1 Introduction

Determiner sharing and non-constituent coordination are two relatively old, but relatively uninvestigated phenomena, especially within mainstream generative syntax. The peculiarity of both phenomena has led to a number of interesting, but not entirely satisfactory, accounts; to date, no real account of determiner sharing exists, and the best accounts of non-constituent coordination come from the categorial theories. In this paper I will attempt to give an account of both that relies on nothing more than fairly run-of-the-mill technology that exists within mainstream syntactic theory.

2 Determiner Sharing

Determiner sharing, first investigated by McCawley (1993) and then investigated most recently by Citko (2006) and Johnson (2000), is the phenomenon where a seemingly missing determiner is interpreted as if it were an occurrence of another determiner present in the expression. Examples are more enlightening than words:

(1) The duck was dry, and mussels tough, but the buffet was a hit nonetheless

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1 Some determiners are less acceptable to some speakers. There does not seem to be anything systematic in this variation, but this could be simply a lack of sufficient data. Since the amount of data required to properly discover significant patterns is not currently available, I will not attempt to account for any variation among speakers’ acceptability judgements. This extends to the more general versions of sharing discussed in this section — variation does not occur just with which determiner is shared, but where it is sharing, etc. All English judgements are my own. Your mileage may vary.
(2) Most dogs love Alpo, and cats Whiskas\(^2\)

(3) Some girls wore hats, and boys scarves

Speakers of dialects of English that allow these sentences interpret them to mean the following (italicizing the inserted words for clarity):

(4) The duck was dry, and *the* mussels *were* tough, but the buffet was a hit nonetheless

(5) Most dogs love Alpo, and *most cats love* Whiskas

(6) Some girls wore hats, and *some boys wore* scarves

The obvious solution would be to say it is possible to do some form of determiner head ellipsis under identity with another determiner head in the expression, but it is not just the determiner that can elide but entire chunks of the DP, as shown in (7). To make matters worse, in English, it is impossible to determiner share unless the verb has also gapped, as shown in (8).

(7) Every hairless dog loves Alpo, and *cat Whiskas*

(8) Some dogs love Alpo, and *cats love Whiskas*

In example (7), the only available interpretation is one in which every hairless cat loves Whiskas, and in (8), the only interpretation is where cats in general love Whiskas.

Also observe that this must be gapping proper, not pseudogapping (where gapping-proper prohibits a second overt T head, and pseudogapping requires one). In (9), we can see that a pseudogapped version of (2) only have the cats-in-general reading.

(9) Most dogs will love Alpo, and cats will Whiskas

A further confound is that determiner sharing only seems to occur between (almost) identical positions within coordinated structures. In the above examples we only have sharing of subject determiners, but determiners of direct objects can share (as in (10), and determiners of prepositional objects can share (as in (11)), and yet not possible to have a subject determiner share down to a missing object determiner (as in (12)), nor the reverse (as in (13)).

\(^2\)For those readers who are unfamiliar with American pet products, Alpo and Whiskas are brands of dog food and cat food, respectively.
(10) John met the boys, and Susan girls

(11) John spoke with the boys, and Susan girls

(12) *The dog chased a rabbit, and the cat mouse
(to mean “The dog chased a rabbit, and the cat chased the mouse”)

(13) *The dog chased a rabbit, and cat the mouse
(to mean “The dog chased a rabbit, and a cat chased the mouse”)

Note that in (11), the preposition has also vanished, and indeed must, as (14) shows. This will fall out naturally in the account proposed later.

(14) John spoke with the boys, and Susan with girls
(only means “… and Susan spoke with some girls or other”)

English is not the only the only language to allow determiner sharing — Polish, among other languages, allows it. As noted by Citko (2006), Polish in particular provides an interesting extra data point that is not available in English: The second verb does not need to delete if it is distinct from the first. In (15) we can see the now routine version of determiner sharing, and in (16) a case where the second verb is not deleted (with (17) for contrast).

(15) Mało psów je Whiskas a kotów Alpo
      Few dogs eat Whiskas and cats Alpo
      Few dogs eat Whiskas and few cats eat Alpo

(16) Mało psów pije wodę a kotów je tuńczyka
      Few dogs drink water and cats tuna
      Few dogs drink water and few cats eat tuna

(17) *Few dogs drink water, and cats eat tuna (to mean “few cats”)

This possibility in Polish will also fall out as natural in the account that will be given.

