

## 6 Pseudogapping

We have, in previous chapters, presented evidence of the advantages of TLCG’s flexible constituency vis-à-vis the syntax-semantics interface problems posed by coordination. It is true, however, that coordination has been the empirical “set piece” of CG for several decades, and it is legitimate to ask at this point whether, apart from this one (admittedly vast) domain of phenomena, the flexibility of CG is needed in empirical studies of natural language grammars. We argue in this chapter that ellipsis phenomena provide an emphatically positive answer to this question. Like coordination, ellipsis frequently involves apparently missing material which does not correspond to a phrase structural constituent, and which, just as in the case of coordination, has typically been treated in derivational approaches via complex movement operations, with a separate series of deletion steps. In this chapter, we take up one specific type of ellipsis phenomenon in English, namely, *pseudogapping*, and argue that neither movement nor deletion is required or motivated for its analysis; on the contrary, not only are neither necessary, but the specific analyses which have appealed to them are dubious on both conceptual and empirical grounds. The failure of the movement + deletion type approach is perhaps most dramatic in the case of pseudogapping, but we believe that our argument can be extended to other major ellipsis constructions which have attracted much attention in recent theorizing. Hybrid TLCG offers a particularly natural way of reformulating the syntactic and semantic licensing conditions for ellipsis and has the potential of overcoming the major problems of both the transformational and nontransformational accounts of ellipsis in the previous literature. We return to this issue in chapter 8, where we examine more complex types of ellipsis phenomena in which ellipsis interacts with another major grammatical phenomenon, namely, extraction.

Pseudogapping is a somewhat odd instance of ellipsis in which a lexical verb under an auxiliary is deleted, leaving behind its own complement(s). There are clear family resemblances between pseudogapping on the one hand and Gapping and VP ellipsis on the other.

(262) Mary hasn’t **dated** Bill, but she has  $\emptyset$  Harry. (*pseudogapping*)

- (263) Smoke **bothers** Fred, and loud music,  $\emptyset$  Fred's parents. (*Gapping*)  
 (264) Smoke might have **bothered Fred**, but it didn't  $\emptyset$ . (*VP ellipsis*)

In both pseudogapping and Gapping, the lexical verb is missing, leaving behind some (or all) of its complements as remnants, but in pseudogapping, an auxiliary in the elided clause must be present (just as in VP ellipsis), whereas in gapping no auxiliary is found. Gapping also differs from the other two in that it is restricted to coordination environments (e.g., *I'll contact John if you will (Mary)* vs. *\*I'll contact John if you Mary*).

The proper analysis of pseudogapping has long been a problem in the literature (e.g., Kuno 1981; Jayaseelan 1990; Miller 1990; Lasnik 1999; Baltin 2000; Takahashi 2004; Hoeksema 2006; Gengel 2013; Miller 2014). The shared-auxiliary requirement and distributional parallelisms of pseudogapping and VP ellipsis (where, unlike the pattern with Gapping, these elliptical constructions are not restricted to coordination environments) suggest a unitary analysis in which the latter is nothing but a limiting case of the former with all the verb's complements elided. In transformational approaches (e.g., Jayaseelan 1990), this unification has been implemented by treating pseudogapping as VP ellipsis in which a remnant (*Harry* in (262)) has been moved out of a subsequently deleted VP, thereby escaping ellipsis. The disagreements among previous proposals pertain to differences in (i) the kinds of movements proposed (A- vs.  $\bar{A}$ -movement) and (ii) the direction of movement (leftward vs. rightward). However, as we will show, regardless of which choices are made, the various movement operations employed for this purpose by different authors are not only undermotivated but empirically problematic. The nontransformational literature, by contrast, has given relatively little attention to pseudogapping, with Miller (1990, 2014) being virtually the only exception. Building on Schachter's (1978) analysis of VP ellipsis (see also Hardt 1993), Miller (1990) proposes that the meaning of the missing verb (such as *dated* in (262)) in pseudogapping is simply recovered by an anaphoric mechanism. This approach is quite successful in providing a relatively simple mechanism for correlating form and meaning, and we have adopted its core ideas into our own proposals. But it has one major drawback: the complete dissociation between the syntactic and semantic licensing conditions for pseudogapping underlying Miller's analysis (which is common to many nontransformational analyses of ellipsis phenomena) overgenerates in a way never expected in a transformational approach.

We argue in this chapter that a synthesis of the transformational and nontransformational approaches to pseudogapping becomes possible in Hybrid TCG. As we have demonstrated in the previous chapters, the flexible interactions between the directional and nondirectional modes of implication are at the heart of our approach. We show that the "hybrid" architecture of Hybrid TCG once again yields an elegant analysis of a highly problematic empirical phenomenon, namely, pseudogapping. Our analysis characterizes the syntactic properties of the "antecedent" of the pseudogapped verb

in the preceding clause via the flexible notion of constituency with directional slashes and captures the anaphoric relation between the antecedent and the ellipsis clauses via order-insensitive inference with the nondirectional slash. This essentially amounts to augmenting the interpretive analysis of Miller (1990) with the insight from transformational approaches that syntactic information is also relevant in the licensing of pseudogapping, resulting in a synthesis of the seemingly antithetical transformational and nontransformational analytic strategies.

## 6.1 Syntactic and Semantic Constraints on Pseudogapping

### 6.1.1 Basic Patterns and Sensitivity to Discourse-Oriented Factors

Pseudogapping is most typical with transitive verbs (with NP or PP complements).

- (265) a. Mary hasn't dated Bill, but she has  $\emptyset$  Harry.  
 b. Mary dates Bill more frequently than she does  $\emptyset$  Harry.
- (266) a. You can't count on a stranger, but you can  $\emptyset$  on a friend.  
 b. John speaks to Mary more civilly than he does  $\emptyset$  Anne.

Though both the comparative and the non-comparative variants are clearly acceptable in such simple examples, pseudogapping is a somewhat marginal phenomenon at best, and judgments are often unstable. For this reason, it is important to first clarify the factors that affect the felicity of pseudogapping and to control for them as much as possible.<sup>1</sup>

The most fundamental property of pseudogapping, which is particularly important to bear in mind, is that, as noted by Hoeksema (2006), this construction must satisfy the Contrast relation in Kehler's (2002) classification of discourse relations.<sup>2</sup> Thus, note that the highly marginal (267a) improves with the use of contrastive *but* in (267b) and becomes virtually unexceptionable with the use of the comparative structure in (267c).

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1. Since judgments on pseudogapping examples are often subtle and complex, we adopt a somewhat elaborate system for marking the acceptability of examples in this chapter. We use \* for marking examples that, in our view, cannot be ameliorated by pragmatic manipulation (lexical choice, discourse context, world knowledge, and so on). In this section, we mark examples with intermediate levels of acceptability with %. Since we take all such examples to be grammatical (but degraded for pragmatic reasons), we generally eliminate this marking in later sections of this chapter to avoid overload of notation. When a (gradient) acceptability difference is at issue, we indicate different degrees of acceptability with the number of % symbols (where %% is worse than %). Outside of the particular set of contrasted examples, this should not be taken to have any significance. For examples from the literature, we have (except where noted) replaced the original judgments with our own.

2. The Contrast relation is typically expressed by *but*, as in *Mary went to the movies, but Bill went to a rock concert*, and is often manifested (as in this example) by the juxtaposition of two clauses having overall parallel structures but with at least one "slot" that is different; the material in this slot is in some sense opposed to the material in the corresponding slot in the other clause.

- (267) a. %% John will write essays and he will  $\emptyset$  novels.  
 b. % John won't write essays but he will  $\emptyset$  novels.  
 c. John will write essays much more successfully than he will  $\emptyset$  novels.

Note moreover that in all these cases, contrastive emphasis on *essays* and *novels* increases acceptability of the sentence as uttered (other sources of increased acceptability include the use of the demonstratives *this/that* [see section 6.3.5], which corroborates the same point).

Indeed, Hoeksema (2006) notes a strong statistical association between pseudogapping and comparative constructions, where 87 percent of his attested examples involve comparatives or constructions for comparison (with expressions such as *like* and *the way/manner*). This makes sense given the tight correlation between pseudogapping and the Contrast relation.

Also, as noted by Levin (1979), Hoeksema (2006), and Miller (2014), keeping the subject of the antecedent and the pseudogapping clause identical greatly increases the acceptability of pseudogapping (in fact, Miller notes that 85 percent of the pseudogapping examples in his corpus sample contain a pronoun as the subject of the ellipsis clause). Thus, compared with (267a,b), (268a,b) are somewhat degraded.

- (268) a. %%% John will write essays and Mary will  $\emptyset$  novels.  
 b. %% John will write essays but Mary will  $\emptyset$  novels.

The effect of the Contrast requirement and the “same subject” preference is that the least acceptable example in this paradigm is (268a), with no contrastive stress on the remnants (and no discourse context suggesting that essays and novels are contrasted), and the best is (267c), with strong contrastive stress on the remnants. Thus, we do not regard (268a) as ungrammatical; it just fails to satisfy all the relevant discourse conditions affecting the felicity of pseudogapping.<sup>3</sup> When presenting our examples below, we will control for these factors so that the examples will not violate these interfering discourse conditions. This is especially important for examples with more complex structures, in which such effects (unsurprisingly) tend to be aggravated. For example, even with single remnants, when the syntactic and semantic types are not the simple NP individual-denoting type as in (265) and (266), acceptability noticeably drops, as in the following (but note that the comparative structure is consistently better than the non-comparative structure).

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3. It is well-known in the literature on island effects that cumulative effects of such extragrammatical factors can lead to unacceptability practically indistinguishable from ungrammaticality. See chapter 10 for more discussion on this point.

- (269) a. %% John will bet an entire fortune that the METS will win the pennant, but he won't  $\emptyset$  that the BRAVES will win.  
(Culicover and Jackendoff 2005, 294)
- b. % John would bet an entire fortune that the METS will win the pennant more readily than he would  $\emptyset$  that the BRAVES will win.

### 6.1.2 Complex Pseudogapping Patterns

Beyond the “base cases” involving direct objects of transitive verbs as remnants, there are a variety of more complex pseudogapping examples that are well within the range of acceptable patterns. We take all these examples to be generated in the syntax since doing so will make the overall analysis simpler. Wherever relevant, we offer some observations on the extragrammatical factors possibly affecting their perceived acceptability.

**6.1.2.1 Multiple remnants** Pseudogapping is possible with multiple remnants in the ellipsis clause (we show the antecedent of the “elided verb” in boldface and the remnant(s) in italics).

- (270) a. % Although I wouldn't **introduce** *THOSE people to Tom and SALLY*, I WOULD  $\emptyset$  *THESE people to each OTHER*. (Gengel 2013, 58)
- b. I would **introduce** *THOSE people to Tom and SALLY* with more hesitation than I would  $\emptyset$  *THESE people to each OTHER*.

The moderately degraded status of (270a) essentially disappears when the sentence is reframed as a comparative as in (270b), suggesting that the degree of contrast in (270a) is not quite sufficient to completely satisfy the Contrast relation.

We believe that the number of remnants is not limited to two. Though (271) is admittedly somewhat awkward, we take its decreased acceptability to be due to processing difficulty.<sup>4</sup>

- (271) % I'd **bet** a *FRIEND* more *DOLLARS* that something *UNLIKELY* was true than I would  $\emptyset$  *an ENEMY EUROS that the SUN will rise tomorrow*.

