Fragments and left-edge ellipsis: the division of labour between syntax, semantics, and prosody*

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1 Introduction

This paper investigates two kinds of ellipsis in English: the left-edge ellipsis seen in (1) (investigated in Schmerling 1973, Thrasher 1973, Akmajian et al. 1979, Napoli 1982, Zwicky & Pullum 1983, Wilder 1997, Fitzpatrick 2006, Weir 2012); and the clausal ellipsis which is responsible for the creation of fragments such as (2) (Morgan 1973, Stanley 2000, Merchant 2004, Weir 2014, and much other work).

(1) a. Going to the pub tonight. (=I̶'̶m̶ going. . .)

b. Seen the new Star Wars film yet? (=H̶a̶v̶e̶ ̶y̶o̶u̶ seen. . .)

c. Postman been yet? (=H̶a̶s̶ ̶t̶h̶e̶ postman. . .)

(2) What did John eat?—Chips.

(=J̶o̶h̶n̶ ̶a̶t̶e̶ chips)

Fragments, as in (2), are of course very common; the phenomenon shown in (1) belongs to a somewhat colloquial spoken register, but is extremely common in that register.

Both of these phenomena have been investigated in great detail. It has however only occasionally been suggested (e.g. by Wilder 1997), and occasionally explicitly rejected (Thrasher 1973, Napoli 1982), that these two phenomena result from the same process. The standard view of fragments like (1) is either that they are base-generated nonsententials (e.g. Stainton 1998, 2006, Ginzburg & Sag 2000, Valmala 2007,

Jacobson 2016, and many of the papers in Progovac et al. 2006), or that they result from a process of clausal ellipsis which is basically syntactically governed (with Merchant 2004 being the recent locus classicus). By contrast, a widely-held view on left-edge deletion such as (1) is that it is fundamentally prosodically governed: it involves deletion of unstressed material at the left edge (see particularly Napoli 1982 and Weir 2012), though with important caveats (Zwicky & Pullum 1983, Fitzpatrick 2006).

In this paper, I argue that the two phenomena come about via the same mechanism: they are both cases of the deletion of recoverable material (understood in a particular formal way) in order to satisfy constraints imposed at the syntax–prosody interface. The main empirical justification for linking the two comes from the fact that left-edge ellipsis is blocked in sentences containing narrow focus, although full clauses are available, and (in the right discourse circumstances) fragments also are:

(3)   (Zwicky & Pullum 1983: 159)

        When are you going?

        a.   I'm going at FOUR.

        b. ??Going at FOUR.

        c.   At FOUR.

This is particularly salient in the cleft examples in (4). In the case where both the cleft pivot and the relative clause are new information, (4a), left-edge ellipsis of *it was a* is permitted, but in the case where the relative clause is given information, it is not.

(4)   a.   (It was a) nice dress you wore to the party last night.

        b.   A: What kind of meeting did you go to yesterday?

              B: *(It was a) really BORING meeting that I went to yesterday.

The facts in (3) have previously been noted, though I believe the observation in (4) is new. These facts were previously taken (see, e.g., Zwicky & Pullum 1983: 159) to militate *against* a unification of left-edge ellipsis and fragment ellipsis. I interpret these differently: they indicate that these phenomena, although not generated by the grammar in exactly the same way, do take place at the same level, namely the syntax–PF interface. I provide an analysis of these patterns couched in a constraint-based/optimality-theoretic view of the syntax–PF/prosody interface (as in Selkirk 2011 among others). In brief, deletion can take place at the syntax–prosody interface (a) to solve a linearization problem where constraints would otherwise want a copied (moved) phrase to be in two places at once, following Fox & Pesetsky (2005) and Thoms (2010),

and (b) to ensure that a prosodic constituent begins with a 'strong start' (Selkirk 2011), that is, not with a relatively weaker prosodic constituent. The relative ranking of these constraints is such that they interact to bleed cases like (3b) and (4b); fragment ellipsis will always pre-empt left-edge ellipsis.

I show first that such a constraint-based model accounts well for English left-edge deletion data, summarizing the analysis in Weir (2012). I then show how this independently motivated analysis delivers fragment/clausal ellipsis with only few (and independently plausible) additional assumptions. In particular, I address the fact that fragments do not seem to arise purely from the deletion of deaccented material, pace suggestions in Chomsky & Lasnik (1995), Bruening (2015), Ott & Struckmeier (2018). Rather, fragment ellipsis appears to also involve a step of A′-movement of a focused phrase (Merchant 2004). I argue that this focus movement—which I take to be generally available, but generally covert, having no effect on word order—creates a particular input to the syntax–PF interface which has the effect that clausal ellipsis can be an optimal output.

The implication of this model is that left-edge and fragment ellipsis are essentially interface phenomena; in timing terms, they happen very late. All of the action takes place at the syntax–PF interface. Movements in syntax (e.g. focus movement) can feed the process, but these are taken to be independently available processes, rather than processes whose goal is ellipsis: there is, in particular, no sui generis syntactic licensing of (fragment) ellipsis, along the lines of Merchant's (2001, 2004) [E]-feature. This conclusion is taken to flow from the fact that left-edge ellipsis does not seem in any way to be *syntactically* licensed (pace Fitzpatrick 2006): it is licensed by its prosodic environment. If, as I argue here, left-edge ellipsis and fragment ellipsis result from the same process, it therefore seems unlikely that fragment ellipsis requires a syntactic licensor. This is, I am aware, a strong claim and one that runs against much recent literature, but I hope for this paper to establish that such a line of attack is at least a possibility, at least for fragment ellipsis. I turn first to the analysis of left-edge ellipsis, before extending the analysis to fragment ellipsis.

2   Left-edge ellipsis

I consider first left-edge ellipsis (LEE) of the type in (5), repeated from (1).

(5)   a.   Going to the pub tonight. (=~~I'm~~ going. . .)

b.   Seen the new Star Wars film yet? (=~~Have you~~ seen. . .)

c.   Postman been yet? (=~~Has the~~ postman. . .)

I restrict myself here to spoken English data. Deletions of the type in (5) are sometimes identified with the omission of the subject that is possible in written register, so-called 'diary drop' (see, e.g., Haegeman 1997, 2017). But there are certain differences between these two: in particular, written register is more liberal in what omissions it allows. For example, (6) is grammatical in written register, but is degraded in speech (as noted by Schmerling 1973, Napoli 1982, Weir 2012).

(6)   Am going to the pub tonight.

I assume that diary drop requires a separate analysis, very possibly one which genuinely is syntactic (see the above-cited references for discussion), and put it aside here, concentrating only on the spoken data in (5). I also set aside apparent cases of left-edge ellipsis languages other than English, in particular 'pronoun zap'/topic-drop phenomena in Germanic languages (Ross 1982, Sigurðsson & Maling 2010, Nygård 2018, among others); while these phenomena are clearly relevant, I lack the space to take them up in detail here, and focus only on English.

2.1   Prosodic motivation

As briefly outlined above, many authors argue that left-edge ellipsis (at least in spoken English) is a fundamentally prosodic process (rather than, for example, a narrow-syntactic process). The arguments for this can be summarized as follows:

(7)   a.   The domain of application for LEE (that is, the range of possible targets) does not seem to be capturable by any purely syntactic generalization.

        b.   By contrast, the domain of application *does* seem to be capturable by a generalization stated in prosodic terms, namely being initial in an intonational phrase.

        c.   A prosodic analysis can give a more natural account of cases where partial LEE appears to be ungrammatical, namely cases where LEE would lead a cliticizable verb to be stranded at the left edge.

I will step through these arguments in turn. The first argument, (7a), is based on the intuition that the strings in (8) appear to be instances of the same phenomenon, left-edge ellipsis, and that the correct generalization about this phenomenon would account for all of the data in (8).

(8)   a.   ~~Has~~ the postman come yet?

        b.   ~~The~~ postman just came.

  c. ~~I~~ already ate dinner.

  d. ~~I'm~~ eating my dinner.

  e. ~~Has the~~ postman come yet?

It seems unlikely that the ellipsis process in (8) can be captured by any unitary *syntactic* generalization, that is, any which refers to phrase structure. The heads being targeted for deletion in each case are of distinct categories: an auxiliary (T head) in (8a), a determiner in (8b), a pronoun in (8c), a pronoun+auxiliary combination in (8d), and an auxiliary+determiner in (8e). No rule of a general form could be stated over which categories could be deleted; separate rules of T-deletion, D-deletion, DP-deletion and so forth would have to be postulated. And further restrictions need to be placed on where such non-realization is possible; it is clear, for example, that heads of category D or T cannot simply be omitted anywhere:

(9) a. I don't want to talk to Bill. *He hates. (intended: *He hates me*)

  b. *I ~~am~~ eating my dinner. (in standard English)

The notion of 'the left edge' therefore needs to play a role in the statement of the licensing environment for this kind of ellipsis. But it is difficult to see how to consistently categorize this notion syntactically. There is no generalization that can be stated over constituents, for example; it is not necessary for either the elided material (8d,e) nor the remnant (8b,e) to be a constituent. And the deletion is not restricted to material outside of TP (as in the data discussed in Fitzpatrick 2006), as subjects (and parts of subjects, e.g. determiners) in TP can also be deleted.

Rather, there is reason to believe that the correct generalization is prosodic, and specifically, makes reference to the left edge of an intonational phrase. This is theoretically attractive insofar as it is uncontroversial that prosody and phonology must make reference to notions of linear order ('left' and 'right'), while this is much more controversial for syntax. It is also empirically supported insofar as it appears to be the presence of an intonational break which licenses such ellipsis. For example, left-edge ellipsis is possible at the start of a parenthetical or appositive (at least if that parenthetical is heavy enough to trigger an intonational break; see Dehé 2009), as in (10a,b). It is also possible when a left-dislocation structure generates an intonational break between preposed material and the rest of the sentence, as in (10c).

(10) a. The new Star Wars film—~~have~~ you seen it yet, by the way?—is getting good reviews.

  b. John Smith—~~the~~ guy over there in the hat—asked me to give this to you.

  c. As for the assignment resubmissions: ~~I~~ don't think you need to worry about those.

Facts such as these lead Napoli (1982) and Weir (2012) to conclude that LEE is a fundamentally prosodic phenomenon: it targets unstressed initial syllables in an intonational phrase. The principal motivation for this is the generalization exemplified by (11) and (12) below (originally noted by Schmerling 1973, Napoli 1982): LEE does not allow auxiliary verbs which can be cliticized—i.e. *have, be, will* (with clitic forms *'s/'ve, 'm/'re/'s*, and *'ll* respectively)—to be stranded at the left edge. If deletion takes place in the (a) examples, it cannot be partial as in (b), but rather there is an all-or-nothing effect, as in (c):

(11) a. I am going to the cinema.

   b. *Am going to the cinema.

   c. Going to the cinema.

(12) a. I have just received an unpleasant letter.

   b. *Have just received an unpleasant letter.

   c. Just received an unpleasant letter.

The (b) examples are ruled out because they still begin with unstressed syllables. The details of this analysis will be considered in more detail below, but I take data such as (11) and (12) as good initial evidence in favour of a prosodic account of LEE.