In summary, D-sharing has the following properties that will need to be addressed by the current account:

1. Determiner sharing can share adjectives (and other nominal modifiers) along with determiners;

2. Determiner sharing is only possible in sentences that have gapped verbs, or, as in Polish, if the non-gapped verb is different than the verb in the other coordinated phrase;
3. Determiner sharing can only share between like positions (subject $D$ to subject $D$, object $D$ to object $D$, etc.);

4. Determiner sharing cannot occur with an overt $T$ in the right coordinated phrase (i.e. only gapping, not pseudogapping, licenses D-sharing);

5. Determiner sharing between objects of prepositions can only occur if the preposition is shared as well.

The account that I will give is roughly as follows: Non-shared elements of one coordinand move to the edge of their coordinand, after which the coordinand is elided. The account relies crucially on the non-shared elements being strandable, as well as the coordinand being elidable.

### 2.1 Gapping-as-Ellipsis

The proposal I will make for accounting for D-Sharing is an extension of the analysis of gapping as a case of ellipsis. This analysis of gapping, due to Coppock (2001), views gapping as a combination of two processes: first, contrasted arguments to the verb are raised to the edge of the $vP$ (or some projection around the $vP$), and then the lower portion of the $vP$ is elided. For example, the sentence *John ate a hamburger and Susan a hotdog* would be given the following (partial) derivation: the two $vP$'s are constructed in the obvious manner (18), raising of the contrasted elements applies to the right $vP$ (19), the $vP$'s are conjoined (20), eliding the boxed $vP$ at some point during the derivation, and the rest of the $TP$ is constructed, raising the left $vP$'s subject to the specifier position of the $TP$ (21). All traces are merely a space-saving convenience — if the copy theory of movement is desired, simply pretend the traces are copies.

(18)
(19) vP DP John v′ v VP V0 v V DP ate t0 a hamburger

(20) vP DP2 Susan vP DP3 a hotdog DP v′ t2 VP v V1 v V DP ate t1 t3
2.2 A Gapping-as-Ellipsis Account of D-Sharing

The gapping-as-ellipsis account of D-sharing is identical to normal gapping\(^3\), except that an NP raises instead of the DP that contains it. For instance, in generating (1), each vP is constructed (22), the right subject NP and the right AdjP raise to the edge of the right vP (23), the vPs are conjoined (24), eliding the boxed vP at some point, and the rest of the TP is constructed, raising the left vP’s subject (25).

\(^3\)If gapping-as-ellipsis is not desirable, the above operation of deletion could be seen as distinct from ellipsis. However, as discussed later, the main points against an analysis of gapping as ellipsis are in fact not a problem for Coppock-style gapping-as-ellipsis.
The duck was dry.

The mussels were tough.

The mussels were tough.
the duck was dry and 2 mussels were tough.
D-sharing of more than just the determiner, as in (7), is similarly easy:

(26)
(29)
For D-sharing in object position, as in (10), we have:

(30)
(31) 

(32)
John and the boys met the girls.

(33)
Prepositional object D-sharing as in (11), which shares the preposition as well, falls out similarly:

(34)
John spoke with the boys

Susan spoke with the girls

NP3 girls

John spoke with the boys

(35)

(36)
John spoke with the boys and Susan spoke with the girls.

(37)
The case of Polish D-sharing in (16) that allows a second distinct verb in the right \( vP \) would be the same as English D-sharing, but with extra head movement of the complex \( v \) head to the edge of \( vP \) as well:

(38)
(39)

(40)
mało psów pije wodę

& a

kotów je tuńczyka

&D D mało 'few'

(41)
Polish gapping constructions already permit this lack of actual gapping provided the second verb is contrastive, so it is no surprise that in D-sharing constructions this property is preserved. This last case of D-sharing in Polish does not carry over to English, which can perhaps be attributed to a parametric difference between the two languages. The precise difference is not relevant at this time, however, and so shall not be addressed in this paper, but I think it is safe to speculate that it is intimately connected to the relatively free word order of Polish, and how that interacts with focus.

It is clear from this account that the first of the five properties of D-sharing — that it can share adjectives along with determiners — falls out
from this account because the process can strand adjectives in the deleted *vP*. The second property — that it can only occur if the verb gaps (or is distinct, as in Polish) — also falls out from this account, since D-sharing is nothing more than a special kind of gapping. The third property — that sharing only occurs between like positions — also falls out because gapping can only occur between structurally similar *vP*’s, and if the underlying *vP*’s had different determiners in, say, subject position, they would fail to be similar enough for gapping to occur. The fifth property — that prepositions must share if the determiners of their objects share — falls out from the fact that the preposition is stranded in the deleted *vP* during the contrastive movement of the *NP* to the edge of that *vP*.

