did [$_{IP}$ he$_i$ invite to the party] [$_{CP}$ that John$_i$ dated in high school]?

Example (56) shows that there is a limit on how high an extraposed RC can be attached (i.e. how large a phrase it can be co-ordinated with). If this were not the case, then the RC in (56a) would be free to attach higher than VP and thus be outside the c-command domain of the subject. Some refinement must therefore be made to the percolation mechanism to avoid this problem. As De Vries (2002) points out, this refinement will need to account for the right roof constraint whilst allowing for extraposition from embedded NPs in Dutch and German.[19]

Additionally, while Koster's account appears to explain why extraposition bleeds condition C, it overgenerates in this regard. Let us reconsider the relevant data repeated here:

(57) a. *John lent her$_1$ a book that Mary$_1$ had asked him for.

b. ?John lent her$_1$ a book last semester that Mary$_1$ had asked him for. [20]

In (57b), the RC is co-ordinated with a constituent containing *a book*. The fact that this serves to bleed the condition C effect is captured if the constituent in question also obligatorily contains the indirect object. As long as the RC is co-ordinated with something at least as large as VP (as is necessary in order for it to follow a VP-adverbial), then this requirement is met, and no c-command obtains between *her* and *Mary*:

(58) ?John[$_{:P}$ [$_{VP}$ lent her$_1$ a book last semester] : [that Mary$_1$ had asked him for].

While Koster's account appears to correctly predict the grammaticality of (58), it does not obviously explain why a similar thing is not possible in (57a). The fact that the features of a nominal cannot percolate up in instances of vacuous extraposition is not immediately explained. Once again, it appears that further limits must be placed on percolation in order to avoid overgeneration of this kind.[21, 22]

In conclusion, Koster's account of RC extraposition overcomes most, though not all, of the problems facing Kayne's stranding account, and appears to be at present the most promising way of approaching extraposition. In the following section, though, I argue that this analysis can only apply to RC extraposition. Complement extraposition, it will be argued, has very

different properties which raise considerable obstacles for a parallel construal approach (cf. also Fox & Nissenbaum 1999; Kiss 2005).[23]

3. Two kinds of extraposition

In this section, I suggest that not all instances of extraposition can be analysed as parallel construal. More specifically, I show that extraposed complements raise a number of conceptual and empirical problems for Koster's account. In fact, the properties of complement extraposition are so divergent from those of RC extraposition that the two phenomena arguably deserve separate analyses. As such, I propose a novel account of complement extraposition in Section 4.

3. 1 The projection principle

Upon consideration, while Koster's analysis is a plausible account of RC extraposition (modulo certain recalcitrant problems), it is problematic as an analysis of the extraposition of complement PPs/CPs. According to Chomsky's (1981:29) projection principle, all argument theta-roles must be satisfied as early as possible, and that information retained at each derivational stage. It therefore seems conceptually problematic to merge the complement of a noun as a coordinate of a phrase dominating said noun, after its thematic requirements should have been satisfied. Examples such as the following are therefore potentially problematic for the parallel construal account:

(59) a. **A good solution** has been found **to this problem**.

b. **A problem** has emerged **with your proposal**.

c. **A picture** has been taken **of Mary**.

d. **A request** has been received **for your signature**.

e. **A new book** has come out **about fishing**.

Of course, the examples in (59) are only problematic for the projection principle inasmuch as the PPs in question are genuine complements rather than reduced RCs/adverbial modifiers. As Schütze (1995) notes, differentiating between PP complements of N and PP adjuncts to N is no simple task. In fact, according to one classic diagnostic 'the one-replacement test', the extraposable PPs in (59) are *not* complements:

(60) a. ?He found a solution to *my* problem, and I found one to *his*.

b. ?I found a problem with *his* proposal, and he found one with *mine*. [24]

c. I took a picture of Mary, and she took one of John.

d. He issued a request for your signature, and you issued one for his.

e. I bought a book about fishing, and you bought one about baking.

This contrasts with the pattern observed with derived '-er' nominals, for example:[25]

(61) a. *He is the driver of the Ford Cortina and you're the one of the Jaguar.

b. *He's a student of Law and you're one of History.

c. *She's a lover of good food and I'm one of fine wine.

The extraposable PPs in (59) also pass Grimshaw's (1990) predication test for adjuncthood, to varying degrees:

(62) a. ?That solution is to the wrong problem.

b. ?The problem is with his proposal (not his credentials).

c. That picture is of Mary

d. ?The request is for your signature.

e. That book is about fishing.

Chomsky (2008) takes evidence like this to indicate that the PPs following picture nouns at least *can* be reduced RCs, and need not always be complements. This possibility would be sufficient to render them impervious to the projection principle and hence able to occur in parallel construal. In fact, with other NPs, which are complements according to the one-replacement test, complement extraposition appears to be banned (using passive constructions akin to those in (59)):

(63) a. *A student was invited of Physics.

b. *A driver has been seen of a Ford Cortina.

c. *A lover has been identified of fine food.

One might be tempted to take these data as evidence in support of Koster's analysis. The claim would be that the PPs in (63), being complements, cannot occur in parallel construal constructions because of the projection principle and so cannot appear extraposed, whereas those in (59), being adjuncts/reduced RCs, can and so allow extraposition. This is equivalent to the empirical generalisation given in Radford (1988), based on similar data.

Unfortunately, as Schütze (1995) and Davies and Dubinsky (2003) argue, there is actually some evidence that matters are more complex than this and that the PPs in (59) behave like

complements in some crucial respects. Firstly, as Schütze notes, these prepositions appear to be selected by the head noun:

(64) a. A good solution to/*about/??for/*with this problem.

b. *A good elucidation/clarification/book/idea/analysis to this problem

Secondly, the PPs in question are non-iterative (with the possible exception of *about P*), unlike adjunct PPs (cf. Schütze 1995 for additional complications):

(65) a. A car with a red bonnet with a sunroof [adjunct PPs]

b. *The picture of my relatives of Mary

c. *The solution to the problem to the first question

Thirdly, these PPs resist separation from the head noun by an adjunct PP to varying degrees (controlling for heaviness effects):

(66) a. *This is a good solution from an expert to this problem.

b. *This is a problem without a solution with the proposal.

c. ??This is a picture in a book of someone famous.

d. ??This is a request without a deadline for your signature.

e. ?This is a book with a read cover about fly fishing.

Thirdly, the PPs in question pattern with complements rather than adjuncts with respect to extraction and subextraction facts. It is generally the case that adjunct PPs contained in NP

cannot be extracted and are themselves strong islands for subextraction (67), the same is not true with clear complement PPs (68) (cf. Davies & Dubinsky 2003):

(67) a. *What colour cover have you bought a book with?

b. *With what colour cover have you bought a book?

(68) a. Which city did you witness the destruction of?

b. Which car are you the driver of?

c. Of which branch of science are you a student?

The PP in (68a) is a complement according to Grimshaw (1990) as *destruction* is a complex event nominal (CEN) with full argument structure.[26] The PPs in (68b-c) are also complements according to the one-replacement and predication tests. Curiously, the ambiguous PPs from (59), clearly pattern with complements with respect to this diagnostic:[27]

(69) a. Which problem did you find a solution to?

b. ?Which proposal did you find a problem with?

c. Who did you see a picture of?

d. What did you receive a request for?

e. ?Which topic did you buy a book about?

According to Uriagereka's (1999) re-appraisal of Huang's (1982) CED, if a phrase permits subextraction then it must be a complement.[28] In this crucial respect then, many extraposable PPs behave like complements rather than adjuncts. Of course, it might be argued that if the PPs in question can be either complements or adjuncts then they are complements where they

allow subextraction and adjuncts where they can be extraposed. However, further evidence from reconstruction and subextraction suggests that this cannot be the case either and that the PPs in question must be complements, despite apparent evidence to the contrary.

3. 2 Reconstruction

Most of the generalisations in the literature regarding the behaviour of complements and adjuncts to N have been developed based on picture and book nouns. For example, the following examples illustrate the observation that after A-bar movement, complements obligatorily reconstruct, whereas adjuncts need not (cf. Chomsky 1993; Fox 1999).

(70) *[Which picture of $John_1$]$_2$ does he_1 like t_2?

(71) [Which picture which John took]$_2$ does he_1 like t_2?[29]

One influential account of the A-bar complement/adjunct asymmetry is based on the proposal of late merger, following Lebeaux (1988, 1991). For Lebeaux, adjuncts, unlike complements, can be merged late in the derivation because they are not selected/theta-marked and as such are not subject to the projection principle.[30] Building on this idea, Chomsky (1993) proposes that the lack of reconstruction in examples such as (71) results from the fact that the adjunct is simply not present on the base-copy of *which picture*:

(72) [Which picture *that $John_1$ took*] does he_1 like [~~which picture~~]?

If the PP in (70) were optionally an adjunct then it would be able to avoid a condition C violation in the same way, by undergoing late-merger. The fact that this is not possible,

strongly suggests that the PPs associated with picture nouns are always merged 'early' as selected complements. A similar effect appears to hold of many extraposable (complement) PPs:

(73) a. *How many solutions to John$_i$'s problem has he$_i$ found?

b. *How many requests for John$_i$'s help has he$_i$ received?

c. *How many books about John$_i$'s ancestors does he$_i$ know of?

In Lebeaux's terms, this means that the PPs can never be late-merged, as even the possibility of late-merger would be sufficient to render (73a-c) grammatical. Whatever the correct analysis of this argument/adjunct distinction, it is clear that the PPs in question pattern as complements rather than adjuncts. The implication is that the one-replacement and predication tests do not differentiate complements from adjuncts after all, but rather distinguish between different kinds of complements.

3. 3 Subextraction from extraposed constituents

A further reason to believe that not all extraposed constituents (or even all RCs) are in parallel construal constructions comes from the fact that subextraction from them is sometimes possible. Ross's (1967:160) 'Frozen Structure Constraint' states that subextraction from extraposed constituents is ungrammatical, and this is to be expected according to Koster's parallel construal analysis, because of the coordinate structure constraint (as Koster 2000:24 notes). In fact, some constituents are generally strong islands regardless of their position in the clause. This is true, for example, of (most) RCs and nominal adjuncts, which block subextraction irrespective of (i) whether they are extraposed (ii) the

complement/specifier status of the nominal which they modify, and (iii) the argument/adjunct status of the extracted phrase. Thus even extraction of a thematic complement from a non-extraposed RC modifying an NP in a complement position is usually ungrammatical in English (cf. Ross 1967):

(74) *Which book do you know someone [$_{RC}$ who has read t]?