**6.1.2.2 Nonconstituent ellipsis targets** The elided material is not necessarily a standard constituent.

- (272) a. % You can't **take the lining out of** that coat. You can  $\emptyset$  *this one*.  
(Levin 1979, 77)

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4. As noted in chapter 3 (footnote 2), multiple remnants are difficult in Gapping as well, presumably for a similar reason.

- b. You can **take the lining out of** that coat more easily than you can  $\emptyset$  *this one*.
- c. You can't **pay more attention to** John than you do  $\emptyset$  *Mary*!

These examples are particularly important since they seem to militate against analyses that depend on rightward movements to evacuate the remnants out of the deleted VP. Our analysis allows the elided material in these examples to constitute combinatorial units with proper semantic interpretations, enabling us to subsume these cases under the normal licensing mechanism of pseudogapping.

**6.1.2.3 Discontinuous ellipsis** There are also data displaying apparently discontinuous ellipsis.

- (273) a. She **found** her coworker **attractive** but she didn't  $\emptyset$  *her husband*  $\emptyset$ .
- b. I didn't **expect** your mother **to like the picture**, but I did  $\emptyset$  *you*  $\emptyset$ .

These examples seem particularly problematic to some of the movement-based approaches (again, ones involving rightward movement). They also have some interesting implications for our own analysis, and they raise an important (open) question: Namely, how much flexibility should be allowed in the syntax proper in capturing the possible patterns of pseudogapping adequately? We return to this issue in section 6.3.3.

### 6.1.3 Analytically Problematic Patterns

As noted at the beginning of this chapter, two major approaches have been taken to pseudogapping: (i) transformational analyses with movement + VP ellipsis and (ii) non-transformational analyses that rely on purely anaphoric mechanisms to retrieve the meaning of the missing verb. We now turn to data that prove to be especially difficult (or even intractable) for one or the other of these approaches.

**6.1.3.1 Problems for covert structure** Movement-based approaches find support in essentially two types of evidence: (i) syntactic identity conditions between the antecedent and the elided VPs and (ii) manifestations of island constraints governing the movement operations involved. Here we focus on the former. Islandhood-based evidence is discussed in chapter 10, together with similar evidence for other constructions analyzed in other chapters.

Evidence for identity conditions is taken to come from data such as (274), which according to Merchant (2008a) is ungrammatical because of voice mismatch.

- (274) %%Klimt is admired by Abby more than anyone does Klee.  
(Merchant 2008a, 170).

However, as noted by Tanaka (2011, 476) and Miller (2014, 87), there are well-formed instances of voice-mismatch pseudogapping such as the following, casting serious doubt on an argument for hidden syntactic structure based on data such as (274):<sup>5</sup>

- (275) a. %MY problem will be investigated by Tom, but he won't YOURS.  
 b. These savory waffles are ideal for brunch, served with a salad as you would a quiche.

A subtler type of tolerated mismatch is noted in Miller 2014, where the pseudogapped verb has a different valence from the token that appears in the antecedent clause.

- (276) Ask Doll, who spoke as much about his schoolboy career ending as he did of the season in general. (Miller 2014, 83)

(275) and (276) are clearly problematic for “deletion under structural identity” type approaches.

There is further evidence against syntactic identity in pseudogapping. Miller (2014, 85) notes examples such as the following, in which there is no overt syntactic constituent in the antecedent clause corresponding to the elided material in the pseudogapping clause:

- (277) a. They all called him Pa Tommy, just as they would any village elder in Sierra Leone.  
 = ‘. . . just as they would *call* any village elder in S. L. *by his first name*’  
 b. Type in your PIN, just hit those buttons like you would a phone.  
 = ‘. . . like you would *use* a phone’  
 c. EPA urged the Corps “to work directly with the affected communities as well as seek professional assistance in this matter as they would any other environmental issue.”  
 = ‘. . . as they would *act with respect to* any other environmental issue’

Here, the ellipsis clauses are interpreted along the lines of the paraphrases given, but there are no corresponding syntactic constituents in the preceding clauses that would match these paraphrases (or any other paraphrase that would work for these examples).

Note also that pseudogapping allows for split antecedents, which are similarly problematic for syntactic approaches.

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5. Nakamura (2013), building on Kertz (2010, 2013), argues convincingly that the asymmetry between cases such as (274) and (275) reflects the manner in which the Contrast relation is satisfied. Specifically, when the (intended) contrast is between the subject in the antecedent clause and the corresponding demoted argument in the pseudogapped clause, voice mismatch is barred, whereas if the contrast is established between the auxiliaries in different polarities in the two clauses, voice mismatch does not lead to unacceptability. See also Miller (2014, 87) for some discussion on the role of discourse constraints in acceptable examples of voice mismatch in pseudogapping.

- (278) a. %John saw Mary and Peter heard Ann, but neither did me.  
 (Miller 1990, 296)
- b. John saw Mary and Peter heard Ann more clearly than either of them did me.

Data such as (277) and (278) obviously present severe challenges to arguments for covert structure based on the premise that straightforward syntactic identity conditions hold between the elided material and its antecedent.

**6.1.3.2 Problems for purely interpretive approaches** Purely interpretive approaches can handle the kinds of data given above without trouble. But such approaches, too, face empirical contraindications from a certain type of data, namely, those displaying syntactic connectivity between the antecedent and the ellipsis site (Miller [1990] marks (279a) with ?? and takes it to be semantically, rather than syntactically, ill-formed; see section 6.2.2).

- (279) a. \*John spoke to Mary more often than he did for Anne.  
 b. \*John will accuse Bill of perjury more readily than he would Mary with forgery.

For example, (279a) is ungrammatical since the preposition in the remnant (*for*) does not match the one in the antecedent clause (*to*). It should be clear that these patterns do not fall out in any straightforward way in an approach relying solely on a semantic process of anaphora retrieval.<sup>6</sup>

## 6.2 Previous Proposals

We now review representative analyses of pseudogapping in the literature. As we discuss in more detail below, both the (majority of) transformational analyses and Miller's (1990) nontransformational alternative take pseudogapping and VP ellipsis to be derived by essentially the same mechanism. Our own analysis in section 6.3 follows these proposals in this respect. Though this assumption has been challenged by some

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6. Regarding connectivity, some authors have discussed the interactions between pseudogapping and binding conditions (such as Principle A [Baltin 2000] and Principle C [Sauerland 1998; Takahashi 2004]) and have drawn various theoretical conclusions. Unfortunately, exploring this issue is beyond the scope of the present work. For one thing, at least for some of these conditions (most notably, Principle C), their exact status—in particular, whether they are syntactic in nature—has been controversial (see Büring [2005] for a lucid review). Another reason for postponing this issue for future work is that (syntactic) binding is an area that is relatively underdeveloped in CG research (but see Szabolcsi 1992; Steedman 1996; Jacobson 2007). That being said, the interaction between binding and ellipsis is an important area for future research since typical accounts of both phenomena in CG eschew reference to syntactic structures, yet the relevant empirical observations in this domain have usually been taken to present evidence for structure-based accounts.



authors (most notably, Hoeksema [2006]), we believe that Miller (2014, section 5) shows convincingly that the various distributional differences between pseudogapping and VP ellipsis identified in the literature can be explained by means of independent non-syntactic (i.e., discourse- and/or processing-oriented) differences between the two constructions and thus do not constitute convincing enough evidence to posit a syntactic difference between them.

### 6.2.1 Pseudogapping as VP Ellipsis: Movement-Based Approaches

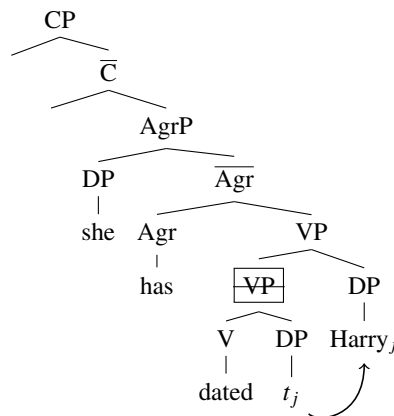
There are two aspects to movement-based approaches that need to be kept separate. One is the characterization of pseudogapping (and ellipsis more generally) as an operation that makes reference to purely syntactic information. The second is the specific implementation of this syntactic dependency via structure-changing operations.

The essential insight of movement-based approaches seems to lie largely in the first of these aspects. Movement-based approaches immediately explain the category-matching connectivity effect in pseudogapping, which can be accommodated only by an ad hoc stipulation in the interpretive approaches. At the same time, as we discuss in detail below, previous transformational analyses are unsatisfactory on both empirical and conceptual grounds: the various movement operations utilized either lack independent motivation or (when an independently motivated movement is retooled) do not match the actual distributional properties of pseudogapping. Moreover, movement-based approaches do not by themselves illuminate the question of why we might expect something like pseudogapping to be a possible type of ellipsis in English.

The transformational literature has essentially followed Kuno (1981), who took pseudogapping to be a case of VP ellipsis in which various constituents are moved out of the VP via adjunction operations, thus “surviving” VP ellipsis. Adopting this general idea, Jayaseelan (1990) analyzes (280) (= (262)) as in (281), via Heavy NP Shift (HNPS).

(280) Mary hasn't dated Bill, but she has  $\emptyset$  Harry.

(281)



Various empirical challenges have been identified in the literature for this analysis of pseudogapping. See, for example, Lasnik (1999) and Kubota and Levine (2017) for some extensive critiques. The most striking problem is perhaps the fact that it predicts that pronouns are not good remnants of pseudogapping since they are not right-shiftable in HNPS. Miller (2014), however, shows that pronouns are in fact one of the most typical types of remnants in many naturally occurring instances of pseudogapping, such as the following:

(282) It hurt me as much as it did *her*.

Subsequent transformational literature has seen several alternatives to Jayaseelan's (1990) proposal, but in a sense these are minor variants of the original idea embodied in his analysis. The only differences consist in whether the movement is taken to be A or  $\bar{A}$  movement and rightward or leftward movement. Among these various suggestions, Takahashi's (2004) "eclectic" analysis is empirically the most successful. For this reason, we focus on his analysis in what follows.

The background for Takahashi's (2004) solution is that neither an exclusively rightward movement analysis (such as Jayaseelan's [1990]) nor an exclusively leftward movement analysis (such as Lasnik's [1999]) can cover the whole range of data that pseudogapping displays. The gist of Takahashi's (2004) own proposal, then, is to admit both leftward and rightward movement as sources of pseudogapping and to capture data that are problematic for either one of the two approaches by the other movement mechanism. In a sense, this "eclectic" approach can be seen as the limiting case of the movement strategy: given that neither the leftward nor the rightward analysis covers all cases, the next (and the last) analytic alternative is to combine all approaches that have worked in particular cases. Unfortunately, however, a wider set of data reveals problems similar to those that undermine the previous accounts.

In the following (283), for example, there are three remnants.

(283) %I'd bet a FRIEND more DOLLARS that something UNLIKELY was true than I would  
an ENEMY EUROS that the sun will RISE tomorrow.