The fourth property — gapping cannot occur with an overt *T* in the right coordinated phrase — falls out in two distinct ways. The first is that if this indeed just gapping-as-ellipsis, as I am assuming, then a language that has only VP ellipsis, such as English, must coordinate VPs beneath a single *T* head. The second is that languages with TP ellipsis will elide a remnant TP, instead of a remnant VP, and so the second *T* head will be deleted. If this is correct, then we should expect to get NPIs or concordant elements showing up in different places depending on the language’s ellipsis sites. I will return to this point later, as it is related to the gapping-as-ellipsis analysis more generally, not just the analysis of determiner sharing.

In view of the fifth property, this account makes a prediction: languages that cannot strand prepositions cannot D-share the determiners of prepositional objects. German and Finnish both allow D-sharing, but disallow it in prepositional object position entirely, even when the preposition is shared, as shown below. It is also no surprise that German and Finnish both disallow P-stranding.

(42) Die meisten Hunde lieben Alpo und Katzen Whiskas
    Most dogs love Alpo and cats Whiskas
    “Most dogs love Alpo and most cats love Whiskas” *(German)*

(43) John hat mit den Jungen gesprochen und Susan mit den
    John has with the boys spoken and Susan with the
    Mädchen
    girls
    “John has spoken with the boys and Susan with the girls”
    *(only gapping)*

(44) *John hat mit den Jungen gesprochen und Susan den Mädchen
    John has with the boys spoken and Susan the girls
“John has spoken with the boys and Susan the girls”

(only P sharing)

(45) * John hat mit den Jungen gesprochen und Susan mit Mädchen
   John has with the boys spoken and Susan with girls
   “John has spoken with the boys and Susan with girls”
   (only D sharing)

(46) * John hat mit den Jungen gesprochen und Susan Mädchen
   John has with the boys spoken and Susan girls
   “John has spoken with the boys and Susan girls”
   (P sharing and D sharing)

(47) Useimmat koirat rakastavat Alpoa ja kissat Whiskasia
    most dogs love Alpo and cats Whiskas
    “Most dogs love Alpo and most cats love Whiskas” (Finnish)

(48) John joi kahvia kaikkien poikien kanssa ja Susan kaikkien
    John drank coffee every boys with and Susan every
    tyttöjen kanssa
    girls with
    “John drank coffee with all of the boys and Susan drank coffee with
    all of the girls”
    (only gapping)

(49) * John joi kahvia kaikkien poikien kanssa ja Susan kaikkien
    John drank coffee every boys with and Susan every
    tyttöjen
    girls
    “John drank coffee with all of the boys and Susan with all of the
    girls”
    (only P sharing)

(50) * John joi kahvia kaikkien poikien kanssa ja Susan tyttöjen
    John drank coffee every boys with and Susan girls
    kanssa
    with
    “John drank coffee with all of the boys and Susan with all of the
    girls”
    (only D sharing)
(51) *John joi kahvia kaikkien poikien kanssa ja Susan tyttöjen
John drank coffee every boys with and Susan girls
“John drank coffee with all of the boys and Susan with all of the girls”

(P sharing and D sharing)

(45) and (50) are both bad with the definite reading of girls, but good with the generic reading of girls (where no D-sharing would occur). The other starred examples are simply unacceptable and have no interpretation.

Some languages, such as Quebecois (52), Spanish (53), Japanese (54), and Chinese (55) simply prohibit D-sharing entirely, despite having gapping and TP ellipsis.

(52) *Plusieurs chiens aiment l’Alpo et chats le Whiskas
many dogs love the-Alpo and cats the Whiskas
“Many dogs love Alpo and cats Whiskas”

(53) *Muchos perros comen Alpo y gatos Whiskas
many dogs eat alpo and cats whiskas
“Many dog eat Alpo and cats Whiskas”

(54) *Inu ga Alpo wo tabe-ru soshite hotondo no neko ga
dog NOM Alpo ACC eat-PRES and most GEN cat NOM
Whiskas wo tabe-ru
Whiskas ACC eat-PRES
“Most dogs eat Alpo and most cats eat Whiskas”

(55) *Daduoshu gou chi Alpo, mao chi Whiskas
most dog eat Alpo, cat eat Whiskas
“Most dogs eat Alpo, (and) most cats eat Whiskas”