This is not always the case, though, as noted by Kayne (1994:167, fn 14, and Büring & Hartmann 1997:7). In Scandinavian languages, for example, subextraction from RCs is fully acceptable in certain contexts (cf. Taraldsen 1971; Engdahl 1997):

(75) *De blommorna känner jag en man som säljer*
those flowers know I a man that sells
"These flowers, I know a man who sells."
[Swedish, Engdahl (1997:54, citing Allwood 1976)]

As has been noted in the literature, some of these examples are also marginally acceptable in English, for example the following example from Engdahl (1997:61):

(76) *Här är [en fråga]$_1$ som jag inte känner någon som kan svara på t$_1$*
here is a question that I not know anybody that can answer
?"Here's a question that I don't know anyone who can answer." [Swedish]

Crucially, such subextraction from RCs *is* subject to Huang's (1982) Condition on Extraction Domains (CED): subextraction from RCs modifying nominals in specifier/adjunct positions

is banned. Only extraposed RCs and RCs modifying complements permit subextraction, as Taraldsen (1981) has shown (examples from Engdahl 1997:58, citing Taraldsen 1981:52):

(77) a.*Her er en bok$_1$ som ingen som leser t_1 blir lykkelig
here is a book that nobody that reads becomes happily

b. Her er en bok$_1$ som ingen blir lykkelig som leser t_1
here is a book that nobody becomes happily that reads
"Here's a book that nobody becomes happy who reads it." [Norwegian]

These Norwegian RCs appear to pattern with some extraposed PP complements in English, which marginally allow subextraction, unlike their pied-piped counterparts (cf. Kuno 1973; Huck & Na 1990; Sheehan 2009a):

(78) a.?Which topic has a new book just appeared about?

b. *Which topic has a new book about just appeared?

(79) a. ?Who has a photograph been taken OF?

b. *Who has a photograph of/OF been taken? (based on Huck & Na 1990:71)

(80) a. ?Which item has a request been issued FOR?

b. *Which item has a request for been issued?

These examples are not equally acceptable to all speakers and other equivalent examples are considerably less acceptable:

(81) ??Which problem has a solution been found to?

(82) *Which proposal has a problem been found with?

This seems to correlate with the strictness of adjacency to the head noun (see Section 3.1). The higher the preference for the PP to appear adjacent to the head noun, the worse subextraction is.[31]

Complications arise where the extraposed constituent surfaces to the right of an adverb. In such cases, extraction becomes more marked, but according to Huck & Na (1990:66), is still possible where the preposition is stressed:

(83) Okay, you saw a picture yesterday, but just whom did you see a picture yesterday OF?

(84) Here's an article in the Tribune by Trevor, of all people; he's someone I'd expect to read a story in the paper ABOUT.

Subextraction is less marked with non-finite clausal complements of N (though subextraction from finite complements of N is severely degraded in all contexts for poorly understood reasons, cf. Ross's 1967 complex NP constraint):

(85) a. ??Who has [a chance for you to visit t] arisen?

b. Who has a chance arisen [for you to visit t]?

It therefore appears that subextraction from extraposed complements is in principle possible, though subject to additional restrictions which require further investigation, unlike subextraction from the pied-piped complements of moved phrases, which is systematically

banned.[32] Wherever this is the case, the transparent extraposed constituent cannot be in parallel construal with the main clause (as otherwise subextraction would be banned by the co-ordinate structure constraint).

An anonymous reviewer points out that the pattern in Dutch appears to be the reverse, with extraposed PP complements blocking, but pre-verbal PPs allowing subextraction (cf. De Vries 2002:259):

(86) a. *Waar heb je een boek [t over] gelezen?* [Dutch]
what have you a book about read

b. **Waar heb je een boek gelezen [t over]?*

Additional factors mean, however, that these examples might not be directly comparable. De Vries (2002:289, fn 2) claims that the PP in (86a) does not modify N but rather is an adverbial, following Corver (1990) amongst others (see also footnote 21 above). As such, despite superficial similarities, it might be that the Dutch and English examples are not directly comparable.

Other apparently problematic examples appear to be instances of heavy NP shift (HNPS), which behave differently from complement extraposition in that it is island-inducing. While HNPS cannot target a nominal contained in a PP, it can shift a whole PP rightwards (Ross 1967):

(87) a. *I referred to in a recent article the very point that you have just made.

b. I referred in a recent article to the very point that you have just made.

Right-shifted PPs, like right-shifted nominals become opaque for subextraction:

(88) *What point did you refer in a recent article to?

As such, right-shifted PP complements in Dutch are strong islands for the same reason:

(89) a. *Waar heb je [t aan] gedacht?* [33]
where have you of thought
b. * *Waar heb je gedacht [aan t]?* [Dutch, De Vries (2002:259)]

This suggests that in both languages, HNPS (i) can also target PPs and (ii) leads to strong islandhood.[34] An investigation of HNPS is beyond the scope of this paper.

In other contexts, though, it appears that Dutch patterns with English, at least for some speakers. Consider, for example, extraposed and non-extraposed non-finite sentential complements: [35]

(90) a. **Wie heeft zich [een kans om t te ontmoeten] voorgedaan?*
who has itself a chance C to meet presented
b. *(??)Wie heeft zich een kans voorgedaan [om t te ontmoeten?]* [36]
who has itself a chance presented C to meet
"Who has a chance arisen for you to meet?" [Dutch]

In conclusion, at least some extraposed complements (and RCs) permit subextraction. If these extraposed constituents were coordinated via parallel construal, then this would involve a violation of the otherwise robust Coordinate Structure Constraint. The implication is once again that there must be an alternative extraposition strategy applying to complements (and also to RCs in some languages, perhaps as a secondary strategy).

3. 4 Complement extraposition feeds condition C

Another property of complement extraposition which is problematic for the parallel construal analysis concerns patterns of reconstruction. It has already been noted that RC extraposition bleeds condition C in certain cases, and that this is what is expected under Koster's analysis. The following contrast from Guéron (1980:650), discussed by Kayne (1994:122) is evidence that complement extraposition has the opposite effect, feeding condition C. The extraposed complement in (91b) appears to occupy a lower position than its non-extraposed counterpart, c-commanded by the indirect object PP:

(91) a. **A picture of Mary$_i$** was sent to her$_i$.

b. *__A picture__ was sent to her$_i$ **of Mary$_i$**.

According to Harley's (2002) base-generated structure for dative ditransitives in (92), there is no copy of *a picture of Mary* which is c-commanded by the PP *to her*, as the dative PP is base generated in the lowest complement position:

(92) [$_{v'}$ CAUSE [$_{PP}$ [$_{DP}$ a picture of Mary] P_{LOC} [$_{PP}$ to her]]]

The condition C effect in (91b) is thus highly problematic, as it seems to imply that 'downwards' movement must be possible. If, on the other hand, we adopt a (now controversial) Larsonian structure like that proposed by Aoun & Li (1989:164), whereby the DP undergoes A-movement and the PP is adjoined to VP, then the effect becomes less problematic, as at least there is a copy of the DP c-commanded by the PP:[37]

(93) $[_{V'}$ CAUSE $[_{SC}\,[_{DP}$ a picture of Mary$]_i$ $[_{VP}\,[_{PP}$ to her$]$ $[_{VP}\,P_{HAVE}\ t_i\ ]$

In relation to complement extraposition from an A-bar position, we see a similar condition C violation in English, though this is less striking as complements always reconstruct after A-bar movement (see Section 3.2), so there is no difference in grammaticality between (94a-b):

(94) a. ***Which solution to Mary$_i$'s problem** did she$_i$ accept?

b. ***Which solution** did she$_i$ accept **to Mary$_i$'s problem**?

The ungrammaticality of (94b) is nonetheless a problem for Koster's analysis: as the source occupies spec CP, the extraposed PP would have to be co-ordinated with CP, meaning no c-command should obtain between the subject and the PP, contrary to fact:

(95) *$[_{:P}\,[_{CP}\,[_{DP}$ Which solution$]$ did she$_i$ accept$]$: $[_{PP}$ to Mary$_i$'s problem$]$?

Crucially, once again the pattern is different from that observed with RC extraposition, where extraposed RCs appear to occupy a high position (as predicted by Koster's analysis). Here again, there is no difference in grammaticality between the extraposed and non-extraposed variants, because RCs do not obligatorily reconstruct after A-bar movement (see Section 3.2):

(96) a. **Which book that Mary$_i$ had always wanted** did she$_i$ finally buy?

b. ?**Which book** did she$_i$ finally buy **that Mary$_i$ had always wanted**?

Curiously, it appears to be the case that extraposition of non-RC adjunct PPs also feeds condition C:[38]

(97) *?Which picture did she$_1$ see from Mary$_1$'s collection?

(98) *?A book was given to him$_1$ with John$_1$'s name on it.

Kayne claims that data of this kind support a narrow syntactic stranding analysis, whereby the stranded phrase has not moved higher than its base position and so must be interpreted there. However, given the more general possibility of reconstruction after A and A-bar movement, Kayne's conclusion is by no means a logical necessity, as I argue in the following section.

3. 5 Complement extraposition and scope reconstruction

Further consideration of the scope of source NPs after extraposition suggests an alternative interpretation of the condition C effects described above. Fox (1999) argues that scope reconstruction feeds condition C in cases of both A-bar and A-movement, with complements and adjuncts. His evidence for this comes from data such as the following:

(99) a. [Someone from David's$_1$ city] seems likely to him$_1$ t to win the lottery. *likely>exist

b. [Someone from his$_1$ city] seems likely to David$_1$ t to win the lottery. ambiguous

In (99a) the existential quantifier must take wide scope over *likely*, giving the meaning: 'there is a (specific) person x from David's city such that it seems likely to David that x will win the lottery' (maybe because the person in question has bought a lot of tickets). Crucially, it cannot have the narrow scope interpretation: 'it seems likely to David that some person x from his city will win the lottery', (because he lives in a city of addicted gamblers). This is because scope reconstruction of the subject is blocked by the potential condition C violation, or put another way, because scope reconstruction feeds condition C. As such only the higher copy of the subject can be interpreted at LF (cf. Takahashi & Hulsey 2009 for a potential account of this). The same is not true of (99b), where no such condition C effect would obtain.

Now consider the fact that complement extraposition forces a narrow scope reading on a source NP:

(100) a. A better/#certain book has never been printed about sheep shearing. neg>exist, *exist>neg

b. A better/certain book about sheep shearing has never been printed. ambiguous

(100b) is potentially ambiguous between a narrow and wide scope reading of negation, whereas (100a) seems to disallow a narrow scope reading altogether. The following example shows that adjunct-PP extraposition has the same effect, forcing scope reconstruction of the complete source NP:

(101) a. Someone from this region is likely to be knighted. Likely>exist, exist>likely

b. Someone is likely to be knighted from this region. Likely>exist, *exist>likely

Example (101a) is ambiguous, referring either to a specific person from this region who is likely to be knighted or to the fact that it is likely that this region will yield a knight. (101b), on the other hand, with extraposition, is unambiguous and has only the second meaning. Given (100)-(101), a more accurate interpretation of the condition C facts discussed in the previous section appears to be that complement extraposition triggers obligatory scope reconstruction of the source NP, and this in turn feeds condition C. Neither of these effects is expected if all extraposition is derived by parallel construal. Under parallel construal, extraposed constituents should neither feed condition C nor force reconstruction of a source NP.[39]

3. 6 Conclusions

In the preceding section it has been shown that there are strong conceptual and empirical reasons to believe that complement extraposition cannot be derived via parallel construal. This does not question the correctness of Koster's approach as an analysis of RC extraposition, but rather suggests that an additional rightwards placement strategy exists alongside it. In the following section, I propose an analysis of complement extraposition based on scattered deletion, compatible with the LCA and the projection principle. While the analysis focuses on PP complements, it is intended to apply also to those extraposed adjunct PPs and indeed RCs (in some languages) which share the core properties of 'complement extraposition'. The crucial difference between extraposed complements and extraposed RCs is that the later, unlike the former, can also be extraposed via parallel construal, hence their rather different behaviour (outlined in Section 2).