Takahashi's analysis would take the leftmost complement *an enemy* to undergo Object-shift to the left, followed by either two rightward movements targeting each of the remaining complements or a second movement to the left, applying to *Euros*, and a movement of the clausal complement to the right. But both of these possibilities are ruled out by Takahashi's own respective arguments against Jayaseelan's analysis on the one hand and Lasnik's on the other. In the former case, leaving aside the legality of multiple HNPS, the first of the rightward movements must move the indirect object *Euros* over the clausal complement. However, this is not a legal type of HNPS (see Kubota and Levine [2017, section 3.1] for a detailed discussion). In the latter case, the first movement must displace the indirect object over the direct object—again, an

option precluded for Takahashi's approach, since admitting such movement would incorrectly license the passivization of an indirect object.<sup>7</sup>

Aside from the specific empirical problems noted above, there is one fundamental issue for all movement-based analyses of pseudogapping (and of VP ellipsis more generally). As noted in the previous section, under the right conditions, pseudogapping is possible without any overt syntactic antecedent (cf. the antecedentless and split-antecedent pseudogapping examples (277) and (278) noted in section 6.1). These examples suggest that, despite the initial appeal of the movement + deletion strategy, descriptively speaking, the type of ellipsis involved in pseudogapping is anaphoric rather than being licensed syntactically. But then the fact that pseudogapping leaves a remnant (displaying connectivity effects) is particularly troublesome, since extraction "out of" unequivocally anaphoric expressions is generally prohibited. Note, for example, the following contrast between antecedent-contained ellipsis and its counterpart involving *do so* anaphora:

(284) John talked to everyone who Peter did (\*so). (Haik 1987, 513)

Previous syntactic accounts of pseudogapping remain silent about this tension between (apparent) evidence for a structural account and evidence against it.

### 6.2.2 The Anaphoric-Interpretive Strategy

During the past three decades, an alternative approach to ellipsis has emerged, whose central claim is that ellipsis never involves covert structure (e.g., Schachter 1978; Sag et al. 1985; Miller 1990; Dalrymple et al. 1991; Hardt 1993; Culicover and Jackendoff 2005). Versions of this approach typically invoke some kind of anaphoric process based on the semantics of the antecedent clause. We illustrate this strategy by reference to Miller (1990), which offers the most explicit proposal of this sort to date for pseudogapping (see Culicover and Jackendoff [2005] for a similar idea, worked out in less detail).

The key idea of Miller's (1990) non-derivational analysis of pseudogapping, couched in Generalized Phrase Structure Grammar, is that auxiliaries can appear as the head verb in the same set of phrase structure rules that license projections of lexical verbs. For example, in (262), reproduced here as (285), the auxiliary *has* is effectively treated as a transitive verb and directly combines with the remnant *Harry*.

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7. Takahashi (2004, 579) suggests the possibility of multiple leftward movements for the two objects in multiple remnant pseudogapping with ditransitives. But this directly contradicts Takahashi's (2004, 575) own argument against Lasnik (1999) just a few pages earlier. Since Takahashi suggests an alternative leftward + rightward movement analysis for ditransitives immediately after this puzzling mention of the multiple leftward movement possibility, we take the latter to be his real proposal (which is by far more in line with the spirit of his "eclectic" approach).

(285) Mary hasn't dated Bill, but she has  $\emptyset$  Harry.

Miller implements this strategy by assuming that auxiliaries can appear not only in subcategorization frames taking nonfinite VP complements but also in frames instantiating any subcategorization frame of a lexical verb in English. This means that the auxiliary *has* is specified in the lexicon to be compatible with the [SUBCAT 2] specification, which is associated with the following phrase structure rule licensing lexically transitive verbs such as *drink*:

(286) VP  $\rightarrow$  H[SUBCAT 2], NP

This rule licenses (285), and the meaning of the “missing” verb is then supplied by anaphoric reference to some “corresponding” verb in the preceding clause.

Elegant though it is, this analysis has one serious source of overgeneration. The problem, in a nutshell, is that Miller's anaphora resolution procedure makes no reference to any syntactic information of the antecedent clause—in particular, to the syntactic selectional properties of the head verb, which must be matched by the auxiliary in the pseudogapped clause, as discussed above. This indeterminacy entails that if some complement in the pseudogapping clause has a denotation that corresponds to the denotation of a syntactically different complement in the antecedent clause, then it is in principle possible to obtain a coherent interpretation in Miller's analysis even though the verb in the antecedent clause cannot actually combine with the pseudogapping clause complement. Thus, this account as it stands does not predict the anomaly of (279a), repeated here as (287).

(287) \*John spoke to Mary more often than he did for Anne.

Here, the individual denotation **anne** is a possible interpretation for *for Anne* (cf. *John waited for Anne*, where the preposition *for* is standardly taken to be meaningless). But then, the meaning of the auxiliary *did* can be anaphorically resolved as the meaning of the verb *spoke* in the antecedent clause (note that *to* in *spoke to Mary* is similarly meaningless), leading to the misprediction that (287) should be well-formed with the same interpretation as *John spoke to Mary more often than he did to Anne*.

Miller takes (287) to be ruled out by a semantic selectional restriction analogous to the gender restriction on pronouns. This selectional restriction applies to the anaphoric auxiliary and imposes the constraint that it is felicitous just in case the verb meaning that is anaphorically retrieved is compatible with the overt preposition that heads the PP that the auxiliary syntactically combines with. Thus, for example, (287) is predicted to be semantically anomalous since “NP1 *spoke to* NP2” and “NP1 *spoke for* NP2” mean different things (NP2 is a participant in the act of speaking in the former but not in the latter). Thus, when appearing with *for* (as in the pseudogapping clause), the meaning of *spoke* in the antecedent clause would not be the “appropriate” one, and anaphora resolution therefore fails. Though this approach seems in principle implementable in

an interpretive approach, it is unclear to us what the motivation could be for anaphoric auxiliaries (which are all identical in form in the relevant respect) to carry *semantic* restrictions based on the intended antecedent target, which according to Miller is no different from the gender restriction on pronouns (the latter of which has a clear morphological reflex on the overt form of the pronouns).<sup>8</sup> In the next section, we offer an alternative formulation of the syntactic connectivity restrictions that keeps the core insight of Miller's proposal but implements the relevant constraint in a way we believe is much more straightforward.

### 6.3 Pseudogapping as Pseudo-VP Ellipsis

In this section, we propose an analysis of pseudogapping in Hybrid TLCG. Our analysis aims to synthesize the key insights from both transformational and nontransformational approaches. Specifically, we follow Miller (1990) in taking pseudogapping to be licensed by an anaphoric mechanism, thereby avoiding the various problems associated with previous transformational analyses. However, unlike Miller's purely interpretive approach, the specific way in which we unify the syntactic licensing mechanism of pseudogapping and VP ellipsis naturally predicts that pseudogapping is sensitive to certain syntactic information (specifically, the syntactic selectional restrictions that the antecedent verb imposes on its complements). This way, the analysis naturally incorporates the connectivity requirement on pseudogapping from transformational approaches as well.

The key analytic idea of our proposal is largely theory-independent and can be formulated in any syntactic theory that has an explicit syntax-semantics interface and countenances a relatively flexible notion of syntactic constituency. We believe that one of the reasons that pseudogapping has turned out to be so problematic in both the transformational and the nontransformational literature is that previous syntactic theories do not have these properties in a fully general manner. Hybrid TLCG is uniquely distinct from previous transformational and nontransformational syntactic theories in that

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8. Since this condition cannot be hooked to the morphological form of the anaphoric auxiliary, the formulation of the relevant condition (Miller's [1990] (41)) is rather complicated.

- (i) The functor from the antecedent of *do* which applies to the denotation of the complement (respectively complements) of *do* (that functor is either the denotation of a verb or of a preposition) must be an appropriate denotation for that verb or preposition when it is used with a subcategorization frame comprising a complement (respectively complements) of the same syntactic category as that of the complement (respectively complements) of *do*. (This presupposes that such a subcategorization frame exists.)

Moreover, this alleged "semantic" selectional restriction is very different from the gender restriction on pronouns (which has the simple function of restricting the domain for the referent) in that it refers to the subcategorization frame (which is syntactic, rather than semantic, information) of the target antecedent verb.

it satisfies both of these two requirements adequately. In particular, the flexible notion of syntactic constituency that it shares with many other variants of CG enables a straightforward characterization of the meaning-category pair of the “elided” material, and a novel mechanism of prosodic  $\lambda$ -binding (originally due to Oehrle [1994]) that enables a generalization of the notion of “movement” from the transformational literature offers a simple characterization of the relevant anaphoric process.

### 6.3.1 VP Ellipsis in Hybrid TLCG

Since we take pseudogapping to be a special case of VP ellipsis, we start with an analysis of VP ellipsis. In chapter 3, we posited a higher-order entry for the auxiliary verb and showed that the following VP/VP-type entry (where VP is an abbreviation for NP\S), familiar in the nontransformational syntax literature, is derivable from that higher-order entry.

(288)  $\text{can}; \lambda Q \lambda x. \diamond Q(x); \text{VP/VP}$

Since the lower-order entry suffices for the purpose of the analysis of ellipsis phenomena for the most part, in this chapter and in chapter 8, we make the simplifying assumption that auxiliaries have entries of the form in (288) with the syntactic type VP/VP. But such entries should not be taken to be separately posited in the lexicon, but should be thought of as “theorems” derived from the more basic higher-order entries, as per (76). In chapter 9, we analyze modal auxiliaries in English in greater detail. We discuss cases of VP ellipsis and pseudogapping that require the higher-order versions of the auxiliary entry in that chapter (section 9.3.3).

We take VP ellipsis to be licensed by an alternative sign for the auxiliary verb, which unlike the VP/VP entry in (288), does not subcategorize for a VP but instead anaphorically retrieves the relevant VP meaning in reference to the preceding discourse. For this purpose, we posit an empty operator that applies to the lexical sign of auxiliaries and saturates the VP argument slot of the latter. This “VP ellipsis” operator is defined as in (289).

(289) **VP ellipsis operator, version 1**

$\lambda \varphi. \varphi; \lambda \mathcal{F}. \mathcal{F}(P); \text{VP} \uparrow (\text{VP/VP})$

—where  $P$  is a free variable whose value is identified with the meaning of some linguistic sign in the preceding discourse with category VP

By applying (289) to (288), we obtain a derived auxiliary entry of category VP as in (290).

$$(290) \frac{\lambda \varphi. \varphi; \lambda \mathcal{F}. \mathcal{F}(P); \text{VP} \uparrow (\text{VP/VP}) \quad \text{can}; \lambda Q \lambda x. \diamond Q(x); \text{VP/VP}}{\text{can}; \lambda x. \diamond P(x); \text{VP}} \text{IE}$$

A simple VP ellipsis example such as (291) can then be derived as in (292) (here and below, the syntactic category of the expression that serves as an antecedent of VP ellipsis is shaded).

(291) John can sing. Bill can't.