These languages lack P-stranding, and it would not be much of an extension of the theory to say that they also lack D-stranding. As with the contrast between English and Polish, this could plausibly be a parametric variation. Again, I will not address the issue in this paper, this time primarily because the conditions on what can and cannot be stranded are poorly understood at best, but there is some evidence suggesting this is the right analysis of the contrast. Within the semantics literature, there is a phenomenon called “D-sharing” that is superficially distinct from syntactic D-sharing discussed here. Semantic D-sharing occurs when what appears to be an NP can coordinate under a single determiner and yield distinct referents: (56) has two
distinct readings, one where there is a single person who is both mayor and chief of police, and another where there are two people.

\[(56)\] the mayor and chief of police

\[(57)\] *le maire et chef de police

The Quebecois translation of this DP — (57) — has only one reading: there is one person who has two roles, that of mayor and that of chief of police. Gagnon (p.c.) observed that this might relate directly to syntactic D-sharing, and the analysis of (56) would look like (58).

\[(58)\]

\[
\begin{array}{c}
\&P \\
\text{DP} & \&' \\
\text{D} & \& \\
\text{NP} & \text{NP} \\
\text{the mayor} & \text{chief of police} \\
\& & \text{the}  \\
\end{array}
\]

If the analysis of the contrast between English and Quebecois is correct, then this would suggest that only languages with "semantic" D-sharing can undergo syntactic D-sharing and vice versa, because they are in fact one and the same process.\(^4\)

3 Non-constituent Coordination (NCC)

Non-constituent coordination is exactly what it sounds like: the coordination of two pairs of elements which do not form a constituent in standardly assumed structures. Prototypical examples involve ditransitive sentences, as in (59), where two objects are coordinated, and transitive sentences with

\(^4\)It also, of course necessitates ellipsis of a DP. This is potentially a problem for an account of semantic D-sharing, because English does not have DP ellipsis in general. However, there might be constraints on DP ellipsis that are normally not possible, but in these local coordinated settings are satisfied.
prepositional adverbial modifiers, as in (60), where an object and modifier are coordinated.

(59) John gave Susan a book and Michael a magazine

(60) John saw Susan on Monday and Michael on Tuesday

In non-binary trees for ditransitive sentences, it is common for the two objects to be sisters within the VP, and in non-binary trees for sentences with PP adverbial modifiers, it is similarly common for the PP to be sister to the object. In binary trees, both objects (or the object and preposition) would be sisters to projections of the verb. Such VP trees are given abstractly in (61) and (62).

\[
\begin{aligned}
(61) & \quad \text{VP} \\
& \quad \text{V} \\
& \quad \text{DP} \\
& \quad \text{DP} \\
\end{aligned}
\quad \quad \quad
\begin{aligned}
(62) & \quad \text{VP} \\
& \quad \text{V} \\
& \quad \text{DP} \\
& \quad \text{PP} \\
\end{aligned}
\]

A possible way to account for these forms of NCC is by some form of across-the-board movement of the verb out of two conjoined VPs. Using the binary tree for the ditransitive case, would coordinate as in (63). The PP adverbial case would be similar in the obvious way.

(63)
Alternatively, and perhaps the currently most assumed analysis, is with some sort of small clause. For ditransitives, the small clause is in fact just a lower VP shell (as in (64)), as in Larson (1988). For the PP case, it is either a proper small clause (as in (65)), or, under again Larson (1988)’s analysis of adverbial modifiers, also a VP shell (swap a PP for the lower DP in (64)).

\[(64)\]

\[5\] It should be pointed out that the shell analyses themselves are not the issue, but rather the use of ATB for NCC, due to the NCC-PSC facts which follow.
3.1 Non-constituent Coordination with Partial Sub-constituents (NCC-PSC)

A interesting sub-case of NCC, discussed first by Dowty (1988) (who used categorial grammar), and then, to my knowledge, for the last time ever, by Pesetsky (1995) in a more mainstream framework, involves two constituents being conjoined which are not sisters in non-binary-branching phrase structures, and not both sisters to projections of the verb in binary trees. In the sentence in (66), we conjoin a prepositional object with a PP, using only one
preposition for both prepositional objects.

(66) John met with Susan on Monday and Michael on Tuesday

These pose problems for extending the existing accounts of NCC. One possible account for this sort of construction using ATB could employ head-movement of the preposition to adjoin with the verb, as in (67), as a sort of reanalysis prior to ATB of the verb. Alternatively, the preposition could similarly ATB out of the VP as in (68). The obvious variations on this theme of ATB would be employed in the VP shell/small clause analyses.

(67)

(68)
These two solutions are somewhat exotic, and of course require postulating these destinations for ATB movement that do not have any motivation other than to permit this construction\(^6\).

