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Pseudogapping in English: a direct interpretation approach

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Abstract: Gapping elides a finite verb in the non-initial conjunct of a coordinate structure while VP ellipsis deletes a whole VP after an auxiliary. Unlike these two, pseudogapping elides most of the VP except one remnant. Pseudogapping additionally differs from gapping and VP ellipsis, in that it involves ellipsis of part of a non-finite VP. In this paper we provide a Construction Grammar account of pseudogapping that captures its similarities with as well as differences from other related elliptical constructions like VP ellipsis. Our construction-based analysis, which capitalizes on the inheritance network of constructions to capture broad similarities and unique differences among these constructions, allows us to account for the full range of extant data.

Keywords: context; inheritance network; pseudogapping; question-under-discussion; VP ellipsis

1 Basic properties

As illustrated in (1a) and (1b), gapping elides a finite verb in the non-initial conjunct of a coordinate structure while VPE (VP ellipsis) deletes a whole VP after an auxiliary. Unlike these two, pseudogapping elides most of the VP except one remnant, as in (1c). Pseudogapping additionally differs from gapping and VPE, in that it involves ellipsis of part of a non-finite VP (see, among others, Gengel 2013; Hoeksema 2006; Kubota and Levine 2017; Levin 1979; Miller 2014; Ross 1967):

(1) a. *Kim played the guitar, and Lee the recorder.* (Gapping)
b. *They survived, and we can too.* (VPE)
c. *It might not hurt me, but it would him.* (Pseudogapping)

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The putatively elided part of pseudogapping can vary dramatically, but at least includes a main verb, as illustrated by the following examples from Levin (1979: 13–16):[1]

(2) a. *Does that annoy you? It would [me].*
b. *It leaves some water in you. At least it does [me].*
c. *I'm sure I would like him to eat fruit more than I would [cookies].*
d. *Does it work out about the same money on a fellowship as it does [a T.A.]?*
e. *I think you need to show yourself more than you do [anyone else].*

The bracketed remnant in pseudogapping is typically an NP, but it can also be a PP, as seen from the following:

(3) a. *You can't take the lining out of that coat, You can [out of this one].*
b. *It [an enema] leaves some water in you. At least, it does [in me].* (Levin 1979: 16)

The remnant is in general the object of a verb as in (4a), but it can be a prepositional object as in (3) and (4b), or even an argument of the verb in an embedded clause as in (4c) (Levin 1979; Miller 2014):[2]

(4) a. *He actually does not admire Azaria the way Jonathan did [David].* (COCA 2001 ACAD)
b. *I could no sooner do without music than I could [oxygen].* (COCA 2012 FIC)
c. *They may have a much harder time stopping the regulations than they would [any bills in Congress].* (COCA 2007 NEWS)

The typical environments where pseudogapping occurs are comparatives or coordinations with a polarity contrast (Gengel 2013; Hoeksema 2006; Levin 1979; Miller 1990):

(5) a. *They like rutabagas more than they do [lima beans].*
b. *Robin will eat rutabagas, but she won't [ice cream].* (Gengel 2013: 70)

However, as long as the context provides a contrastive interpretation of the remnant, pseudogapping can be used in other syntactic environments across the sentence boundary (Levin 1979; Miller 2014):

(6) a. *I think it would make you proud. It would [me].* (COCA 1991 FIC)
b. *I don't hate him. Forgive him. Like he did [me].* (COCA 2016 TV).

1 The underlined expression is the putative antecedent of the elided material whereas the [bracketed expression] is the remnant in the pseudogapping or gapping.

2 COCA (Corpus of Contemporary American English).

The remnant here has a corresponding correlate which is in a contrast relation with it, as *you* and *me* in (6a) and *him* and *me* in (6b). This contrast condition renders examples like (7a) infelicitous since the remnant *fish* has no contrastive counterpart. The unnatural property of (7b) is also due to the fact that the focus in the antecedent differs from the focus in the remnant (Gengel 2013; Thoms 2016):

(7) a. **Kim will eat fish, and Lee will [fish], too.*
b. **Kim gave A BOOK to Tom and Mary did [TO BILL].*

The two contrastive expressions in pseudogapping are in general syntactically identical.[3]

The grammatical properties of pseudogapping we have just reviewed reveal two main tasks: one is how to capture its similarities to and differences from other relatives like gapping and VPE, and the other is how to license the construction. As regards the first task, there have been two main directions pursued in the literature: one is to analyze it as a type of VPE (Jayaseelan 1990; Kubota and Levine 2017; Lasnik 1999), and the other direction is to take pseudogapping as a type of gapping (Agbayani and Zoerner 2004; Johnson 2009). As for the second task, there have also been two strands: movement-cum-deletion and base-generation. Movement approaches propose that the remnant in the pseudogapping clause is moved out of a VP constituent, which is then elided. These approaches vary in the kinds of movements proposed (A-movement vs. A′-movement) and in the direction of movement (leftward vs. rightward) (see Agbayani and Zoerner 2004; Gengel 2013; Jayaseelan 1990; Lasnik 1999; Thoms 2016). Meanwhile, base-generation approaches do not rely on movement; the syntax of pseudogapping is licensed by syntactic rules while its semantics is resolved by an anaphoric mechanism by inference (Kim and Nykiel 2020; Kubota and Levine 2017; Miller 1990, 2014).

This paper offers a construction-based analysis of pseudogapping, while referring to the two closely related constructions, VPE and gapping. The paper first reviews key grammatical properties of pseudogapping that are shared with VPE and gapping as well as those that differentiate it from these two. We do this using authentic corpus data extracted from COCA (Corpus of Contemporary American English). The paper also discusses issues that the previous movement-based as well as surface-oriented analyses encounter. After briefly noting some fundamentals of Construction Grammar including the inheritance network system of constructions, the paper then sketches a construction-based analysis of VPE to lay out a foundation of our analysis for pseudogapping. This is then followed by our

3 See (34) in Section 3.1 for cases violating the exact syntactic identity, where we suggest that the syntactic violation is possible when the correlate and the remnant bear the same semantic role.

proposal, a construction-based analysis of pseudogapping that captures its similarities to and differences from VPE.[4] In particular, the paper proposes that pseudogapping belongs to the same family of meso-constructions as VPE, but bears its own constructional constraints that account for the tight interplay among syntactic, semantic, and discourse information.

2 Pseudogapping and its kin: gapping and VPE

2.1 Pseudogapping versus gapping

As just reviewed in the previous section, pseudogapping is quite similar to gapping in that both involve a remnant phrase and a missing main verb. However, they differ in many respects (see, among others, Gengel 2013; Hoeksema 2006; Johnson 2009; Kubota and Levine 2017; Levin 1979; Miller 1990). First, as in (8), gapping shows apparent verbal deletion without any remaining auxiliaries, while pseudogapping must have a finite auxiliary with a remnant phrase, as in (9):

(8) a. *Pat loves mysteries, and Terry [romances].*
b. *Robin ate beans, and Kim [rice].*

(9) a. *Kim drinks milk more often than he does [water].*
b. *Kim might read the short story, but he won't [the play].*

Second, gapping in general occurs in the non-initial conjuncts of coordinate structures but not in subordinate structures. However, pseudogapping is more flexible in occurring not only in coordinations but also subordinate clauses (often introduced by subordinators and coordinators like *if, although, but, than*). This contrast is illustrated by the following pair (Hoeksema 2006; Johnson 2009):

(10) a. **He will consider your proposal, before he mine.*
b. *He will consider your proposal, before he does mine.*

Third, unlike gapping, pseudogapping is possible in embedded clauses (Johnson 2009; Levin 1979):

(11) a. **Some had eaten mussels and she clams that others [shrimp].*
b. *Some had eaten mussels and she claims that others had [shrimp].*

4 The paper here focuses on VPE and pseudogapping only. Offering an analysis of related constructions like gapping and stripping is desirable, but it is left for future research.

Fourth, gapping constructions require non-coreferential subjects, but pseudogapping has no such requirement (Johnson 2009; Levin 1979). Compare gapping in (12) and pseudogapping in (13):

(12) a. *Pat_i [loves] mysteries, and Pat_i romances.*
b. Pat_i *[loves] mysteries, and* Lee_j *romances.*

(13) a. Kim_i *[drinks] milk more often than* he_i *does [water].*
b. I_i *can [shoot] you before* you_j *can me.* (COCA 1997 SPOK)

The contrast in (12) illustrates that gapping prefers to have different subjects. However, as in pseudogapping examples (13a) and (13b), the subject of the pseudogapping clause can be either coreferential with or different from that of the antecedent clause.

2.2 Pseudogapping versus VPE

As noted, pseudogapping shares many properties with VPE. For instance, pseudogapping shares one key property with VPE in that it requires the presence of an auxiliary verb. In this sense, it has often been taken to be a special type of VPE, even though there are several differences. The following summarizes the key similarities and differences of the two constructions noted in the previous literature (see, among others, Gengel 2013; Hoeksema 2006; Kubota and Levine 2017; Levin 1979; Miller 1990, 2014).

First, the literature notes that VPE can apply in infinitival clauses, while pseudogapping cannot (Hoeksema 2006; Levin 1979):

(14) a. *I don't play chess as often as I would like to.*
b. *Kim might not have read the short story, but Lee might have.*

(15) a. **I don't play chess as often as I would like to [checkers].*
b. **Kim might have drunk milk more often than Lee might have [water].*

The examples in (14) tell us that VPE can be licensed by the nonfinite infinitival marker *to* or the non-finite auxiliary *have*.