(292)

$$\begin{array}{c}
 \text{john;} \\
 \mathbf{j}; \text{NP} \\
 \hline
 \text{john} \circ \text{can} \circ \text{sing}; \diamond \mathbf{sing}(\mathbf{j}); \text{S}
 \end{array}
 \begin{array}{c}
 \text{can;} \\
 \lambda P \lambda x. \diamond P(x); \\
 \text{VP/VP} \\
 \hline
 \text{can} \circ \text{sing}; \lambda x. \diamond \mathbf{sing}(x); \text{VP}
 \end{array}
 \begin{array}{c}
 \text{sing;} \\
 \mathbf{sing}; \\
 \text{VP} \\
 \hline
 \mathbf{sing}(\mathbf{j}); \text{VP}
 \end{array}
 \left. \vphantom{\begin{array}{c} \text{john;} \\ \mathbf{j}; \text{NP} \\ \hline \text{john} \circ \text{can} \circ \text{sing}; \diamond \mathbf{sing}(\mathbf{j}); \text{S} \end{array}} \right\} /E \backslash E$$

$$\begin{array}{c}
 \text{bill;} \\
 \mathbf{b}; \text{NP} \\
 \hline
 \text{bill} \circ \text{can't}; \neg \diamond \mathbf{sing}(\mathbf{b}); \text{S}
 \end{array}
 \begin{array}{c}
 \lambda \varphi. \varphi; \\
 \lambda \mathcal{F}. \mathcal{F}(\mathbf{sing}); \\
 \text{VP} \uparrow (\text{VP/VP}) \\
 \hline
 \text{can't}; \lambda x. \neg \diamond \mathbf{sing}(x); \text{VP}
 \end{array}
 \begin{array}{c}
 \text{can't;} \\
 \lambda P \lambda x. \neg \diamond P(x); \\
 \text{VP/VP} \\
 \hline
 \neg \diamond \mathbf{sing}(\mathbf{b}); \text{VP}
 \end{array}
 \left. \vphantom{\begin{array}{c} \text{bill;} \\ \mathbf{b}; \text{NP} \\ \hline \text{bill} \circ \text{can't}; \neg \diamond \mathbf{sing}(\mathbf{b}); \text{S} \end{array}} \right\} \uparrow E \backslash E$$

Note that, since the operator directly applies to the auxiliary to modify its subcategorization property, no phonologically empty verb is involved.

At this point, some comments are in order about our choice of an analysis involving an empty syntactic operator. There are at least three alternatives to this approach: (i) a binding-based analysis in which a hypothetical VP is bound by an antecedent VP via a syntactic mechanism of variable binding (Morrill et al. 2011; Barker 2013), (ii) an analysis that posits an empty VP (this would correspond most closely to a deletion-based analysis in derivational approaches), and (iii) an analysis that posits an alternative auxiliary entry (identical to the output of our syntactic empty operator) in the lexicon (Jäger 2005).

We think that our empty operator-based approach has certain advantages over these three alternatives, although admittedly the third alternative in particular is very close (both in spirit and in content) to our own approach. The binding approach does not easily extend to intersentential anaphora; especially problematic are cases where VP ellipsis (and pseudogapping) takes place across speakers. The present approach is superior to an empty VP approach in that it can straightforwardly capture the generalization that auxiliaries (including the “infinitive marker” *to*) are the triggers of VP ellipsis.<sup>9</sup> The main difference between our own approach and a lexical approach along the lines of the third alternative is that the former straightforwardly extends to the pseudogapping case (see below), with a uniform ellipsis operator (schematically) of the form  $A \uparrow (A/A)$ .

9. (289) involves a simplification in this respect, since, as it stands, the VP ellipsis operator can combine with any VP/VP. In a more complete account, auxiliaries need to be distinguished from VP adverbs. A well-established approach in lexicalist theories (such as HPSG and CCG) is to introduce syntactic features to classify different types of VPs (for example, the auxiliary *have* will be specified as  $\text{VP}_{bse}/\text{VP}_{pst}$ , a verb taking a past participle and returning a base form VP). Once this modification is made, we can refine the syntactic category of the VP ellipsis operator so that it takes as an argument  $\text{VP}_\alpha/\text{VP}_\beta$ , where  $\alpha \neq \beta$  (which suffices to distinguish auxiliaries from adverbs).

It should, however, be noted that lexicalizing the effect of the ellipsis operator in the Jäger-type approach is definitely possible.

Interactions between VP ellipsis and other phenomena such as quantifier scope and the strict/sloppy ambiguity of pronouns can be handled in essentially the same way as in previous analyses of VP ellipsis in TLOG (Morrill and Merenciano 1996; Jäger 2005).

- (293) a. John thinks he is a genius. Bill does, too.  
 b. John read every book before Bill did.

(294) shows the sloppy reading of (293a).

(294)

$$\begin{array}{c}
 \text{thinks;} \quad \frac{[\varphi_1; x; \text{NP}]^1 \quad \text{is } \circ \text{ a } \circ \text{ genius; } \mathbf{is-a-gens}; \text{ VP}}{\mathbf{think}; \text{ VP/S} \quad \varphi_1 \circ \text{ is } \circ \text{ a } \circ \text{ genius; } \mathbf{is-a-gens}(x); \text{ S}} \backslash \text{E} \\
 \frac{\lambda\sigma.\sigma(\text{he}); \quad \frac{\text{thinks } \circ \varphi_1 \circ \text{ is } \circ \text{ a } \circ \text{ genius; } \mathbf{think}(\mathbf{is-a-gens}(x)); \text{ VP}}{\text{think } \circ \varphi_1 \circ \text{ is } \circ \text{ a } \circ \text{ genius; } \mathbf{think}(\mathbf{is-a-gens}(x)); \text{ VP}} \uparrow \text{I}^1}{\lambda R \lambda x. R(x)(x); \quad \lambda\varphi_1. \text{thinks } \circ \varphi_1 \circ \text{ is } \circ \text{ a } \circ \text{ genius;} \\ \text{VP} \uparrow (\text{VP} \uparrow \text{NP}) \quad \lambda x. \mathbf{think}(\mathbf{is-a-gens}(x)); \text{ VP} \uparrow \text{NP}} \uparrow \text{E} \\
 \frac{\text{john;} \quad \frac{\text{thinks } \circ \text{he } \circ \text{ is } \circ \text{ a } \circ \text{ genius; } \lambda x. \mathbf{think}(\mathbf{is-a-gens}(x))(x); \text{ VP}}{\text{john } \circ \text{ thinks } \circ \text{he } \circ \text{ is } \circ \text{ a } \circ \text{ genius; } \lambda x. \mathbf{think}(\mathbf{is-a-gens}(x))(x); \text{ VP}} \uparrow \text{E}}{\mathbf{j}; \text{NP} \quad \text{thinks } \circ \text{he } \circ \text{ is } \circ \text{ a } \circ \text{ genius; } \lambda x. \mathbf{think}(\mathbf{is-a-gens}(x))(x); \text{ VP}} \backslash \text{E} \\
 \text{john } \circ \text{ thinks } \circ \text{he } \circ \text{ is } \circ \text{ a } \circ \text{ genius; } \mathbf{think}(\mathbf{is-a-gens}(\mathbf{j}))(\mathbf{j}); \text{ S}
 \end{array}$$
  

$$\begin{array}{c}
 \text{bill;} \quad \frac{\lambda\varphi.\varphi; \lambda \mathcal{F}. \mathcal{F}(\lambda x. \mathbf{think}(\mathbf{is-a-gens}(x))(x)); \text{ VP} \uparrow (\text{VP}/\text{VP}) \quad \text{does; } \lambda P.P; \text{ VP}/\text{VP}}{\text{does; } \lambda x. \mathbf{think}(\mathbf{is-a-gens}(x))(x); \text{ VP}} \uparrow \text{E} \\
 \frac{\text{bill;} \quad \frac{\lambda\varphi.\varphi; \lambda \mathcal{F}. \mathcal{F}(\lambda x. \mathbf{think}(\mathbf{is-a-gens}(x))(x)); \text{ VP} \uparrow (\text{VP}/\text{VP}) \quad \text{does; } \lambda P.P; \text{ VP}/\text{VP}}{\text{does; } \lambda x. \mathbf{think}(\mathbf{is-a-gens}(x))(x); \text{ VP}} \uparrow \text{E}}{\text{bill } \circ \text{ does; } \mathbf{think}(\mathbf{is-a-gens}(\mathbf{b}))(\mathbf{b}); \text{ S}} \backslash \text{E}
 \end{array}$$

We assume the so-called “binding at VP” analysis of pronouns in (294) (see Bach and Partee 1980, 1984). In this analysis, after the binding of the pronoun to the subject NP, the right meaning (self-ascription of the property of being a genius) is assigned to the VP, which the VP ellipsis operator can then take as the antecedent. The strict reading, on the other hand, is obtained by letting the pronoun *he* in the antecedent clause pick up *John* as its own antecedent, not by binding but by a general mechanism for anaphora resolution for free pronouns (notated in the following proof by  $\alpha$ ). This, then, creates the property  $\lambda y. \mathbf{think}(\mathbf{is-a-gens}(\mathbf{j}))(y)$  that serves as an appropriate antecedent for the elided VP in the ellipsis clause as in (295).





### 6.3.2 Pseudogapping

We analyze pseudogapping in (297) via transitive verb (TV = (NP\S)/NP) ellipsis (Jacobson [2019] independently arrives at the same conclusion).

(297) John should eat the banana. Bill should eat the apple.

In the present setup, this involves making only a minimal extra assumption: all that is necessary is to make the VP ellipsis operator in (289) polymorphic. Polymorphism is a standard technique for generalizing the lexical definitions of semantic operators independently needed in the grammar in the analysis of coordination and certain adverbial operators (cf. the “cross-categorical” analysis of focus particles in Rooth [1985]).

Moreover, there is independent evidence that English allows for TV ellipsis. Jacobson (1992, 2008) argues that antecedent-contained deletion (ACD) is to be analyzed in terms of TV ellipsis rather than VP ellipsis. The idea is that in (298), what is missing after *had* is just the transitive verb *showed* instead of a full VP.<sup>10</sup>

(298) John showed Bill every place that Harry already had.

We refer the reader to Jacobson’s work for a detailed empirical justification and technical execution of this analysis of ACD (see also Jäger [2005] for a TLCG implementation of Jacobson’s analysis), but one big advantage should be immediately obvious: in this

---

10. Pseudogapping and ACD are sometimes thought to display different distributions. First, Jacobson (1998, 80) reports the following contrast (her (17), judgment hers):

- (i) a. John thought that Mary read everything that Bill (also) did (= think that Mary read).
- b. \*John thought that Mary read *Crime and Punishment* and Bill did *The Brothers Karamazov* (= think that Mary read).

But note that the structure in (ib) improves considerably in an example like the following:

- (ii) John would claim Bill is a SPY more confidently than I would a SABOTEUR.

We therefore take it that the unacceptability of (ib) is not due to a combinatoric constraint but rather derives from the requirement that the elided material correspond to some “coherent semantic unit” so as to support the Contrast relation between the two clauses. ACD is not so constrained, presumably because the object is shared in the two clauses and hence the construction is not associated with the Contrast discourse relation. See section 6.3.5 for some relevant discussion. We leave it for future work to clarify exactly what is going on in data such as (i) and (ii). The notion of “coherent semantic unit” here is admittedly vague, but such a notion does seem to play a role in accounting for certain linguistic phenomena that resist a purely syntactic characterization—see, for example, Kubota and Lee’s (2015) analysis of CSC patterns in Japanese and Korean for another such case. Second, Lasnik (1999, 169) reports contrasts like (iii), arguing that pseudogapping is limited to direct objects but ACD is not.

- (iii) a. John stood near everyone Bill did.
- b. \*John stood near Bill and Mary should Susan.

Again, the alleged restriction on pseudogapping is dubious at best. Miller (2014, 81) reports attested examples analogous in structure to (iiib). Finally, one might wonder how “Kennedy’s puzzle” (Kennedy 1994/2008) would be treated in this approach. See Jacobson (2009) for a non-representational account of this phenomenon.

analysis, the notorious problem of “infinite regress” simply does not arise, since a VP containing a trace is not reconstructed in the ellipsis site to begin with.