The analysis given by Pesetsky avoids the new higher constituents, but instead uses PP shells (and multiple dominance for right-edge PP adjuncts), as shown in (69).

\[(69)\]

\(^6\)The destination of verb ATB could plausibly be v, assuming that the PPs are adjoined to VP and not vP, removing the need to postulate a new target for verb ATB.
Pesetsky’s approach is somewhat less exotic — the odd PP shell structures are similar enough to more conventional small clauses, but it still raises the same questions about linearization that any account employing multiple dominance raises. Even if those questions have reasonable answers, it is not clear how the semantics of such trees can be calculated.\(^7\)

A substantial problem for these approach, however, is that it cannot account for sentences such as (70), where the coordinated items are both subconstituents.

(70) John met with Susan on Monday and Michael Tuesday

In light of the discussion of D-sharing, however, NCC-PSC has an obvious identical solution, as shown abstractly in (71) for the PP adverbial case.\(^8\) In

\(^7\)Perhaps even more problematic, from a purely syntactic perspective, is how Principle A interacts with these structures. A sentence like John spoke to Susan about herself should have the structure in (1), but this would be ruled in by Principle A, while (2) would be ruled out. The facts are, of course, the exact opposite.

\(^8\)I am assuming that everything that is not common to both the highest VPs is shared by being moved. It is also possible that only the lowest VP is elided, in which case there is only one movement — of the non-shared DP. I do not think there is reason to think that either is preferable, at this time, and so I am using the one that seems most parallel to D-sharing.
this view, this phenomenon is not non-constituent coordination, as such, but rather P-sharing.

\[(71)\]

Applying this approach to (66), we have the following derivation:

\[(72)\]
John met Susan with on Monday.

John met Michael with on Tuesday.
vP
  vP  PP
  vP  on Monday
 DP   P   DP
 John  with  Susan
  v  v  v
 VP   VP   VP
  V0  t0  met
Michael met John with on Tuesday.
John met with Susan on Monday and Michael on Tuesday.

(75)
The problematic case in (70) now has a trivially different derivation:

(76)
(77)
John met with Susan on Monday.
(78)
This proposal has the benefit of using existing technology for contrastive focus, which such constructions plausibly have, as well as the benefit of making a strong prediction: only languages with P stranding will allow NCC-
PSC. What we find looking at other languages is that this is exactly correct: English and Norwegian both have P-stranding, and permit NCC-PSC, while German, Finnish, Quebecois, and Spanish lack P-stranding and also prohibit NCC-PSC.

(80) Jon snakket med Susan på tirsdag og Stephen på onsdag
    Jon talked with Susan on Tuesday and Stephen on Wednesday
    “Jon talked with Susan on Tuesday and with Stephen on Wednesday”

(81) *John redete am Dienstag mit Susan und am Mittwoch
    John talked on Tuesday with Susan and on Wednesday
    Stephen
    Stephen
    “John talked with Susan on Tuesday and Stephen on Wednesday”

(82) *John juonut kahvia ilman maitoa keskiviikkoisin ja sokeria
    John drank coffee without milk on Wednesday and sugar
    torstaisin
    on Thursday
    “John drank coffee without milk on Wednesday and sugar on Thursday”

(83) *Juan habló con Susana el martes y Esteban el miércoles
    Juan spoke with Susana the Tuesday and Esteban the Wednesday
    “Juan spoke with Susana on Tuesday and with Esteban on Wednesday”

(84) *Jean a mis un livre sur la table Mardi et le bureau
    Jean has put a book on the table Tuesday and the desk
    Mercredi
    Wednesday
    “Jean (has) put a book on the table Tuesday and the desk Wednesday”

3.2 Expanding the Account to NCC in General

The contrastive focus properties of NCC-PSC are plausibly the same as in the normal sorts of non-constituent coordination that this section started with, and so a tempting extension of this approach is to capture those cases
with a gapping account as well. Doing so, the normal PP adverbial case of non-constituent coordination in (60) can be captured with the following structure (minus the by-now painfully obvious derivation):

(85)
In languages like Quebecois, which lack VP ellipsis, there is still non-constituent coordination of this sort, but this is not a problem, because in place of it there is TP ellipsis: focal movement at the TP level and followed by ellipsis of a coordinated TP, as in (86) will yield the same gapping effect.