Second, it is also noted that VPE readily allows more than one supporting auxiliary, while pseudogapping does not (Agbayani and Zoerner 2004; Levin 1979):

(16) a. *Robin has been playing the oboe, and Kim has been too.*
b. *?*Robin hasn't been playing the oboe as much as she has been [the bassoon].* (Agbayani and Zoerner 2004: (49))

Third, the literature has often observed that VPE can apply backward, but pseudogapping is possible only forward (Hoeksema 2006; Levin 1979):[5]

(17) a. *Even if Kim could, she wouldn't speak French.*
b. **Even if Kim could [every Romance language], she wouldn't speak French.*

Fourth, most of the previous literature has claimed that pseudogapping, unlike VPE, is sensitive to island constraints (Gengel 2013; Lasnik 1999):

(18) a. *Robin will fascinate the children, and I believe [the claim [that Kim will too]].*
b. **Robin won't fascinate the children, but I believe [the claim [that she will the adults]].*

However, as noted by Hoeksema (2006) and Miller (2014), island violations can appear in pseudogapping. Our corpus data also reveal island insensitive examples:

(19) a. *Last night someone put a bullet through his head, just like they did [poor Mr. Felton].* (Left Branching Island, Hoeksema 2006)
b. *Why don't you put a bullet in his head like you did [that man out there]?* (Left Branching Island, Hoeksema 2006)

(20) a. *Critics say it's not unusual for the police to spend less time investigating the deaths of black citizens than they do [whites].* (CNPC, COCA 1993 SPOK)
b. *Bring the same kind of carry-ons when traveling by train as you would [by air].* (Adjunct island, COCA 1998 MAG)

Fifth, unlike in VP-ellipsis, the elided material in pseudogapping need not be a constituent, as attested by the following (see Miller 2014 also):

(21) a. *I would buy one from him before I would [Obama].* (COCA 2012 WEB)
b. *Those cops spent a whole lot more time looking at Aunt Farrah than they did [me].* (COCA 2008 FIC).

The antecedent clause, as marked here, contains a putatively elided part that is not a constituent. The putatively elided part can even be discontinuous, as seen from these corpus examples:

5 Miller (2014: 88) notes that "cataphoric uses of pseudogapping are very hard", while offering one example from the corpus COCA, *As it did me, work rescued Willa Cather*.

Table 1: Similarities and differences among the three constructions.

	Pseudogapping	VPE	Gapping
Requires an auxiliary	Yes	Yes	No
Occurs in subordinate clauses	Yes	Yes	No
Occurs in embedded clauses	Yes	Yes	No
Requires a non-coreferential subject	No	No	Yes
Has a remnant	Yes	No	Yes
Occurs only in finite clauses	Yes	No	No
May have more than one auxiliary	No	Yes	No
Can apply backward	No	Yes	No
Island sensitivity	??	No	No

(22) a. *The notion probably makes your skin crawl as much as it does mine.* (COCA 1993 FIC)
b. *I just figured the money would do them a lot more good than it would [me].* (COCA 1995 NEWS).

As reviewed so far, there are observable differences between pseudogapping and VPE, but it is clear that the two are closely related in the sense that both are licensed by an auxiliary expression. In addition, languages that do not have VP-ellipsis, such as German and Dutch, also appear to lack an exact parallel to English pseudogapping (Hoeksema 2006). This further supports their kinship. Table 1 summarizes the properties of the three constructions, pseudogapping, VPE, and gapping, that we have discussed so far. In what follows, after discussing the previous literature, we offer a construction-based analysis that addresses these properties.[6]

3 Previous analyses

3.1 Move-and-delete analyses

In licensing pseudogapping, one dominant idea is to assume that the remnant in pseudogapping is moved out of a VP constituent and the remaining VP undergoes deletion. For instance, Jayaseelan (1990) takes the remnant movement as a heavy NP shift, as shown in the derivation of (23a) in (23b):

6 As noted by Johnson (2009) and others, gapping can be applied to a nonfinite verb as in *Some children have eaten chocolate, and others might fruit*.

(23) a. *Kim might read the short story, but she won't the play.*
b. … she won't [$_{VP}$ ~~[$_{VP}$ read t$_j$]~~ the play$_j$].

One potential difficulty for a heavy NP shift analysis, as noted by Lasnik (1999), arises from the fact that heavy NP shift cannot generally take place out of a PP, as shown in examples like (24):

(24) a. **We should go with __ the next time [the plan that has the lowest likelihood of failure].*
b. **I sent off presents to __ yesterday [my good friends in Belgium].*

However, as we have seen, pseudogapping allows a prepositional object to be a remnant:

(25) *If you can't understand me, I will communicate with you like I would [a dog].*

Another issue arises from the fact that, as noted by Miller (2014) and seen in these attested examples, most of the remnants in pseudogapping are pronouns:

(26) a. *What I am about to relate surprises me as much as it will [you].* (COCA 2019 FIC).
b. *He probably thinks that it will cause us more problems than it will [him].* (COCA 1996 SPOK)

Considering the fact that pronouns are usually considered syntactically "light", they thus cannot undergo heavy NP shift. Lasnik (1999) points out that this raises a non-trivial issue for the heavy NP shift analysis, and suggests that pseudogapping involves an overt leftward A-movement with application of a lower VP ellipsis, as represented in the following:

(27) *[$_{TP}$ she won't [$_{AgrP}$ the play$_j$ ~~[$_{VP}$ read t$_j$]~~]]*

As illustrated here, the remnant is now moved leftward to an argument position. However, as noted by Gengel (2013) and Thoms (2016), this kind of leftward A-movement analysis raises several issues. For instance, the PP, not required to have a case, should therefore not undergo A-movement under standard assumptions. In addition, it is also questionable how the remnant phrase can undergo A-movement when it is deeply embedded as in the following examples:

(28) a. *It's more expensive to produce and use ethanol than it is [gasoline].* (COCA 2018 NEWS)
b. *Sometimes I think you like hanging around more with animals than you do [people].* (COCA 2012 MOV)
c. *She hopes sweet opium smoke was there to help him as it did [her].* (COCA 2015 FIC)

For instance, the remnant *her* in (28c) would be an object of the verb *help* heading an adjunct clause, and thus would not undergo A-movement.

The analysis also needs an additional mechanism to block the A-movement in pseudogapping from being applied to the VP complement of a nonfinite auxiliary:

(29) a. **Kim wouldn't have been playing chess, but he might have been checkers.*
b. **Kim wouldn't have been playing chess, but he might have checkers.*
c. *Kim wouldn't have been playing chess, but he might checkers.* (Thoms 2016: (15))

As an alternative to A-movement, Gengel (2013) and Thoms (2016) suggest that pseudogapping is an A′-focus movement.

(30) *[Rab has [wine [been drinking]]] and [Tam has [$_{FocP}$ beer ~~[been [drinking]]]~~].*

Within this analysis, the focused XP *beer*, as well as its focused correlate, undergo a QR-like covert movement to the SpecFocP, as illustrated in (30). The A′-movement then would avoid the issues that Lasink's A-movement analysis encounters, though still leaving open the question of how to license a remnant from an embedded clause or an island. Another direction that has been adopted in derivational analyses is to take the movement operation involved in pseudogapping to be a type of gapping (Agbayani and Zoerner 2004; Johnson 2009). This approach, positing coordination-like structures for gapping and pseudogapping, assumes that pseudogapping involves ATB (across the board) verb movement. The following is a simplified structure of the one suggested by Agbayani and Zoerner (2004: (15)):[7]

(31) *They like$_i$ [$_{VP}$ [$_{VP}$ t$_i$ rutabagas] [$_{CP}$ more than they do t$_i$ lima beans]]*

Their key idea is that pseudogapping is derived via ATB verb movement from a matrix VP and an adjunct CP. Such an analysis may be appealing for embedded/subordinate pseudogapping as in (31), but for coordinate structures, exceptional assumptions have to be made regarding the placement of the subject of the second clause. An ATB analysis requires that the second subject remain *in situ* within VP, an assumption not independently motivated, which weakens that account.

The derivational analyses we briefly reviewed take pseudogapping to be derived from a clausal source. Supporting arguments for clausal sources with deletion processes seem to be found from syntactic connectivity between the

7 See Kubota and Levine (2017) for theoretical issues in assuming the ATB verb movement of gapping for pseudogapping.

antecedent and pseudogapped clauses. For example, consider the following contrasts (Kubota and Levine 2017; Miller 1990):

(32) a. *John spoke to Mary more often than Peter did [for Anne].
b. John spoke to Mary more often than Peter did [to Anne].

The verb *speak* can take a PP headed by *to* or *for*, but in (31), only *to Mary* is possible. This contrast indicates the requirement of syntactic connectivity between the antecedent and pseudogapped clauses. However, category mismatch can be tolerated in some cases:

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

As suggested by Miller (2014), the lexical meaning of *spoke* in the antecedent clause subcategorizing a PP[*about*] is quite similar to that of the unrealized verb *spoke* in the pseudogapped clause combining with a PP[*of*]. The semantic closeness of these two seems to allow the preposition mismatch here.

There are also examples that allow another type of syntactic mismatch between the antecedent clause and the pseudogapped clause (see Miller 2014 for a similar point). Compare the following:

(34) a. *dear friends, kindly show the same consideration to us as you would to your pets.* (COCA 2012 WEB).
b. *I ask every New Yorker, when you see a police officer today, please offer them condolences as you would [to someone who has lost a family member]…* (COCA 2019 NEWS).