With this said, it was noted early on that a *purely* phonological/prosodic account of LEE cannot be the whole story; not all weak/unstressed or functional utterance-initial material can be deleted.

(13) a. *~~On the~~ train I saw someone I knew.

   b. ??~~At~~ five p.m. I'll leave.

   c. *~~That the~~ students failed came as no surprise.

   d. ?*~~Will~~ the postman come early today?

   e. Two men left. *~~Two~~ men came back.

There appear to be idiosyncratic restrictions on which words can be elided. This is the case even if one might imagine that the right meaning is intuitively guessable, as one might imagine for (13a,b) for example, or if an antecedent is present, as in (13e). There appear to be formal restrictions of Recoverability (cf. Katz & Postal 1964, Chomsky & Lasnik 1995, Johnson 2014, among many others):

(14)   RECOVERABILITY

Material that is underlyingly present in a linguistic representation, which meets some appropriately stated condition on recoverability, can fail to be realized in the output. (alternatively: material that is underlyingly present but which does *not* meet some appropriately stated condition on recoverability *must* be realized in the output)

In the latter, negatively phrased version, (14) is nearly a truism, a definition of the term 'recoverable', as Fiengo & Lasnik (1972) indicate. The positively phrased version simply notes the fact that languages contain ellipsis and that usually this ellipsis is conditioned by factors beyond functional ones (that is, it is not generally enough for deleted material to be guessable by an interlocutor to allow for its deletion). Obviously a lot will then hang on how one understands the precise nature of the 'appropriately stated condition', and at what linguistic level the constraint in (14) is taken to operate. Section 4 will take up these questions in more detail; before that discussion, I will take it as a given throughout the presented analysis that there is some constraint of Recoverability which will often rule out certain deletions, and that it is this which governs facts of the type in (13) above. What I will first be concerned with are patterns where deletion is ungrammatical, but where this cannot be put down to Recoverability (because deleting the same morpheme is grammatical in different contexts), the kinds of patterns in (11) and (12), and giving a phonological account which captures these patterns.

2.2   An optimality-theoretic account: Weir (2012)

Weir (2012) proposes an analysis of LEE couched in Optimality Theory, which formalizes the notion of deletion at the left edge and captures the 'from the left edge in' pattern. Weir's theory is in turn based on a syntax–prosody mapping theory like that of Selkirk (2011). We assume a Prosodic Hierarchy (Selkirk 1978, Nespor & Vogel 1986, among many others), that is, an ordered list of prosodic phrase categories such that those categories higher on the list will generally dominate those lower. (The square brackets enclose prosodic categories which will not be of major concern to us.)

(15)   Intonational Phrase (ι) > Phonological Phrase (ϕ) [> Minor Phrases] > Prosodic Words (ω) [> Foot > Syllable (σ)]

Syntactic categories are mapped into prosodic categories via the operation of MATCH constraints, of the below type (Selkirk 2011: 439).

(16) MATCH(ROOT, ι)

The edges of a root clause are mapped to the edges of an Intonational Phrase. (see Downing 1970, Selkirk 2011: 452)

(17) MATCH(XP, ϕ)

The edges of a maximal projection (other than a root clause) are mapped to the edges of a Phonological Phrase.

(18) MATCH(X^0, ω)

The edges of a lexical word are mapped to the edges of a Prosodic Word.

Given these constraints, an example like (19) would be mapped into the prosodic structure in (20).

(19) a. Has the postman delivered the mail?

  b. [$_{CP}$ has [$_{TP}$ [$_{DP}$ the postman] [$_{T'}$ [$_{VP}$ delivered [$_{DP}$ the mail]]]]]

(20) ($_\iota$ has ($_\phi$ ($_\phi$ the ($_\omega$ postman)) ($_\phi$ ($_\omega$ delivered) ($_\phi$ the ($_\omega$ mail)))))

The lexical words *postman*, *delivered*, and *mail* are parsed into Prosodic Words; the maximal projections DP, VP, and TP are parsed into Phonological Phrases; and the whole utterance is parsed into an Intonational Phrase.

The realization in (20) (=(21a)) is not the only possible realization. It is also possible to delete from the left edge in, as in (21b,c):

(21) a. Has the postman delivered the mail?

  b. The postman delivered the mail?

  c. Postman delivered the mail?

Although the realization in (20) may be optimal with respect to the MATCH constraints, it may violate other constraints on prosodic well-formedness. In particular, it violates the constraint STRONGSTART:

(22) STRONGSTART (Selkirk 2011: 470)

A prosodic constituent optimally begins with a leftmost daughter constituent which is not lower in the prosodic hierarchy than the constituent that immediately follows.

The prosodic parse in (20) violates STRONGSTART with respect to the Intonational Phrase, because it starts

with the stray syllable *has*, and with respect to the Phonological Phrases *the postman* and *the mail*, because these both start with the stray syllable *the*.

Selkirk proposes STRONGSTART as a general principle. Weir (2012: 117f.) proposes that this constraint is decomposed into versions parametrized to particular prosodic constituents:[1]

(23)   STRONGSTART-ι

   An Intonational Phrase should not start with a constituent lower on the prosodic hierarchy than a Phonological Phrase.

(24)   STRONGSTART-ϕ

   A Phonological Phrase should not start with a prosodic constituent lower on the prosodic hierarchy than a prosodic word.

The prosodic parse in (20) violates (23) once and (24) twice. If we assume, as a stipulation at the moment, that the auxiliary *has* and the determiner *the* are Recoverable, and therefore potentially deletable, then a possible repair for these violations would be to delete the offending morphemes. However, we know that there must be some constraint that militates against deletion, as deletion of recoverable material is not completely free (that is, determiners and the like are not elided everywhere where they are recoverable). We therefore suppose a constraint of the MAX type:[2]

(25)   MAX

   Every terminal with a specified contentful realization in the underlying structure (input) must have a realization in the output.

Below are various possible outputs for the input syntax in (19b), along with their constraint violation profiles, given as an OT tableau. (Some alternative possible candidate outputs, in particular deletion of *the* in *the mail*, will be considered shortly.)

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[1]Weir also proposes a version at the level of the prosodic word, STRONGSTART-ω, which I put aside here.

[2]Implicit in the formulation of MAX in (25) is that the input form, here taken to be syntax, contains some specification for how terminals should be realized (thanks to an anonymous reviewer for urging clarity on this point). The relevant input form would, for example, have to be after the step of Vocabulary Insertion in a Distributed Morphology approach. The point is that MAX should not penalize *all* silent output, only those characterizable as ellipsis in the sense intended here; in particular it should not penalize output specified as silent in the input, such as PRO or silent functional heads (or it is at least not obvious that it should penalize these). I think it is an open question whether the elision of a pronoun, *pro*-drop, should be penalized by MAX in the current model, and leave that question for future work; I also leave open the question of whether other ellipses, such as VP ellipsis, should be penalized by MAX, though see some discussion in Section 4.

[Has [[the postman] [delivered [the mail]]]]	STRST-ι	STRST-ϕ	MAX
(26) a. ($_\iota$ has ($_\phi$ ($_\phi$ the postman) ($_\phi$ delivered ($_\phi$ the mail))))	has	the, the	
b. ($_\iota$ ($_\phi$ ($_\phi$ the postman) ($_\phi$ delivered ($_\phi$ the mail))))		the, the	has
c. ($_\iota$ ($_\phi$ ($_\phi$ postman) ($_\phi$ delivered ($_\phi$ the mail))))		the	has, the

In order to capture the 'from the left edge in' behavior of LEE, Weir (2012) proposes that the STRONGSTART constraints are rigidly ranked:

(27)   STRONGSTART-ι $\gg$ STRONGSTART-ϕ

However, Weir proposes that MAX can float between these constraints. Different orderings of MAX with respect to the STRONGSTART constraints give different output forms. For floating constraints as a means of capturing free variation across different utterances, see, e.g., Nagy & Reynolds (1997) on 'floating constraints' and Anttila (1997) on 'crucial non-ranking'.[3] If MAX is high-ranked (for a given utterance)—that is, faithfulness to the input is strictly more important than satisfying the STRONGSTART constraints—then the fully faithful candidate with no deletion will be the output (indicated by a pointing hand). If MAX is ranked between STRST-ι and STRST-ϕ, the candidate where the weak initial syllable of the intonational phrase (*has*) is deleted will be the output. If MAX is ranked low (that is, prosodic well-formedness with respect to both STRONGSTART constraints is strictly more important than being faithful to the content of the input), then the candidate where both weak initial syllables are deleted will be the winner. In each case, an exclamation point shows a fatal violation which takes a candidate output out of the running.

[Has [[the postman] [delivered [the mail]]]]	MAX	STRST-ι	STRST-ϕ
(28) ☞ a. ($_\iota$ has ($_\phi$ ($_\phi$ the postman) ($_\phi$ delivered ($_\phi$ the mail))))		has	the, the
b. ($_\iota$ ($_\phi$ ($_\phi$ the postman) ($_\phi$ delivered ($_\phi$ the mail))))	has!		the, the
c. ($_\iota$ ($_\phi$ ($_\phi$ postman) ($_\phi$ delivered ($_\phi$ the mail))))	has!, the		the

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[3]The approach could also be amenable to stochastic variations of OT—see Hayes (2017) for an overview—in which violations of constraints are given weights which can randomly vary with some noise at any given utterance. It is not clear to me, however, to what extent existing stochastic variations of OT would allow for MAX to float very widely across a number of other constraints (that is, have a very high level of random noise assigned to its weight) while keeping those other constraints in a fixed ranking with respect to each other (as in (27), and as I will propose in Section 3.2). Because of this complication, and to keep the main discussion uncluttered, I restrict myself to the 'floating constraints' model here, leaving to future work the question of whether the analysis can be implemented in stochastic OT.

<table>
<thead>
<tr><th>[Has [[the postman] [delivered [the mail]]]]</th><th>STRST-ι</th><th>MAX</th><th>STRST-ϕ</th></tr>
</thead>
<tbody>
<tr><td>a. $(_\iota$ has $(_\phi$ $(_\phi$ the postman) $(_\phi$ delivered $(_\phi$ the mail))))</td><td>*!</td><td></td><td>**</td></tr>
<tr><td>☞ b. $(_\iota$ $(_\phi$ $(_\phi$ the postman) $(_\phi$ delivered $(_\phi$ the mail))))</td><td></td><td>*</td><td>**</td></tr>
<tr><td>c. $(_\iota$ $(_\phi$ $(_\phi$ postman) $(_\phi$ delivered $(_\phi$ the mail))))</td><td></td><td>**!</td><td>*</td></tr>
</tbody>
</table>

(29)

<table>
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</thead>
<tbody>
<tr><td>a. $(_\iota$ has $(_\phi$ $(_\phi$ the postman) $(_\phi$ delivered $(_\phi$ the mail))))</td><td>has!</td><td>the, the</td><td></td></tr>
<tr><td>b. $(_\iota$ $(_\phi$ $(_\phi$ the postman) $(_\phi$ delivered $(_\phi$ the mail))))</td><td></td><td>the, the!</td><td>has</td></tr>
<tr><td>☞ c. $(_\iota$ $(_\phi$ $(_\phi$ postman) $(_\phi$ delivered $(_\phi$ the mail))))</td><td></td><td>the</td><td>has, the</td></tr>
</tbody>
</table>

(30)

Importantly, it will not be possible to delete *the* without deleting *has* (**has postman delivered the mail*), because of the fixed order STRONGSTART-ι ≫ STRONGSTART-ϕ; if MAX is ranked below STRONGSTART-ϕ (and therefore favours the deletion of *the*), it will also be ranked below STRONGSTART-ι, favouring the deletion of *has*.