4. Complement extraposition as scattered deletion

In this section I propose that despite all the objections to Kayne's generalised stranding analysis of extraposition, complement extraposition is, nonetheless, best analysed as stranding of sorts. On the surface, the claim that a phrase can move and strand its complements in base position appears highly problematic, as this would appear to require movement of a non-constituent, a criticism already raised in relation to Kayne's proposal (see Section 2.3.2). However, Wilder's (1995) account of extraposition provides the basis for a solution to this problem. Wilder proposes that extraposition does not involve narrow syntactic stranding of a RC in base position, but rather full XP movement and scattered deletion, giving the PF appearance of 'stranding':

(102) [a chance ~~to meet the president~~] has come up [~~a chance~~ to meet the president]

Wilder's analysis is intended as an account of RC extraposition and as such it suffers from many of the same problems as Kayne's original proposal (as discussed in Section 2.3). I will propose, however, that his basic idea can be used to provide an explanatory account of the distinct phenomenon of complement extraposition. Crucially, though, it will be proposed that scattered deletion is highly constrained and obtains only as a last resort, in order to avoid an additional (costly) application of spell-out.

I begin by introducing Uriagereka's (1999) simplification of the LCA upon which the proposal is based. I then show that the predictions of this analysis are subtly altered if we adopt a copy theory of labelling, as developed at length by Sheehan (2010). This paves the way for a new analysis of the data in Section 4.4. In Section 5, I show how this analysis accounts for the main properties of complement extraposition. Finally, in Section 6, I revisit

the objections to Kayne's stranding account, showing that they do not apply to the scattered deletion account.

4. 1 Multiple Spell-Out

Uriagereka (1999) points out that from a Bare Phrase Structure perspective whereby terminal nodes themselves can c-command (Chomsky 1995), the LCA can be divided into a base step and an induction step:

(103) A more explicit version of Kayne's LCA (based on Uriagereka 1999:252)

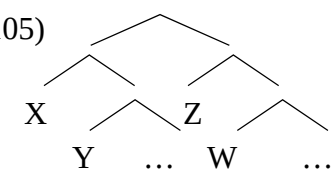
(a)Base step: If α asymmetrically c-commands ß, then α precedes ß.

(b)Induction step: If α precedes ß and α dominates γ then γ precedes ß

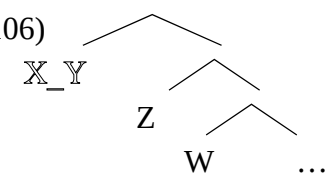
While (a) is the basic intuition behind the LCA, from a BPS perspective (b) serves only to enable the linearisation of complex specifiers, and fails to follow from virtual conceptual necessity. Uriagereka's (1999) proposal is that the elimination of the 'induction step' serves to (i) simplify and (ii) increase the explanatory power of the LCA. Crucially, once (b) is eliminated from (103), the latter can no longer linearise complex specifiers. Uriagereka's novel proposal is that the 'simple LCA' (my term) in (104) coupled with the need for total linear order essentially rules out structures like (105) and forces them to look like (106):

(104) *Simple LCA*: α precedes ß if α asymmetrically c-commands ß.

(105)

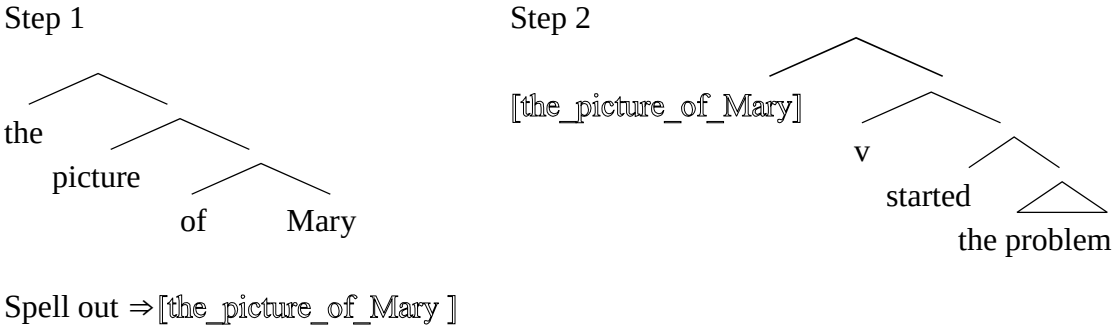


(106)



More specifically, Uriagereka proposes that spell-out (indicated with outline font) can apply multiple times in the course of a derivation, subject to last resort.[40] Because of the possibility of 'Multiple Spell-Out' (MSO) and (104), all complex phrases will be spelled out or 'atomised' prior to being merged in a specifier position (cf. Uriagereka 1999:256). Insertion of a complex specifier is therefore a two-step operation:

Figure 1: Multiple Spell-Out



Spell out ⇒ [the_picture_of_Mary]

According to the conservative version of MSO, after step 1, the complex DP the_picture_of_Mary behaves in some ways like "a giant lexical compound" or "word", lacking in internal structure but with "syntactic terms [which] are obviously interpretable but are not accessible to movement, ellipsis, and so forth" (Uriagereka 1999:256-7). For this reason, due to lexical integrity, all externally merged specifiers are predicted to be strong islands. As Uriagereka notes, this appears essentially to derive Chomksy's (1973) subject condition, which holds of English and many other languages:

(107) ***Who** did [a_picture_of t] cause the problem? (nominal is atomised)

(108) **Who** have you seen **a picture of**? (nominal is not atomised)

Crucially, complex phrases in a complement position (as in (108)), unlike those in a specifier position, do not need to be atomised, as they can be ordered with respect to the clausal spine in a single application of spell-out. Uriagereka further proposes that the strong islandhood of adjuncts might be similarly explained (cf. Sheehan, in press, for discussion). As such, the simple LCA in (104) combined with MSO not only simplifies the LCA but also serves to derive Huang's (1982) CED.[41]

4. 2 The simple LCA seems too strict

Despite the obvious appeal of the simple LCA, it is unfortunately too restrictive given standard assumptions about phrase structure, as Sheehan (in press) shows. Essentially, it implies that all syntactic trees will uniformly branch in one direction, with no branching specifiers. Or rather that all complex specifiers will be atomic 'words' and thus strong islands. At least three immediate empirical challenges arise (cf. Sheehan in press):

a. the special behaviour of derived specifiers;
b. the fact that some languages allow subextraction from subjects (Stepanov 2007);
c. the fact that head-final languages permit object extraction from complex left-branches.

Problems (a)-(c) are discussed at length in Sheehan (in press, 2010), and we consider only (a) here, for reasons of space. Consider the following examples of subextraction from a derived specifier by way of illustration (cf. also Chomsky 2008):

(109) a. ?To which problem has a solution been found?
b. ?About which topic have many books been borrowed?
c. ?Of which film star have many pictures been published?

While such examples are slightly marginal for most speakers, they are clearly more acceptable than equivalent examples involving subextraction from an externally merged specifier:

(110) a. *To which problem has a solution signaled progress.

b. *About which topic have many books annoyed you?

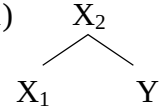
c. *Of which film star have many pictures annoyed you?

This contrast poses a problem for the simple LCA as it suggests that derived specifiers differ from externally merged specifiers in being non-atomic (contra Nunes & Uriagereka 2000). The question is whether the simple LCA can be weakened in an explanatory way in order to allow for these constrained instances of subextraction, whilst maintaining its explanatory account of the CED. Sheehan (2009b, in press, 2010) proposes that one way to do this is to reconsider the labelling operation. Attributing a slightly different status to labels serves to explain why derived specifiers differ from externally merged specifiers.

4. 3 The copy theory of labelling

In Chomsky's (1995) Bare Phrase Structure (BPS), the operation 'copy' is involved in the labelling operation but the *label* of a complex phrase does not have the status of a *copy* in any real sense. Rather projection gives rise (in the general case) to category formation, so that X_1 and X_2 in (111) represent two distinct categories:

(111)



As a result, the asymmetric c-command domain of the category X_2 will necessarily define the linear position of *all the terminals dominated by* X_2 (i.e. X_1 & Y). If labels of this kind define precedence pairs, then this forces us to reject the simple LCA and accept the induction step, whereby labels act as 'proxies' for the terminals which they dominate. On the surface then, it seems that allowing labels (or at least allowing them to count for the LCA) undermines the possibility of simplifying the LCA via the removal of the induction step, and hence undermines Uriagereka's explanation of the CED.

Sheehan (2010) argues that this is a product not of labelling *per se* but of the status of labels in Bare Phrase Structure (and X-bar theory). She proposes, moreover, that if we adopt a 'copy theory of labelling' whereby all projections of a terminal/head X are segments of a single category X, then we get a very different result. In this case, the label X_2 is not a separate category, but rather a segment of the two-part discontinuous category X (comprising X_1-X_2). A modified version of Kayne's category-based definition of c-command means that the asymmetric c-command domain of the bipartite category X need not determine the linear position of Y, but only that of the category X itself.

Consider the following definitions, taken from Sheehan (2010):

(112) **Complete Dominance**: A category X completely dominates a category Y iff X≠Y and the shortest path from every copy of Y to the root of the tree includes all non-terminal copies of X.[42]

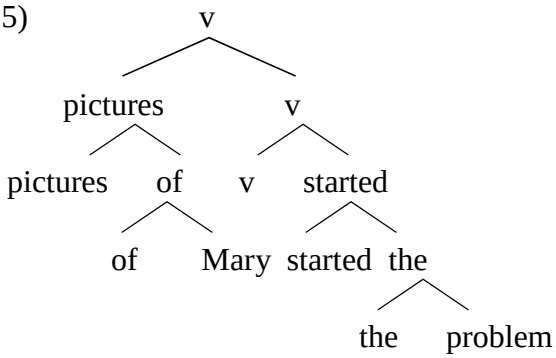
(113) **Partial category dominance**: a category X partially dominates a category Y iff X≠Y, the shortest path from every copy of Y to the root of the tree includes a copy of X, but X does not completely dominate Y.

Given these definitions, Kayne's version of c-command can be restated in the following way:[43]

(114) C-command: A c-commands B iff A and B are categories, A≠B, A does not partially dominate B and any category which completely dominates A also completely dominates B.