In (34a), the argument structure of the verb *show* in the antecedent clause matches that of the unexpressed *show* in the pseudogapped clause. However, there is a mismatch in (34b). The antecedent clause here has a ditransitive structure (NP-NP) while the pseudogapping clause has a dative pattern (NP-PP). Such examples show us that requiring exact syntactic identity between the antecedent clause and the pseudogapping one is too strong.

Miller (2014) further provides attested data where no proper linguistic antecedent can be identified:

(35) a. *Type in your PIN, just hit those buttons like you would [a phone].*
b. *They all called him Pa Tommy, just as they would [any village elder in Serra Leone].*

The antecedent clauses here do not provide proper putative sources. For instance, the putative source of (35a) would be something like *You would hit the buttons on a phone*, which differs from the existing syntactic structure.

Another issue arises from voice mismatches. Merchant (2013) notes that unlike VPE, pseudogapping does not allow voice mismatch between the pseudogapping clause and its antecedent clause. However, as noted by Miller (2014) and observed from our corpus examples, the pseudogapping clause and the antecedent clause can have different voices, at least in comparatives:

(36) a. *A whole poached wild striped bass should be taken to the table as you would [a Thanksgiving turkey]…* (COCA 1998 NEWS)
b. *I mean for her to be dressed– and addressed – as we would [Becky Sharp, or Ophelia].* (COCA 1998 MAG)
c. *These savory waffles are ideal for brunch, served with a salad as you would [a quiche].* (COCA 2012 NEWS)

The movement analyses accept the claim that move-and-deletion operations in pseudogapping observe island constraints (Merchant 2013). In the previous section, we have provided attested examples that are insensitive to islands. Miller (2014: (13)) also identifies the following attested data that appear to be island insensitive:[8]

(37) a. *… the voting preferences of black women much more closely approximated the pattern of [black men] than they did [white women].* (CNPC)
b. *They would examine what [[I]] wore as intensely as anything else as they would [any woman who met with them].* (Wh-island)

In these examples, the correlate linked to the remnant is within an island, challenging a movement and deletion operation for pseudogapping.

There have thus been many developments in move-and-delete approaches, but there are still many unsettled analytical as well as empirical issues. We have noted that pseudogapping is quite a flexible syntactic phenomenon that challenges the postulation of clausal sources and the application of move-and-delete processes. Additionally, many of the existing derivational analyses still need to address similarities and differences among VPE, gapping, and pseudogapping in a systematic way.

8 As observed by Miller (2014) as well as by our corpus investigation, the dominant uses of pseudogapping are in comparatives or comparative-like structures. In addition, the identified island violation examples of pseudogapping are all in comparatives. At this point, we have no clear answer for this, but we conjecture that this flexibility may have to do with the tight interplay between the properties of comparatives and those of pseudogapping.

3.2 Nonderivational, base-generation analyses

Nonderivational analyses introduce no covert expressions in the putative clausal source for pseudogapping. Miller (1990) introduces ID (immediate dominance) rules like (38) that allow an auxiliary verb to combine with a remnant or remnants. Miller proposes that the meaning of the missing elements can be resolved by anaphoric reference to some corresponding expression(s) in the preceding clause. For instance, the ID rule (38a) is designed to license the combination of an auxiliary with an NP remnant while (38b) is designed to allow the combination of an auxiliary with a PP remnant:

(38) a. VP → H[2], NP
b. VP → H[7], PP

In addition to these PS-style rules, Miller's analysis introduces an anaphoric interpretation process that refers to a contextual variable corresponding to the elided material. One advantage of such an interpretive account, as noted by Miller (1990), is to allow ambiguous readings for examples like (39), whose possible interpretations are given in (40):

(39) *The president asked Congress to fund the Contras more often than he did the Salvadorian government.*

(40) a. VP of the antecedent clause: ask'(fund(Contras'))(Congress')
b. [[did]] = λP.**ask'**(fund'(P))(**Congress'**)
c. [[did]] = λP.**ask'**(fund'(**Contras'**))(P)

As such, by taking the auxiliary *did* to undergo an anaphor resolution procedure as a usual pronoun does, his analysis allows these two readings.

As pointed out by Kubota and Levine (2017), this analysis handles simpler cases, but requires elaboration to address some more complex syntactic environments where pseudogapping can occur. As we have noted earlier, the pseudogapping clause tolerates syntactic mismatch with the antecedent clause in some respects, but, as noted before, there are also many instances where we need to refer to syntactic information of the antecedent clause:[9]

(41) a. *You can put a lot more pressure on local officials than you can [on federal ones]* (COCA 2012 BLOG)
b. *It's necessary to react to it as you would [to any other artist's paintings].* (COCA 1997 MAG)

9 Unlike typical pseudogapping examples, (41c) does not have an overt correlate in the antecedent clause. See Section 4.3 for further discussion.

c. *Make your leaflet not only about how to access you, but also offer health advice as you would [to any patient].* (COCA 2012 ACAD)

In these examples, the remnant in the pseudogapping clause must be linked to the subcategorization properties of the head verb in the antecedent clause.

Adopting Miller's interpretative approach, Kubota and Levine (2017) provide a non-derivational analysis of pseudogapping within the framework of Hybrid Type-Logical Categorial Grammar. The analysis allows the interface between semantic resolution and syntactic information. The key idea of this Categorial Grammar approach is to assume that pseudogapping involves the ellipsis of a transitive verb and introduces a VP/Pseudogapping operator that behaves like a (di)transitive verb:

(42) VP-ellipsis/Pseudogapping operator (Kubota and Levine 2017: (100)): $\lambda\varphi.\varphi;\lambda\mathcal{F}.\mathcal{F}(P)$; (VP/$)↑((VP/$)/(VP/$)) where VP/$ is a metavariable notation for a set of categories (e.g., VP, VP/NP, VP/NP/PP, etc) where any number of arguments and *P* is a free variable whose value is resolved anaphorically.

This operator, functioning as a transitive verb, combines with the auxiliary in the pseudogapping clause and then the remnant in sequence. The operator needs to refer to the head verb of the antecedent clause and functions as a kind of elided verb matching the one in the antecedent clause. This Categorial Grammar approach has certain merits, but still raises additional questions. For instance, it is unclear what kind of operator can be introduced for examples where the remnant is the complement of an embedded clause, which we have noted earlier:

(43) a. *Never in my life have I wanted to hit a woman as much as I do [you].* (COCA 1990 MOV)
b. *It costs considerably more to develop good software than it does [automation hardware].* (COCA 2012 BLOG)

The operator cannot be a simple verb in such examples. Further, it is noted that the remnant is in general the object of a verb and further that with prepositional verbs like *rely on*, the verb and the following preposition can undergo a reanalysis. However, there are numerous examples where reanalysis is not feasible (see Miller 2014 also):

(44) a. *Sometimes I think you like hanging around more with animals than you do [people].* (COCA 2010 MOV)
b. *Since they are recovering, and their body produces the best food for babies in those times, it makes sense for them to stay with the newborn more than it does [men].* (COCA 2012 BLOG)

In such examples, the NP remnant serves as the object of the preposition *with* in (44a) and the object in (44b) but it seems unlikely that a reanalysis process could create a lexical unit out of the elided part. A similar situation can be observed in the following:

(45) a. *It's more expensive to produce and use ethanol than it is [gasoline].* (COCA 2006 NEWS)
b. *Maybe it's easier to get the devil to listen than it is [God].* (COCA 2016 TV)

The understood elided part is a string of words that form no semantic unit at all and further the head is an adjective that would not normally be assumed to participate in a reanalysis process. It is challenging to take all these understood elliptical parts as a lexical-style operator or a reanalysis unit. There are substantial merits of this Categorial Grammar-based approach, but in this paper, we try to offer an alternative one incorporating some of the insights observed by Kubota and Levine (2017).

4 A construction-based direct interpretation approach

4.1 Fundamentals, inheritance network, and structured discourse

We propose a base-generation approach from a Construction Grammar (CxG) perspective to account for the similarities and differences between pseudogapping and its family of related constructions. By doing so we can offer a streamlined analysis of pseudogapping that can address both the general and idiosyncratic properties of the construction. The main features of CxG can be summarized as follows (see, among others, Goldberg 2005, 2013; Kim and Michaelis 2020; Sag 2012)

- All levels of description (including morpheme, word, phrase, and clause) are understood to involve pairings of form with semantic or discourse functions.
- Constructions vary in size and complexity, and form and function are specified if not readily transparent.
- Language-specific generalizations across constructions are captured via inheritance networks, reflecting commonalities or differences among constructions.

Within this view, 'constructions' are thus the basic units of language and central to all linguistic descriptions and theories of language. Interpreted within the sign-based system, this means that all linguistic signs are taken to be constructions. A construction consists of a form and a meaning or a function connected with that form, which can be characterized as follows (Goldberg 2005: 5):

(46) Definition of grammatical 'constructions':
Any linguistic pattern is recognized as a construction as long as some aspect of its form or function is not strictly predictable from its component parts or from other constructions recognized to exist. In addition, patterns are stored as constructions even if they are fully predictable as long as they occur with sufficient frequency.

To put it simply, a construction is thus a form-meaning pair, whose meaning we cannot predict from syntactic combinations, as well as a form-meaning pair with high frequency whose meaning is compositional. Constructions are thus defined as not fully predictable form/function-mappings or as sufficiently entrenched structures due to their high frequency.