<table>
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</thead>
<tbody>
<tr><td>a. $(_\iota$ has $(_\phi$ $(_\phi$ postman) $(_\phi$ delivered $(_\phi$ the mail))))</td><td>has!</td><td>the</td><td></td></tr>
<tr><td>b. $(_\iota$ $(_\phi$ $(_\phi$ the postman) $(_\phi$ delivered $(_\phi$ the mail))))</td><td></td><td>the, the!</td><td>has</td></tr>
<tr><td>☞ c. $(_\iota$ $(_\phi$ $(_\phi$ postman) $(_\phi$ delivered $(_\phi$ the mail))))</td><td></td><td>the</td><td>has, the</td></tr>
</tbody>
</table>

(31)

The above is the basic idea: the floating of MAX around STRONGSTART constraints leads to the variable patterns of left-edge deletion. Some additions are however needed to ensure that the analysis does not under- or overgenerate. It appears that the second *the* should be deleted in the ranking in (31) (where MAX is lowest-ranked), as this *the* is also a weak start to a Phonological Phrase. (A sad face is used for candidates that are attested but ruled out by the ranking, while a skull-and-crossbones is used for the candidate which is predicted as output but not attested.)

<table>
<thead>
<tr><th>[Has [[the postman] [delivered [the mail]]]]</th><th>STRST-ι</th><th>STRST-ϕ</th><th>MAX</th></tr>
</thead>
<tbody>
<tr><td>☹ a. $(_\iota$ $(_\phi$ $(_\phi$ postman) $(_\phi$ delivered $(_\phi$ the mail))))</td><td></td><td>the!</td><td>has, the</td></tr>
<tr><td>☠ b. $(_\iota$ $(_\phi$ $(_\phi$ postman) $(_\phi$ delivered $(_\phi$ mail))))</td><td></td><td></td><td>has, the, the</td></tr>
</tbody>
</table>

(32)

This outcome is avoided because medial weak starts of this kind have an alternative repair available to them: they can be parsed directly into a superordinate Phonological Phrase (here, the phonological phrase corresponding to the VP), as in (33).[4]

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[4]Note that this implies that Phonological Phrases can contain other Phonological Phrases, as in Selkirk (2011), and contra the

(33) $(_{\iota}$ $(_{\phi}$ $(_{\phi}$ postman) $(_{\phi}$ delivered the $(_{\phi}$ mail))))

This will violate MATCH(XP, ϕ), as the edges of the DP *the mail* no longer correspond to the edges of a Phonological Phrase. The constraints matching syntax to phonology (MATCH(XP, ϕ) and MATCH(Word, ω)—which I abbreviate below as simply MATCH(SYN, PH)) should then be ranked below the STRONGSTART constraints.[5] These constraints should be present, even if low-ranked, in order to capture the default mapping from syntax to phonology, but repairing STRONGSTART violations will always take precedence over these constraints.

(34)

[Has [[the postman] [delivered [the mail]]]]	STRST-ι	STRST-ϕ	MAX	MATCH(SYN, PH)
a. $(_{\iota}$ $(_{\phi}$ $(_{\phi}$ postman) $(_{\phi}$ delivered $(_{\phi}$ the mail))))		the!	has, the	
b. $(_{\iota}$ $(_{\phi}$ $(_{\phi}$ postman) $(_{\phi}$ delivered $(_{\phi}$ mail))))			has, the, the!	
☞ c. $(_{\iota}$ $(_{\phi}$ $(_{\phi}$ postman) $(_{\phi}$ delivered the $(_{\phi}$ mail))))			has, the	*

Note that we cannot use the same 'trick' to rescue the first *the* (in *the postman*). If we try to parse this *the* into a superordinate phrase, the only phrase available is the Intonational Phrase containing the entire utterance—in which position *the* would violate STRONGSTART-ι and would be ruled out.

(35)

[Has [[the postman] [delivered [the mail]]]]	STRST-ι	STRST-ϕ	MAX	MATCH(SYN, PH)
a. $(_{\iota}$ $(_{\phi}$ $(_{\phi}$ postman) $(_{\phi}$ delivered $(_{\phi}$ mail))))			has, the, the!	
☞ b. $(_{\iota}$ $(_{\phi}$ $(_{\phi}$ postman) $(_{\phi}$ delivered the $(_{\phi}$ mail))))			has, the	*
c. $(_{\iota}$ the $(_{\phi}$ $(_{\phi}$ postman) $(_{\phi}$ delivered the $(_{\phi}$ mail))))	the!		has	**

Strict Layer Hypothesis (Selkirk 1984, Nespor & Vogel 1986).

The editors point out that the kind of prosodic parse envisaged in (33) (parsing a functional word apart from its complement) has recently been argued against by Tyler (2019), who argues that (most) [Fnc^0 LexP] sequences are parsed (in English) as adjunction to a ω: $(_{\omega}$ the $(_{\omega}$ mail)). If this were true, initial weak articles would not cause STRST-ϕ violations, and it would be impossible to derive the deletion of utterance-initial articles as in (30). Tyler's main focus/data concerns PPs, without extensive discussion of articles; his main analytical concern is to argue that MATCH constraints, at the word level, do not distinguish between functional and lexical material. One possible avenue to explore is that prepositions indeed are subject to MATCH (that is, they need to be parsed into ωs), but that articles are not, and this may provide an avenue for explaining why articles can, but prepositions cannot, be elided under LEE without reference to Recoverability as in the current proposal; but I lack the space to follow up this line of enquiry here. With this said, it cannot generally be the case that in English [V [Fnc Lex]] sequences, there must be a ω left edge before Fnc; for example, in (some dialects of) Scottish English, T-glottalization is possible for the onset of Fnc in this environment (*run*[ʔə] *the shops*, i.e. *run to*), but T-glottalization is impossible at the beginning of a prosodic word: *seat Eddy* [siʔ ɛdi] but *see Teddy* [siː tɛdi], *[siʔɛdi]. I take the apparent lack of left edge between V and Fnc in such cases as evidence for the availability of a parse like (33).

[5]But not MATCH(Clause, ι); this constraint is assumed to be undominated, that is, utterances are always parsed into an Intonational Phrase.

We also need to rule out repairs which alter the prosodic structure in different ways, for example by strengthening weak *the* to prosodic words (36a), or inserting a phonological phrase boundary such that initial weak *has* is encompassed by it and no longer violates STRONGSTART-ι (36b). Given the current set of constraints, these repairs threaten to harmonically bound the attested deletion candidates (that is, the deletion candidates are strictly worse than these repairs on any ranking of these constraints and are therefore incorrectly predicted to be categorically ruled out), as in (37).

(36)   a.   ($_\iota$ has ($_\phi$ ($_\phi$ ($_\omega$ the) ($_\omega$ postman)) ($_\phi$ delivered ($_\phi$ ($_\omega$ the) ($_\omega$ mail)))))

        b.   ($_\iota$ ($_\phi$ has ($_\phi$ ($_\phi$ the postman) ($_\phi$ delivered ($_\phi$ the mail)))))

(37)

[Has [[the postman] [delivered [the mail]]]]	STRST-ι	STRST-ϕ	MAX	MATCH(SYN, PH)
☺ a. ($_\iota$ ($_\phi$ ($_\phi$ postman) ($_\phi$ delivered the ($_\phi$ mail))))			has!, the	*
☠ b. ($_\iota$ ($_\phi$ has ($_\phi$ ($_\phi$ ($_\omega$ the) ($_\omega$ postman)) ($_\phi$ delivered ($_\phi$ ($_\omega$ the) ($_\omega$ mail))))))				

Weir (2012) proposes that repairs of this sort are ruled out because they violate a different kind of MATCH constraint,[6] constraints which require correspondence between prosodic categories and syntactic categories, as proposed by Selkirk (1995, 2011). That is, constraints of the form MATCH(Ph, Syn) (rather than MATCH(Syn, Ph)), such as:

(38)   a.   MATCH(ι, Root)

              The left and right edges of an intonational phrase in the output should align with the left and right edges of a root clause in the input. (Assign a violation for any intonational phrase for which this is not so.)

        b.   MATCH(ϕ, XP)

              The left and right edges of a phonological phrase in the output should align with the left and right edges of an XP in the input. (Assign a violation for any phonological phrase for which this is not so.)

        c.   MATCH(ω, LexWd)

              The left and right edges of a prosodic word in the output should align with the left and right edges of a lexical word in the output. (Assign a violation for any prosodic word for which this

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[6]As Weir (2012) discusses, it is of course possible to have such promotions if discourse conditions (e.g. focus) license them (e.g. polarity focus: HAS *the postman delivered the mail?!*, in which *has* bears stress and so presumably has prosodic word status). I assume that such prosodic representations are created by discourse–prosody mapping constraints which are higher-ranked than STRONGSTART or the MATCH constraints. As predicted, LEE is impossible in such conditions, e.g. #*The postman delivered the mail?!* cannot be interpreted with the astonished interpretation that polarity focus on the auxiliary would give it.

is not so.)

While MATCH(Syn, Ph) constraints penalize the erasure or displacement of prosodic boundaries with respect to syntactic edges, constraints of the MATCH(Ph, Syn) type penalize the addition of extraneous prosodic structure not licensed by the presence of syntactic boundaries. The spurious repairs of STRONGSTART violations shown in (36) can therefore be ruled out if the constraints in (38) (which I collapse to MATCH(Ph, Syn) below) are ranked above the STRONGSTART constraints; they will penalize the spurious insertion of a ϕ boundary and the promotion of function-word *the* to a prosodic word in (39b).

(39)

[Has [[the postman] [delivered [the mail]]]]	MATCH(PH, SYN)	STRST-ι	STRST-ϕ	MAX	MATCH(SYN, PH)
☞ a. (ι (ϕ (ϕ postman) (ϕ delivered the (ϕ mail))))				has, the	*
b. (ι (ϕ has (ϕ (ϕ (ω the) (ω postman)) (ϕ delivered (ϕ (ω the) (ω mail))))))	*!**				

This analysis extends to capture other patterns of left-edge drop, such as the case where a pronoun and (positive) auxiliary are at the left edge. In such a case, either both the pronoun and auxiliary can remain, or both can drop, but one cannot remain while the other is deleted:

(40)   a.   I have eaten dinner. / I've eaten dinner.

        b.   Eaten dinner.

        c.   *Have eaten dinner.[7]

        d.   *I eaten dinner.