This definition will still serve to force the atomisation of externally-merged head-initial specifiers. Consider the following simplified tree:

(115)

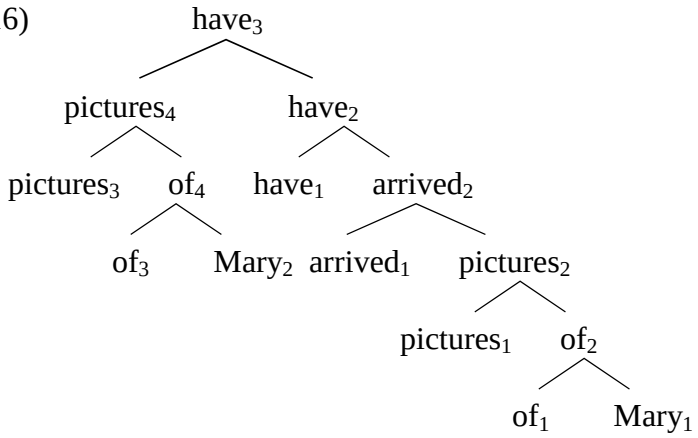


In (115), the bipartite category *pictures* actually asymmetrically c-commands the categories *v, started, the* and *problem* (according to the copy theory of labelling) and so must precede them according to the simple LCA. The categories *of* and *Mary*, however, do not enter into any c-command relation with the categories *v, started, the* or *problem* (as they are both completely dominated by the category *pictures*, which fails to dominate *v, started, the* or *problem*). This means that a tree such as (115) cannot be straightforwardly linearised by the simple LCA. Following Uriagereka, we can assume that this problem is overcome by assembling and spelling out the specifier before it is merged with the v projection, as detailed in Section 4.1. Crucially, then, in relation to externally merged head-initial specifiers, the copy theory of labelling makes the same predictions as BPS, allowing us to maintain Uriagereka's simple LCA and its elegant account of the CED.

4. 4 An account of complement extraposition

In relation to internally merged specifiers originating in a complement position, however, (henceforth derived specifiers) the copy theory of labelling makes novel predictions:

(116)

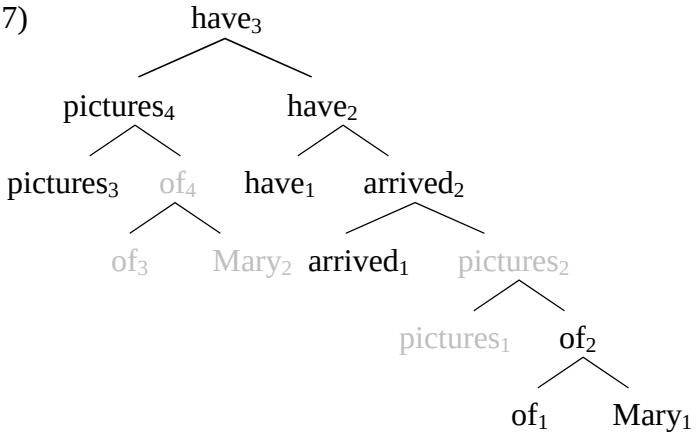


If copying uniformly gives rise to segment formation, as Sheehan (2010) proposes, then movement of the *pictures*-projection in (116) will create two four-part distributed categories (*pictures* and *of*), as well as a bipartite distributed category (*Mary*). In such contexts, I assume, as is standard, that copy deletion must take place in order for linearisation to be possible (cf. Nunes 2004).[44] According to the definitions given above, after movement, the projecting category *pictures* ceases to completely dominate *of* and *Mary* (the path from $Mary_1$, of_1 and of_2 bypasses $pictures_4$ and that from $Mary_2$, of_3 and of_4 bypasses $pictures_2$). In descriptive terms, then, movement of the *picture*-projection converts the complement of *pictures* into a specifier, recreating the ordering problem associated with head-initial specifiers.

In such cases, deletion of the lower copy of the *pictures*-projection will create a structure akin to that in (115), requiring subject atomisation in order for the categories *of* and *Mary* to be linearised with respect to *have* and *arrived*. Assuming that both atomisation and deletion have a certain cost associated with them, it is to be expected that they will be avoided if possible, hence the fact that MSO applies only to externally merged specifiers as a last resort. As such,

if deletion can apply in such a way as to remove the need for atomisation then the prediction is that this will be preferred over deletion+atomisation. In such cases, scattered deletion of the following kind removes the need for atomisation, giving rise to complement extraposition:

(117)



In (117), no atomisation will be required, as the simple LCA (*without* the induction step) provides the following total linear order of categories: pictures>have>arrived>of>Mary. According to Bošković (2001) and Nunes (2004), scattered deletion is available as a last resort, where constituent deletion is blocked for some reason. The claim is that full constituent deletion is blocked precisely in those cases where scattered deletion will help avoid an extra application of spell-out. In these cases, scattered deletion is preferred on economy grounds, and thus legitimate. [45]

The result will be obligatory spelling out of the complete complement of the projecting head of a derived specifier in its base position, giving rise to what we have been calling complement extraposition. In the next two sections, I show how this analysis accounts for many of the properties of complement extraposition. The fact that scattered deletion appears to be optional here, given the grammaticality of *(some) pictures of Mary have appeared* will

be dealt with in Section 5.4, as will the fact that indefinite articles and other material may precede the head noun. For our present purposes, though, let us merely assume that indefinite articles (a, numerals, many, several etc.) are specifiers of N, and that pre-nominal adjectives are adjuncts to N'.

5. Empirical support for scattered deletion

5. 1 Only externally merged complements/derived specifiers permit it

The proposed analysis makes the strong prediction that complement extraposition will only be possible where the host occupies a derived specifier position and was externally merged as a complement. As predicted, complement extraposition appears to be possible after A-movement with unaccusative verbs and passives (118) as well as after A-bar movement of an externally merged complement (120), but impossible after where the host is a (moved) externally-merged specifier (119, 121):[46, 47]

(118) Some pictures have been printed of a film star.

(119) a. Some pictures of a film star have provoked a scandal.

b. *Some pictures have {of a film star} provoked a scandal {of a film star}.

(120) How many pictures did you see of him?

(121) *How many pictures might {of him} be worth money {of him}?

Moreover, this is true where successive cyclic A or A-bar movement has taken place, again, as long as the base-position of the source nominal is a complement position:

(122) a. A request appears to have been received for his signature.

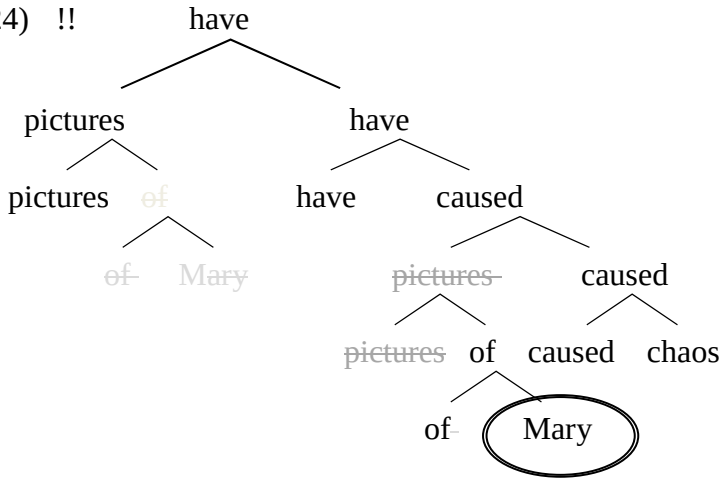
b. *?A request appears {for his signature} to have caused annoyance {for his signature}.

(123) a. How many pictures did you say were printed of him?

b. ??How many pictures did you say {of him} were worth money {of him}?

Complement extraposition is limited to externally merged complement sources because applying scattered deletion to a chain involving an externally merged specifier does not generally serve to forestall atomisation. Consider the externally-merged copy of *Mary* in (124). Even after scattered deletion, *Mary* neither asymmetrically c-commands or is asymmetrically c-commanded by *caused* or *chaos.* As such, no order is possible, resulting in a PF crash (indicated as !!):

(124) !!



The prediction is that head-initial externally-merged specifiers will require atomisation, and that where the complement of a derived specifier is linearised via scattered deletion, it will always be spelled-out in the base (complement) position, rather than any intermediate (specifier) position. This serves to radically restrict patterns of scattered deletion, apparently correctly, accounting for why complement extraposition always targets the right edge.

5. 2 Source NPs cannot be embedded

The account also serves to explain why complement extraposition can only target the whole complement of the source NP and not a part thereof (Akmajian 1975:118):

(125) a. A review has come out of a new book about French cooking.

b. *A review of a new book has come out about French cooking.

Once again this falls out from the proposed analysis, as stranding a subpart of a complex complement will not help avoid atomisation. Rather scattered deletion must strand the entire complement of the projecting head in its base-generated position.[48,49] Note that in this way too, complement extraposition differs from parallel construal of RCs, which can target embedded source nominals (cf. Section 2.3.3).

5. 3 Subextraction from extraposed constituents

Recall that some extraposed PPs and CPs remain open to subextraction (126b), unlike their pied-piped counterparts (126a):

(126) a. *What information has a request for been issued?

b. ?What information has a request been issued for?

This is as expected if complement extraposition is in complementary distribution with atomisation (which induces strong islandhood). The nominal in (126b) has evaded atomisation via scattered deletion and hence remains open to subextraction, all else being

equal. Note that this account extends (though less obviously so) to instances of PP extraction from derived specifiers (cf. Section 4.2).

5. 4 Optionality, Condition C effects and Reconstruction

An obvious complication arises from the fact that complement extraposition is apparently optional. Recall, however, that extraposition appears to have an effect on interpretation, where quantifiers are involved, and so this 'optionality' might be illusory. While examples like (127a) are ambiguous between wide and narrow scope of the existential quantifier, as discussed in Section 3.5., examples with complement extraposition have only the narrow scope reading for the existential (neg>exist) (127b):

(127) a. A better/certain book about sheep shearing has never been published.

b. A better/#certain book has never been published about sheep shearing.

My claim is that (127a) and (127b) involve different numerations, with the nominal in (127b) being truncated in structure, weak in interpretation (in Diesing's 1992 sense) and non-atomic. In such cases, I claim that scattered deletion is obligatory. More specifically, I propose that (127b) involves a non-atomic truncated NumP (in the spirit of Bowers 1987) which receives a weak non-specific reading (triggering obligatory reconstruction), and allows both subextraction and complement extraposition:

(128) a. [$_{\text{NumP}}$ [many] pictures ~~of the fire~~] have been circulated [$_{\text{NumP}}$ ~~[many] pictures~~ of the suspect].

The plural marker –s and the null singular marker are suffixal Num heads which attract the lexical noun.[50] As such, where NumP undergoes internal merge, the complement of Num will be stranded in base position at the mapping to PF. Indefinite quantifiers (such as *many* and *how many*) and numerals (including *a*), I take to be specifiers of Num (rather than specifiers of N, as suggested provisionally above).[51]

Optionally specific nominals, like that in (127a), on the other hand, I take to be full DPs which have been atomised. In Chomsky's phasal terms, this amounts to the claim that DP is an edgeless phase.[52] This accounts for a crucial correlation between transparency and extraposition. Firstly, note that complement extraposition does not seem to be as acceptable where the source nominal is unambiguously a specific DP (as noted by Kayne 1994):

(129) *Your/??the new book has been published about sheep shearing.