(86)
Jean 'Jean' a 'has'

Mardi 'Tuesday'

Mercredi 'Wednesday'

du 'a'

un livre 'book'

la table 'table'

sur 'on'

un livre 'book'

la table 'table'

TP

DP

Jean 'Jean'

T

a 'has'

vP

vP

T'

et 'and'

vP

vP

v

v

V

mis 'put'

V

mis 'put'

V

t₀

D

NP

un 'a'

livre 'book'

D

NP

la 'the'

table 'table'

P

sur 'on'

P

sur 'on'

PP

PP

V'

V'

V

V

t₀

t₀

t₁

t₁

tₖ

T

T'

a 'has'

vP

vP

v'

v'

DP

la 'the'

bureau 'bureau'

DP

le 'the'

bureau 'bureau'

DP

Jean 'Jean'

DP

un livre 'book'

DP

un livre 'book'

NP

le

NP

le
4 Gapping More Generally

The final proposal to be made is that these mechanisms — focal movement followed by ellipsis — are the general mechanisms for gapping cross linguistically, and that just ellipsis is responsible for pseudogapping. In this section I will attempt to address Johnson’s critiques of this analysis. I will also discuss categorial approaches to these phenomena, as they have provided some of the best and most natural accounts of non-constituent coordination to date, and so rejecting them is not a simple matter.

4.1 Coordination Site

The question of where coordination is taking place in gapped sentences (and thus in D-sharing, NCC, and NCC-PSC) is difficult to answer, partly because there are a number of sites that could produce very similar results. Initially, one might be tempted to use NPI licensing to show that in English, coordination must be low — if an NPI can be licensed in both coordinands, the coordination must be below negation, and in English that means somewhere around VP, shown abstractly in (87). This will not work, however, because high coordination that results in the ellipsis of a second negative element will produce the same result, shown abstractly in (88).

\[(87) \quad \ldots \text{not } [\ldots \text{NPI } \ldots] \text{ and } [\ldots \text{NPI } \ldots]\]

\[(88) \quad [\ldots \text{not } [\ldots \text{NPI } \ldots]] \text{ and } [[\ldots \text{NPI } \ldots] \not\text{not}]\]

English does, however, have negative concord coordinators, such as nor, which cannot be used above the scope of negation, as shown in (89).

\[(89) \quad *\text{John does not like cappuccino nor Susan does not like caffe latte}\]

Such examples are good, however, with gapping, as shown in (90).\footnote{They are also good with “negative inversion” and a missing second negation, as in (1), suggesting that these negative inversion cases are actually low adverbial clauses.}

(1) John does not like cappuccino nor does Susan like caffe latte

Notice, though, that negative inversion of this sort prohibits D-sharing:

(2) Most dogs do not like Alpo, nor do cats like Whiskas

(3) Most dogs do not like Alpo, nor do cats Whiskas

These sentences only have the reading that cats in general dislike Whiskas, which is expected if low coordination gapping, not pseudogapping, is required for English D-sharing.
(90) John does not like cappuccino nor Susan caffe latte

With D-sharing, NCC, and NCC-PSC, we find that nor is indeed licensed, and so the coordination must be below negation. In the D-sharing cases, the missing determiner is interpreted, perhaps oddly, as the negative equivalent of the overt determiner (e.g. few when the overt determiner is most).

(91) Most dogs do not like Alpo, nor cats Whiskas

(92) John did not go to New York on Tuesday, nor to Chicago on Wednesday

(93) John did not go to New York on Tuesday, nor Chicago on Wednesday

!!!! to add – quebecois nor data from michaêl

4.2 Responding to Johnson’s Critique

Johnson (2009)’s critique of the gapping-as-ellipsis approach centers around the unacceptability of sentences in which gapping occurs in in a subordinated clause, as in (94). As Johnson points out, this sentence can only have the same interpretation as (95), where the subject has reported both that Peter ate his peas and that Sally ate her greens. It cannot receive the same interpretation as (96), where the subject has reported that Peter ate his peas, and the speaker is asserting that Sally ate her greens.

(94) *She’s told me that Peter has eaten his peas, and Sally her green beans, so now we can have dessert.

(95) She’s told me that Peter has eaten his peas, and she’s told me that Sally her green beans, so now we can have dessert.

(96) She’s told me that Peter has eaten his peas, and Sally has eaten her green beans, so now we can have dessert.

This sentence, Johnson argues, should be possible under the gapping-as-ellipsis approach because the non-elided elements can move to the edge of the vP and the vP can then elide under identity with an antecedent, as in the partial tree in (97).
In fact, a more general critique could be levied against the gapping-as-ellipsis approach. As observed by Jackendoff (1971), trying to do gapping in most of the typical environments that VP ellipsis is usually found yields unacceptability, as shown in (98).