Pronouns, in their weak/unstressed forms, are assumed by Weir (2012) not to be parsed into full prosodic words or phonological phrases as full DPs are. The same holds for cliticizable auxiliaries such as *have* (as already shown in the subject–auxiliary inversion examples above). As such, both *I* and *have* will constitute weak starts to the Phonological Phrase which corresponds to the TP, according to the MATCH(Syn, Ph) constraints.[8]

(41)   a.   [CP [TP [DP I] [T' have [VP eaten [DP dinner]]]]]

        b.   (ι (ϕ I have (ϕ (ω eaten) (ϕ (ω dinner)))))

There is no weak start to the Intonational Phrase in (41b), as it begins with a Phonological Phrase. However,

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[7]Recall that the grammaticality judgements offered here refer to spoken register only, not to certain written registers such as diaries, in which (40c) is fully acceptable.

[8]I depart here from Weir (2012), who assumes that what I show as T′ in (41) is a TP (and therefore its own phonological phrase). That is, I assume only maximal phrasal projections are mapped into Phonological Phrases.

that Phonological Phrase itself has a weak start. If MAX is ranked below STRONGSTART-ϕ, then both *I* and *have* must delete; only deleting one of them does not repair the weak start, capturing the pattern in (40).

(42)

[$_{\text{TP}}$ I have [$_{\text{VP}}$ eaten [$_{\text{DP}}$ dinner]]]	STRST-ι	STRST-ϕ	MAX	MATCH(S,P)
a. ($_\iota$ ($_\phi$ I have ($_\phi$ ($_\omega$ eaten) ($_\phi$ ($_\omega$ dinner)))))		I!		
b. ($_\iota$ ($_\phi$ have ($_\phi$ ($_\omega$ eaten) ($_\phi$ ($_\omega$ dinner)))))		have!	I	
☞ c. ($_\iota$ ($_\phi$ ($_\phi$ ($_\omega$ eaten) ($_\phi$ ($_\omega$ dinner)))))			I, have	

To end this section of the analysis, and as preparation for the following section on narrow focus, let us consider cases like (43):[9]

(43)   a.   It's/it is lovely weather that we've been having.

   b.   Lovely weather that we've been having.

I do not here make detailed assumptions about the syntax of examples like (43a), assuming for the sake of exposition that the relative clause *that we've been having* is adjoined to vP, though I do not think anything hinges on this. As expected, the deletion of *it is* results when MAX is ranked below STRONGSTART-ϕ. (Phonological structure internal to the relative clause *that we've been having* is suppressed in output candidates in (44).)

(44)

[$_{\text{CP}}$ [$_{\text{TP}}$ it is [$_{\text{VP}}$ [$_{\text{DP}}$ lovely weather] [$_{\text{CP}}$ that we've been having]]]]	STRST-ι	STRST-ϕ	MAX
a. ($_\iota$ ($_\phi$ it is ($_\phi$ ($_\phi$ lovely weather) ($_\phi$ that we've been having))))		it!	
b. ($_\iota$ ($_\phi$ ($_\phi$ ($_\phi$ lovely weather) ($_\phi$ that we've been having))))			it, is

We have seen, then, that left-edge ellipsis—modulo Recoverability, to be returned to in Section 4—can be captured as a fundamentally prosodic process at the syntax–prosody interface. I now turn to how this process interacts with fragment ellipsis.

3   Fragment ellipsis

3.1   LEE and narrow focus

Recall the peculiar fact that narrow focus, and especially narrow focus in cleft structures, causes degradation in LEE.

(45)   When are you leaving?

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[9]See Fernández-Sánchez (2013) for discussion of some similar cases.

a. At FOUR.

b. I'm leaving at FOUR.

c. ??Leaving at FOUR. (Zwicky & Pullum 1983: 159)

(46) What kind of meeting is it that you'll be attending?

a. It's a DULL meeting that I'll be attending.[10]

b. *A DULL meeting that I'll be attending.

c. *DULL meeting that I'll be attending.

This is particularly odd given that (46c) does not violate STRONGSTART, yet (46c) is quite strongly ungrammatical in the given context. This is not immediately predicted by analyses of left-edge drop of the type 'delete until a stressed syllable' such as Napoli (1982) or the analysis from Weir (2012) discussed above. The ungrammaticality of (46b,c) is also surprising in light of the fact that apparently identical cleft constructions *can* show left-edge ellipsis, as shown at the end of the previous section, if both the cleft pivot and the relative clause provide new information, e.g. if used discourse-initially.[11]

(47) (It's) lovely weather that we've been having.

Why should narrow focus, as in (45c) and (46), make a difference to the left-edge ellipsis possibilities?

I suggest that this comes about because left-edge ellipsis and fragment ellipsis are effected at the same level—the syntax–prosody interface—and that the possibility of fragment ellipsis preempts left-edge ellipsis. In short, (45c) and (46b,c) are ungrammatical because they are blocked by the availability of the corresponding fragments:

(48) a. At four.

b. A dull meeting.

---

[10]The example in (46) is after examples in den Dikken (2013) and originally from Declerck (1988). The cleft in (46a) is a so-called predicational *it*-cleft (see the authors just cited and references therein), as opposed to more familiar specificational *it*-clefts: the cleft pivot in (46a), rather than providing the identity of what I attended (=specificational), provides a description of the meeting I attended (=predicational). Non-predicational clefts seem to behave differently under left-edge ellipsis; see footnote 11.

[11]Non-predicational clefts seem to work differently (thanks to Chris Wilder for discussion of this point). Deletion of *it be* seems degraded in such clefts even if both the pivot and relative clause are new information:

(i) a. It/that was the postman that just came to the door.
b. ??Postman that just came to the door.

I do not have much to say about this mystery. One possibility is that the pivots of clefts such as (i) are always treated as foci even if the relative clause is new information, and so the explanation in Section 3.2 for why LEE is not possible in narrow-focus contexts will carry over to (i).

In order to show this interaction of LEE and fragment ellipsis, it will first be necessary to outline how fragment ellipsis can be handled in this framework, and in particular the division of labour between syntax on the one hand and the syntax–prosody mapping on the other.

To start, it is clear that fragments are not generated purely prosodically, by a process of deleting deaccented material. In particular, there is evidence that fragments undergo a step of A′-movement in the course of their derivation, as in (49).

(49)   a.   What did John eat?—Chips.

           b.   Chips ~~[he ate t]~~

This position is defended at greatest length by Merchant (2004), to which I refer the reader for detailed argumentation.[12] Probably the strongest empirical argument for the treatment in (49b) comes from pied-piping behavior. Note, for example, that a focused phrase which would underlyingly be within a definite DP (and so would be ineligible for A′-movement and require the pied-piping of the whole DP, cf. the topicalization examples in (50b,c,d)) needs to surface within that definite DP as a fragment (51a); further reduction is not possible (51b,c,d) (see Drubig 1994, cited in Krifka 2006: 122, for discussion of the same point, and to whom the examples are due):

(50)   a.   John invited [the man in a purple suit] to the party.

           b.   *A purple suit, John invited [the man in t] to the party.

           c.   *In a purple suit, John invited [the man t] to the party.

           d.   The man in a purple suit, John invited t to the party.

(51)   A: Did John invite the man in a PURPLE suit to the party?

           a.   B: No, the man in a BLACK suit.

           b.   B: *No, in a BLACK suit.

           c.   B: ??No, a BLACK suit.

           d.   B: ?*No, BLACK.

It is apparently not possible to delete up to just the focused constituent (*black*), or even the phase containing the focused constituent (here presumably the DP *a black suit*); a fragment remnant is apparently obligatorily

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[12]For reasons of space I set aside entirely the non-sententialist/base-generated view of fragments mentioned in the introduction: see Merchant (2004) and Weir (2014: ch. 2) for arguments against this view. To the extent that the data presented in the present paper show that left-edge ellipsis and fragments are created by the same mechanism, I take these data as evidence in favour of a clausal-ellipsis treatment of fragment answers.

pied-piped (that is, it is the smallest constituent *mobile under A′-movement* which contains a focused constituent[13]). As the diacritics indicate, (51c,d) are not quite as degraded as might be expected on this theory, so there are many issues that remain to be considered here, including the unresolved empirical debate on whether ellipsis voids island effects: but the real problem for a simple delete-unstressed-material theory is the unquestionable *grammaticality* of (51a), despite the fact that *the man in a … suit* is all unstressed and given in context, and so (one could imagine) subject to deletion. Note that it would not be sufficient to say that an arbitrarily large amount of destressed material surrounding the focused phrase can survive, as this would not explain why (51b) is (clearly) ill-formed, nor why the same is true of (52). By contrast, the ungrammaticality of (52) follows from a movement theory, given that verb phrases do not generally pied-pipe in English (under, e.g., topicalization of the object, (53)):

(52)   *No, invite the man in a BLACK suit.

(53)   Who will eat what?

    a.   *Beans* JOHN will eat, and *peas*, MARY will eat.

    b. ??Eat *beans* JOHN will, and eat *peas* MARY will.

To capture this, I assume that *focus phrases*—constituents containing a element which is focused in the Rooth (1985) sense and which receives stress, and which are mobile under A′-movement—move, following particularly Krifka (2006), and also Chomsky (1976), Erlewine & Kotek (2018), among others. Essentially: focused constituents move and pied-pipe, in both elliptical and non-elliptical contexts.

(54)   a.   A: Did John invite the man in a PURPLE suit to the party?

        B: No, John invited the man in a BLACK suit.

    b.

FocP
DP   Foc′
the man in a [black]$_{[Foc]}$ suit   Foc   TP
John invited t

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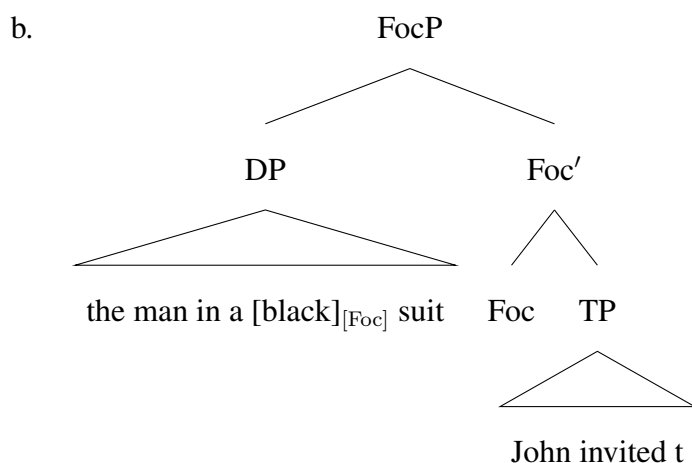
[13]But see Ott & Struckmeier (2018) for important challenges to this generalization, and Griffiths (2019a) for further challenges and some ways in which they might be met (see also footnote 15).

If the structure in (54b) is right, it is not pronounced (in terms of linear order) as would be expected. In fact it is a standing problem for theories of fragments that assume A′-movement that such putative movement is not grammatical in English in the absence of ellipsis (that is, English does not have focus fronting in answer contexts):

(55)   A: What did John eat?

         B: *CHIPS he ate.

(56)   A: Did John invite the man in a PURPLE suit to the party?

         B: ??No, the man in a BLACK suit John invited to the party.

Various proposals have been made for why the proposed movement of focus phrases in fragments is apparently only allowed in the context of ellipsis. A brute-force way of encoding this is to propose that (clausal) ellipsis is licensed by a syntactic feature on C, such as Merchant's (2001, 2004) [E]-feature, and that this feature (or the particular head that bears it) bears a focus feature which drives movement of focused phrases, but that this focus feature would only be present in elliptical contexts (alongside [E]), so its effects would only be observed alongside ellipsis.