The constructions identified in a language are related to each other through inheritance hierarchies in which sub-constructions can inherit constructional properties from their super-constructions (see Ginzburg and Sag 2000; Goldberg 2005; Kim and Davies 2020; Sag 2012; Traugott and Trousdale 2013).Within the system of inheritance hierarchy, super-constructions (macro) express broad generalizations that are inherited by many other constructions; mid-constructions (meso) posited at various midpoints of the hierarchical network capture limited patterns; low-level constructions (micro) express exceptional patterns; the lowest level of constructions (construct) contains the largest amount of linguistic information. These four levels of construction, summarized in the following, are thus hierarchically connected:

(47) Constructional schemas: an inheritance hierarchy (Traugott 2007; Traugott and Trousdale 2013)
a. Macro-constructions: highly abstract, schematic constructions
b. Meso-constructions: a network of related construction types which are still fairly abstract with similar semantics and/or syntax
c. Micro-constructions: individual construction types
d. Constructs: Instances of micro-constructions, realizations of actual use

In the present context, all the elliptical constructions can be defined as subtypes of the Ellipsis Construction (*elliptical-cxt*), which licenses the ellipsis of one or more words. Consider again some canonical examples of these four:

(48) a. *Kim likes wine more than she does beer.* (Pseudogapping)
b. *Kim likes wine, and Lee does, too.* (VPE)

(49) a. *Kim likes wine, and Lee beer.* (Gapping)
b. *Kim likes wine, but not Lee.* (Stripping)

The main difference between the examples in (48) and (49) is that those in (48) include an auxiliary verb while those in (49) do not. This indicates that ellipsis

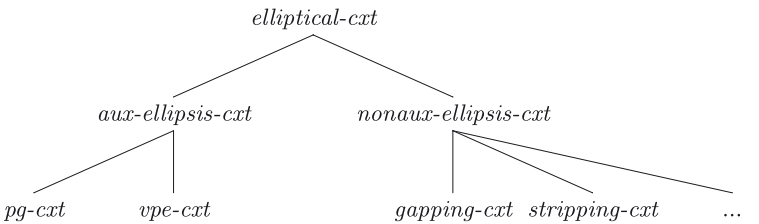
constructions can be classified into at least two meso-constructions with respect to the requirement of auxiliary verb licensing. Pseudogapping and VPE thus belong to the construction licensed by an auxiliary (*aux-ellipsis-cxt*), while Gapping and Stripping do not require an auxiliary (*nonaux-ellipsis-cxt*). The key difference between the two is thus that the former bears the feature [AUX +], originated from the head auxiliary verb.[10] Unlike these two auxiliary sensitive constructions, gapping and stripping do not require the presence of an auxiliary verb. The two behave alike in that they both typically occur in conjunctions or disjunctions, as in (49) (Johnson 2009; Kubota and Levine 2017; Miller 2014). However, unlike VPE and pseudogapping, gapping and stripping do not occur in subordination:

(50) a. *I will contact John, if you will.* (VPE)
b. *I'll contact John if you will Mary.* (Pseudogapping)

(51) a. **I'll contact John if you Mary.* (Gapping)
b. **I'll contact John if you.* (Stripping)

These simple facts imply that the four are all macro ellipsis constructions, but they can be classified into different meso-constructions while each functions as its own micro-construction, as represented in the following:[11]

(52)



10 This implies that non-auxiliary verbs like *get* license neither VPE nor pseudogapping, as seen from the following data (Kim and Michaelis 2020):

(i) a. **I get paid something via ticket sales, and Lee gets too.*
b. **I get paid something via ticket sales, as Lee gets website maintenance.* (in the sense of 'Lee gets paid something for website maintenance')

11 As suggested by a reviewer, to reflect certain differences between pseudogapping in comparatives (or comparative-like examples) and pseudogapping in coordination (e.g., with respect to syntactic flexibility), we may need to subclassify the pseudgapping construction (*pg-cxt*) further. Additionally, this simple hierarchy does not address similarities between pseudogapping and gapping, which could be done by the postulation of another meso-construction whose properties these two can multiply-inherit. As we noted earlier, we leave this open for future research.

We assume that the Ellipsis Construction (*elliptical-cxt*) belongs to a clause (a subtype of the clausal type CLAUSALITY), reflecting the fact that each ellipsis construction has a propositional meaning (Ginzburg and Sag 2000). Different from other clausal types, the construction *elliptical-cxt* bears a nonempty FOC value and each of its subtypes is cross-classified with respect to its HEADEDNESS and CLAUSALITY. For instance, the Pseudogapping Construction is also a subtype of a head-complement construction while the VPE Construction is the head-only construction. In the meantime, the Gapping and the Stripping constructrions would be subtypes of the head-fragment construction.[12] Each empirically attested token we have extracted from the corpora or intuitively constructed well-formed token is a construct, serving as realizations of actual uses.

In what follows, we focus on VPE and pseudogapping and show that such an inheritance network system plays a key role in capturing language-specific generalizations across the constructions in question. For instance, the shared requirement of an auxiliary verb as licensing Pseudogapping and VPE predicts their compatibility with SAI (Kempson et al. 1999: 282; Sag 1976):

(53) a. *Hey! I've never seen you on campus before. Nor have I you!*
b. *John didn't give a nickel to Mary, nor did I a dime to Sue.*

This kind of SAI compatibility is not found in Gapping or Stripping. This construction-based account can also imply that pseudogapping is more restricted than other ones like VPE, or has its own constructional constraints (see Section 4.3). Pseudogapping occurs mainly in the environments that evoke two parallel propositions like comparatives or comparative-like environments. The syntax-based move-and-delete analyses would have no way to refer to such constructional properties since movement cannot refer to such features. In contrast, pseudogapping, being an independent construction, can bear such constructional constraints.

It has been well-noted that all the macro-ellipsis constructions observe general constraints. Ever since the pioneering work of Rooth (1992), many have suggested that ellipsis involves a focus assignment to an expression and further that ellipsis resolution requires certain 'parallelism' between the clause including the ellipsis and its antecedent clause (see, among others, Griffiths and Lipták 2014;

12 The details as well as the complete clausal type hierarchy needs to be worked out, but for a direction, refer to Ginzburg and Sag (2000) and Nykiel and Kim (2021) for fragments and sluicing, Chaves (2009), Abeillé et al. (2014), and Park (2019) for gapping, Kim and Abeillé (2019) for stripping, and so forth.

Hardt and Romero 2004; Hartman 2011; Kehler 2000; Merchant 2016; Sag 1976; Stockwell 2018; Thoms 2016). This parallelism can be informally stated as follows:[13]

(54) Parallelism condition (Hardt and Romero 2004):
Ellipsis requires that there be some phrase E containing the ellipsis and some antecedent phrase A in the discourse, such that [[A]] is or contextually implies a member of F(E).

For illustration, consider the VPE example in (48b). The first conjunct *Kim likes wine* can be a member of F(E), as in (55a), since its focus value is the set of propositions as in (55b):

(55) a. [[[Kim likes wine]]] ∈ F([Lee likes wine]) (VPE: Lee does, too)
b. {P|∃x.P = x likes wine}

The example (48b) above thus satisfies the condition in (54). The pseudogapping in (48a) and the gapping in (49a) do as well:

(56) a. [[[Kim likes wine]]] ∈ F([she likes beer]) (Pseudogapping: she does beer)
b. {P|∃x.P = Kim likes x}

(57) a. [[[Kim likes wine]]] ∈ F([Lee likes beer]) (Gapping: Lee beer)
b. {P|∃x.∃y.P = x likes y}

As seen from these representations, the meaning of E and that of A in each case meet the parallelism condition in (54). The ellipsis clause has its parallel, linguistic antecedent where the antecedent clause implies there is a member of F(E). Note that the parallelism condition will block tautologous conditional examples like (58b), as pointed out by Stockwell (2018):

(58) a. **Kim likes wine, and Kim does, too.*
b. **Kim likes wine more than she does wine.*

13 The following is Rooth's (1992) formal definition on focus interpretation:

(i) Focus at the level of a phrase Φ requires an antecedent A such that either
a. [[A]]∈ F(Φ) and [[A]] ≠[[Φ]]; or
b. [[A]]⊆ F(Φ)

The first condition is the requirement that the antecedent A must be a member of the focus semantic value of the one containing the focus Φ, and that A and Φ must have distinctive (contrastive) meanings. The second condition ensures that the meaning of A is a subset of the focus semantic value of Φ.

Both of these are unacceptable since the two are not in sufficient contrast.

Following Kehler (2000) and Hardt and Romero (2004), we also assume that the parallelism condition for ellipsis is a condition on discourse structure. This means that the macro-construction Ellipsis Construction (*elliptical-cxt*) bears the following constructional constraints, which are inherited by its meso and micro-constructions including pseudogapping, VPE, gapping, and stripping as well:

(59) Elliptical Construction:

$$\textit{elliptical-cxt} \Rightarrow \begin{bmatrix} \textsc{sem}\ \mathrm{E} \\ \textsc{foc}\ \textit{nelist} \\ \textsc{cnxt} \mid \textsc{presup}\ \textit{parallel-rel}(A, E) \end{bmatrix}$$

The construction reflects the observed generalization that ellipsis clause (E) has at least one FOC expression, and its meaning E is in a parallel-relation with its antecedent A. The parallel relation, evoked in the context (CNXT), can be defined such that two situations are parallel when the variables in the antecedent and the elided clause are bound from parallel positions (see Griffiths and Lipták 2014 for a similar formulation).