Since pseudogapping is not restricted to transitive verbs but can involve ditransitive verbs and so on, we make the VP ellipsis operator polymorphic, employing Steedman’s (2000) \$ notation for polymorphic lexical entries.

(299) **VP ellipsis/pseudogapping operator, version 2**

$$\lambda\varphi.\varphi; \lambda\mathcal{F}.\mathcal{F}(P); (\text{VP}/\$)\uparrow((\text{VP}/\$)/(\text{VP}/\$))$$

—where  $P$  is a free variable whose value is identified with the meaning of some linguistic sign in the preceding discourse with category VP/\$

VP/\$ is a metavariable notation for a set of categories where any number of arguments (of any category) are sought via / (VP, VP/NP, VP/NP/PP, and so on). The three occurrences of VP/\$ are to be instantiated in the same way. The key idea behind this extension is that the ellipsis operator is generalized to apply to any syntactic category that the auxiliary itself can be derived in (as will become clear momentarily).

The TV/TV (= (VP/VP)/(VP/VP)) entry of the auxiliary that this operator applies to in the analysis of (297) can be derived from the lexically assigned VP/VP entry and does not need to be posited separately. This is an instance of the Geach rule, which is a theorem in the Lambek calculus and TLOG (as long as the calculus is associative).

$$(300) \frac{\text{should}; \lambda P\lambda y.\Box P(y); \text{VP/VP} \quad \frac{[\varphi_2; f; \text{TV}]^2 \quad [\varphi_3; x; \text{NP}]^3}{\varphi_2 \circ \varphi_3; f(x); \text{VP}}/E}{\frac{\text{should} \circ \varphi_2 \circ \varphi_3; \lambda y.\Box f(x)(y); \text{VP}}{\text{should} \circ \varphi_2; \lambda x\lambda y.\Box f(x)(y); \text{TV}}/I^3} /E$$

$$\frac{\text{should}; \lambda f\lambda x\lambda y.\Box f(x)(y); \text{TV/TV}}{\text{should}; \lambda f\lambda x\lambda y.\Box f(x)(y); \text{TV/TV}}/I^2$$

The analysis of a basic pseudogapping example like (297) is then straightforward.

$$(301) \frac{\text{john}; \mathbf{j}; \text{NP} \quad \frac{\text{should}; \lambda P\lambda x.\Box P(x); \text{VP/VP} \quad \frac{\text{eat}; \mathbf{eat}; \text{TV} \quad \text{the} \circ \text{banana}; \mathbf{the-b}; \text{NP}}{\text{eat} \circ \text{the} \circ \text{banana}; \mathbf{eat}(\mathbf{the-b}); \text{VP}}/E}{\text{should} \circ \text{eat} \circ \text{the} \circ \text{banana}; \lambda x.\Box \mathbf{eat}(\mathbf{the-b})(x); \text{VP}}/E}{\text{john} \circ \text{should} \circ \text{eat} \circ \text{the} \circ \text{banana}; \Box \mathbf{eat}(\mathbf{the-b})(\mathbf{j}); \text{S}} \setminus E$$

$$\frac{\text{bill}; \mathbf{b}; \text{NP} \quad \frac{\text{should}; \lambda x\lambda y.\Box \mathbf{eat}(x)(y); \text{TV}}{\text{should} \circ \text{the} \circ \text{apple}; \lambda y.\Box \mathbf{eat}(\mathbf{the-a})(y); \text{VP}}/E}{\text{bill} \circ \text{should} \circ \text{the} \circ \text{apple}; \Box \mathbf{eat}(\mathbf{the-a})(\mathbf{b}); \text{S}} \setminus E$$

$$\frac{\text{should}; \lambda f\lambda x\lambda y.\Box f(x)(y); \text{TV/TV} \quad \text{the} \circ \text{apple}; \mathbf{the-a}; \text{NP}}{\text{TV}\uparrow(\text{TV/TV}) \quad \text{TV/TV}}/E$$

Here, the auxiliary is in the derived TV/TV category. The VP ellipsis/pseudogapping operator in (299) takes this auxiliary category as an argument and saturates its TV argument by anaphorically referring to the transitive verb *eat* in the antecedent clause.

As discussed in section 6.1, the “deleted” material in pseudogapping does not necessarily correspond to a syntactic constituent in the traditional sense. The present approach straightforwardly handles such cases of “nonconstituent” pseudogapping (like those in (272)) by treating the “nonconstituent” strings in the preceding clause as syntactic constituents that can serve as antecedents in pseudogapping. We illustrate in (303) the derivation for (the antecedent clause of) (302) (= (272a)).

(302) You can't **take the lining out of** that coat. You can  $\emptyset$  this one.

(303)

	take; <b>take</b> ; VP/PP/NP	the $\circ$ lining; <b>the-lining</b> ; NP	out $\circ$ of; <b>out-of</b> ; PP/NP	$\left[ \begin{array}{c} \varphi; \\ x; \\ \text{NP} \end{array} \right]^1$	
	take $\circ$ the $\circ$ lining; <b>take(the-lining)</b> ; VP/PP		out $\circ$ of $\circ$ $\varphi$ ; <b>out-of(x)</b> ; PP		/E
	take $\circ$ the $\circ$ lining $\circ$ out $\circ$ of $\circ$ $\varphi$ ; <b>take(the-lining)(out-of(x))</b> ; VP				
	take $\circ$ the $\circ$ lining $\circ$ out $\circ$ of; $\lambda x.$ <b>take(the-lining)(out-of(x))</b> ; VP/NP				/I <sup>1</sup>
can't; $\lambda P \lambda x.$ $\neg \diamond P(x)$ ; VP/VP	take $\circ$ the $\circ$ lining $\circ$ out $\circ$ of $\circ$ that $\circ$ coat; <b>take(the-lining)(out-of(that-coat))</b> ; VP				/E
you; <b>you</b> ; NP	can't $\circ$ take $\circ$ the $\circ$ lining $\circ$ out $\circ$ of $\circ$ that $\circ$ coat; $\lambda x.$ $\neg \diamond$ <b>take(the-lining)(out-of(that-coat))(x)</b> ; VP				/E
you $\circ$ can't $\circ$ take $\circ$ the $\circ$ lining $\circ$ out $\circ$ of $\circ$ that $\circ$ coat; $\neg \diamond$ <b>take(the-lining)(out-of(that-coat))(you)</b> ; S					\E

Via hypothetical reasoning involving directional slashes, the string *take the lining out of* is derived as a syntactic constituent of category VP/NP. The denotation of this sign can then be identified as the antecedent of the relevant anaphoric process in the target clause. Examples like those in (272) are especially important in that they show the significance of the flexible notion of constituency available in CG in an empirical domain other than coordination. Note that these nonconstituent pseudogapping examples pose significant problems for many previous transformational accounts, since deriving these examples via movement + ellipsis entails positing various otherwise unmotivated movement operations.

As discussed in section 6.2.1, pseudogapping with multiple remnants like the following are also highly problematic for movement-based approaches:

- (304) a. I won't introduce THOSE GIRLS to my SISTER, but I WOULD these boys to my BROTHER.  
 b. I bet more money with JOHN that the game would go into OVERTIME than I did with MARY that the final score would be a TIE.

Multiple-remnant pseudogapping is straightforward in our approach. The key point is that the following PDTV/PDTV (where PDTV = VP/PP/NP) version of the auxiliary can be derived from the lexically specified VP/VP entry via the Geach rule:

(305) *would*;  $\lambda f \lambda x \lambda y \lambda z. f(x)(y)(z)$ ; PDTV/PDTV

Since the derivation is parallel to the one for the TV/TV entry above (hypothesizing a PDTV, NP, and PP to the right of the auxiliary and withdrawing these hypotheses one by one after combining them with the auxiliary), we omit it here.

Since the VP ellipsis/pseudogapping operator is polymorphic, it can take this derived auxiliary verb as an argument and anaphorically saturate the missing PDTV argument position in the same way as in the simpler examples above. Here, we show only the derivation for the target clause of pseudogapping. The VP ellipsis/pseudogapping operator makes reference to the ditransitive verb in the antecedent clause with category PDTV and semantics **introduce** (here we ignore the modal meaning of the auxiliary *would*).

(306)

$\lambda \varphi. \varphi;$	$\text{would};$		
$\lambda \mathcal{F}. \mathcal{F}(\lambda x \lambda y \lambda z.$	$\lambda f \lambda x \lambda y \lambda z.$		
<b>intro</b> (y)(x)(z);	$f(x)(y)(z);$		
PDTV↑(PDTV/PDTV)	PDTV/PDTV	these ◦ boys;	to ◦ my ◦
$\text{would}; \lambda x \lambda y \lambda z. \text{intro}(y)(x)(z); \text{PDTV}$		E <b>these-boys</b> ;	brother;
i;	$\text{would} \circ \text{these} \circ \text{boys}; \lambda y \lambda z. \text{intro}(y)(\text{these-boys})(z); \text{VP/PP}$		E <b>my-bro</b> ;
i;	$\text{would} \circ \text{these} \circ \text{boys}; \lambda z. \text{intro}(\text{my-bro})(\text{these-boys})(z); \text{VP}$		PP
NP	$\text{would} \circ \text{these} \circ \text{boys} \circ \text{to} \circ \text{my} \circ \text{brother}; \lambda z. \text{intro}(\text{my-bro})(\text{these-boys})(z); \text{VP}$		E
$i \circ \text{would} \circ \text{these} \circ \text{boys} \circ \text{to} \circ \text{my} \circ \text{brother}; \text{intro}(\text{my-bro})(\text{these-boys})(i); \text{S}$			

The present analysis also correctly predicts the interactions between pseudogapping and strict/sloppy readings and quantifier scope in examples like the following:

- (307) a. John forwarded HIS address to Ann before BILL did to SUE.  
 b. John read every book to MARY before Bill did to SUE.

We omit the derivations, which are parallel to the VP ellipsis cases in (294) and (296).

Since in CG the combinatorial properties of linguistic expressions (including those corresponding to nontraditional constituents) are represented explicitly in their syntactic categories, our approach overcomes the major problem for previous nontransformational approaches as well. Recall from section 6.2.2 that Miller's (1990) interpretive

approach requires a rather cumbersome “add-on” in order to explain the ungrammaticality of preposition mismatch examples like (308).

(308) \*John spoke to Mary more often than he did for Anne.

Our approach rules out this type of example straightforwardly. In the antecedent clause, we have an instance of the verb *speak* that subcategorizes for a *to*-PP (of syntactic category VP/PP<sub>to</sub>). But in the target clause, we need to recover the meaning of *speak* associated with a different subcategorization frame VP/PP<sub>for</sub>. Because of the syntactic category mismatch, the relevant anaphoric mechanism fails and hence (308) is correctly blocked.

Interestingly, the present proposal can also correctly capture cases of tolerated category mismatch, exemplified by data such as (309) (= (276)).

(309) Ask Doll, who spoke as much about his schoolboy career ending as he did of the season in general.

Miller (2014) makes the important observation that (309) is licensed despite the preposition mismatch because of the closeness of the lexical meaning of the verb in the different subcategorization frames. This condition is not satisfied in the minimally different (308), resulting in the degraded status of the latter.