Another line of thought, proposed by Richards (2001) and Temmerman (2013), can be called the 'weak feature' approach. On this approach, focus movement is always in principle possible, but is driven by a weak feature in languages where it is not overtly allowed; and movement driven by weak features (as opposed to strong features) does not give PF unambiguous instructions about whether to pronounce the moved phrase in its moved position or base position. This will lead to a crash outside of ellipsis, but if the base position is elided, the focus movement becomes grammatical.

Another approach, proposed by Boone (2014) and Weir (2014), suggests that movement of foci does not generally take place in English, but that focus movement exceptionally takes place in elliptical contexts, not due to a featural requirement, but as an escape for focused material which would otherwise find itself in an ellipsis site at spell-out.

Each of these approaches trades on the insight that something about ellipsis either licenses, or forces, a movement which is not otherwise possible (at least overtly). However, each of them is at least to a degree problematic. The brute-force approach is a direct stipulation of the observed behaviour; while this may eventually be all we can say, it would be preferable to derive the behavior from other principles if possible. The exceptional movement approach grants a syntactic movement the power of lookahead to the needs of

phonology/interfaces; a kind of movement, which crucially does not otherwise take place,[14] takes place just in case a focused (stressed) phrase would otherwise not be pronounced. The weak feature approach is probably the most successful approach to the problem, but it relies on the specific technology of strong and weak features, and does not (at least without further elaboration) account for the fact (discussed by Weir 2014: 189) that only clausal ellipsis apparently has the power to amnesty the weak feature; focus movement is just as ungrammatical with VP ellipsis as in full clauses, but it's not clear why VP ellipsis could not amnesty the weak focus feature in this case.

(57)   (Weir 2014: 189)

   a.   No no, it wasn't chips I ate. *COOKIES I did.

   b.   [$_{FocP}$ Cookies$_{[foc]}$ [$_{TP}$ I did [~~$_{VP}$ eat cookies$_{[foc]}$~~]]

However, I think that elements of the above views can be developed in the syntax–prosody interface framework being developed here. Suppose that the movement of foci shown in (54b) takes place quite generally in sentences containing foci.[15] Following the copy theory of movement, after such focus movement for an example like (58a), the syntactic tree will look like (58b). Note that the actually focused constituent, here *black*, bears the focus feature, but pied-pipes the DP it is a subconstituent of.

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[14]That is, exceptional movement approaches cannot be cast in terms of a generate-and-filter approach where the syntax generates movement structures which are later filtered out; the movement must *only* happen under ellipsis.

[15]Weir (2014: ch. 4) argues that fragments do *not* move at LF, but this position has recently been argued against by Shen (2017). If, however, one wishes to maintain the position that fragments (and foci) do not actually move at LF, Griffiths (2019a) provides a recent detailed analysis which can maintain the apparent A′-movement sensitivity of fragments without appealing to actual movement. I believe the analysis I present here could be made compatible with Griffiths' analysis, but have not investigated this in detail.

(58) a. (Did John invite the man in a PURPLE suit?)—No, John invited the man in a BLACK suit.

b.

```
                        FocP
                    ┌────┴────┐
                  DP₁        Foc′
              ┌────┴────┐   ┌──┴──┐
       the man in a black[Foc] suit  Foc[foc]  TP
                                      ┌────┴────┐
                                     DP        T′
                                     △      ┌──┴──┐
                                    John    T    VP
                                          ┌──┴────┐
                                          V      DP₁
                                          │    ┌──┴──┐
                                       invited  the man in a black[Foc] suit
```
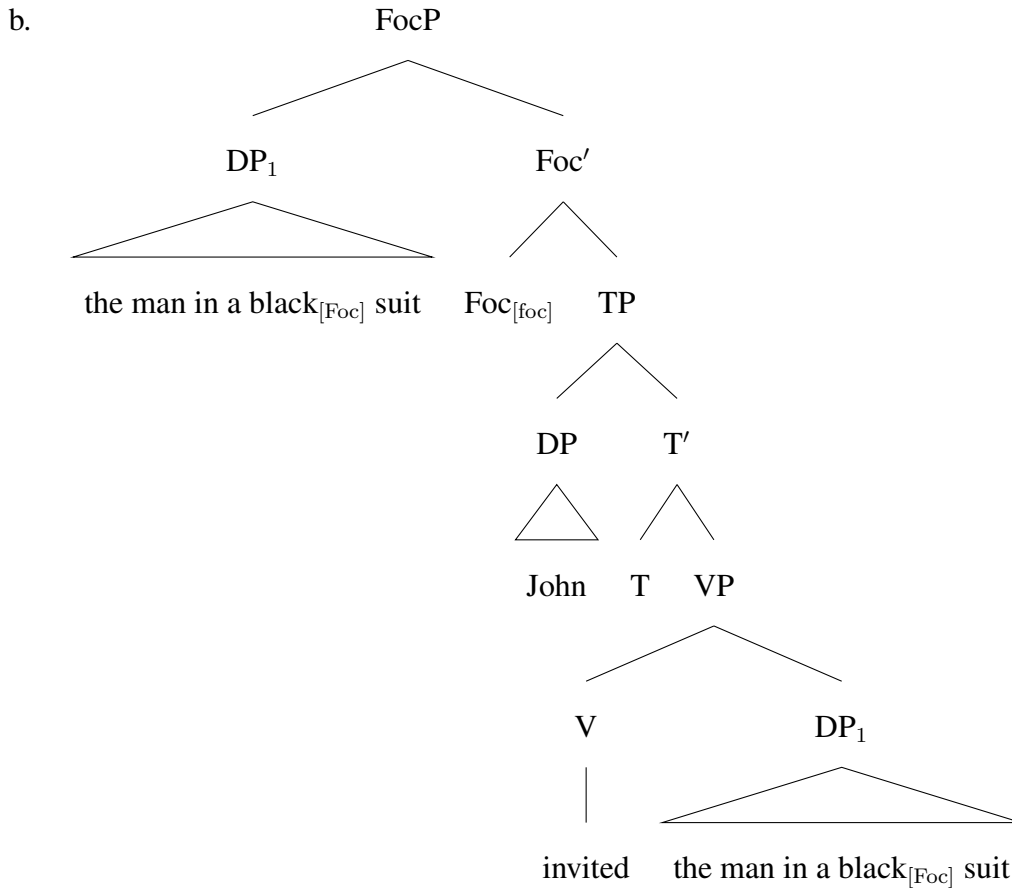
We need some way of ensuring that only one copy is pronounced (chain reduction, Nunes 2004 et seq.) and that in the case of focus movement, this is the copy in the base position (that is, focus movement is covert movement). Suppose that structures like (58b) are the input to the syntax–prosody interface,[16] and that the linearization is enforced by constraints on the output, such as these:

(59) CHAINREDUCTION

Given syntactic copies $A_1, A_2, \ldots A_n$ in the input, realize at most one copy in the output. (Assign a violation if more than one copy is realized in the output.)

(60) PRONOUNCELOWESTCOPY

Given syntactic copies $A_1, A_2, \ldots A_n$ in the input, where $A_1, A_2 \ldots$ asymmetrically c-command A_n (that is, A_n is the lowest copy in the chain), realize at most A_n. (Assign a violation for each of $A_1, A_2, \ldots A_{n-1}$ which are realized in the output.)

These constraints will favour the lower linearization of *the man in a black suit* in (58b). Suppose that terminals in the input and their realizations in the output are co-indexed (as is standardly assumed in OT

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[16]See, e.g., Bobaljik & Wurmbrand (2012) for the claim that the input to the syntax–prosody interface is LF, that is, narrow syntax after all movements both overt and covert.

phonology for segments in the input and the output).[17] Then CHAINREDUCTION and PRONOUNCELOW-ESTCOPY will favour the pronunciation of the copy corresponding to the base position.[18] This will violate MAX, which we therefore take to be ranked below PRONOUNCELOWESTCOPY (not floating above it at any point).

(61)

[[the man in a black suit]$_1$ [John invited [the man in a black suit]$_2$]]	CHAINREDUCTION	PRONOUNCELOWESTCOPY	MAX
☞ a. John invited (the man in a black suit)$_2$			*
b. (the man in a black suit)$_1$ John invited		*!	*
c. (the man in a black suit)$_1$ John invited (the man in a black suit)$_2$	*!	*	

This, of course, raises the question of why other movements, e.g. *wh*-movement and contrastive topicalization in English, are not apparently affected by PRONOUNCELOWESTCOPY. Fully answering this question would amount to giving a theory of why some movements are covert (=pronounce the lower copy) and some are overt (=pronounce the higher copy), and the variation in this across languages, which is beyond the scope of this paper; but I will provide the outline of an answer which draws in particular on Richards's (2010) proposal for why (overt) *wh*-movement does or does not take place in various languages. Richards proposes that there is a general cross-linguistic constraint, at the syntax–prosody interface, on scope-taking *wh*-phrases and interrogative complementizers: they are optimally in the same prosodic domain. Different languages will use different means to bring this about, depending on the other prosodic rules/constraints operative in those languages, and on their syntax/word order (e.g. whether complementizers are clause-initial or clause-final); some languages will move the *wh*-phrase close to the complementizer, while others will establish a prosodic phrasing which puts a *wh*-phrase in the same prosodic domain as the complementizer without moving it.

I suggest a slight modification to Richards's proposal: rather than suggesting, as Richards does, that a complementizer must be in the same prosodic domain as a *wh*-marked constituent, I propose that a [wh]-marked complementizer requires (in English, at least) the presence of a Phonological Phrase containing [wh]-marked material to its immediate left.

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[17]Note that this indexing is only a way of indicating correspondence between terminals in the syntactic input and tokens in the phonological output; it has no connection with syntactic co-indexing in the sense in which higher and lower copies of a phrase bear the same index.

[18]Implicit in all of this is that there are constraints providing that the syntax–PF interface (linearization) will in the normal case order heads before their complements in head-initial languages, and order specifiers before heads, etc. That is, there is either no genuine reordering of constituents at the interfaces (no PF movement), or it is heavily restricted, and the system will not get around constraints like PRONOUNCELOWESTCOPY by realizing a lower copy (the copy indexed with 2 in (61)) in a position linearly to the left of *John* and *invited*.

(62)   ALIGN-[wh]

Call material c-commanded by a left-peripheral [wh]-marked functional head the *scope* of [wh].

Then, the left edge of the string which is the realization of the scope of [wh] should align with the right edge of a Phonological Phrase containing[19] (the output realization of) a terminal marked with a [wh]-feature.

Assign a violation if the scope of a left-peripheral [wh]-marked functional head is realized in the output without a [wh]-containing Phonological Phrase abutting it to the left.