Consider, also, the seemingly unrelated fact that subextraction from representational nominals in a complement position is similarly sensitive to specificity (Fiengo & Higginbotham 1981; Fiengo 1987; Davies & Dubinsky 2003):[53]

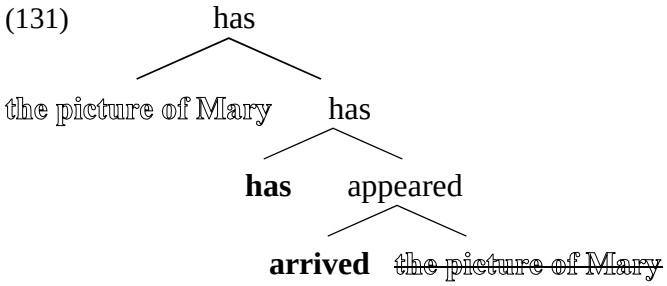
(130) a. Who did you see a/??the/*his picture of?

b. Which problem are you looking for a/??the/*my solution to?

Given that strong islandhood equates to atomisation from the MSO perspective, a plausible account of this effect is that some head/feature triggers the atomisation of specific nominals (in complement or specifier position) making them universally into strong islands, but that this head/feature is lacking from non-specific nominals. I assume, following Bowers (1987),

that it is the presence/absence of the D head which is crucial. A D-head, where present, triggers atomisation of a nominal as well as giving it more referential possibilities (cf. Hinzen 2011). This atomisation will avoid the need for scattered deletion if the DP undergoes internal merge, ruling out complement extraposition from specific DPs:

(131)



It is well known that indefinite nominals are ambiguous between specific and non-specific readings (cf. Diesing 1992). In our terms, this is because indefinites can be either atomic DPs, with scope-taking possibilities or truncated NumPs, which take only narrow scope and require scattered deletion.

A remaining problem is that the atomised DP in (127a) does not have unambiguously wide scope but rather can optionally reconstruct to take narrow scope. The implication is that strong readings of quantifiers are inherently ambiguous in scope. While this may seem problematic, note that according to Russell (1905), even definite descriptions can reconstruct to take narrow scope with respect to negation:

(132) The King of France is not bald. ambiguous

Russell argued that (132) can be either true or false, depending on scope interactions. According to his analysis, definite descriptions assert the existence of a unique referent with

the relevant property (in this case that of being 'king of France'). Where negation scopes over this existence assertion, the sentence will be true where no King of France exists. Where the existence assertion has wide scope with respect to negation, however, the sentence will be false where no such king exists. As such, it would appear that if Russell's account is correct, then even definite subjects can take narrow scope with respect to sentential negation. The same is also true of universal quantifier subjects such as 'everybody'.[54]

5. 5 Locality: the right roof constraint

The account also serves to explain the fact that complement extraposition is subject to Ross's (1967) Right Roof Constraint (RRC). As noted above, Kayne's stranding analysis readily captured the RRC, as stranding by definition always targets the base-generated position of the 'extraposed' XP:

(133) a. [The fact that a new book has appeared about semantics] is irrelevant.

b. *[The fact that a new book has appeared] is irrelevant about semantics.

Kayne's analysis of the RRC carries over to the analysis proposed here. Thus in (133a) *about semantics* has been stranded in its base position as part of the complement to the unaccusative verb *appeared* and then atomised as part of the larger DP. In these terms, (133b) is ungrammatical simply because the complement does not occupy its base-generated position. A slightly more complicated example of the RRC can be seen in the following examples. There are three clauses in (134), none of which need be extraposed (as in (134a)). CP3 can be stranded in its base position at the end of CP2 (cf. (134b)). Alternatively, CP2 can be stranded in its base position at the end of CP1 (cf. (134c)). It is even possible to strand CP3

inside CP2 and CP2 inside CP1 (as in (134d)). What is not possible, is (134e), where CP3 surfaces outside CP2, at the end of CP1.

(134) a. ?[$_{CP1}$ Confirmation[$_{CP2}$ that a claim[$_{CP3}$ that John had lied] had been made] was given]

b. ?[$_{CP1}$Confirmation [$_{CP2}$that a claim had been made [$_{CP3}$ that John has lied]] was given]

c. [$_{CP1}$Confirmation was given [$_{CP2}$ that a claim [$_{CP3}$ that John had lied] had been made]]

d. [$_{CP1}$Confirmation was given [$_{CP2}$ that a claim had been made [$_{CP3}$ that John had lied]]]

e. *[$_{CP1}$ Confirmation [$_{CP2}$ that a claim had been made] was given [$_{CP3}$ that John has lied]]

This pattern is explained by the scattered deletion account once we assume that both *confirmation* and *claim* being indefinites can project to either atomic DPs headed by a null D or non-atomic NumP. In (134a), both project to DP and are atomised, in (134b), *confirmation* projects to DP, whereas *claim* projects to NumP. In (134c) *confirmation* projects to NumP, whereas *claim* projects to DP. Finally in (134d) both nouns project to NumP. There is, however, no way to derive the word order in (134e) via scattered deletion.

5. 6 Lexical sensitivity

An anonymous reviewer points out that there are additional lexical restrictions on extraposition, not explained by this analysis so far. For example, not all unaccusative verbs permit complement stranding after A-movement:

(135) a. ??A book has arrived about physics

b. ??A picture has fallen (over) of Mary.

Moreover, not all nominal complements can be extraposed (cf. example (63) repeated here):

(136) a. *A student was invited of Physics.

b. *A driver has been seen of a Ford Cortina.

c. *A lover has been identified of fine food.

These examples are potentially problematic for the scattered deletion account, as these same nominals permit subextraction in certain limited contexts (cf. example (68) repeated here):

(137) a. Which car are you the driver of?

b. Of which branch of science are you a student?

Note, however, that these nominals only actually permit subextraction where they are used predicatively (cf. Zamparelli 2000:220). Where they surface as arguments, subextraction is highly marginal:

(138) a. ??Of which branch of science do you know a student?

b. ??Which car do you know the driver of?

There are also lexical restrictions concerning which transitive verbs permit complement stranding after A-bar movement:

(139) *Which book did you destroy about physics?

These same restrictions extend to the availability of complement extraposition in passives:

(140) ??A picture has been destroyed of Mary.

This again, appears to be related to the fact that these same predicates disallow subextraction from a nominal complement (cf. Davies & Dubinsky 2003):

(141) *Who did you destroy a picture of?

Davies & Dubinsky (2003) argue that this is connected to the fact that these predicates force a concrete reading on their complements. They argue that representational nouns are systematically ambiguous between an abstract and concrete reading, and that concrete nominals are always strong islands. Now if concrete nouns, as strong islands, are always atomised DPs then it follows that they will not give rise to scattered deletion. This would appear to extend to the restrictions concerning unaccusative verbs: only those verbs which can select for a non-specific abstract nominal (NumP) will display complement extraposition. Only concrete entities can fall or (physically) arrive. On the other hand abstract entities can ‘come out’, ‘appear’ or ‘be found’. Likewise agentive nouns are only abstract NumPs when used predicatively, otherwise they get a concrete reading, and behave like atomic DPs.

6. Returning to the objections to Kayne 1994

Because scattered deletion is offered only as an analysis of complement extraposition, the account proposed avoids almost all the objections raised to Kayne’s stranding analysis. In this section, I briefly review these objections, arguing that the vast majority of them do not apply.

6. 1 Complement PPs/CPs

While Kayne's stranding analysis was challenged by the fact that complement PPs/CPs can be extraposed, the same is not true of the scattered deletion analysis. This is because the latter requires neither movement of a non-constituent, nor remnant movement.

6. 2 Extraposition from embedded positions

Complement extraposition from embedded positions does not seem to be possible in German (cf. Kiss 2005). It is also at best highly marginal in English:

(142) ??I thought of a book yesterday about fishing.

(143) a. To which book about syntax are you referring?

b. Which book about syntax are you referring to?

c. Which book are you referring to about syntax?

d. ??To which book are you referring about syntax?

This is as expected given the scattered deletion approach, as only stranding the complete complement of the projecting head will suffice to aid linearisation and forestall an extra application of spell-out (cf. also Section 5.2).

As an anonymous reviewer points out, Kaan (1992, 1993) claims that Dutch is more permissive in this respect, given examples such as the following (Kaan 1993:145):

(144) *…dat het [$_{NP}$ een weerlegging [$_{PP}$ van [$_{NP}$ de kritiek]]]*

that it a disproof of the criticism

bevatte [$_{PP}$ *op de NP constraint***]**.

contained of the NP constraint

"…that it contained a disproof of the criticism of the NP constraint."

These kinds of examples are problematic for the account proposed here, and require further investigation.

6. 3 Subextraction from specifiers

The scattered deletion account of complement extraposition, unlike Kayne's stranding account of RC extraposition, does not require subextraction from specifiers. The scattered deletion account correctly predicts complement extraposition from externally-merged specifiers to be impossible (cf. Section 5.1). In the case of derived specifiers, on the other hand, complement extraposition is possible but what is at stake is scattered deletion of the nominal and not subextraction from a left branch.

6. 4 Lack of clause-internal stranding

The lack of stranding in the middle field is also predicted by the scattered deletion account, as complements will only be stranded in the base position of an externally-merged complement. In all cases, the position where this complement was externally merged will be at the right edge of a clause.

6. 5 The mirror effect

As only one complement per clause can be stranded, the mirror effect is irrelevant as a condition on extraposed complements.

6. 6 Patterns of VP-preposing/ellipsis

Ellipsis patterns also support the idea that extraposed PP complements remain inside VP, as unlike extraposed RCs/adjuncts, they must be elided along with VP:

(145) *?Although no good solution has been found [to *our* problem], a bad one has [$_{VP}$] [to *your* problem].

Note that this pattern is different from that observed with RCs extraposed from surface subjects (cf. section 2.3.7). In relation to VP-topicalisation, the fact that Kaan's generalisation holds with PP complement/adjunct extraposition via scattered deletion can be attributed to the fact that non-specific nominals (NumPs) cannot be scrambled (Diesing 1992). As such, extraposed PP complements/modifiers only occur with non-specific source NumPs, which raise to a preverbal object position inside VP (assuming OV order in German and Dutch to be derived via object movement, Zwart 1993).[55]

6. 7 High extraposed constituents

As discussed in Section 3.2, extraposed complements, unlike extraposed RCs, seem to occupy a low position in the clause.

6. 8 Definite source NPs

Finally, as discussed in Section 5.4, specific DPs headed by the definite article do not seem to allow PP complement extraposition. Clausal complements of N, however, can be extraposed from specific DPs (cf. also Kaan 1992 on Dutch and Kiss 2005 on German):

(146) Mary mentioned the fact yesterday that John is intelligent. (Kiss 2005:281)

This raises some problems for the scattered deletion account as it is not clear how the noun *fact* can be the highest projecting head in such contexts. On the basis of finite CPs, one might be tempted to adopt Grimshaw's (1990) proposal that they are not complements but appositions, suggesting that they can be extraposed via parallel construal. This raises some problems for Kiss's (2005) claim that extraposition of CP complements is restricted in the same way as that of PP complements. Moreover, non-finite CPs clearly pattern with extraposed PPs in permitting subextraction. We are therefore forced to adopt Kayne's proposal that the definite article is not always a projecting D-head. The implication would be that in these cases, *the* is actually a specifier of Num (cf. Zamparelli 2000:219 for the proposal that *the* occupies a lower position in T(ransparent)-definites). Further research is required into clausal complement extraposition and the structure of T-definites to ascertain whether this analysis is tenable.