To see how the contrast between (308) and (309) can be accounted for in the present approach, note first that exactly the same contrast is found in unlike-category coordination (UCC).

(310) a. Robin spoke about the war and of similar events.  
b. \*John didn't speak to Mary or for Susan at the meeting.

This contrast motivates assigning the category VP/PP<sub>of</sub>  $\wedge$  VP/PP<sub>about</sub> involving the meet connective  $\wedge$  to the verb *speak*, following the general analysis of UCC by Morrill (1994) and Bayer (1996) (see also Kubota and Levine 2013a). We assume that / and \ associate more strongly than  $\wedge$ ; thus, VP/PP<sub>of</sub>  $\wedge$  VP/PP<sub>about</sub> is an abbreviation for (VP/PP<sub>of</sub>)  $\wedge$  (VP/PP<sub>about</sub>). In (311), the two (related yet distinct) meanings of *speak* associated with different subcategorization frames are represented separately in the form of a tuple.<sup>11</sup>

(311) speak;  $\langle$  **speak-about**, **speak-of**  $\rangle$ ; VP/PP<sub>about</sub>  $\wedge$  VP/PP<sub>of</sub>

11. This corresponds to “semantically potent” meet in Bayer 1996. Bayer rejects this type of lexical entry by claiming that admitting such entries would incorrectly overgenerate violations of Zaenen and Karttunen’s (1984) Anti-Pun Ordinance (\**I can tuna and get a job*). We don’t find this argument convincing. By assuming that lexical entries involving meet are restricted to ones in which the two meanings listed together in a single entry are related (as in (311) and (317)), and by ensuring that meet cannot be syntactically introduced, the Anti-Pun Ordinance can be maintained while still admitting semantically potent meet.

With this lexical assignment and the *Meet Elimination* rules in (643) (where  $\pi_1$  and  $\pi_2$  are the standard projection functions such that  $\pi_1(\langle\alpha, \beta\rangle) = \alpha$  and  $\pi_2(\langle\alpha, \beta\rangle) = \beta$ ), the analysis for (310a) is straightforward, as in (313). Recall that the index 1 at the last step of the first chunk of the derivation in (313) is for indicating the hypothesis that is withdrawn at that step. For this reason, the PP *about the war* is derived in a functor category that seeks as its argument a conjunctively specified verb.

$$\begin{array}{l}
 (312) \quad \text{a. Left Meet Elimination} \qquad \qquad \qquad \text{b. Right Meet Elimination} \\
 \frac{a; \mathcal{F}; A \wedge B}{a; \pi_1(\mathcal{F}); A} \wedge E_l \qquad \qquad \qquad \frac{a; \mathcal{F}; A \wedge B}{a; \pi_2(\mathcal{F}); B} \wedge E_r \\
 \\
 (313) \quad \frac{[\varphi; F; VP/PP_{about} \wedge VP/PP_{of}]^1}{\frac{\varphi; \pi_1(F); VP/PP_{about} \quad \text{about} \circ \text{the} \circ \text{war}; \mathbf{w}; PP_{about}}{\varphi \circ \text{about} \circ \text{the} \circ \text{war}; \pi_1(F)(\mathbf{w}); VP} / E} \wedge E_l \\
 \frac{\text{about} \circ \text{the} \circ \text{war}; \lambda F. \pi_1(F)(\mathbf{w}); (VP/PP_{about} \wedge VP/PP_{of}) \setminus VP}{\vdots} \setminus I^1 \\
 \frac{\text{spoke}; \quad \text{about} \circ \text{the} \circ \text{war} \circ \text{and} \circ \text{of} \circ \text{similar} \circ \text{events};}{\langle \mathbf{spoke-about}, \mathbf{spoke-of} \rangle; \quad \lambda F. \pi_1(F)(\mathbf{w}) \sqcap \lambda F. \pi_2(F)(\mathbf{s-ev});} \\
 \frac{VP/PP_{about} \wedge VP/PP_{of} \quad (VP/PP_{about} \wedge VP/PP_{of}) \setminus VP}{\text{robin}; \quad \text{spoke} \circ \text{about} \circ \text{the} \circ \text{war} \circ \text{and} \circ \text{of} \circ \text{similar} \circ \text{events};} \setminus E \\
 \frac{\mathbf{r}; \text{NP} \quad \mathbf{spoke-about}(\mathbf{w}) \sqcap \mathbf{spoke-of}(\mathbf{s-ev}); VP}{\text{robin} \circ \text{spoke} \circ \text{about} \circ \text{the} \circ \text{war} \circ \text{and} \circ \text{of} \circ \text{similar} \circ \text{events};} \setminus E \\
 \mathbf{spoke-about}(\mathbf{w})(\mathbf{r}) \wedge \mathbf{spoke-of}(\mathbf{s-ev})(\mathbf{r}); \text{S}
 \end{array}$$

The contrast in (310) then follows from the assumption that *speak* with a *for*-PP complement is simply listed as a separate entry in the lexicon. We take it that the “closeness” of meaning that Miller (2014) alludes to governs which subcategorization frames can be “packaged” into a single lexical entry involving the meet connective for any given verb.

The parallel contrast between (308) and (309) in the pseudogapping case follows from the same assumption. The preposition-mismatch pseudogapping apparently violating connectivity is licensed in the present analysis without any extra machinery, except that the anaphoric retrieval mechanism is a bit more involved in this case. We assume that the VP ellipsis/pseudogapping operator can access either of the two category-meaning pairs stored in a linguistic sign involving the meet connective such as (311). With this assumption, examples such as (309) can be accounted for straightforwardly. We provide an analysis of (314), a slight variant of (309), in (315).

(314) Robin has spoken about the war, and Leslie has of similar events.

- (315)
- $$\begin{array}{c}
 \text{spoken;} \\
 \langle \mathbf{speak-about}, \mathbf{speak-of} \rangle; \\
 \text{VP/PP}_{\text{about}} \wedge \text{VP/PP}_{\text{of}} \\
 \text{has;} \quad \frac{\text{spoken;} \mathbf{speak-about}; \text{VP/PP}_{\text{about}} \quad \text{about} \circ \text{the} \circ \text{war}; \mathbf{w}; \text{PP}_{\text{about}}}{\text{spoken} \circ \text{about} \circ \text{the} \circ \text{war}; \mathbf{speak-about}(\mathbf{w}); \text{VP}} \wedge_{E_l} /E \\
 \text{robin;} \quad \frac{\lambda P.P.; \text{VP/VP} \quad \text{spoken} \circ \text{about} \circ \text{the} \circ \text{war}; \mathbf{speak-about}(\mathbf{w}); \text{VP}}{\text{has} \circ \text{spoken} \circ \text{about} \circ \text{the} \circ \text{war}; \mathbf{speak-about}(\mathbf{w}); \text{VP}} /E \\
 \mathbf{r}; \\
 \text{NP} \quad \frac{\text{has} \circ \text{spoken} \circ \text{about} \circ \text{the} \circ \text{war}; \mathbf{speak-about}(\mathbf{w}); \text{VP}}{\text{robin} \circ \text{has} \circ \text{spoken} \circ \text{about} \circ \text{the} \circ \text{war}; \mathbf{speak-about}(\mathbf{w})(\mathbf{r}); \text{S}} \backslash E
 \end{array}$$
- 
- $$\begin{array}{c}
 \lambda \varphi.\varphi; \quad \vdots \\
 \lambda \mathcal{F}.\mathcal{F}(\mathbf{speak-of}); \quad \text{has;} \\
 (\text{VP/PP}_{\text{of}}) \uparrow \quad \lambda f \lambda x \lambda y. f(x)(y); \quad \text{of} \circ \text{similar} \circ \\
 ((\text{VP/PP}_{\text{of}})/(\text{VP/PP}_{\text{of}})) \quad (\text{VP/PP}_{\text{of}})/(\text{VP/PP}_{\text{of}}) \quad \text{events;} \\
 \text{leslie;} \quad \frac{\text{has}; \lambda x \lambda y. \mathbf{speak-of}(x)(y); \text{VP/PP}_{\text{of}} \quad \text{s-ev}; \text{PP}_{\text{of}}}{\text{has} \circ \text{of} \circ \text{similar} \circ \text{events}; \lambda y. \mathbf{speak-of}(\mathbf{s-ev})(y); \text{VP}} \uparrow E /E \\
 \mathbf{l}; \\
 \text{NP} \quad \frac{\text{has} \circ \text{of} \circ \text{similar} \circ \text{events}; \lambda y. \mathbf{speak-of}(\mathbf{s-ev})(y); \text{VP}}{\text{leslie} \circ \text{has} \circ \text{of} \circ \text{similar} \circ \text{events}; \mathbf{speak-of}(\mathbf{s-ev})(\mathbf{l}); \text{S}} \backslash E
 \end{array}$$

The ungrammaticality of (308) still follows, since the meaning of *speak* associated with the different lexical entry with syntactic category  $\text{VP/PP}_{\text{for}}$  cannot be anaphorically retrieved from an occurrence of the  $\text{VP/PP}_{\text{of}} \wedge \text{VP/PP}_{\text{about}}$  entry in the antecedent.

Furthermore, the following related example noted by Miller (1990, 300), in which a ditransitive verb instantiates different subcategorization frames (V NP NP vs. V NP PP) in the antecedent and the pseudogapping clauses, can be analyzed in essentially the same way (see Kubota and Levine 2014a for a complete derivation):

- (316) John gave Mary more books than he did  $\emptyset$  records to Ann.

The key assumption is the following entry for the ditransitive verb *give* involving the meet connective (which again is motivated by the pattern in UCC (Kubota and Levine 2013a)):

- (317) give;
- $$\langle \lambda x \lambda y \lambda z. \mathbf{give}(x)(y)(z), \lambda y \lambda x \lambda z. \mathbf{give}(x)(y)(z) \rangle; \\
 (\text{VP/PP/NP}) \wedge (\text{VP/NP/NP})$$

We take voice-mismatch examples such as (318) from Tanaka (2011) (= (275a)) to be licensed in a similar way.

- (318) %<sub>MY</sub> problem will be investigated by Tom, but he won't YOURS.

Though the active/passive alternation is different from the argument structure alternation involving ditransitive verbs in that a morphological marking is involved (thus, the meet connective would be of no use here), there is an obvious similarity between



examples like (316) and voice-mismatch examples involving the active form in the antecedent clause licensing a passive pseudogapped verb or vice versa. The key in both cases is lexical relatedness and the mutual entailment of the two related meanings.<sup>12</sup> Following the standard assumption in the nontransformational literature (cf. Bresnan 1982; Pollard and Sag 1994), we take passivization to be a lexical relationship. Since the argument structure and the morphological form are different, the passive form of a verb is listed in the lexicon as a distinct entry separate from the active form. However, they are related to each other via some explicit lexical operation (one standard way of formalizing this is in terms of lexical rules), and the active and the passive forms have identical meanings in terms of their truth-conditional entailments. It is then not unreasonable to assume that the pseudogapping operator can have access to the lexical entry of the passive form from the occurrence of the active form in the preceding clause and vice versa, because of this close relation between the lexical entries for the active and passive forms in the lexicon. Thus, voice-mismatch examples like (318) do not pose problems for the present approach.