Suppose that the constraint in (62) is, in English, ranked above PRONOUNCELOWESTCOPY. Then, given a *wh*-copy structure like (63), the preferred linearization will be one in which the higher copy (and therefore only it, due to CHAINREDUCTION) will be pronounced, to satisfy the requirement that the [wh]-head has a Phonological Phrase to its left. The effects of MATCH(Syn, Ph) are assumed in the candidate output forms in (64) (only Phonological Phrases are shown) but the constraint itself is not shown; we will return soon to the relative ordering of the constraints being proposed. Note also that I abstract away from the analysis of head movement (of *did* in (63)), treating it as 'old-fashioned' movement (without a copy in the lower position), although eventually of course we will want to integrate head movement into an analysis of this type. I have also split CP into WhP and FinP (in the spirit of cartographic treatments of the left periphery, Rizzi 1997 and much subsequent work), where verb movement targets Fin and *wh*-movement targets WhP.

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[19]The correct formulation of this may be something like '*immediately* containing' (that is, without any other Phonological Phrase boundaries intervening), to capture facts about flattening of Phonological Phrases in non-*wh*-movement languages such as Japanese discussed by Richards (2010: sec. 3.1.1), as well as facts about English wh-in-situ echo questions (Richards 2010: 198f.) and massive pied-piping under sluicing (Weir 2017a). Though I think there are promising avenues to explore in this respect, I cannot take this up here for reasons of space, so restrict myself just to 'containing' in the formulation above.

(63)　　a.　Which house did John buy?

b.
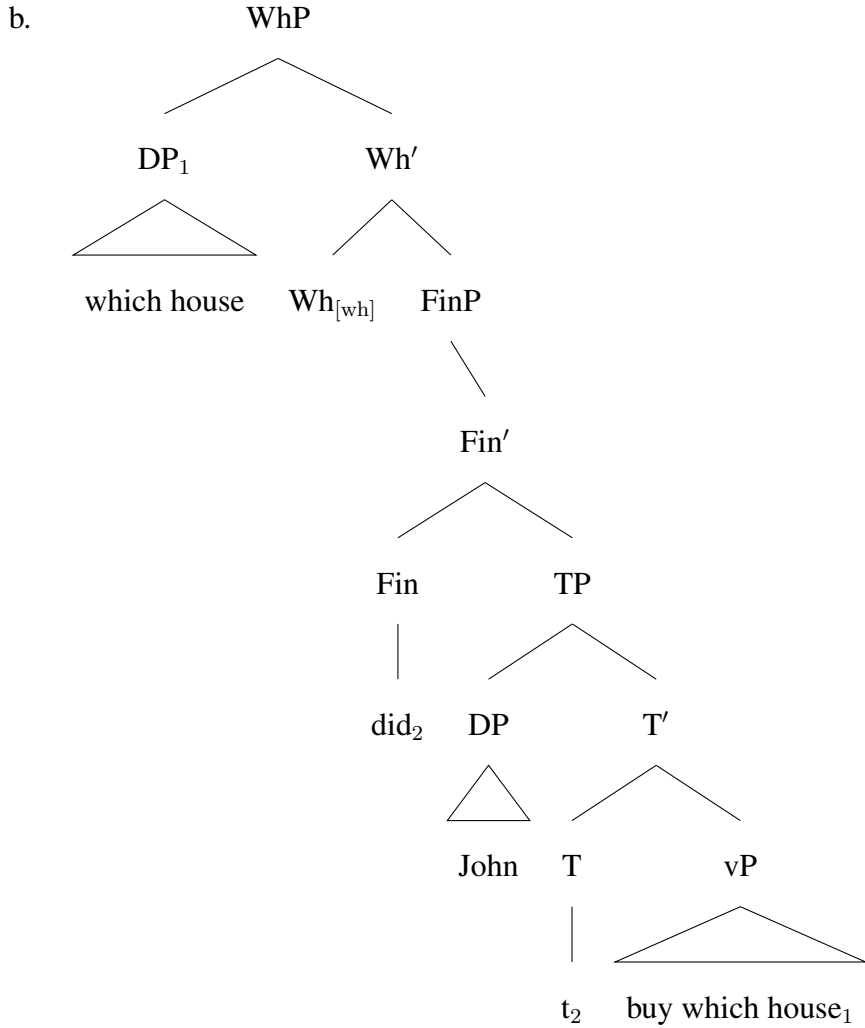
(64)

[Which house₁ [wh] [did John buy which house₂]]	CHAINREDUCTION	ALIGN-[WH]	PRNLOWESTCOPY
a. (Which house)₁ did ((John) (buy (which house)₂))	*!		*
b. (John) (bought (which house)₂)		*!	
☞ c. (Which house)₁ did ((John) (buy))			*

CHAINREDUCTION ensures that only one copy of *which house* is pronounced, and the ALIGN constraint, ranked above PRONOUNCELOWESTCOPY, ensures that this is the higher copy. (From now on I will assume that CHAINREDUCTION is an undominated constraint in English, that is, that potential repairs involving the expression of both copies, such as (64a), are always ruled out and will not include such repairs or the CHAINREDUCTION constraint in tableaux. I also omit violations of MAX incurred by the deletion of unrealized copies.) If we now suppose that there exists a corresponding ALIGN constraint for [foc]-marked functional heads:

(65) ALIGN-[foc]

Call material c-commanded by a left-peripheral [foc]-marked functional head the scope of [foc].

Then, the left edge of the string which is the realization of the scope of [foc] should align with the right edge of a Phonological Phrase containing (the output realization of) a terminal marked with a [foc]-feature.

Assign a violation if the scope of a left-peripheral [foc]-marked functional head is realized in the output without a [foc]-containing Phonological Phrase abutting it to the left.

. . . but that this constraint is ranked *below* PRONOUNCELOWESTCOPY (in English), we encode the fact that focus phrases do not front in English, even though they are copied in the syntax.

(66)

[the man in a black suit$_1$ [foc] [John invited the man in a black suit$_2$]]	ALIGN-[WH]	PRNLWSTCOPY	ALIGN-[FOC]
a. ((John) (invited (the man in a black suit)$_2$))			*
b. (the man in a black suit)$_1$ ((John) (invited))		*!	

3.2 Enter MAX

Let us now consider what happens when these constraints interact with the other constraints we considered earlier, in particular MAX. In a context like (67), the background—all of the clause in (67a) to the exclusion of the phrase containing focus—can be omitted (creating a fragment), that is, it is Recoverable. (I return in Section 4 to the precise nature of Recoverability; the important point for the moment is that just that the background can be elided, that is, a fragment is possible.)

(67) Who did John invite? (The man in the purple suit?)

  a. John invited the man in the BLACK suit.

  b. The man in the BLACK suit.

Crucially, the ALIGN-[wh] and ALIGN-[foc] constraints are not constraints on *wh*- or focus-marked items themselves; they rather assign violations to the realization of [wh]/[foc]'s *scope* without a Phonological Phrase (containing the realization of a terminal marked [wh] or [foc] respectively) left-abutting it. This formulation is critical, because it allows for the possibility of the scope simply not being realized as a possible repair. In fact, given the constraints considered up to now, deletion is even a better repair than realizing the higher copy (that is, given only these constraints, (68d) harmonically bounds the alternatives).

(68)

[the man in the black$_{[foc]}$ suit$_1$ [foc] [John invited [the man in the black$_{[foc]}$ suit$_2$]]	PRNLOWESTCOPY	ALIGN-[FOC]
a. (John) (invited (the man in the black suit)$_2$)		*!
b. (the man in the black suit)$_1$ ((John) (invited))	*!	
c. (the man in the black suit)$_1$	*!	
☞ d. (the man in the black suit)$_2$		

Obviously the winning candidate in (68d) is not the only possible repair; it alternates with the nonelliptical variant in (68a). The solution is as before: the MAX constraint will penalize deletion, and if MAX is allowed to float on either side of ALIGN-[foc], we derive the two attested outcomes. If MAX is ranked above ALIGN, the outcome without deletion (but with the lower of the two copies pronounced) is the winning candidate; if MAX is ranked below ALIGN, then the candidate with deletion wins.[20]

(69)

[the man in the black$_{[foc]}$ suit]$_1$ [John invited [the man in the black$_{[foc]}$ suit]$_2$]	PRNLWSTCOPY	MAX	ALIGN-[FOC]
☞ a. (John) (invited (the man in the black suit)$_2$)			*
b. (the man in the black suit)$_1$ ((John) (invited))	*!		
c. (the man in the black suit)$_1$	*!	*	
d. (the man in the black suit)$_2$		*!	

(70)

[the man in the black$_{[foc]}$ suit]$_1$ [John invited [the man in the black$_{[foc]}$ suit]$_2$]	PRNLWSTCOPY	ALIGN-[FOC]	MAX
a. (John) (invited (the man in the black suit)$_2$)		*!	
b. (the man in the black suit)$_1$ ((John) (invited))	*!		
c. (the man in the black suit)$_1$	*!		*
☞ d. (the man in the black suit)$_2$			*

This analysis builds on the idea developed in various places in the recent literature (e.g. Fox & Pesetsky 2005, Thoms 2010) that movement feeds ellipsis and that ellipsis can be one possible repair for the problem of linearizing two copies with respect to each other, but it does this without requiring any stipulations about the different status of strong versus weak features, or the order of movements; everything falls out from

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[20]Note that in these cases, it is actually the lower copy of the focus-marked phrase which is pronounced in the optimal output. Although this distinction does not obviously make a difference here, it may help understand some cases of fragments which otherwise don't seem to be able to undergo A′-movement outside of ellipsis (such as NPIs, as in *What didn't you bring?—Any wine*); see den Dikken et al. (2000), Valmala (2007), Weir (2014).

independent principles of linearization (which copy of a focus-moved phrase is pronounced), along with the mechanism of floating MAX to account for the optionality of fragment ellipsis, a mechanism which we independently proposed for the optionality of left-edge ellipsis.

I believe further support for the view that both fragment ellipsis and left-edge ellipsis come about via the floating of MAX with respect to other constraints comes from the fact that left-edge ellipsis interacts with narrow focus, as discussed above—and that this is immediately capturable in the analysis proposed here. Recall that narrow focus seems to bleed left-edge ellipsis of the kind shown in (71), even in cases where that narrow focus is on the left-edge (and so is a strong start) as in (71b):

(71)   a.   A: When are you leaving?

             B: At four.

             B': ??Leaving at four.

             B": I'm leaving at four.

        b.   A: What kind of meeting will you be attending?

             B: A dull meeting.

             B': *Dull meeting that I'll be attending.

             B": It's a dull meeting that I'll be attending.

This follows if (a) the focused phrases in these cases move (i.e. are copied), as above, and (b) MAX can freely float with respect to ALIGN-[foc] and the STRONGSTART constraints, but ALIGN-[foc] is rigidly ranked above the STRONGSTART constraints. If MAX is ranked above ALIGN-[foc], then there is no deletion, as in (69). If MAX is ranked below ALIGN-[foc] but above the STRONGSTART constraints, then there is clausal ellipsis—but there is no way to favour the candidate with left-edge ellipsis alone. In tableaux (72) and (73) below, the left-edge ellipsis candidate *leaving at four* is harmonically bounded by (has a proper superset of the violations of) the clausal-ellipsis candidate *at four*, and so *leaving at four* cannot be a possible outcome. In this way, narrow focus bleeds the realization of a sentence containing LEE.