Together with this discourse-based system, we develop an analysis of pseudogapping. It is true that pseudogapping differs from both gapping and VPE, but there are also clear similarities, as summarized in Table 1. In what follows, we suggest a construction-based approach that takes pseudogapping as a sub-construction with its own constructional constraints. The analysis assumes that there is no syntactic structure at the ellipsis site and its semantic resolution refers to the activated discourse structure by inference. The discourse structure also monitors which questions are under discussion (QUD), what answers have been provided by whom, etc. (Ginzburg and Sag 2000). As the dialogue progresses, the value of QUD is constantly being updated and the relevant context offers the basis for the interpretation of fragments. For example, uttering a question like *What do they want?* will activate the following information:[14]

14 The semantic notation given here is a simplified version of Ginzburg and Sag (2000) and Sag (2010), in which wh-questions are individuated in terms of a nonempty set of parameters and an open proposition. For instance, Sag (2010) represents the meaning of *What fell?* as $\lambda\{\pi_x\}$ [Past(fall)(x*)].

(60)
$$\begin{bmatrix} \textsc{form} \left\langle \text{What do they want?} \right\rangle \\ \textsc{syn}\ \text{S} \\ \textsc{sem}\ \lambda_x \left[want(i,x) \right] \end{bmatrix}$$

With this utterance, as well as updating the contextual information, also evokes two relevant attributes MAX-QUD (maximal-question-under-discussion) and FEC (focus establishing constituent), the latter of which is linked to the list value of FOC:

(61)
$$\left[\textsc{cnxt} \left[\begin{bmatrix} \textsc{max-qud}\ \lambda_x \left[want(i,x) \right] \end{bmatrix} \\ \textsc{fec} \left\{ \begin{bmatrix} \textsc{syn} \mid \textsc{cat}\ \text{NP} \\ \textsc{sem}\ x \end{bmatrix} \right\} \right] \right]$$

The feature MAX-QUD, representing the question currently under discussion, takes as its value *questions*. FEC, taking as its value syntactic as well as semantic information, represents the utterance which receives the widest scope within MAX-QUD. In the present context, the *wh*-question thus asks what they want now (QUD) and this information linked to the *wh*-phrase (the index value) functions as the FEC.

4.2 VPE as a micro-construction

The standard generalization of VPE is that it is licensed by an auxiliary verb (Hardt 1999; Johnson 2001; Lobeck 1995):

(62) a. *He will protect you, and I will __ too.*
b. *You can say it doesn't affect you but it really does __ .*
c. A: *Have you talked about that with council?* B: *Yes, I have __ .*

One of the key issues in analyzing VPE, as with other elliptical constructions including gapping and pseudogapping, concerns the question of whether there is any syntactic structure for the elided parts in VPE. The traditional assumption within the Minimalist approach has been that there is an overt VP that has undergone an ellipsis process, as again represented in the following:

(63) *You can say it doesn't affect you but it really does <~~affect you~~>.*

However, naturally occurring VPE data indicate that simple syntactic reconstruction would often require infelicitous putative sources (see Ginzburg and Sag 2000; Hardt 1993). Further, it has been widely noted that VPE behaves quite like a pronominal expression (Aelbrecht and Harwood 2015; Ginzburg and Miller 2018; Kim 2006; Lobeck 1995; López 2000). For instance, VPE can cross utterance boundaries (64) and further is not sensitive to island constraints (65):

(64) A: *Kim won't leave Seoul soon.*
B: *I don't think Lee will __ either.*

(65) a. *Kim didn't hit a home run, but I know a woman who did __ .* (CNPC)
b. *That Kim won the batting crown is not surprising, but that Peter didn't know she did __ is indeed surprising.* (SSC)

One way to account for VPE closely tracks analyses of *pro*-drop phenomena. As Kim and Michaelis (2020) and others show, it is not necessary to posit a phonologically empty pronoun in elliptical constructions if a level of argument structure is available where the required pronominal properties can be encoded (see Bresnan 1982; Ginzburg and Miller 2018; Kim 2006). Given this, English VPE can be analyzed as a language-particular VP *pro* drop phenomenon. We will pursue such an analysis here.

Before discussing this *pro*-analysis, let us briefly review some key properties of English auxiliary verbs whose presence is sensitive to VPE. Differing from lexical verbs, English auxiliary lexemes bear the positive AUX feature as given in (66a) and, different from *have* and *be*, modal auxiliaries are further specified to be finite with the selection of a base VP[*bse*] complement, as represented in (66b) with the feature structure system of HPSG (see Kim and Michaelis 2020; Sag 2012):

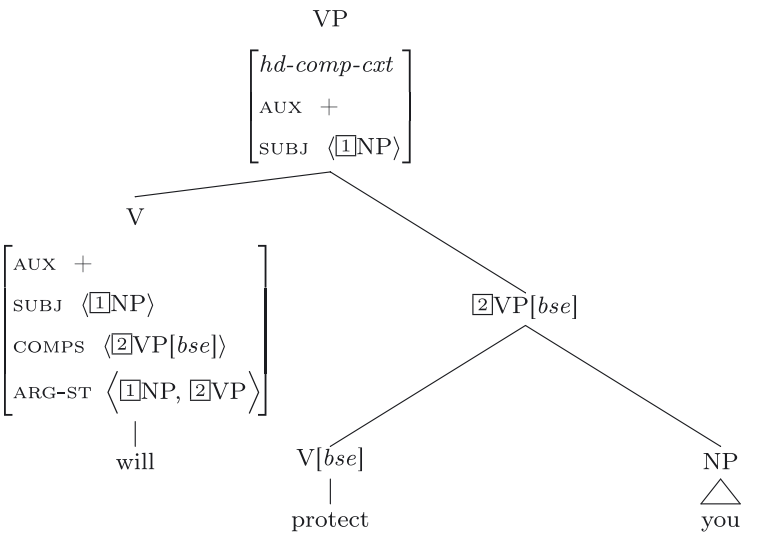
(66) a. $aux\text{-}lxm \Rightarrow \left[\text{SYN} \mid \text{HEAD} \mid \text{AUX} \; +\right]$

b. $aux\text{-}modal\text{-}lxm \Rightarrow \begin{bmatrix} \text{SYN} \mid \text{HEAD} \mid \text{VFORM} & fin \\ \text{ARG-ST} & \langle \text{NP}, \text{VP}\left[\text{VFORM} \;\; bse\right] \rangle \end{bmatrix}$

The lexical specification in (66b) that requires a modal to combine with a finite VP will then license a VP structure like the following for (62a):[15]

15 We illustrate the analysis of a modal here, but similar analyses can be constructed for the other auxiliaries *be* and *have*, as in Kim and Michaelis (2020).

(67)



The modal *will* combines with its overt VP complement whose VFORM value is *bse* (base).[16] This VFORM value is projected from the head daughter *protect* in accordance with the HFP (Head Feature Principle).[17]

Differing from an example where the VP complement is an overt one, in VPE sentences like (62), as noted earlier, the VP complement is realized as a covert *pro* expression. That is, the present analysis takes the VP argument of an auxiliary verb in VPE to be realized not as an overt syntactic complement, but functioning as a *pro*-VP which is associated with its antecedent in context (Ginzburg and Miller 2018; Kim 2006; Kim and Michaelis 2020; Kim and Sag 2002). This realization process is guaranteed by the following:

16 The Argument Realization Constraint (ARC) ensures that the first argument is mapped onto the subject (SUBJ) while the remaining arguments onto the complements (COMPS). See Sag et al. (2003: 494) and Kim and Michaelis (2020).

17 The principle ensures that the head features (e.g., VFORM) of a phrase are identical with those of its head daughter.

(68) Mapping a VPE Auxiliary Word:

$$\begin{bmatrix} \textit{aux-lxm} \\ \textsc{arg-st} \ \langle \boxed{1}\text{XP}, \boxed{2}\text{YP} \rangle \end{bmatrix} \mapsto \begin{bmatrix} \textit{aux-vpe-wd} \\ \textsc{val} \begin{bmatrix} \textsc{subj} \ \langle \boxed{1}\text{XP} \rangle \\ \textsc{comps} \ \langle \ \ \rangle \end{bmatrix} \\ \textsc{arg-st} \ \langle \boxed{1}\text{XP}, \boxed{2}\text{YP}[\textit{pro}] \rangle \end{bmatrix}$$

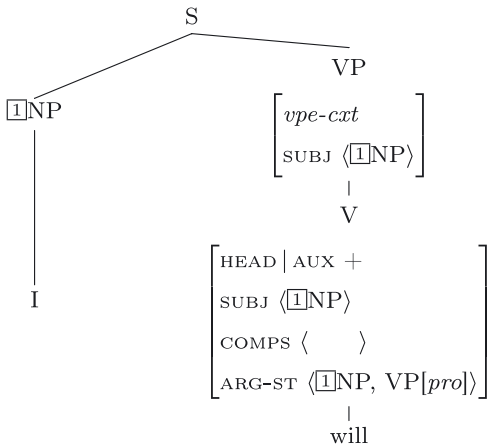
This mapping process allows any auxiliary lexeme (*aux-lxm*) to be mapped into a VPE word (*aux-vpe-wd*) that realizes its VP complement as a *pro* expression. This *pro* expression, having no syntactic realization, is linked to either a linguistic or a contextual antecedent, as a regular pronoun is. Given the independent constraint that only an overt expression is realized as the valence (SUBJ and COMPS) expression (Ginzburg and Sag 2000), the covert *pro* will not be mapped onto a COMPS element, as illustrated in the following:

(69)

$$\begin{bmatrix} \textit{aux-modal-lxm} \\ \textsc{form} \ \langle \text{will} \rangle \\ \textsc{arg-st} \ \left\langle \boxed{1}\text{NP}, \boxed{2}\text{VP} \right\rangle \end{bmatrix} \mapsto \begin{bmatrix} \textit{aux-vpe-wd} \\ \textsc{form} \ \langle \text{will} \rangle \\ \textsc{syn} \begin{bmatrix} \textsc{head} \mid \textsc{aux} \ + \\ \textsc{val} \begin{bmatrix} \textsc{subj} \ \langle \boxed{1}\text{NP} \rangle \\ \textsc{comps} \ \langle \ \rangle \end{bmatrix} \end{bmatrix} \\ \textsc{arg-st} \ \left\langle \boxed{1}\text{NP}, \boxed{2}\text{VP}[\textit{pro}] \right\rangle \end{bmatrix}$$

The derived output word, just like its input lexeme, also selects two arguments, but the second argument is thus a *pro* which has no presence in the syntax and whose interpretation depends on context. This output auxiliary will then license a syntactic structure like the following for the VPE clause in (62):

(70)



In the structure here, the auxiliary's COMPS list is empty because the second element in the ARG-ST is realized as a *pro* VP expression. The projected VP, forming a well-formed phrase in accordance with the head-only VPE Construction, as in (71), then combines with its subject NP, forming a well-formed head-subject construct.[18]

(71) VPE Construction (↑ *aux-ellipsis-cxt*):
VP[*vpe-cxt*] → **H**[*aux-vpe-wd*]

This simple construction, whose immediate superconstruction is *aux-ellipsis-cxt* (indicated by the up-arrow ↑), by inheritance requires its head to be an auxiliary (*aux-vpe-wd*) whose VP argument is unrealized.[19]

One information-structure constraint that the VPE Construction has is that either the subject of the VP or the head auxiliary needs to be focused (Kertz 2013; Merchant 2008; van Craenenbroeck 2017), which is inherited from its macro-construction, Ellipsis Construction (see Section 4.3 for further discussion). The requirement for having a focus expression (marked as the FOC value must be a nonempty list (*nelist*)), which is inherited from the Ellipsis Construction, can account for the following:

(72) a. *Kim went to the party, and [FOC Lee] did __ too.*
b. **Kim went to the party, and Kim did __ too.*

(73) a. *Kim could go to the party, but he [FOC won't] __ .*
b. **Kim could go to the party, but he could __ too.*

In (72a), the subject of the VPE Construction is focused while in (72b), no expression can be identified as a focus. In (73a), the negative modal is focused, but no expression is focused in (73b). Note that the identification of a focus element, as illustrated by these examples, is dependent upon the context provided. This in turn means that the understood VP of VPE thus looks for its antecedent VP as well as S in the context provided. That is, ellipsis resolution on our account is not based on syntactic reconstruction but rather from discourse, at least to identify what is focused. As noted earlier in (54) and (59), we assume that all elliptical constructions including VPE and pseudogapping refer to structured discourse. This discourse-based resolution can easily account for the following contrast:

---

18 Instead of defining the construction in terms of a type implication (⇒), following Ginzburg and Sag (2000: Chap. 8) in representing NSUs (non-sentential utterances), we represent the constructional constraint in terms of a rewriting rule (→).

19 The AUX-Ellipsis Construction (*aux-ellipsis-cxt*) is defined to have an auxiliary head-daughter bearing the feature [AUX +]. The VPE Construction seems to be quite simple, but its auxiliary head is not a canonical one in the sense that one of its arguments is realized as a *pro* that looks for its antecedent in the given context.

(74) a. *Kim will go to the store, and Lee will, too.* <go to the store>
b. **Kim will go to the store, and the school will be too.* <gone to by Kim>

From a discourse structure, uttering a sentence like (74a) could also introduce a QUD (question-under-discussion) as well as a FEC (focus establishing constituent), as given in the following:

(75)
$$\begin{bmatrix} \text{CNXT} & \begin{bmatrix} \text{MAX-QUD} & \lambda_x[\text{go.to}(x,\ st)] \\ \text{FEC} & \left\{ \begin{bmatrix} \text{SYN} & \text{NP} \\ \text{SEM} & x \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

The declarative sentence in the first conjunct in (74a) could introduce a QUD of whether there is someone other than Kim who will go to the store (go.to(*k.st*)). The additive particle *too* is also linked to the presupposition that there is someone else who will go to the store and the subject of the VPE provides its value, serving as an FEC. With this background, we could represent the resolution process of the understood part in the following informal way. In (74), the antecedent VP and S of the VPE will activate the following compositional meaning in the CNXT.

(76) a. [[antecedent-VP]] = λ*x*[go.to(*x.st*)]
b. [[antecedent-S]] = [go.to(*k.st*)]

The *pro* in the VPE clause in (75a) will refer to the VP meaning in (76a). The subject *Lee* just offers the value for the first argument 'x'. Meanwhile, the VPE clause in (75b), whose possible antecedent is 'gone to by Kim', cannot find its appropriate anaphor neither from (76a) nor from (76b) since the second argument is not the store but the school in (75b). What we can observe here is that the parallelism condition in (59) on the Ellipsis Construction interacts with the constructional constraints of the VPE Construction.[20]

20 It has been well-established that VPE can tolerate a mismatch in voice between antecedent and ellipsis site (Dalrymple 1991; Hardt 1993; Johnson 2001; Kehler 2000; Kim et al. 2011; Merchant 2013; Poppels and Kehler 2019; Sag 1976):

(i) a. *The janitor must remove the trash whenever it is apparent that it should be __.* <removed> (Merchant 2013)
b. *This information could have been released by Gorbachov, but he chose not to __.* <release the information> (Hardt 1993)

In each of these examples, there is voice mismatch between the understood (or elided) ellipsis and its putative antecedent. In (ia), the elided passive VP is linked to the active antecedent, while in (iia), the elided active VP is associated with the passive antecedent. As argued by Kehler (2000) and Kertz (2013), such voice mismatches in VPE seem to be licensed depending on the discourse or information structure in question (discourse coherence relations like resemblance vs. cause-effect relations, contrastive topic vs. auxiliary focus) rather than with respect to syntactic constraints.

4.3 Pseudogapping as a micro-construction

As we have seen, pseudogapping shares many of the properties of VPE but behaves more restrictively. The key properties of pseudogapping are given in the following:

- It requires a finite auxiliary.
- There is a remnant which functions as a contrastive focus.

As noted earlier, these two properties account for the following contrast:

(77) a. *I played chess as often as I did [checkers].*
b. **I don't play chess as often as I would like to [checkers].*

(78) a. *I rolled up a newspaper, and Lynn did [a magazine].*
b. **Kim ate fish, and Lee did [fish] too.*

These constraints are not from general principles but learned as constructional constraints as defined in the following:

(79) Pseudogapping Construction (↑ *aux-ellipsis-cxt*, first approximation):

$$\text{VP}\begin{bmatrix} pg\text{-}cxt \\ \text{FOC} \ \langle \boxed{1} \rangle \end{bmatrix} \rightarrow \mathbf{H}\begin{bmatrix} aux\text{-}vpe\text{-}wd \\ \text{VFORM} \quad fin \end{bmatrix}, \boxed{1}\text{RP}$$

This simple specification indicates that a pseudogapping VP has a finite auxiliary verb as its head with a focused RP (remnant phrase). Since the finite auxiliary is a type of *v-vpe-wd*, its second argument is not realized at syntax but functions as a *pro*. As we have seen in the analysis of VPE, the auxiliarihood of the head in the construction reflects the simple fact that VPE and pseudogapping are both sensitive to the presence of an auxiliary. The key difference of the two constructions is that the head is finite (VFORM), as seen from (77).

Another main difference has to do with the fact that the RP (remnant phrase) in pseudogapping is focused (FOC). As we have noted, VPE assigns a focus value to either the subject or an auxiliary, or even both. But in pseudogapping, it is the RP

Though we cannot do justice to this in detail, the discourse structure evoked from the QUD, as given in (ii), can also be referred to for the proper resolution of the elided VP:

(ii) a. [[antecedent-VP]] = λ*x*[remove(*x*,*t*)]
b. [[antecedent-S]] = [remove(*j*,*t*)]

We leave open the detailed discussion of voice mismatches in VPE.

that must be focused while the subject can be optionally focused.[21] This accounts for the unnaturalness of (c) examples with no focus on the RP (Merchant 2013):

(80) a. *Some brought roses and others did LILIES.*
b. *Some brought roses and others DID LILIES.*
c. *#Some brought roses and others DID lilies.*

The other key properties we observed in pseudogapping include semantic and pragmatic constraints:

- The remnant is a contrastive focus with respect to the correlate.
- The antecedent clause and the pseudogapping clause refer to the same situations with the different referents of the remnant and the correlate.