(98)  

a. *John will see Susan before Stephen Michael  
b. John will see Susan before Stephen does  
c. *Because Pavarotti couldn’t sing the aria, they asked Domingo the recitative  
d. Because Pavarotti couldn’t sing the aria, they asked Domingo to  
e. *Because Pavarotti the aria, Domingo sings the recitative
f. Because Pavarotti does, Domingo sings the recitative (too)
g. *If John drinks coffee, then Susan tea
h. If John drinks coffee, then Susan does
i. *Whenever John drinks coffee, Susan tea
j. Whenever John drinks coffee, Susan does (too)
k. *Whenever John coffee, Susan drinks tea
l. Whenever John does, Susan drinks tea (too)

All of the gapping examples are unacceptable, and therefore, the reasoning goes, gapping cannot be ellipsis because it has a considerably constrained environment. However, there is a simply answer to this: it is not the ellipsis that is problematic in these sentences, but rather the focal movement. A simple constraint on focal movement can be given:

*Phrases can only move for contrastive focus if the phrase that they move to the edge of is coordinated with another phrase, and the moved phrases are the only differences in the coordinated phrases.*

This constraint, which seems quite natural, makes it obvious why the base sentences in (98) are bad: the lower VP, which the contrasted phrases move to the edge of, is not coordinated with its antecedent VP. Consequently, the focal movement is simply unlicensed, and so these sentences are bad.

### 4.3 Categorial Coordinations

Categorial accounts of gapping range from incredibly beautiful to incredibly awkward, depending on the language being analyzed. Consider, for example, the Japanese sentence in (99), which comes from Steedman (2000).

(99) Ken ga Naomi wo Erika ga Sara wo tazuneta
     Ken NOM Naomi ACC Erika NOM Sara ACC visited
     “Ken visited Naomi, and Erika visited Sara”

The analysis given for this sentence is a straight forward use of function composition:

(100)
Attempting to do gapping in the right conjunct instead of the left conjunct will fail because it is no longer possible to coordinate the two subject-object nonstandard constituents. And indeed, this is how Japanese behaves: only the verb in the left conjunct can gap, as can be seen in (101). The exact mirror of this situation obtains in Irish as well, as seen in (102) and (103).

(101) *Ken ga Naomi wo tazuneta

"Ken visited Naomi, and Erika visited Sara"

(102) Chonaic Eoghan Siobhán agus Eoghnaí Ciarán

"Eoghan saw Siobhán and Eoghnaí saw Ciarán"

(103) *Eoghan Siobhán agus Eoghnaí Ciarán chonaic

"Eoghan saw Siobhán and Eoghnaí saw Ciarán"

The categorial approach therefore looks exceedingly good so far. Japanese and Irish are both similar in that the verb is on the edge of its arguments, not nestled between them, and this is the key to the whole analysis. For a language like English, however, where verbs are between their arguments, no simple analysis of gapping exists. Steedman is forced to introduce an operation that is the inverse of function application called decomposition, given in leftward form in (104).

(104) \[ \frac{X}{Y} \frac{Y}{X} \]

Thus, for a sentence like (105), we have a proof like (106).
This decomposition operation effectively “unapplies” a function term to produce something at the type level which is identical to the Irish case. To give a semantic interpretation to this, some extra work has to be done. Augmenting the proof now with semantic forms as well, we have

\[
\begin{align*}
\text{(107)} & & \text{Dexter eats bread} & & \text{Warren} & & \text{potatoes} \\
\quad & & \vdots & & \quad \vdots & & \quad \vdots \\
\quad & & S & & \langle T \ S\backslash((S/NP)/NP) \rangle & & \langle T \ S\backslash((S/NP)/NP) \rangle & & \langle T \ S\backslash((S/NP)/NP) \rangle \\
\theta (\text{eats bread dexter}) = \text{eats} & & \lambda f \rightarrow \text{eats bread dexter} & & \lambda g \rightarrow g \text{warren} & & \lambda h \rightarrow h \text{potatoes} & & \langle T \ S\backslash((S/NP)/NP) \rangle \langle T \ S\backslash((S/NP)/NP) \rangle \langle T \ S\backslash((S/NP)/NP) \rangle & & \langle T \ S\backslash((S/NP)/NP) \rangle \langle T \ S\backslash((S/NP)/NP) \rangle \langle T \ S\backslash((S/NP)/NP) \rangle & & \langle T \ S\backslash((S/NP)/NP) \rangle \langle T \ S\backslash((S/NP)/NP) \rangle \langle T \ S\backslash((S/NP)/NP) \rangle \\
\text{eats bread dexter} & & \lambda f \rightarrow \text{eats bread dexter} & & \lambda f \rightarrow h \text{potatoes} & & \langle T \ S\backslash((S/NP)/NP) \rangle \\
\quad & & \vdots & & \quad & & \quad \\
\text{eats bread dexter} & & \lambda f \rightarrow \text{eats bread dexter} & & \lambda f \rightarrow h \text{potatoes} & & \langle T \ S\backslash((S/NP)/NP) \rangle & & \langle T \ S\backslash((S/NP)/NP) \rangle & & \langle T \ S\backslash((S/NP)/NP) \rangle
\end{align*}
\]