(72)

[at four$_1$ [foc] [I'm leaving at four$_2$]]	PRNLWRCOPY	MAX	ALIGN-[FOC]	STRST-ι	STRST-ϕ
a. (at four)$_1$ (I'm leaving)	*!				at, I'm
☞ b. (I'm (leaving (at four)$_2$))			*		I'm, at
c. (at four)$_2$		*!			at
d. (leaving (at four)$_2$)		*!	*		at

[at four$_1$ [foc] [I'm leaving at four$_2$]]	PRNLWRCOPY	ALIGN-[FOC]	MAX	STRST-ι	STRST-ϕ
a. (at four)$_1$ (I'm leaving)	*!				at, I'm
b. (I'm (leaving (at four)$_2$))		*!			I'm, at
☞ c. (at four)$_2$			*		at
d. (leaving (at four)$_2$)		*!	*		at

(73)

If we assume that pivots of clefts which bear narrow focus also undergo copy-movement, then we derive the surprising result that LEE is blocked even when one would imagine that it would favour the strong start of the pivot being realized at the left edge (i.e. left-edge deletion of *it's*):

(74)   a.   It's JOHN that Mary saw.

   b.   *JOHN that Mary saw.

[John$_1$ [it's John$_2$ that Mary saw]]	PRNLWRCOPY	ALIGN-[FOC]	STRST-ι	STRST-ϕ	MAX
a. (John)$_1$ (it's (that Mary saw))	*!			it's	
b. (it's (John)$_2$ (that Mary saw))		*!		it's	
c. (John)$_2$ (that Mary saw)		*!			*
☞ d. (John)$_2$					*

(75)

(The reader can check that ranking MAX above ALIGN will result in *It's John that Mary saw* being chosen as the winning output.) In the case of a cleft where both pivot and relative clause are new information, that is, where the pivot is not the narrow focus, we can suppose that no focus copy-movement takes place. As such, PRONOUNCELOWESTCOPY and ALIGN-[foc] are not relevant to the decision between candidates, and ranking MAX below STRONGSTART-ϕ allows for deletion of the initial *it's* in an example like (76). (Ranking MAX above the STRONGSTART constraints results in the no-deletion output.)

(76)   a.   It's lovely weather we've been having.

   b.   Lovely weather we've been having.

(77)

[it's [lovely weather [we've been having]]]	PRNLWRCOPY	ALIGN-[FOC]	STRST-ι	STRST-ϕ	MAX
a. (it's ((lovely weather) we've been having))				it's!	
☞ b. ((lovely weather) we've been having)					*

Note, however, that left-edge ellipsis *is* (optionally) possible *within* a fragment answer (as long as the deleted word is one which is stipulatedly Recoverable, e.g. the determiner *the* in (78); see also Merchant 2004: fn. 17).

(78)   Who did John invite?

    a.   The man in a black suit.

    b.   Man in a black suit.

This also falls out from the present analysis. The form in (78a) results if MAX is ranked below ALIGN-[foc] but above STRONGSTART-ϕ, (79) (the ranking with respect to STRONGSTART-ι is irrelevant, as the intonational phrase here starts with a Phonological Phrase boundary). The form in (78b) results if MAX is ranked below STRONGSTART-ϕ, (80).[21]

(79)

[the man in a black suit$_1$ [John invited [the man in a black suit]$_2$]]	PRNLWRCOPY	ALIGN-[FOC]	MAX	STRST-ι	STRST-ϕ
a. (John) (invited the (man in a black suit)$_2$)		*!			
☞ b. (the man in a black suit)$_2$			*		the
c. (man in a black suit)$_2$			**!		

(80)

[the man in a black suit$_1$ [John invited [the man in a black suit]$_2$]]	PRNLWRCOPY	ALIGN-[FOC]	STRST-ι	STRST-ϕ	MAX
a. (John) (invited the (man in a black suit)$_2$)		*!			
b. (the man in a black suit)$_2$				the!	*
☞ c. (man in a black suit)$_2$					**

4   On recoverability and the encoding of ellipsis

In all of the above discussion, an informal notion of Recoverability of Deletion has been relied on. But what actually is the relevant notion of Recoverability, and how is it actually encoded in the syntax; at what level does it apply?

It is well-known that not everything that is given (in an intuitive sense), nor everything that is deaccented, can necessarily be deleted. For example, while *he insulted* can be deaccented in (81a), and is Given in the

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[21]The ϕ that would contain *a black suit*, as well as the violation of STRST-ϕ that the determiner *a* in that ϕ causes, are ignored in these tableaux. This would be repaired by parsing the determiner *a* outside of this ϕ (i.e. *the (man in a (black suit))*), as discussed in Section 2.2.

sense of Schwarzschild (1999) (entailed by *he called (someone) an idiot*), the interpretation of (81b) cannot be as in (81b-i) but only as in (81b-ii).

(81)   (after Merchant 2001: 23)

     a.   John called Bill an idiot, and then he insulted Mary.

     b.   John called Bill an idiot, and then Mary.

         (i)   = and then ~~he called~~ Mary ~~an idiot~~.

         (ii) $\neq$ and then ~~he insulted~~ Mary.

The condition on deletion, then, needs to be stricter than that on deaccenting, for example.

A clear benefit of the [E]-feature approach to licensing ellipsis, discussed by Merchant (2004: sec. 2), is that it can combine three distinct features of ellipsis—the silence itself, the requirement for a syntactic licensor of ellipsis (e.g. an auxiliary verb in VP ellipsis), and the requirement that what is elided be Recoverable in a precise sense—in one element, the [E]-feature, which is present at narrow syntax and can therefore be the input to both phonology and interpretation. As Merchant (2004) describes, one can encode (for example) the fact that clausal ellipsis is clausal by saying that C (but not, say, V) bears the [E]-feature, that it is interpreted by the phonological component as in (82) (that is, it silences its complement at spell-out), and that it is interpreted by the semantic component as in (83) (that is, it bears a presupposition that its complement be of the correct semantic form—in Merchant's analysis, e-GIVEN).

(82) $\text{XP} \rightarrow \emptyset \ / \ [\text{E}] \ \_\_$ (Merchant 2004: 671)

(83) $[\![[\text{E}]]\!] = \lambda p.p$ is e-GIVEN $: p$ (Merchant 2004: 672)

Locating these three factors in one item is obviously appealing and is especially so for those ellipses, such as VP ellipsis or NP ellipsis, which very clearly seem dependent on a particular syntactic configuration to be licensed (see e.g. Johnson 2001, Aelbrecht 2010 on VP ellipsis). However, it is unclear that clausal ellipsis really requires a licensor in the same way. One notable difference between clausal ellipsis and VP ellipsis, for example, is that the licensor of VP ellipsis (e.g. an auxiliary) is always itself pronounced (obligatorily so, prompting exceptional *do*-support in English for example), while in clausal ellipsis, the putative licensor (the complementizer/left-peripheral functional head) is not pronounced (Merchant 2001's Sluicing-COMP Generalization).[22] Rather, the distinguishing characteristic of clausal ellipsis seems to be the ellipsis of

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[22]The idea that clausal ellipsis is nevertheless syntactically licensed originates in Lobeck (1995), where it is employed to distinguish (inter alia) between sluicing in interrogatives, grammatical (*Someone left but I don't know who*), and in relatives,

all of a clause up to one remnant which appears to have undergone a step of A′-movement. That can be more naturally encoded in accounts like the present one (and the accounts it draws on, e.g. Fox & Pesetsky 2005, Thoms 2010), where the A′-movement itself, and its interaction with linearization/spell-out, licenses (or forces) ellipsis. In addition, I have argued that the current account predicts the otherwise surprising interaction between left-edge ellipsis and narrow focus, which an approach which licenses clausal ellipsis in syntax (by means of the [E]-feature or similar) does not predict. However, if we move away from the [E]-feature approach, we also lose that approach's ability to encode the antecedence/Recoverability condition directly in the presupposition of [E]. How, then, can we determine what can be deleted at the syntax–PF interface, and what cannot?

One option would be to bite the bullet and say that the syntax–PF interface does have access to the semantic interpretation of the syntactic input. That is, the syntax–PF interface would know that a certain constituent was or was not recoverable in the precise sense required to license its deletion. We could imagine building this into a constraint RECOVERABILITY, which would allow for deletion in (85), but not (86) (where the input form is inappropriate).

(84)   Who did John call an idiot?—Bill. (= ~~John called~~ Bill ~~an idiot~~)

(85)

Bill₁ John called Bill₂ an idiot	RECOVERABILITY	PRNLOWERCOPY	ALIGN-[FOC]	MAX
a. John called Bill₂ an idiot			*!	
☞ b. Bill₂				*

(86)

Bill₁ John insulted Bill₂	RECOVERABILITY	PRNLOWERCOPY	ALIGN-[FOC]	MAX
☞ a. John insulted Bill₂			*	
b. Bill₂	*!			*

However, this requires the syntax–PF interface to be able to see semantic interpretation.[23] While this is sometimes implicitly countenanced, and explicitly defended in parallel architecture models such as Jackendoff (2002), the interfaces in the current analysis are presumed to link syntax to semantics and syntax to prosody separately, and so we might be skeptical of letting the syntax–prosody interface see the semantic

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ungrammatical (*_Someone left but I don't know the person who_); the difference can be encoded by saying that $C_{[wh]}$, but not $C_{[rel]}$, licenses ellipsis. But it is not clear that relative clauses cannot in fact undergo ellipsis in the right conditions, as Collins (2015) discusses, citing examples like _At the party I saw three men that I knew and four women_ (= four women that I knew).

[23]Not just the syntactic level of Logical Form, which would not be problematic (cf. for example the Scope Transparency constraint of Bobaljik & Wurmbrand 2012 mapping between LF scope and PF order), but the actual interpretation of that LF— e.g. whether a particular constituent is entailed by one given in the discourse context, etc.

interpretation of its input in this way.[24] An alternative is to suppose that constituents which can be deleted are marked as such in the syntax: a form of Givenness marking as proposed by Fery & Samek-Lodovici (2006), Selkirk (2007), Kratzer & Selkirk (to appear) which would need to be sharpened to mark only material which could be deleted. That, however, seems to duplicate the work done by [foc]-marking and the movement of foci (pace the conclusions of Kratzer & Selkirk to appear that both types of marking, [focus] and [given], are indeed necessary).

I want to suggest that the answer lies elsewhere: in the mechanisms of interpretation within a discourse, rather than in the mechanisms of production. Simply put: there are no restrictions on the production (generative) side of the grammar on deletion (at least not of the sort being discussed here, i.e. clausal ellipsis and left-edge ellipsis). The grammar will, in principle, allow for the generation of deletion structures even where the correct notion of Recoverability is not met, as in the implicational bridging example in (86). The reason such examples fail is that *addressees* will have procedures for interpreting such fragments, which will draw on the relevant principles of Recoverability. (A similar suggestion is made by Ott & Struckmeier 2018: 403f.) Let us say, for concreteness, that the interpretation procedure is as in (87) (cf. Stainton 2006, Jacobson 2016):

(87) *Procedure for interpreting fragments*
   The denotation of a fragment composes with the Question under Discussion (understood categorially, i.e. as a function) to give a propositional interpretation.