### 6.3.3 Discontinuous Pseudogapping

As discussed in the previous section, our approach extends smoothly to quite complex types of data such as multiple-remnant pseudogapping (304), “nonconstituent” pseudogapping (302), and “unlike-category” pseudogapping (309) and (316), all of which are highly problematic for many previous approaches. However, as it stands, the present analysis does not yet cover cases of discontinuous pseudogapping exemplified by the following data:

- (319) a. Although I didn't **give Bill the book**, I did  $\emptyset$  Susan  $\emptyset$ .  
 b. She **found** her coworker **attractive** but she didn't  $\emptyset$  her husband  $\emptyset$ .

There are at least two possible approaches to this problem, and deciding between them is a delicate matter, given the somewhat marginal status of the pseudogapping construction itself and especially its discontinuous variant. Here, we simply lay out the two options and leave it for future work to determine which is the better alternative.

One possible approach would be to deal with discontinuity via the prosodic  $\lambda$ -binding mechanism already available in the grammar. Since this alternative does not involve adding any new machinery to the grammar, we will be relatively brief in sketching the main idea. See Kubota and Levine 2014a for a more detailed demonstration of this approach with example derivations. Essentially, the idea of this vertical slash-based approach is that in order to license (319a), for example, we can derive the following

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12. Mutual entailment is a crucial factor. For example, the conative alternation is treated (under certain theories) via a lexical rule, but *\*He kicked Bill more than he did at John* does not seem to be as acceptable as (318).

expression of type VP|NP and identify it as the antecedent for the VP ellipsis/pseudogapping operator (whose syntactic category also needs to be changed slightly) in the target clause:

(320)  $\lambda\varphi.\text{give} \circ \varphi \circ \text{the} \circ \text{book}$ ;  $\lambda x.\text{give}(x)(\text{the-book})$ ; VP|NP

This would suffice to license (319a) ((319b) could be derived analogously).

One concern about this type of approach is its overgeneration. One concrete case that the vertical slash–based approach would overgenerate is (321).

(321) \*John **laughed when** BILL **arrived**, but he didn't  $\emptyset$  SUE  $\emptyset$ .  
intended: '... he didn't laugh when Sue arrived.'

Here, the same VP|NP category as in (320) could be assigned to the string *laughed when \_\_ arrived*. It is not immediately clear whether this example could be ruled out by any of the known pragmatic properties associated with pseudogapping.<sup>13</sup>

While pushing the “syntax overgenerates, pragmatics constrains” approach to its limits is certainly an attractive option (especially if doing so avoids the need to introduce new theoretical machinery), we would like to offer another possibility, if only as a point of comparison for future investigations. The guiding intuition behind this alternative is the observation (which itself needs to be scrutinized, but which seems to match the overall empirical patterns we have been able to identify) that there is an intriguing overlap between the cases of discontinuous pseudogapping and patterns of (apparent) discontinuity traditionally analyzed by the “wrapping” operation in the CG literature.<sup>14</sup> Wrapping is a mechanism originally proposed by Bach (1979) and Dowty (1982) in the

13. One might think that (i) (from Miller 2014, 83) would have the same structure as (321):

(i) ... they would **examine what I wore** as intensely as anything else—as they would  $\emptyset$  any woman who met with them  $\emptyset$

If the elided material were to correspond to the boldfaced material in the antecedent clause, this example indeed would not seem to lend itself to any well-motivated wrapping analysis (discussed below). However, (i) seems to allow for an alternative parse in which the elided material is just the verb *examine* (note from above that, as in (277), pseudogapping is sometimes possible without any matching syntactic antecedent), and it is hard to clearly establish that this example is consistent only with the former interpretation. For this reason, we do not take (i) to provide a conclusive enough argument for the vertical slash–based analysis of discontinuous pseudogapping.

14. Levin (1979) provides several examples of (apparent) discontinuous pseudogapping. So far as we can tell, all of her examples belong to one of the following three classes: (i) antecedentless pseudogapping (similar to the cases discussed in section 6.3.4), (ii) pseudogapping combined with an independent nominal ellipsis or adjunct ellipsis, (iii) wrapping-type pseudogapping. For example, her (36) on p. 77 *Does it [writing a check at a grocery store] usually take this long? – No, it never did me before* can be analyzed as an instance of (i), where what is missing after *did* is simply the verb (plus preposition) *happen to*. See section 6.3.4 for antecedentless pseudogapping. We take an example such as Levin's (1) on p. 75 *We'll share it—like we do  $\emptyset$  the pink [blouse]* as an instance of (ii), where the ellipsis of *blouse* after *pink* is nominal ellipsis independent of pseudogapping.

early Montague Grammar literature for treating discontinuous strings (such as *make \_\_\_ up, pull \_\_\_ out* in verb-particle constructions) as combinatoric units. For example, in a wrapping-based analysis, the verb-adjective pair *found \_\_\_ attractive* in (319b) is analyzed as an “underlying” constituent, and it “wraps” around the object NP *her coworker* in the surface form of the sentence.

We now give a somewhat detailed sketch of this alternative, which treats discontinuous pseudogapping like that in (319) via an interaction between pseudogapping and wrapping. In contemporary TLCG, wrapping is modeled by enriching the prosodic component of the theory (roughly corresponding to PF) via the notion of “multimodality” (Moortgat and Oehrlé 1994; Dowty 1996a,b; Muskens 2007; Kubota 2010, 2014; Mihalicek 2012). We discuss this type of extension of Hybrid TCG in chapter 11 in greater detail. Here we provide a brief sketch of the main idea as it pertains to the analysis of discontinuous pseudogapping. The notion of “modality” here pertains to different “modes” of composition in the prosodic component governing various reordering and restructuring operations related to surface morpho-phonological constituency; it has nothing to do with the notion of modality in the semantics literature. Following Kubota (2010, 2014), we call this surface morpho-phonological component of grammar the “prosodic algebra.”

For our purposes, it suffices to distinguish between two modes of composition in the prosodic algebra: the ordinary concatenation mode ( $\circ$ ) and the infixation mode (which we notate as  $\circ\cdot$ ). Prosodic terms are ordered in the prosodic algebra by the *deducibility* relations between terms (where  $\varphi_1 \leq \varphi_2$  is to be read ‘ $\varphi_2$  is deducible from  $\varphi_1$ ’). Specifically, to model wrapping, we posit the following rule:

$$(322) (A \circ\cdot B) \circ C \leq (A \circ C) \circ B$$

The intuition behind this is that when  $A$  and  $B$  are combined in the infixation mode, an expression  $C$  that combines with that unit at a later point in the derivation can be infixated in the middle by a surface morpho-phonological reordering operation. To refer to the deducibility relation in the prosodic algebra from the combinatoric component during the course of a derivation, we posit the following P(rosodic)-Interface rule:

(323) P-Interface Rule

$$\frac{\varphi_1; \mathcal{F}; A}{\varphi_2; \mathcal{F}; A} \text{PI}$$

—where  $\varphi_1 \leq \varphi_2$  holds in the prosodic algebra

The syntactic rules are also revised to take into account the sensitivity to modes of composition (for space reasons, we only reproduce the rules for  $/$ , but the rules for  $\backslash$  are similarly revised; the rules for  $\uparrow$  remain the same as above).

(324) a. Forward Slash Introduction                      b. Forward Slash Elimination

$$\begin{array}{c} \vdots [\varphi; x; A]^n \vdots \\ \vdots \quad \quad \quad \vdots \\ \hline b \circ_i \varphi; \mathcal{F}; B \\ b; \lambda x. \mathcal{F}; B/iA \end{array} /i^n$$

$$\frac{a; \mathcal{F}; A/iB \quad b; \mathcal{G}; B}{a \circ_i b; \mathcal{F}(\mathcal{G}); A} /iE$$

In these revised rules, the modes encoded in the slashes match those that are used to combine the phonologies of the functor expressions with those of their arguments.

With this small extension, a simple wrapping example such as (325) can be analyzed as in (326).

(325) Mary found Chris attractive.

$$(326) \quad \frac{\text{found; } \mathbf{find}; \text{VP/NP/.Adj} \quad \text{attractive; } \mathbf{attractive}; \text{Adj}}{\text{found} \circ. \text{attractive; } \mathbf{find}(\mathbf{attractive}); \text{VP/NP}} /iE$$

$$\frac{\text{mary; } \mathbf{m}; \text{NP} \quad \frac{\text{found} \circ. \text{attractive} \circ \text{chris; } \mathbf{find}(\mathbf{attractive})(\mathbf{c}); \text{VP}}{\text{mary} \circ ((\text{found} \circ. \text{attractive}) \circ \text{chris}); \mathbf{find}(\mathbf{attractive})(\mathbf{c})(\mathbf{m}); \text{S}} \backslash E}{\text{mary} \circ \text{found} \circ \text{chris} \circ \text{attractive; } \mathbf{find}(\mathbf{attractive})(\mathbf{c})(\mathbf{m}); \text{S}} \text{PI} /E$$

The point here is that the (surface) discontinuous string *found* \_\_ *attractive* behaves as a unit in the combinatoric component (motivation for this assumption comes from patterns of argument structure-sensitive phenomena such as passivization and binding; see, for example, Dowty 1982, 1996a). The pseudogapping operator can then directly refer to the syntactic category and the semantics of this “underlying constituent” to supply the relevant subcategorization frame and meaning of the missing TV to the auxiliary, in exactly the same way as in the simpler examples above. Thus, (319b) is licensed as follows:

$$(327) \quad \frac{\begin{array}{c} \lambda \varphi. \varphi; \quad \quad \quad \vdots \\ \lambda \mathcal{F}. \mathcal{F}(\mathbf{find}(\mathbf{attractive})); \quad \text{didn't}; \\ \text{TV} \uparrow (\text{TV}/\text{TV}) \quad \quad \quad \lambda f \lambda x \lambda y. \neg f(x)(y); \text{TV}/\text{TV} \end{array}}{\text{didn't}; \lambda x \lambda y. \neg \mathbf{find}(\mathbf{attractive})(x)(y); \text{TV}} \text{IE} \quad \text{her} \circ \text{husband; } \mathbf{her-h}; \text{NP} /E$$

$$\text{didn't} \circ \text{her} \circ \text{husband; } \lambda y. \neg \mathbf{find}(\mathbf{attractive})(\mathbf{her-h})(y); \text{VP}$$

The wrapping-based alternative just sketched does not admit discontinuous constituents involving the vertical slash  $\uparrow$  (such as  $\text{VP} \uparrow \text{NP}$ ), since  $\text{VP}/\mathcal{F}$  ranges over categories involving directional slashes only. With this restriction, it is predicted that discontinuous pseudogapping is possible only when the deleted discontinuous string



We think the right empirical pattern can be captured by relaxing the condition on the VP ellipsis/pseudogapping operator (reproduced in (330)) slightly, along the lines of (331).

(330) **VP ellipsis/pseudogapping operator, final version**

$\lambda\phi.\phi; \lambda\mathcal{F}.\mathcal{F}(P); (VP/\$) \uparrow ((VP/\$)/(VP/\$))$

—where  $P$  is a free variable whose value is resolved anaphorically

(331) Anaphora resolution condition on the VP ellipsis/pseudogapping operator:

- a. If there is a syntactic constituent with category VP/\$ in the antecedent clause matching the syntactic category of the missing verb in the target clause, then the value of  $P$  is identified with the denotation of that constituent.
- b. If there is no such syntactic constituent, then the value of  $P$  is anaphorically identified with some salient property in the discourse that is not inconsistent with the syntactic category VP/\$.