These constraints are functional constraints on the construction, tied to the discourse structure. As noted earlier, VPE and pseudogapping can take place across a discourse, allowing anaphoric reference, but this is not possible in gapping (Kehler 2000; Miller 2014):

(81) A: *Kim didn't know the answer.*
B: *But Lee did.* (VPE)

(82) A: *Your call will get me through the week!*
B: *It will me, too.* (Pseudogapping)

(83) A: *John wants to write a novel.*
B: **Max a play.* (Gapping)

To license the anaphoric property of pseudogapping, we refer to the contextual information, as we did for the analysis of VPE, but add additional constructional constraints on pseudogapping, as in (84):[22]

(84) Pseudogapping Construction in English (second approximation):

$$\left[\begin{array}{l} \textit{pg-cxt} \\ \textsc{foc}\ \langle \boxed{1} \rangle \\ \textsc{sem}\ \mathrm{E} \\ \textsc{cnxt}\ \left[\begin{array}{l} \textsc{presup}\ \textit{contrast-rel}(i,j) \\ \textsc{fec}\ \left\{ \left[\begin{array}{l} \textsc{cat}\ \boxed{2} \\ \textsc{ind}\ i \end{array}\right], \left[\begin{array}{l} \textsc{cat}\ \boxed{2} \\ \textsc{ind}\ j \end{array}\right] \right\} \end{array}\right] \end{array}\right] \rightarrow \mathbf{H}\left[\begin{array}{l} \textit{aux-vpe-wd} \\ \textsc{vform}\ \textit{fin} \end{array}\right], \boxed{1}\mathrm{RP}\left[\begin{array}{l} \textsc{cat}\ \boxed{2} \\ \textsc{ind}\ j \end{array}\right]$$

21 As noted by Miller (2014), the auxiliary verb in pseudogapping is frequently focused together with the RP.

22 The semantics of the construction (E) is a simplified representation.

This revised construction tells us that there is a contrastive relation between the reference of the RP (*j*) and the reference of another individual evoked from the prior discourse (*i*).[23] Being a subtype of the Elliptical Construction, the two also need to be in a parallel relation. One thing worth noting here is that the members of the FEC can also refer to syntactic information (Ginzburg and Sag 2000). That is, we assume that the antecedent A of pseudogapping can refer to the syntactic, categorial information (CAT) as well.[24] This reflects the fact that, as noted by Thoms (2016) and earlier in this paper, the focused RP requires a focused correlate in the antecedent clause, and further that the two must match up in terms of category:

(85) a. **Rab ate fish, and Mary did fish too.*
b. **Rab ate fish, and Mary did some, too.*
c. ?**Rab gave A BOOK to Tom, and Mary did TO BILL.* (Thoms 2016: (2))

These examples violate the constraint that the focused RP (*j*) and its correlate (*i*) need to be in a contrastive relation. Note that the requirement of having an existing contrastive individual in the discourse implies a difference between VPE and pseudogapping. As noted in (81) and (82), VPE and pseudogapping are both anaphoric since they can occur across a discourse, but the difference comes from the fact that pseudogapping cannot be cataphoric in general, which we have seen earlier in Section 2.2. Consider similar examples:

(86) a. **Although it doesn't me, it takes Karen a long time to clean the hamster's cage.*
b. *Although it doesn't always, it takes Karen a long time to clean the hamster's cage.* (Levin 1979: 99)

23 The need to develop the present analysis further comes from examples with more than one RP. Observe the following contrast (Gengel 2013; Kubota and Levine 2017):

(i) a. *John will accuse Bill of perjury more readily than he would [Mary] [of forgery].*
b. **John will accuse Bill of perjury more readily than he would [Mary] [with forgery].*

The contrast tells us that the antecedent and the pseudogapping clauses need to be in a parallel situation with matching contrast-relations:

(ii) a. [[antecedent-S]] = λx[accuse(*j*, **b**, **p**)]
b. [[PG-S]] λx[accuse(*j*, **m**, **f**)]

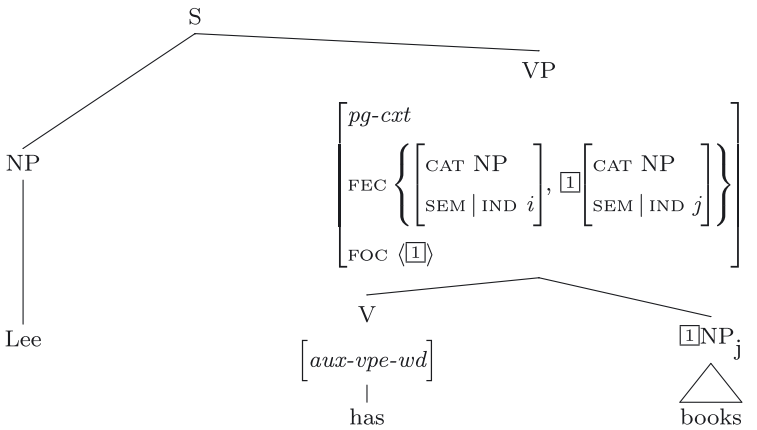
There are thus two contrast-relations, one between *b* and *m* and the other between *p* and *m*. The example also illustrates that the focused RP has the same categorial (cat) value, observing the constructional constraints. To license such examples with more than RP, we need to allow the number of RP to be more than one. See Kubota and Levine (2017) for a Hybrid Categorial Grammar analysis that allows such multiple RPs.

24 As noted earlier, we need to relax this cat identity condition. See the example (104) and the discussion there.

The contrast means that pseudogapping, unlike VPE, requires its antecedent to be evoked in the previous discourse. As discussed earlier in (71), the VPE construction includes no constraint on the CNXT so that its antecedent can be either anaphoric or cataphoric. Unlike VPE, the construction in (84) specifies that the context includes a contrastive relation and the two individuals participating in this relation are already evoked.

To see how the present system, in particular the construction in (84), works in detail, let us consider the structure of the pseudogapping clause in the sentence (1c), *Kim has read magazines and Lee has books*:

(87)



As represented in the structure, the auxiliary verb is an instance of *v-vpe-wd* that allows its VP complement to be a *pro* whose reference is resolved in the given context. This VPE licensing finite auxiliary combines with the remnant *books*, functioning as a focus. The focused remnant has the correlate *magazines* with the same categorial information. The antecedent VP and S would evoke the following information in the CNXT:

(88) a. [[antecedent-VP]] = λ*x*[read(*x*,*m*)]
b. [[antecedent-S]] = [read(*k*,**m**)]

Since the head auxiliary verb *have*, as a VPE introducing one, licenses a *pro* VP as its second argument, it looks for its VP antecedent. The VP in (88a) will suffice. The remnant NP just replaces the second argument, yielding the final VP meaning of the pseudogapping clause in (89a) and then its clausal meaning in (89b):

(89) a. [[PG-VP]] = λx[read(*x*,*b*)]
b. [[PG-S]] = [read(*l*,**b**)]

The analysis also implies that the remnant can be a PP in such a case as long as there is a contrasting PP focus. Consider the following (Kubota and Levine 2017; Miller 1990):

(90) a. *John speaks to Mary more civilly than he does [Anne].*
b. *You can't count on a stranger, but you can [on a friend].*

The difference between the two here is that the focused remnant in (90b) is a PP though the second semantic argument will refer to an individual. The antecedent clause of (90a) would have the following in the CNXT:

(91) a. [[antecedent-VP]] = λx[speak.to(*x*,*m*)]
b. [[antecedent-S]] = ¬[speak.to(*j*,**m**)]

The VPE of the pseudogapping clause will refer to (91a) for its resolution with the replacement of the second argument by the reference of *Anne* ([[PG-VP]] = λx [speak.to(x,a)]). In a similar manner, the antecedent clause of (90b) would evoke the following in the CNXT:[25]

(92) a. [[antecedent-VP]] = λx[count.on(*x*,*s*)]
b. [[antecedent-S]] = ¬[count.on(*y*,**s**)]

The VPE of the pseudogapping clause will refer to (92a) for its resolution with the replacement of the second argument by the reference of *a friend* ([[PG-VP]] = λx [count.on(x,f)]). Note that the FEC refers to the categorial value of the remnant phrase and there is also a matching PP *on a stranger* in the antecedent clause, as seen from the CNXT information evoked here:

(93)
$$\left[\text{FEC} \left\{ \left[\begin{array}{l}\text{CAT } \boxed{2}\text{PP}[on] \\ \text{IND } i\end{array}\right], \left[\begin{array}{l}\text{CAT } \boxed{2}\text{PP}[on] \\ \text{IND } j\end{array}\right] \right\}\right]$$

All these thus satisfy the constructional constraints in (84).

The discourse-based analysis implies that the antecedent correlate being in a contrast relation with the RP need not be overt but can be evoked from the context. Consider the following example of (41), we repeat here:

(94) *Use it to communicate with them directly, and help them negotiate your system. Make your leaflet not only about how to access you, but also offer health advice as you would [to any patient].* (COCA 2012 ACAD)

25 This resolution process adopts an idea from Jacobson (2016). However, as a reviewer points out, a more sophisticated analysis needs to be developed for this resolution process. See Kubota and Levine (2017) for a systematic resolution process.