(88) a. Who did John call an idiot? $\leadsto \lambda x$. John called x an idiot
  b. Bill.
  c. (λx. John called x an idiot)(Bill) = John called Bill an idiot

The reason that (88b) cannot be interpreted as 'John insulted Bill' comes from (87). The reason that (88b) is not uttered with the intended meaning 'John insulted Bill' is not because the productive/generative grammar forbids this, but because speakers know that addressees will use a principle like (87) to interpret fragments, and so they will not use fragments to communicate meanings different from that. This can be compared to, for example, the use of lexical items which carry presuppositions, e.g. *John is smoking again* (presupposing that John previously smoked). Presuppositions are of course very easily accommodated by addressees if they are not incompatible with their understanding of the world, even if, for example, the addressee did not know that John previously smoked. So the productive grammar probably does not actively filter

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[24]Thanks to an anonymous reviewer for pushing for clarity on this point.

items with presuppositions that are not already in the common ground. Speakers will simply generally not use presuppositions if they think they will conflict with their addressee's state of knowledge. This is still a process which is in the grammar in a wide sense (it refers to notions which are specific to discourse, such as the Common Ground, not very general principles of cooperativeness; and the speaker's choice of one utterance over another must of course be some part of grammar in the widest sense), but it doesn't rely on filtering by the generative/productive grammar in a narrower sense (e.g. the mechanisms of syntax or the syntax-semantics interface). The interpretation of fragments—and in particular, the feeling that some fragments are infelicitous because they do not meet antecedence/Recoverability conditions—may be similar.

The actual procedure for interpreting fragments may be quite different from (87). I will not try here to answer the question of what the antecedence condition on clausal ellipsis actually is, a question on which there is a vast literature.[25] But I think the idea that this antecedence condition is built into mechanisms of interpretation, rather than production, may help resolve some of the tension between direct interpretation approaches to fragments (where no syntactic structure is assumed, e.g. Stainton 2006, Jacobson 2016) and elliptical approaches (e.g. Merchant 2004, Weir 2014); it may be that the production side involves ellipsis, while the interpretation side involves direct interpretation. Alternatively, the interpretation procedure may involve the reconstruction by the hearer of the unrealized syntactic structure, such as in the LF-copy approach of Chung et al. (1995, 2011). (These authors explicitly note that their LF-copy model is more easily understood as a model of interpretation than as one of production, Chung et al. 2011: fn. 1.) Such an approach might help explain, for example, why there does seem to be evidence that (some) syntactic (not merely semantic) identity is required between ellipsis site and antecedent (Chung 2013, Merchant 2013b).

Locating Recoverability on the interpretation side, in the (formal) pragmatics of discourse, may also help us understand which elements can and cannot be subject to left-edge drop. For example, *will* cannot easily be dropped:

(89)   ?#You go to the party tomorrow? (intended '~~will~~ you go. . .')

This is true even though one might expect that *will* could be (intuitively) Recoverable here (given the presence of *tomorrow*), and given that it is a weak start which should be favoured for deletion if STRONGSTART-ι is ranked above MAX:

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[25]E.g. Chung et al. (1995, 2011), Chung (2013), Merchant (2001, 2004, 2013b), Krifka (2006), Reich (2007), AnderBois (2010, 2014), Barros (2014), Weir (2014, 2017b), Thoms (2015).

[will [you go to the party]]	STRONGSTART-ι	MAX	STRONGSTART-ϕ
a. ($_\iota$ will ($_\phi$ you go to the party))	will!		you
☠ b. ($_\iota$ ($_\phi$ you go to the party))		will	you

(90)

On the basis of facts like this, Zwicky & Pullum (1983) suppose that the list of elements droppable at the left edge simply has to be lexically specified. However, Fitzpatrick (2006) makes the interesting observation that sentences with dropped auxiliaries at the left edge receive different interpretations depending on the properties of the verb and the object; so (91a) is most naturally interpreted as past tense, while (91b) is interpreted as present/habitual.

(91)   (Fitzpatrick 2006: 413)

   a.   You sell your car? (=Did you sell your car?)

   b.   You sell cars? (=Do you sell cars?)

Fitzpatrick (2006) notes that similar interpretive effects can be seen in languages which can optionally fail to realize Tense, such as Haitian Creole; the so-called 'factative effect' (see also Smith & Erbaugh 2005 for similar principles for temporal interpretation in Mandarin Chinese). There is a sort of default interpretation for tenseless structures; because (91a) has a definite object (and so must describe a telic accomplishment), it is interpreted as completed, i.e. in the past, while (91b), having an indefinite plural object (and so describing an atelic activity), is interpreted as ongoing (and in the present). If a stative verb (inherently atelic) is used, the interpretation is only present tense; Fitzpatrick points out that (92b) cannot be interpreted as past tense, even if we know that the cat in question is deceased.

(92)   (Fitzpatrick 2006: 413)

   a.   You like cats? (=Do you like cats?)

   b.   You like my cat? (=Do you like my cat?, ≠Did you like my cat?)

Fitzpatrick's analysis of left-edge drop is different from the present one in implementation, and in particular he denies that recoverability is at play in the interpretation of examples like (92). However, the idea that the interpretation of structures like (92) may be due to a sort of default interpretation effect could integrate well into the model being proposed here. The *generation* of structures like (92) can come about in the normal way, and it may be that the (productive/generative) grammar does not by itself rule out the deletion of *will* at the left-edge as in (90). What rules out the use of such structures is that they would not be interpreted

correctly, if addressees use (and are assumed by speakers to use) principles of interpretation such as (93):

(93)   If a structure is unspecified for tense, then rely on its aspectual/aktionsart specification to deduce the time of the event (e.g. telic/completed=past, atelic=present).

Note that, if Fitzpatrick is right to equate the interpretive effects of English LEE with the factative effect of zero tense in languages like Haitian Creole, (93) is not a stipulation specific to English but rather a general principle of interpretation across languages. We can imagine telling a similar story for dropped articles, as in *Postman just arrived* (=~~the~~ postman just arrived); such structures, with bare nouns, could be interpreted in the various ways available for interpretation of bare nouns in articleless languages (see, e.g., Chierchia 1998), but a more contentful determiner (say, a numeral like *two*) could not be deleted, perhaps not because the generative grammar rules this out, but because no interpretive strategy would be available that would recover the relevant meaning. The non-droppability of prepositions, even if they are weak starts (as in (94)), might result in a similar way: although there can be default interpretations for tenseless clauses and bare (articleless) noun phrases, there is no default interpretation for a prepositional phrase lacking its preposition.

(94)   *Train I saw someone I knew. (= ~~On the~~ train. . .)

If this is on the right track, then the fact that clausal ellipsis and left-edge ellipsis have completely different antecedence/recoverability conditions is not necessarily a barrier to an analysis which generates them in the same component (in the syntax–prosody interface), and which therefore allows one to bleed the other, as proposed here. The production side of the grammar does not care whether the structures it builds will receive an appropriate interpretation in context or not.[26] Antecedence or recoverability conditions are conditions on interpretation—but as speakers are aware that addressees will use certain interpretive strategies, they will not use structures which will not give the correct interpretation (or any interpretation) when those strategies are used.

5   Taking stock and further directions

I have argued that left-edge ellipsis and the clausal ellipsis process are both handled at the syntax–prosody interface, by the floating of MAX with respect to other constraints (STRONGSTART and ALIGN-[foc]) respectively; the floating of MAX captures the optionality of both of these kinds of ellipsis. If this is

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[26]I do not mean this to be taken overly strictly. There may still be a requirement that the syntax generates only structures which are formally interpretable by the semantic component—which are compositional, do not contain type mismatches, etc. I mean here just that the generative grammar does not directly care about pragmatics, interpretation in discourse.

correct, then this implies that at least these two types of ellipsis are very late processes. Clausal ellipsis is fed by syntax (by focus movement), but there is no separate licensing of clausal ellipsis in the syntax, e.g. in the form of an [E]-feature. I have argued that this is indeed justified on the basis of the interactions we see between these two ellipsis phenomena, and the independently motivated plausibility of the analysis for left-edge ellipsis.

If it is correct, this line of analysis potentially raises further questions. One obvious question is whether the present analysis can extend to other cases of ellipsis. In particular, there are many reasons to believe that fragment ellipsis and sluicing result from the same process of clausal ellipsis (the syntactic parallels are discussed in Merchant 2004; there are also interpretive parallels which suggest that the relevant antecedence/recoverability condition is the same in both sluicing and fragments; see, e.g., Weir 2014: ch. 3), so in the best of all possible worlds, the analysis presented in the present paper should carry over to sluicing. Investigating this in detail, and in particular working out the detail of how the model I propose here should apply to embedded clauses, is a project I have to leave to another occasion; note, however, that the remnant *wh*-expression in sluicing (or some subpart of it) has to be prosodically stressed. This prosodic property of sluicing remnants suggests that a syntax–prosody interface account of the present type may be along the right lines for sluicing too.

As discussed in the text, I believe it is plausible that left-edge ellipsis and fragment ellipsis are generated by the same mechanism because neither of them are licensed by a functional head, at least not obviously, pace Lobeck (1995) and Merchant (2001, 2004). In this respect they differs from, for example, VP ellipsis, which is generally taken to require a licensor such as an auxiliary verb. VP ellipsis also has a large number of constraints on its distribution which do appear genuinely syntactic in nature (see Johnson 2001 for extensive discussion, as well as e.g. Aelbrecht 2010, Aelbrecht & Haegeman 2012, among many others). It may therefore be the case that VP ellipsis (and perhaps other forms of ellipsis such as NP ellipsis) are a different kind of silence from clausal and left-edge ellipsis: the former may genuinely be syntactic processes (which require syntactic licensing), while the latter may be post-syntactic (although fed by syntactic movement). However, it may also be possible to extend the model proposed here, and in particular the fact that movement (and constraints on the pronunciation of copies) may feed ellipsis, to these other kinds of ellipsis as well (following the line of thought in, e.g., Thoms 2010); but this project I also leave to future work here.

The question of formal licensing in the syntax is also highly relevant to understanding the contrasts in (95) and the crosslinguistic contrasts in (96) (from Weir 2014: ch. 5, see also e.g. de Cuba & MacDonald 2013, Temmerman 2013, Vicente 2013):

(95)   Who left early?

    a.   I think John.

    b. ??I found out John.

    c. *I'm surprised John.

(96)   Who left early?

    a.   I think (*that) John.

    b.   Ik denk (*dat) John. (Dutch)

    c.   Creo *(que) John. (Spanish)

    d.   Gondolom *(hogy) John. (Hungarian)

Something has to be said about the difference between the bridge verb *think* and the non-bridge predicates in (95), which Weir (2014) proposes is due to different complementizer heads in the differing structures (and a concomitant formal difference in whether ellipsis is licensed); some other explanation for this, and for the differences in whether the complementizer is obligatorily pronounced or obligatorily absent (96), will have to be found if the present analysis is to extend to these embedded cases, possibly to do with the structure of the clausal left peripheries in these languages and the positions which can host focus movement in these cases (see e.g. de Cuba & MacDonald 2013, contra Weir 2014: ch. 5).

While taking these issues up lies beyond the scope of this paper, but all of these theoretical and empirical questions, among many others, will hopefully provide testing grounds for how far the current proposal can be pushed, and to what extent various ellipsis processes are independent from syntax proper, deriving their properties solely from independent properties of movement and the interfaces.

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