With these conditions, the preposition mismatch case in (287), repeated here as (332), is still correctly ruled out.

(332) \*John spoke to Mary more often than he did for Anne.

The remnant  $PP_{for}$  forces the syntactic category of the derived auxiliary to be VP/ $PP_{for}$ , but then, there is no matching syntactic antecedent in the preceding clause. Crucially, recovering the “speak to” meaning of *speak* from the preceding clause via a purely anaphoric process (clause (ii)) is not an option either, since that meaning is associated with a distinct subcategorization frame VP/ $PP_{to}$  and thus is inconsistent with the VP/ $PP_{for}$  frame.<sup>16</sup>

The revised condition in (331) is clearly in the same spirit as Miller’s (1990) selectional restriction–based treatment (see section 6.2.2) in embodying the intuition that, essentially, (332) is ill-formed because the verb has distinct meanings depending on which of the two subcategorization frames it appears in. But it achieves the same effect by simply making the anaphora resolution process be sensitive to both the syntactic and the semantic information of the antecedent simultaneously, rather than by making

16. Though the formulation in (330) and (331) predicts morphological identity between the remnant and its correlate in the antecedent clause, it does not require the morphological forms of the elided verb and the antecedent verb to be identical. This is because the VP in the result category of (330) and the VP in the anaphora resolution condition (331) do not need to match in terms of their morpho-syntactic features. Thus, well-known form mismatches in VP ellipsis and pseudogapping (e.g., in *I talked to John, though I didn’t want to*  $\emptyset$  with  $VP_{fin}$  vs.  $VP_{bse}$ ) are not problematic. The anaphora condition in (331) essentially says that it doesn’t care about either the number or the category of the elided material, as long as they match in the antecedent clause and the ellipsis site. This seems to correspond to the relevant generalization on connectivity in ellipsis cross-linguistically (cf. Merchant 2004).

the *semantic* restriction on the denotation of the anaphoric verb directly access the subcategorization frame of the antecedent.<sup>17</sup>

The antecedentless and split-antecedent examples in (329) are no longer problematic for the revised formulation of the anaphora resolution condition in (331). In these cases, there are no syntactic antecedents matching in category with the “missing verbs.” However, unlike the case of (332), the relevant relations appropriate as antecedents (such as “use” for (329a) and “saw or heard” for (329b)) are salient in the preceding discourse; moreover, there is no interference from a lexically associated conflicting subcategorization frame. Thus, anaphora is resolved by a purely semantic/pragmatic mechanism in these cases.

### 6.3.5 A Note on Overgeneration

We believe that the above discussion has made it clear that our analysis of pseudogapping achieves better empirical coverage than any of the transformational analyses. At the same time, the flexible CG-based syntax-semantics interface enables us to formulate the restrictions pertaining to syntactic connectivity much more simply than in purely anaphoric approaches. Nonetheless, the present proposal leaves open one major issue, which we should note explicitly: overgeneration owing to the flexible architecture of CG. For example, on our account, nothing in the syntax predicts (333a) to be unacceptable. We take this to be the correct result, since the structurally parallel (333b), an attested example from Levin (1979, 77), is an acceptable example of pseudogapping.

- (333) a. %%%I took a book out of the box. But I didn't ∅ the bookcase.  
 b. %You can't take the lining out of that coat. You can ∅ this one.

But then, how can we account for the unacceptability of (333a)? Here, too, we feel sympathetic to the general perspective advocated by Miller (2014), in which the syntax overgenerates somewhat wildly and additional processing-oriented and pragmatic factors constrain the acceptability of specific examples further. It is beyond the scope of the present work to fully articulate these extragrammatical conditions, but we would like to note some potentially relevant factors, in the hope that our discussion will at

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17. We believe that this is a subtle but important difference between the present proposal and related proposals in the anaphoric approaches. For example, Ginzburg and Sag's (2000) SAL-UTT feature (invoked in their analysis of sluicing and fragment answers and also employed in other recent work such as Chaves [2014]) does roughly the same work; however, a criticism one might raise, that it builds strictly morpho-syntactic specifications of linguistic expressions into supposedly purely discourse-based information (under CONTEXT) to capture morpho-syntactic connectivity by fiat, does not apply to our approach.

Note also that formulating a syntax-semantics interface condition along the lines of (331) seems less straightforward in phrase structure-based frameworks such as HPSG, since such frameworks do not have a fully general “built-in device” for representing the notion of flexible incomplete constituents with some valent(s) unsaturated. In our CG-based approach, hypothetical reasoning is the device that gives us this flexibility.

least provide a starting point for further investigating this quite complex issue in more detail.

The acceptability of complex instances of pseudogapping (such as those in (333)) seems to be particularly sensitive to pragmatic factors such as prototypicality and plausibility of the event described by the sentence in view of general world knowledge.<sup>18</sup> For example, the intended interpretation of (333b) is presumably supported by the fact that linings are components of coats that are detachable for some types of coats, but not all. In (333a), by contrast, there is no such inherent part-whole relation between books and boxes.

Note further that the contrast in (333) becomes less clear if we manipulate certain lexical choices. (334b) is less natural than (333b) since skirts and dresses don't normally have linings. By contrast, (334a) is more natural than (333a) since the use of the demonstratives *this* and *that* naturally invokes a contrast between the two remnants.

- (334) a. %%I took a book out of this box. But I didn't ∅ that one.  
 b. %%I took the lining out of the skirt. But I didn't ∅ the dress.

Given the diversity of the possibly relevant factors, predicting the acceptability of specific examples in some precisely measurable manner is a potentially limitless open question, and we do not attempt to answer it here. But the overall conclusion from the above discussion should be clear: in general, one should be extra careful in assessing the acceptability of pseudogapping examples; in particular, when some example seems to sound bad, one should not immediately attribute its unacceptability to grammatical factors. Such a conclusion is justified only if the unacceptability cannot be ameliorated by carefully controlling for all possible confounding factors.

#### 6.4 Toward an Account of "Partial" Syntactic Sensitivity

Pseudogapping has remained problematic for both transformational and nontransformational approaches because of what has recently been identified in a different domain of ellipsis as "partial syntactic sensitivity" (Chung 2013; Barker 2013; Yoshida et al. 2015): with respect to subcategorization-related properties, the elided verb and the remnant exhibit morpho-syntactic matching, apparently motivating an analysis in terms of syntactic movement; in other respects, however, the movement operations required in syntactic deletion-based analyses do not exhibit the expected distributional properties (such as island sensitivity), and the movements required are themselves typically dubious, as detailed in Kubota and Levine (2017). These considerations cast consider-

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18. The greater role of extragrammatical factors in regulating acceptability here is reminiscent of the similarly nontrivial role that such factors play in the so-called gapless relative clauses in Japanese and Korean (Kuno 1973; Yoon 1993; Matsumoto 1997).



able doubt on movement-based analyses. Interpretive approaches can account for the island insensitivity straightforwardly (and avoid various other problems for movement-based analyses), but on this type of approach, connectivity effects in subcategorization-related properties remain puzzling. In fact, Miller (1990)—who provides the only extant proposal that explicitly attempts to capture syntactic connectivity in pseudogapping in an interpretive approach—invokes for this purpose a quite complex and abstract type of semantic selectional restriction that does not resemble any other well-known types of selectional restrictions. Importantly, neither the transformational nor the non-transformational approach explains *why* pseudogapping exhibits only partial syntactic sensitivity and why it is that, among the various pieces of syntactic information encoded in the “elided” material, what matters are the selectional requirements that the elided verb imposes on the remnant.

It is then interesting to see that, from the CG perspective, this partial syntactic sensitivity is exactly what is expected in an analysis that embodies the null hypothesis about pseudogapping. Pseudogapping involves anaphorically retrieving the meaning of the missing verb. In CG, there is a tight connection between the syntactic category of any linguistic expression and its semantic denotation (even in cases in which the linguistic expression in question does not correspond to a traditional constituent). Thus, it is naturally expected that the relevant anaphoric process is sensitive not just to the meaning of the antecedent but also to its syntactic category, which encodes the relevant subcategorization information. But this anaphora resolution process does not involve any movement operation, and, for this reason, the account is free from the problems facing movement-based approaches. As we have argued here, this CG perspective enables us to naturally synthesize the insights of both transformational and nontransformational approaches, paving the way toward a truly explanatory account of the phenomenon.<sup>19</sup>

Evidence of a possible line of convergence between the approach we take here and the standard transformational “move and delete” scenario for analyzing ellipsis is to be found in the recent work on problems posed by the differential sensitivity of various kinds of ellipsis to island effects. A number of different approaches to this problem have been proposed, which try to reconcile the immunity of certain versions of ellipsis, such as sluicing, to island violations with the supposed vulnerability of VP ellipsis and pseudogapping to such effects. In some proposals, for example, Merchant (2008b), various complex representations and conditions are posited to explain this difference in behavior; Barros et al. (2014) convincingly refutes such an account, arguing instead for an “evasion” explanation in which the covert structure from which movement occurs in the case of sluicing differs in form from the overt, problematic configuration in the

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19. In this connection, see also Barker (2013), who arrives at a conclusion very similar to ours in the analysis of another major and controversial type of ellipsis, namely, sluicing.

antecedent, although the remnant in the ellipsis clause corresponds semantically to the material within the island in the antecedent. The difference in syntactic form is hypothesized to be such that movement of the remnant out of the ellipsed material does not cross any island boundaries. But this approach has been shown to have its own major flaws, in work both outside the transformational approach (e.g., Jacobson 2016) and within, as in Abels (2018), the most recent and comprehensive overview of the issues raised by the interaction of ellipsis and extraction phenomena. As Abels (2018, 424) soberly observes of his own findings,

It was shown that the most immediate empirical consequence of the two canonical theories of ellipsis, that is of theories that posit no (variable) syntactic structure at the ellipsis site and theories that demand syntactic identity between antecedent and ellipsis site, radically different though they are, is Ross's conjecture. Ross's conjecture says that, *ceteris paribus*, all cases of ellipsis give rise to island amelioration. On the surface, the conjecture is false. As a result, the various conclusions based on canonical theories of ellipsis are weakened. The most promising competing approach, the approach based on island evasion, cannot be considered a successful theory until a principled account of case connectivity is presented and the too-many-paraphrases problem is solved.

Our own assessment of such efforts to motivate covert syntactic structure in ellipsis is given in chapter 8, where we extend the present analysis of ellipsis to somewhat more complex cases involving interactions between ellipsis and extraction phenomena. In the literature, such complex interactions between major grammatical phenomena have been taken to provide strong evidence for the hypothesis that ellipsis requires positing invisible syntactic structures (see in particular Kennedy 2003 and Kennedy and Merchant 2000). We argue in chapter 8 that an alternative analysis of the relevant empirical patterns is not only available in Hybrid TLCG but is actually both empirically and conceptually superior to the traditional structural accounts offered in the previous literature. Specifically, our approach offers a principled explanation for *why* ellipsis exhibits only *partial* syntactic sensitivity with respect to these more complex data involving ellipsis/extraction interactions as well, thereby offering one possible answer to the question that Abels (2018) identifies as the major remaining issue. This conclusion suggests once again that the synthesis of transformational and nontransformational perspectives on grammar that Hybrid TLCG offers is not just a matter of theoretical elegance but has substantial empirical and conceptual consequences directly relevant for grammatical theory development.

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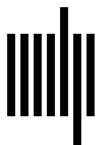
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