7. Conclusions

This paper began by pointing out some of the challenges posed by extraposition for a simple directionless syntax, particularly if Kayne's LCA is assumed at the mapping to PF. It further showed that Kayne's (1994) own attempt to address these challenges, in the form of the stranding account, faced a number of challenges, some seemingly insurmountable, partly because it conflated RC and complement extraposition. In fact, one of the key proposals of

the paper is that the empirical properties of the two types of extraposition are so divergent that a unified account is neither possible nor desirable (cf. Fox & Nissenbaum 1999, Kiss 2005 for the same claim). As such, two separate analyses are explored in the paper, which are consistent with the various properties of the two phenomena to a high degree of subtlety. It is proposed that Koster's parallel construal provides an elegant account of RC extraposition, but cannot extend to complement extraposition. Complement extraposition, rather, is proposed to be derived via scattered deletion, forced by a simplified version of the LCA. This analysis straightforwardly accounts for many of the properties of complement extraposition without additional stipulations. The result is that a number of complex patterns of discontinuity are shown to stem from very basic facts about linearisation combined with more complex lexical differences in the selectional properties of predicates.

The outcome is that extraposition both *is* and *is not* a PF-phenomenon (cf. Chomsky 2004), and both *does* and *does not* involve stranding (cf. Kayne 1994). RC extraposition, inasmuch as it involves parallel construal, is a narrow syntactic phenomenon, resulting from the availability of :P and feature percolation involving neither PF movement nor stranding. Complement extraposition, on the other hand, is essentially a PF phenomenon, resulting from a simple version of the LCA, which gives rise to a kind of stranding at the point of linearisation. Crucially, though, neither type of extraposition is derived via an optional PF process, nor by optional stranding. This much is obvious from the fact that both phenomena interact with binding theory and scope in intricate ways. Rather, complement extraposition is essentially an obligatory operation, applying universally (at the mapping to PF) wherever a non-atomic head-initial phrase moves from complement to specifier position. It is attested with NumPs in English, but also more generally with basic word order permutations (cf. Sheehan 2009a, 2010). If this approach is along the right lines, then complement

extraposition is a pervasive feature of linearisation, and the real challenge is characterising the contexts in which it does not apply (cf. Sheehan, 2010, for a first attempt).

8. References

Abney, Steven P. 1987. *The English Noun Phrase in its Sentential Aspect.* Ph.D dissertation, MIT.

Akmajian, Adrian. 1975. "More Evidence for an NP Cycle". *Linguistic Inquiry* 6:1.115-129.

Allwood, Jens. 1976. “The Complex NP Constraint as a Non-Universal Rule and some Semantic Factors Influencing the Acceptability of Swedish Sentences which Violate the CNPC”. *University of Massachusetts Occasional Papers in Linguistics* II ed. by J. Stillings. Amherst, Mass..

Aoun, Joseph & Li, Yen-hui Audrey. 1989. "Scope and Constituency". *Linguistic Inquiry* 20:2.141-172.

Bach, Emmon & George M. Horn. 1976. “Remarks on ‘Conditions on Transformations’” *Linguistic Inquiry* 7:2.265-299.

Baltin, Mark. 1981. "Strict Bounding". *The Logical Problem of Language Acquisition* ed. by C. L. Baker & John J. McCarthy, 257-295. Cambridge, Mass.: MIT Press.

Baltin, Mark. 1983. "Bounding versus Government-Binding". *Linguistic Inquiry* 14:1.155-162.

Baltin, Mark. 1984. "Rules and Discontinuous Constituents". *Linguistic Inquiry* 15:1.157-163.

Baltin, Mark. 2006. “Extraposition”. *The Blackwell Companion to Syntax* ed. by Martin Everaert & Henk van Riemsdijk, 237-271. Oxford: Blackwell.

Besten, Hans den & Gert Webelhuth. 1990. “Stranding”. *Scrambling and Barriers* ed. by Gunter Grewendorf & Wolfgang Sternefeld, 77-92. Amsterdam: John Benjamins.

Bianchi, Valentina. 1999. *Consequences of Antisymmetry: Headed Relative Clauses.* Berlin: Mouton de Gruyter.

Bianchi, Valentina. 2000. "The Raising Analysis of Relative Clauses: A reply to Borsley". *Linguistic Inquiry* 31:1.123-140.

Biberauer, Theresa, Anders Holmberg & Ian Roberts. 2010. “A Syntactic Universal and its Consequences”. To appear in *Linguistic Inquiry*.

Biberauer, Theresa & Michelle Sheehan. To appear. “Disharmony, Antisymmetry, and the Final-over-Final Constraint”. *Ways of Structure Building* ed. by Myriam Uribe-Etxebarria & Vidal Valmala. Oxford: Oxford University Press.

Borsley, Robert. 1997. "Relative Clauses and the Theory of Phrase Structure". *Linguistic Inquiry* 28:4.629-647.

Bošković, Željko. 2001. *On the Nature of The Syntax-Phonology Interface: Cliticization and Related Phenomena.* Amsterdam: Elsevier.

Bowers, John. 1987. “Extended X-bar Theory, the ECP and the Left-Branch Condition”. *Proceedings of the West Coast Conference on Formal Linguistics*, 47-62.

Büring, Daniel & Hartmann, Katharina. 1997. "Doing the Right Thing – Extraposition as a Movement Rule". *The Linguistic Review* 14.1-42.

Cable, Seth. 2007. *The Grammar of Q: Q-particles and the Nature of Wh-fronting, as Revealed by the Wh-questions of Tlingit*. Ph.D dissertation, MIT.

Cable, Seth. 2010. “Against the Existence of Pied-Piping: Evidence from Tlingit”. *Linguistic Inquiry* 41:4.563-594.

Cinque, Guglielmo. 2005. “Deriving Greenberg’s Universal 20 and Its Exceptions”. *Linguistic Inquiry* 36:3.315–332.

Chomsky, Noam. 1970. “Remarks on Nominalization”. *Readings in English Transformational Grammar*, ed. by Roderick A. Jacobs and Peter S. Rosenbaum, 184-221. Waltham, Mass: Ginn.

Chomsky, Noam. 1973. “Conditions on Transformations”. *A Festschrift for Morris Halle*, ed. by Stephen. R. Anderson and Paul Kiparsky, 232-286. New York: Holt, Rinehart and Winston.

Chomsky, Noam. 1981. *Lectures on Government and Binding.* Dordrecht, Holland & Cinnaminson: Foris Publications.

Chomsky, Noam. 1993. "A Minimalist Program for Linguistic Theory". *A View from Building 20* ed. by Ken Hale & Samuel. J. Keyser, 1-52. Cambridge Mass.: MIT Press.

Chomsky, Noam. 1995. "Bare Phrase Structure". *Government and Binding Theory and the Minimalist Program: Principles and Parameters in Syntactic Theory* ed. by Gert Webelhuth, 383–439. Cambridge, Mass.: Blackwell.

Chomsky, Noam. 2001. Derivation by Phase. *Ken Hale: a Life in Language,* ed. by Ken Hale & Michael Kenstowicz, 28-53. Cambridge, Mass.: MIT Press.

Chomsky, Noam. 2004. “Beyond Explanatory Adequacy”. *Structures and Beyond: The Cartography of Syntactic Structures* ed. by Adrianna Belletti, 104-130. New York: Oxford University Press.

Chomsky, Noam. 2008. "On Phases". *Foundational Issues in Linguistic Theory* ed. by Robert Freidin, Carlos P. Otero & Maria Luisa Zubizarreta, 133-166. Cambridge, Mass.: MIT Press.

Corver, Norbert. 1990. *The Syntax of Left Branch Extractions*. Ph.D. dissertation, Katholieke Universiteit Brabant, Tilburg.

Culicover, Peter W. & Michael S. Rochemont. 1990. "Extraposition and the Complement Principle". *Linguistic Inquiry* 21:1.23-47.

Culicover, Peter W. & Michael S. Rochemont. 1997. "Deriving Dependent Right Adjuncts in English". *Rightward Movement* ed. by Dorothee Beerman, David Leblanc & Henk van Riemsdijk, 279-300. Amsterdam: John Benjamins.

Davies, William, D. & Stanley Dubinsky. 2003. "On Extraction from NPs". *Natural Language and Linguistic Theory* 21.1-37.

Diesing, Molly. 1992. *Indefinites.* Cambridge, Mass.: MIT Press.

Emonds, Joseph Embley. 1976. *A Transformational Approach to English Syntax: Root, Structure-Preserving, and Local Transformations*. New York: Academic Press.

Engdahl, E. 1997. "Relative Clause Extractions in Context". *Working Papers in Scandinavian Syntax* 60.51-79.

Fiengo, Robert. 1987. "Definiteness, Specificity and Similarity". *Linguistic Inquiry* 18:1.163-166.

Fiengo, Robert & Higginbotham, James. 1981. "Opacity in NP". *Linguistic Analysis* 7.395-422.

Fox, Danny. 1999. "Reconstruction, Binding Theory, and the Interpretation of Chains". *Linguistic Inquiry* 30:2.157-196.

Fox, Danny & Jon Nissenbaum. 1999. “Extraposition and Scope: a Case for Overt QR”. *Proceedings of the 18th West Coast Conference on Formal Linguistics* ed. by Sonia Bird, Andrew Carnie, Jason D. Haugen & Peter Norquest, 132–144.

Göbbel, Edward. 2006. “Extraposition as PF movement”. *WECOL online proceedings,*132-145.

Grimshaw, Jane B. 1990. *Argument structure*. Cambridge, Mass.; London: MIT Press.

Guéron, Jacqueline. 1980. "On the Syntax and Semantics of PP Extraposition". *Linguistic Inquiry* 11:4.637-678.

Guéron, Jacqueline & Robert May. 1984. "Extraposition and Logical Form". *Linguistic Inquiry* 15:1.1-31.

Haider, Hubert. 2004. “Pre- and Postverbal Adverbials in OV and VO”. *Lingua* 114.779-807.

Harley, Heidi. 2002. “Possession and the Double Object Construction”. *Linguistic Variation Yearbook* 2.29-68.

Hinzen, Wolfram. 2011. Phases and Semantics. Ms. University of Durham.

Huang, C.-T. James 1982. *Logical Relations in Chinese and the Theory Of Grammar*. Ph.D. dissertation, MIT.

Huck, Geoffrey J. & Younghee Na. 1990. "Extraposition and Focus". *Language* 66:1.51-77.

Hulsey, Sarah & Uli Sauerland. 2006. “Sorting out Relative Clauses”. *Natural Language Semantics* 14.111–137.

Jackendoff, Ray S. 1977. *X-bar Syntax: a Study of Phrase Structure*. Cambridge, Mass.: MIT Press.

Kaan, Edith. 1992. *A Minimalist Approach to Extraposition*. MA dissertation, University of Groningen.