In such an example, the preceding antecedent clause includes no overt correlate for the remnant. The correlate is implicitly provided by the argument structure of the predicate *offer*. Following Ruppenhofer and Michaelis (2014), we could take the unrealized oblique argument of the verb *offer* as an instance of definite null instantiation (*dni*):[26]

(95)
$$\begin{bmatrix} \textsc{form} \ \langle \text{offer} \rangle \\ \textsc{arg-st} \left\langle \text{NP}_i, \ \text{NP}_j, \left(\text{PP} \begin{bmatrix} dni \\ \textsc{pform} \ to \\ \textsc{ind} \ k \end{bmatrix} \right) \right\rangle \\ \textsc{cont} \ offer(i,j,k) \end{bmatrix}$$

The lexical information specifies that the second argument of *offer* can be an unrealized PP. The first clause thus could activate this information, updating the CNXT with a FEC represented by the unrealized PP. The pseudogapping clause would that the following two FEC values:

(96)
$$\begin{bmatrix} \textsc{fec} \left\{ \begin{bmatrix} \textsc{syn} \mid \textsc{cat} \mid \ \text{PP} \begin{bmatrix} dni \\ \textsc{pform} \ to \end{bmatrix} \\ \textsc{cont} \mid \textsc{ind} \ k \end{bmatrix}, \begin{bmatrix} \textsc{syn} \mid \textsc{cat} \mid \ \text{PP} \left[\textsc{pform} \ to \right] \\ \textsc{cont} \mid \textsc{ind} \ p \end{bmatrix} \right\} \end{bmatrix}$$

The first value of the FEC, not expressed but linked to the definite pronoun *them* given in the context in (94), is thus morphosyntactically matching with the remnant PP *to any patient*. Such a pseudogapping example with a covert correlate thus seems to further support a discourse-based approach we defend here.

4.4 More on the complexities of pseudogapping

The construction-based analysis sketched here assumes that pseudogapping and VPE belong to the same meso-construction that shares some properties, but that each has its own constructional constraints as a micro-construction. There is no

26 Ruppenhofer and Michaelis (2014) identify two null instantiations of an object, indefinite and definite:

(i) a. *Kim was reading ϕ.*
b. *Please don't donate any more of your paintings ϕ!*

The object of the verb *read* allows an indefinite null instantiation. However, the missing object of the verb *donated* needs to be definite, which needs to be recoverable from the context. See Ruppenhofer and Michaelis (2014) for further discussion.

move-and-delete operation in licensing the elliptical constructions. This discourse based analysis brings us other immediate, positive consequences.

The present analysis places no restriction on the type of the elided parts. The elided parts need not be a constituent and can be even discontinuous, as noted earlier:

(97) a. *The notion probably makes your skin crawl as much as it does mine.*
b. *Maybe it's easier to get the devil to listen than it is [God].*

Such examples are not unexpected since the constructional constraints only require that the pseudogapping clause and the antecedent clause have the same predicate, expressing the same kind of situation. They differ only in the value of the internal argument in the situation. This can be seen from the meaning composition of the two clauses. The two clauses will have the following meanings, respectively.

(98) a. [[antecedent-S]] = [make(*n*, **ys**, *crawl*)]
b. [[PG-S]] = [make(*n*, **ms**, crawl)]

The two focused (salient) individuals are *your skin* and *my skin*, respectively, observing the constraints for the parallel as well as contrastive relations.

The constructional constraints in (84) do not require the focused phrase (or RP) to be an immediate argument of the matrix verb. The remnant can be in the embedded clause, as we have seen earlier:

(99) a. *I would prefer him to eat fruit more than I would [cookies].*
b. *I can make a lot more money doing this than I did [dancing].*

The remnant is deeply embedded here: it just has a matching focused expression in the antecedent clause.

(100) a. [[antecedent-S]] = [prefer(i,j,(eat(j,**f**)))]
b. [[PG-S]] = [prefer(i,j,(eat(j,**c**)))]

The CNXT information will allow the pseudogapping clause to refer to the information evoked from the antecedent clause.

Since the present analysis introduces no movement processes, it also allows island insensitivity, as we have noted earlier. Consider one example again:[27]

27 As a reviewer points out, the DI (direct licensing) approach we set forth here could be challenged by island violation examples like the following (Johnson 2009: 71):

(i) a. *Will might try to buy kale, but he won't __ asparagus.*
b. **Will might decide when to buy kale, but he won't __ asparagus.* (Wh-island)

The present analysis could attribute the ungrammaticality of examples like (ib) to additional grammatical or processing constraints. For instance, such an example would be disfavored because of the open proposition evoked from *when*.

(101) *Critics say it's not unusual for the police to spend less time investigating the deaths of black citizens than they do [whites].* (CNPC)

The remnant NP *whites* in (101) is within the definite NP in the antecedent clause. The present analysis places no strong conditions on the elided structures: it just refers to the two individuals participating in a contrasting relation.

We have observed that there could be mismatch in the argument structure of the antecedent clause and that of the pseudogapping clause, which is repeated here:

(102) *I ask every New Yorker, when you see a police officer today, please offer them condolences as you would [to someone who has lost a family member].*

The antecedent clause here subcategorizes for a ditransitive structure (NP-NP) while the pseudogapping clause for a dative pattern (NP-PP). The discourse-based approach can refer to two parallel situations with the remnant being in a contrast relation with the correlate:

(103) a. [[antecedent-S]] = [offer(i,**p**,c)]
b. [[PG-S]] = [offer(i,**s**,c)]

One implication we can have here is that once the syntactic valence frame of the verb *offer* is activated, its semantic argument structure is also evoked. For instance, the verb will activate the argument structure of 'offer(agent, recipient, goal)', which can be syntactically realized either as NP-NP or NP-PP sequences.

This direction also allows us to account for the preposition mismatch noted by Miller (2014). Consider the following contrast:

(104) a. **Kim spoke to Lee more often than he did for Ann.*
b. *Robin has spoken about the war, and Leslie has of similar events.* (Kubota and Levine 2017: 19)

The example in (104a) is also not licensed in the present analysis since the category of the RP and that of the overt or covert correlate need to be identical. However, examples like (104b) are licensed due to the fact that the verbs *spoke* here share the semantic argument structure since the two here are quite close in terms of meaning, as noted by Miller (2014).

(105) a. [[antecedent-S]] = [speak.about(r,**w**)]
b. [[PG-S]] = [speak.of(l,**se**)]

The second argument in both clauses has the same semantic argument (e.g., goal). However, in (104a), the second argument in the antecedent clause is a goal while

the one in the pseudogapping is a beneficiary. The contrast here implies that the preposition value of the remnant can differ from that of the correlate as long as the two refer to the same semantic role. That is, the CAT identity condition between the RP and its matching correlate in (84) can be relaxed in such a case. For this, we suggest the following accommodation constraint in English:

(106) Preposition Accommodation Constraint:
The PFORM value of the FEC expressions can be non-identical when they bear an identical semantic role.

The analysis, licensing non-syntactic identity with the antecedent clause in a limited environment, can also explain voice mismatches, which we noted earlier:

(107) a. *A whole poached wild striped bass should be taken to the table as you would [a Thanksgiving turkey]…*
b. *These savory waffles are ideal for brunch, served with a salad as you would [a quiche].*

The example in (107a) is describing a situation of your taking something to the table. The first clause refers to this as a bass while the second one is as a turkey. The two clauses have different voices, but both describe the same 'taking' situation but differ only in the value of the object, as seen from the following:

(108) a. [[antecedent-VP]] = [take.to(x,**b**,tb)]
b. [[PG-S]] = [take.to(y,**tk**,tb)]

The antecedent clause activates a VP meaning where someone takes 'bass' to the table, and the elided VP in the pseudogapping clause can anaphorically refer to this. The Pseudogapping Construction just replaces 'bass' with 'turkey' as contrasting focus value.

Since the analysis refers to a discourse structure that describes a situation, it may be extended to examples with no proper linguistic antecedent, as noted in (35):

(109) *Type in your PIN, just hit those buttons like you would [a phone].*

The proper source of the pseudogapping clause here would be something like *You would use a phone* or *You would hit buttons in a phone*, but the pseudogapping clause describes the situation of hitting the buttons in a phone to use it. In this sense, the antecedent clause and the pseudogapping clause both describe the same situation, satisfying the constructional constraint in (84).

5 Conclusion

As discussed above, pseudogapping is an elliptical construction displaying an unusual form-function mapping correspondence. It bears a number of shared properties with related constructions like VPE and gapping, but at the same time differs in many respects.

There have been several derivational and non-derivational analyses of pseudogapping including Miller (1990, 2014) and Kubota and Levine (2017), some insights of which provide a promising direction. In this paper we have provided an alternative analysis from a construction-based HPSG perspective. After noting its similarities with as well as differences from VPE and gapping, we suggest that all three constructions can be subsumed under the macro Ellipsis Construction. As shown above, VPE and pseudogapping share many similarities, which is reflected as classifying them as the identical meso-construction. Their differences are accounted for by treating them as independent micro-constructions. This type hierarchical network treatment of ellipsis constructions allows us to address both its similarities to and differences from its kin constructions. Constraints placed at this level will be inherited by all its subconstructions. Constraints relevant only to VPE and pseudogapping are placed at the meso-construction level; and those constraints that define the differences between e.g. VPE and pseudogapping are placed at the micro-construction level. Further, we suggested that the semantic resolution of the unexpressed parts refers to the structured discourse structure (CNXT) which includes information of question-under-discussion and focus establishing information (FEC). The latter, as suggested by Ginzburg and Sag (2000), includes syntactic information of the discourse salient expression, which allows syntactic identity in elliptical constructions.

Though there have been many previous attempts to derive the varied features of VPE, Pseudogapping, and Gapping, both in the transformational and non-transformational literature, we argue that no previous analysis is up to the challenge of accounting for the full range of extant data while capturing its particularities. Our construction-based analysis, which capitalizes on the inheritance network hierarchy to capture broad similarities and unique differences among these constructions, makes important strides towards that desideratum.

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