Alongside the decomposition operation, it is also necessary to introduce this \(\theta\) function in the semantics, which takes the semantics of the decomposed element, and extracts precise that item which is needed for gapping. Implicit in this operation is the idea that the semantics is some sort of logical representation, not truth values sets of worlds, or anything of that sort, because there is no way to go back from those objects to the function \(\text{eats}\). What is not clear from Steedman’s account, however, is how the function knows precisely which verb to extract — Steedman simply says it’s an anaphor, but then it should not display any of strong syntactic requirements on the position of the “antecedent”.

For this sort of account to be extended to handle determiner sharing would require the \(\theta\) function to extract a function for the verb and the shared determiner as well (and whatever other material is shared). Essentially, the function would have to abstract over both those elements that are not shared. This is not impossible to do, provided the logical forms are available, and provided it is possible to constrain the sites of abstraction appropriately.
But ultimately, this account does not provide a unifying approach to gapping — English looks very different from Japanese and Irish. And yet the facts of determiner sharing and NCC-PSC suggest that they depend on gapping. How multiple versions of gapping can be unified in the categorial approach so as to allow it to be the determining factor in these phenomena is not clear. Further more, as gapping itself seems to depend on the ability to do ellipsis (VP ellipsis in English or TP ellipsis in French, for example), this should be some how obviously related to the gapping process, but ellipsis in categorial grammars is not obviously related — Steedman assumes that it is purely anaphoric, with no syntactic component at all. Lastly, even for English, NCC and NCC-PSC are both handled in categorial grammars identically to gapping in Irish, and yet they do seem to be dependent on gapping, so even within one language the relationships between processes fail to be adequately captured by the categorial approach.

5 Discussion

In sum, this paper has attempted to provide means for capturing the phenomena of determiner sharing and non-constituent coordination (including the especially interesting case of NCC-PSC) using relatively standard phrase structure analyses (e.g. no new projections between v and T as would ultimately be necessary in a ATB movement account, and certainly no non-traditional constituents, as in the categorial approach). Crucial to this is also the account’s ability to make determiner sharing dependent gapping — which is the most obvious and tricky part of the data to account for, and which other accounts have failed to do — and also to give some means of capturing the other four major properties of determiner sharing.

The price of this account, however, is the weakening of the coordinate structure constraint. As with Johnson’s and Citko’s accounts, the coordinate structure constraint cannot be taken to apply to A-movement in any strict sense. Johnson and Citko both propose that the obviation might relate to the ATB raising of the verb, and one might hope that some aspects of the CSC can be retained for A-movement in similar ways, especially if the retention can be successfully said to be a fact about movement in general which only happens to have interesting effects in these determiner sharing constructions. This would be preferable to saying the CSC does not apply to A-movement. One possibility might relate to the derivational mechanisms underlying the coordinate structure constraint.

For example, if extraction of some element is reflected somehow in the
features of the containing elements, as is done in the GPSG and categorial world, then the CSC simply becomes the classical constraint on coordination, namely, that only same-category items can coordinate. A VP with an DP shaped hole in it — i.e. an element of category VP/DP (which is conveniently the same in both GPSG and categorial works) — can only coordinate with an element of the same type, that is, some other VP with an DP shaped hole. And in some sense we have that: one of the holes is left behind by the DP that moves to the specifier of TP, and the other is a hole left behind by the creation of an even larger hole during ellipsis.

Alternatively, since we already know there are some differences between A-movement and ̅A-movement, it might be possible to find some common thread for these differences that the CSC distinction fits into. A model of the interpretive semantic component, for instance, might have constraints on the compositional mechanisms relevant for focus and WH-movement that are distinct from those that A-movement is typically associated with. It is not at all implausible to imagine that focal movement and WH-movement both involve λ abstraction but that A-movement does not. We might therefore find that there is an elegant account of the CSC purely in how lambda abstraction relates to the semantics of coordination, which merely happens to surface as an apparent constraint on purely ̅A-movement and not at all on purely A-movement.

6 Bibliography