Kaan, Edith. 1993. “Extraposition from NP in Dutch: Some Consequences of Minimalism”. *Groninger Arbeiten zur germanistischen Linguistik* 36.144-151.

Kayne, Richard S. 1994. *The Antisymmetry of Syntax.* Cambridge, Mass.: MIT Press.

Kayne, Richard S. 1998. “Overt vs. Covert Movement”. *Syntax* 1.128-191.

Kayne, Richard S. to appear. “Why is Syntax Antisymmetric?”. *Theoretical Approaches to Disharmonic Word Orders* ed. by Theresa Biberauer & Michelle Sheehan. Oxford: Oxford University Press.

Kiss, Tibor. 2005. "Semantic Constraints on Relative Clause Extraposition". *Natural Language & Linguistic Theory* 23.281-334.

Koster, Jan. 1978. *Locality Principles in Syntax.* Dordrecht: Foris Publications.

Koster, Jan. 2000 *Extraposition as Parallel Construal*. Ms., University of Groningen.

Kuno, Susumu. 1973. “Constraints on Internal Clauses and Sentential Subjects”. *Linguistic Inquiry* 4.363-85.

Lebeaux, David. 1988. *Language Acquisition and the Form of the Grammar*. Ph.D. dissertation, UMass.

Lebeaux, David. 1991. "Relative Clauses, Licensing and the Nature of Derivations". *Perspectives on Phrase Structure, Heads and Licensing* ed. by Susan Rothstein & Margaret Speas, 209-239. Amsterdam: Academic Press.

Mallinson, Graham. 1986. "Languages with and without Extraposition". *Folia Linguistica* 20:1-2.147–164.

McCloskey, James. 1999. "On the Right Edge in Irish". *Syntax* 2:3.189-209.

Nunes, Jairo 1995. *The Copy Theory of Movement and Linearization of Chains in the Minimalist Program*. Ph.D. dissertation, University of Maryland.

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

Nunes, Jairo & Uriagereka, Juan. 2000. "Cyclicity and Extraction Domains". *Syntax* 3:1.20-43.

Perlmutter, David. 1970. “On the Article in English”. *Progress in Linguistics* ed. by M. Bierwisch & K.E. Heidolph, 233-248. The Hague & Paris: Mouton.

Perlmutter, David & John R. Ross. 1970. “Relative Clauses with Split Antecedents”. *Linguistic Inquiry* 1:3.350-351.

Pintzuk, S. 2005. “Arguments against a Universal Base: Evidence from Old English”. *English Language and Linguistics* 9.115-38.

Radford, Andrew. 1988. *Transformational Grammar: a First Course.* Cambridge: Cambridge University Press.

Reinhart, Tanya. 1980. "On the Position of Extraposed Clauses". *Linguistic Inquiry* 11:3.621-624.

van Riemsdijk, Henk C. 1998. “Categorial Feature Magnetism: the Endocentricity and Distribution of Projections”. *Journal of Comparative Germanic Linguistics* 2.1-48.

Rijkhoek, Paulien. 1998. *On Degree Phrases and Result Clauses*. Ph.D. dissertation, Rijksuniversiteit Groningen.

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

Rochemont, Michael S. & Peter W. Culicover. 1990. *English Focus Constructions and the Theory of Grammar*. Cambridge & New York: Cambridge University Press.

Ross, John R. 1967. *Constraints on Variables in Syntax*. Ph.D Thesis, MIT.

Russell, Bertrand. 1905. “On denoting”. *Mind* 14.479-493.

Schütze, Carson. 1995. “PP attachment and Agreement”. *MIT Working Papers in Linguistics 26: Papers on Language Processing and Acquisition*, 95–152. Department of Linguistics and Philosophy, MIT, Cambridge, Mass.

Sheehan, Michelle. 2009a. “The Final-over-Final Constraint as an effect of Complement Stranding”. *Newcastle Working Papers in Linguistics* 15.104-25.

Sheehan, Michelle. 2009b. “Labelling, Multiple Spell-Out and the Final-over-Final Constraint”. *Proceedings XXXV Incontro di Grammatica Generativa (STiL - Studies in Linguistics)* ed. by V. Moscati & E. Servidio, 231-43. Siena.

Sheehan, Michelle. 2010. “Some implications of a copy theory of labelling for the Linear Correspondence Axiom”. Under review at *Syntax.*

Sheehan, Michelle. in press. “The Resuscitation of CED”. *The Proceedings of* NELS 40. MIT, Cambridge, Mass..

Smith, C. 1964. “Determiners and Relative Clauses in a Generative Grammar of English”. *Language* 40.37-52.

Stepanov, Arthur. 2007. “The End of CED? Minimalism and Extraction Domains”. *Syntax* 10:1.80-126.

Takahashi, Shoichi & Hulsey, Sarah. 2009. “Wholesale Late Merger: Beyond the A/Ā-Distinction”. *Linguistic Inquiry* 40:3.387-426.

Taraldsen, K. T. 1981. “The Theoretical Interpretation of a Class of 'Marked Extractions'”. *Theory of Markedness in Generative Grammar: Proceedings of the 1979 GLOW conference* ed. by Adrianna Belletti, L Brandi & Luigi Rizzi, 475-516. Pisa.

Uriagereka, Juan. 1999. "Multiple Spell-out". *Working Minimalism* ed. by Norbert Hornstein & Samuel D. Epstein, 251-282. Cambridge, Mass.: MIT Press.

de Vries, Mark. 1999. “Extraposition of Relative Clauses as Specifying Coordination”. *Proceedings of CONSOLE*, 1-15.

de Vries, Mark. 2002 *The Syntax of Relativization.* Ph.D. dissertation, Universiteit van Amsterdam.

Wilder, Chris. 1995. “Rightward Movement as Leftward Deletion”. *Extraction and Extraposition in German* ed. by Uli Lutz & Jurgen Pafel, 273-309. Amsterdam : John Benjamins.

Wilder, Chris. 2008. “Shared constituents and linearization”. In *Topics in ellipsis*, ed. Kyle Johnson, 229-258. Cambridge, New York: Cambridge University Press.

Ziv, Yaek & Cole, Peter. 1974. “Relative Clause Extraposition and the Scope of Definite Descriptions in Hebrew and English”. *Papers from the Tenth Regional Meeting of the Chicago Linguistics Society.* University of Chicago, 772-786.

Zamparelli, Roberto. 2000. *Layers in the determiner phrase*: Outstanding Dissertations in Linguistics. New York: Garland.

Zwart, C. Jan-Wouter. 1993. *Dutch Syntax. A Minimalist Approach*. Ph.D dissertation, University of Groningen.

---

[*]This research was funded by the AHRC, as part of the project *Structure and Linearisation in Disharmonic Word Orders* (http://research.ncl.ac.uk/linearisation/). Many thanks to the other members of this project for comments and stimulating discussions: Laura Bailey, Theresa Biberauer, Ángel Gallego (albeit briefly), Glenda Newton, Ian Roberts, Sten Vikner and especially Anders Holmberg. The ideas in this paper have also benefited from comments and critique from Wolfram Hinzen, Marit Julien, David Pesetsky, Geoff Poole & Rob Truswell. Finally, thanks to the audiences at LAGB (Essex), IGG (Siena), GLOW (Nantes) and at Newcastle, Cambridge and York Universities who heard various versions of parts of this paper. All errors and omissions are my own.

[1] Comparative clauses and result clauses are also often considered to fall under the remit of *extraposition*. I put them to one side here as they introduce certain complications, but cf. Guéron & May (1984), Kayne (1994:126-8) for relevant discussion.

[2] As Baltin (2006) notes, despite their superficial similarities, there has been no successful attempt to unify heavy NP shift and extraposition. This may be because they are distinct phenomena.

[3] Result clause extraposition appears to be different in this respect, allowing much less local dependencies (cf. Culicover & Rochemont 1997).

[4] I use the term 'NP' here descriptively to refer to nominals in general. The reason I do not adopt the term DP, following Abney (1987), will become apparent in section 4. It will be proposed, building on a proposal by Bowers (1987), that the nominals which give rise to complement extraposition are structurally truncated NumPs, rather than full DPs.

[5] The CED holds reasonably robustly in English except for the fact that certain non-finite low adverbs permit subextraction (cf. Truswell 2011, Sheehan, in press). Cf. Sheehan (in press, 2010) for some complications in other languages, and an explanation for this variation based on linearisation.

[6] Rochemont & Culicover (1990:26) claim that extraposed material must be contained in the focus domain of an utterance in English, nonetheless, it is clearly not the case that all focused material must be extraposed.

[7] This objection also applies to Fox and Nissenbaum's (1999) approach (cf. Chomsky 2004: 121 for the same point). Göbbel (2006) proposes a PF-movement account, which overcomes this conceptual problem, taking up a suggestion put forth by Chomsky (2004). However, the fact that extraposition appears to interact with condition C and scope in various ways renders a PF-movement account problematic (cf. Sections 2.3.8, 3.4, 3.5).

[8] In actual fact, the placement of 'quickly' correlates with a difference in meaning, suggesting that this is not a matter merely of linearisation.

[9] Of course an explanation of why right-branching adjuncts pattern this way in English would still be necessary. (cf. Sheehan, in press, for one possibility).

[10] The same objection can also be raised to Koster's account, as long as the constraints on feature percolation remain obscure.

[11] I am assuming, following Chomsky (1995) and contra Kayne (1994), that the precedence relation exists only at the mapping to PF and not in the narrow syntax *per se*. As such, the notions 'leftward' and 'rightward' have relevance only at the point of linearisation. Kayne (to appear) argues against this position.

[12] This does not, however, preclude the possibility of left adjunction followed by phrasal movement of the modified phrase. This kind of approach to right adjunction requires an additional functional head to attract the modified XP to its specifier. Interestingly, this kind of approach makes similar empirical predictions to Koster's (2000) parallel construal account, which I come to in due course, and could almost be considered a notational variant of it. Cf. Sheehan (in press) for a different account of certain low transparent adjuncts.

[13] I return to the separate issue of word order in the next subsection.

[14] To be acceptable, examples like this require strong de-accenting of the extraposed relative clause.

[15] Kayne (1998: section 4.5) proposes a remnant movement approach to heavy NP shift, another pervasive rightward placement effect. It is not clear, however, whether Kayne intends this remnant movement analysis to supersede his earlier stranding account of RC extraposition (cf. McCloskey 1999 for related discussion).

[16] Rijkhoek (1998) proposes a similar analysis of extraposition. De Vries (1999, 2002) also proposes a version of the specifying co-ordination analysis whereby what is co-ordinated is a complete copy of the phrase to which the features of the source have percolated. Scattered deletion then applies, as follows:

(i) [$_{.P}$ [$_{VP}$ [*een man]* *gezien] : [$_{VP}$ [* ~~*een man*~~ *uit* *India]* ~~*gezien*~~*]]]* [Dutch]

a man seen a man from India seen

The major challenge facing De Vries' analysis is that of ensuring ellipsis/deletion of the unwanted material in the second conjunct. An empirical reason to favour Koster's analysis is that it explains the fact that only matching and not raising RCs can be extraposed. As Hulsey & Sauerland (2006: 117) show, RCs formed from idioms, which can only be formed by raising, resist extraposition:

(ii) *Mary praised the headway last year that John made.

This follows from Koster's account, as only matching RCs can enter into parallel construal (movement from one co-ordinate to another being banned). However, from De Vries' perspective, it remains unexplained. A more thorough comparison of the two approaches is beyond the scope of this paper.

[17] Koster (2000:22) further claims that non-extraposed RCs are also associated with a nominal host by parallel construal.

[18] A remaining question is why (i) is also ungrammatical, given that it seems to involve ellipsis of a VP subconstituent of a larger VP, something which is acceptable in (ii):

(i) *Although I **[$_{.P}$ [$_{VP}$ [$_{VP}$ saw an article] while browsing] : [which interested *me*]]**, you didn't [$_{.P}$ [$_{VP}$ **[$_{VP}$]** while searching] : [which interested *you*]

(ii) I [$_{VP}$ **[$_{VP}$ found an article]** while browsing] but you didn't [$_{VP}$ **[$_{VP}$]** while searching].

The difference might lie in the fact that the VP in (i) is the target of feature percolation, whereas that in (55) is not. I leave this matter for future research.

[19] A greater challenge comes from Cable's (2007, 2010) claim that pied-piping, hence feature percolation, does not exist.

[20] Interestingly, an anonymous reviewer remarks that he/she fails to get these judgements in Dutch, so that (i) is ungrammatical with co-reference.

(i) **Johan heeft haar$_i$ een boek gegeven waar Mary$_i$ om had gevraagd*

Johan has her a book given where Mary on had asked

'John gave her a book that Mary had asked for.' [Dutch, anonymous reviewer]

He/she also notes that Büring and Hartmann (1994) observe similar facts about German. This raises some problems for Koster's analysis. It is possible that, in such cases, there is a preference to co-ordinate the RC with the phrase containing only the direct object and verb, so that the indirect object still c-commands the RC. This is one further detail of Koster's analysis which requires further investigation.

[21] One possibility is that features can only percolate from a specifier position, as De Vries (2002) suggests. This restriction is not a general restriction on percolation, though, as in addition to the unmarked *whose picture* type of pied-piping, the *picture of who* type is also observed in natural languages, though, according to Cinque (2005), it is considerably more marked.

[22] Limiting percolation to a containing (vP or CP) phase is one promising possibility, which should be explored.

[23] Koster's account might ultimately account for the fact that an extraposed RC can have multiple antecedents (Perlmutter & Ross 1970:350):

(i) A man entered the room and a woman went out [who were quite similar]

As pointed out by an anonymous reviewer, examples such as (i), which are also discussed by Rochemont & Culicover (1990:38) are highly problematic for all analyses of extraposition based on movement. It is beyond the scope of this paper to explore how exactly these data would be accommodated under Koster's approach.

[24] Schütze (1995) takes examples like (60a-b) to be ungrammatical, but they seem only slightly marginal to me and far better than examples such as (59).

[25] Assuming 'student' to be an irregular '-er' nominal.

[26] Note that CENs allow subextraction even where the definite article is present. In this much they differ systematically from representational nouns such as book/picture/solution/request which display a specificity effect (cf. Fiengo & Higginbotham 1981, Davies & Dubinsky 2003). This is arguably connected to the fact that they cannot be pluralised or take the indefinite article, suggesting that their functional structure differs substantially from that of representational nouns. Zamparelli (2000:219) also discusses a number of nominals (so-called T(ransparent)-nominals which permit subextraction despite the presence of the definite article and have certain other curious properties.

[27] As Schütze (1995) notes, there are many potential confounding factors here, notably Bach & Horn's (1976) original objection to Chomksy (1970). Bach and Horn argued that subextraction from NP is impossible and that

all apparent counterexamples involve subextraction from a PP complement/modifier of V, as suggested by the pronominalisation in (i), and its optionality:

(i) He wrote (it) about economic instability.

However, the fact that the examples below do not allow it-pronominalisation, suggest that Bach and Horn's objection does not extend to them (cf. Schütze 1995: 111, Davies & Dubinsky 2003):

(ii) *I found it with this problem.

(iii) *I saw it of Mary.

[28] See Sheehan (in press) for an account of some apparent violations of the CED.

[29] An anonymous reviewer notes that the same contrast does not hold for him/her in Dutch, as the equivalents to both examples are equally bad. The data deserve some careful cross-linguistic investigation, which is reserved for future research.

[30] Note that if late merger is possible, then the extension condition no longer holds. Nonetheless, the assumptions that movement occurs as a last resort and Pesetsky's earliness principle independently serve to rule out rightward movement.

[31] Note that these examples improve substantially with pied-piping of the preposition:

(i) To which problem has a solution been found?

(ii) With which proposal has a problem been found?

[32] Büring & Hartmann (1997) also give examples from German which show that not all extraposed CPs are strong islands. See Biberauer & Sheehan (to appear) for an analysis of this fact in line with the general approach of this paper.

[33] I show the trace of the moved R-pronoun as pre-adpositional, as overt R-pronouns form postpositional phrases.

[34] A more problematic Dutch example, also from De Vries (2002: 259), is the following:

(i)	*Waar*	*is*	*hij*	*altijd*	*afhankelijk [t*	*van]*	*geweest?*	[Dutch]
	where	is	he	always	dependent	of	been	

(ii) **Waar is hij altijd afhankelijk geweest [t van]?*

The problem here is not that the extraposed PP resists subextraction, this also holds of many extraposed PPs in English, presumably for prosodic reasons. The problem, rather, is that a post-head complement PP allows subextraction when in a preverbal position.

[35] Thanks to Wim van der Wurff for judgments and discussion of the Dutch data. To clarify slightly, while there is a clear contrast in acceptability here, extraction here appears to be stylistically marked, associated with an echo reading.

[36] An anonymous reviewer finds (90b) unacceptable. This variation requires further investigation. Note, however, that additional factors can rule out subextraction from extraposed clauses.

[37] This approach, of course, faces the usual objections to Larsonian transformational approaches to ditransitive alternations (cf. Harley 2002). Whether the dative and double object alternation is base generated or derived by movement, the fact remains that to allow for the condition C effects described by Guéron, there must be a copy of DP c-commanded by a copy of PP in dative ditransitives, despite the fact that the opposite c-command relations hold at surface structure.

[38] Fox & Nissenbaum (1999) claim that extraposition of adjunct PPs bleeds condition C. I and my informants do not (unfortunately) share these intuitions. This departure is problematic for me as nothing prevents reduced relative clauses from being extraposed via parallel construal. I abstract away from these complications here.

[39] Similar patterns obtain with A-bar movement, with certain complications. I omit a discussion of these data for reasons of space.

[40] While this claim is often assimilated to Chomsky's notion of phasal spell-out, it is actually rather different in nature as Uriagereka's 'phases' are always specifiers, rather than complements.

[41] Huang's CED is actually stated in terms of government and as such the predictions it makes are more nuanced than those presented here, and open to cross-linguistic variation.

(i) Condition on Extraction Domain (Huang 1982:505)

A phrase A may be extracted out of a domain B only if B is properly governed.

[42] Where path is defined as a sequence of nodes (N1, N2, …, N*k*) such that $Y=N_1$, $X=N_k$ (Wilder 2008).

[43] As Sheehan (2010) notes, it is not clear that the copy theory of labelling is compatible with node-based or derivational definitions of c-command. As the category-based definition has considerable empirical coverage,

much of which was outlined by Kayne (1994), it is worthy of consideration in the hope of an ultimate reduction/unification with minimalist tenets.

[44] As Sheehan (2010) points out, if we attempt to linearise the structure without copy deletion, then linear order is underspecified.

[45] An anonymous reviewer points out that scattered deletion of this kind involves deletion of a non-constituent, something which is standardly assumed to be banned. The proposal is that it is not in fact banned, but rather dispreferred. It is only in contexts where it is required as a last resort that this kind of deletion is permitted.

[46] I am glossing over the structure of the nominal here, but return to it shortly in Section 5.4.

[47] Guéron (1980: 668) claims that this effect is due to Focus, and claims that PP extraposition from externally merged specifiers is also possible, where the predicate they combine with has the meaning of a verb of appearance. She gives the following examples:

(i) A book is making the rounds by Chomsky.

(ii) (??)A book has hit the newsstand by Chomksy.

Example (ii) is marginal at best to my ears, but (i) is more acceptable. It is possible that this example is formed by parallel construal and that *by Chomsky* is not a complement. This is supported by the fact that extraction of or from PP in such contexts is marginal at best:

(iii) *By who(m) is a book making the rounds?

(iv) *Who is a book making the rounds by?

[48] This means that the nominals in question cannot be DPs, with D being the highest projecting head, otherwise we would expect the following scattered deletion pattern:

(i) *A has appeared picture.

This raises the question of the status of the indefinite article, to which I return in section 5.4. Until then, assume that it occupies spec NP.

[49] Akmajian (1975:125) also discusses a class of apparent exceptions to this rule:

(i) A number of pictures have been taken of John

(ii) *A number have/has been taken of pictures of John.

It appears, however, from agreement patterns, that these pseudo-partitive constructions (Jackendoff 1977, van Riemsdijk 1998 *inter alia*) are not projections of the first (semi-functional) noun, but of the second (lexical)

noun. As such, the stranding facts are as expected if *a number* is actually a specifier akin to *several*. If this is the case then *of* must be a Case-inflection rather than a syntactic head.

[50] I am simplifying matters, notably the fact that pre-nominal adjectives are possible, for reasons of space. See Sheehan (2009a) for a scattered deletion account of these complications.

[51] cf. Perlmutter (1970) for strong arguments that *a* is a reduced form of the numeral *one*.

[52] It might be asked, at this point, what supports this position as opposed to the opposite claim. Why is not the case, for example, that NumP is a phase, hence allows subextraction, whereas DP is not, hence does not The answer to this is given in Chomsky (1973:105), where it is observed that while indefinite NumPs permit subextraction, they do not permit cyclic subextraction:

(i) *Who did you hear [stories about [a picture of t]]

For this reason, the opposite stance whereby NumP is simply not a phase appears preferable.

[53] We limit the discussion to representational nominals here, aware that different nominals behave differently with respect to both subextraction and stranding. Zamparelli (2000) discusses a category of T(ransparent)-definites which permit subextraction even where definite. I leave a full consideration of other classes of DPs to future research but return to some relevant problems in section 5.6.

[54] The fact that D triggers atomisation of DP remains an empirically motivated stipulation based on the observation that DPs are strong islands regardless of their geometric position. The crucial point for our purposes is that specific DPs are not susceptible either to subextraction or to complement extraposition, and the account provided seeks to link these two properties in an explanatory way, deriving them from facts about linearisation.

[55] This raises the question why VP does not strand its complement when topicalised. This is arguably because VP, as a phase, is independently atomised before it moves. Sheehan (2010) discusses other cases where scattered deletion fails to apply as well instances where it appears to be obligatory. She argues that obligatory scattered deletion offers an explanation for Biberauer, Holmberg & Robert's (2010) Final-Over-Final Constraint.