Chapter 19

Ellipsis

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This chapter provides an overview of HPSG analyses of ellipsis. The structure of the chapter follows three types of ellipsis, nonsentential utterances, predicate ellipsis (including VP ellipsis), and nonconstituent coordination, with three types of analyses applied to them. These analyses characteristically do not admit silent syntactic material for any ellipsis phenomena with the exception of certain types of nonconstituent coordination.

1 Introduction

Ellipsis is a phenomenon that involves a noncanonical mapping between syntax and semantics. What appears to be a syntactically incomplete utterance still receives a semantically complete representation, based on the features of the surrounding context, be the context linguistic or nonlinguistic. The goal of syntactic theory is thus to account for how the complete semantics can be reconciled with the apparently incomplete syntax. One of the key questions here relates to the structure of the ellipsis site, that is, whether or not we should assume the presence of invisible syntactic material. Section 2 introduces three types of ellipsis (nonsentential utterances, predicate ellipsis, and nonconstituent coordination) that have attracted considerable attention and received treatment within HPSG (our focus here is on standard HPSG rather than Sign-Based Construction Grammar, Sag 2012a, see also Abeillé & Borsley 2020, Chapter 1 of this volume and Müller 2020b: Section 1.4.2, Chapter 33 of this volume). In Section 3 we overview

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existing evidence for and against the so-called WYSIWYG ('What You See Is What You Get') approach to ellipsis, where no invisible material is posited at the ellipsis site. Finally in Sections 4–6, we walk the reader through three types of HPSG analyses applied to the three types of ellipsis presented in Section 2. Our purpose is to highlight the nonuniformity of these analyses, along with the underlying intuition that ellipsis is not a uniform phenomenon. Throughout the chapter we also draw the reader's attention to the key role that corpus and experimental data play in HPSG theorizing, setting it aside from frameworks that primarily rely on intuitive judgments.

2 Three types of ellipsis

Depending on the type of analysis by means of which HPSG handles them, elliptical phenomena can be broadly divided into three types: nonsentential utterances, predicate ellipsis, and nonconstituent coordination.[1] We overview the key features of these types here before discussing in greater detail how they have been brought to bear on the question of whether there is invisible syntactic structure at the ellipsis site or not. We begin with stranded XPs, which HPSG treats as nonsentential utterances, and then move on to predicate and argument ellipsis, followed by phenomena known as nonconstituent coordination.

2.1 Nonsentential utterances

This section introduces utterances smaller than a sentence, which we refer to as *nonsentential utterances* (NSUs). These range from *Bare Argument Ellipsis* (BAE) (1),[2] to fragment answers (2) and direct or embedded sluicing (3)–(4):

(1) A: You were angry with them.
    B: Yeah, angry with them and angry with the situation.

(2) A: Where are we?
    B: In Central Park.

(3) A: So what did you think about that?
    B: About what?

(4) A: There's someone at the door.
    B: Who?/I wonder who.

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[1]For more detailed discussion, see Kim & Nykiel (2020).

[2]This term is used in Culicover & Jackendoff (2005).

As illustrated by these examples, sluicing hosts stranded *wh*-phrases and has the function of an interrogative clause, while BAE hosts XPs representing various syntactic categories and typically has the function of a declarative clause (Ginzburg & Sag 2000; Culicover & Jackendoff 2005).[3]

The key theoretical question NSUs raise is whether they are parts of larger sentential structures or rather nonsentential structures whose semantic and morphosyntactic features are licensed by the surrounding context. To adjudicate between these views, researchers have looked for evidence that NSUs in fact behave as if they were fragments of sentences. As we will see in Section 3, there is evidence to support both of these views. However, HPSG doesn't assume that NSUs are underlyingly sentential structures.

2.2 Predicate ellipsis and argument ellipsis

The section looks at three constructions whose syntax includes null or unexpressed elements. They are Post-Auxiliary Ellipsis (PAE),[4] a term we are using here for what is more typically referred to as Verb Phrase Ellipsis (VPE) and pseudogapping, Null Complement Anaphora (NCA), and argument drop (or pro drop). PAE features stranded auxiliary verbs (5) while pseudogapping, also introduced by an auxiliary verb, has a remnant right after the pseudo gap (6): NCA is characterized by omission of complements to some lexical verbs (7), while argument drop refers to omission of a pronominal subject or an object argument, as illustrated in (8) for Polish.

(5) A: I didn't ask George to invite you.
     B: Then who did? (PAE)

(6) The dentist didn't call Sally today but they might tomorrow.
     (Pseudogapping)

(7) Some mornings you can't get hot water in the shower, but nobody
     complains. (NCA)

(8) Pia późno wróciła do domu. Od   razu poszła spać.
     Pia late   got   to home right away went   sleep
     'Pia got home late. She went straight to bed.' (argument drop)

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[3]Several subtypes of nonsentential utterances can be distinguished, based on their contextual functions, which we leave open here (for a recent taxonomy, see Ginzburg 2012: 217).

[4]The term PAE was introduced by Sag (1976) and covers cases where a non-VP element is elided after an auxiliary verb, as in *You think I am a superhero, but I am not.*

One key question raised from such constructions is whether these unrealized null elements should be assumed to be underlyingly present in the syntax of theses constructions, and the answer is no. Another question is whether theoretical analyses of constructions like PAE should be enriched with usage preferences since these constructions compete with *do it/that/so* anaphora in predictable ways (see Miller 2011 for a proposal).

2.3 Nonconstituent coordination

We focus on three instances of nonconstituent coordination — gapping (Ross 1967), right node raising (RNR), argument cluster coordination (ACC) — illustrated in (10), (11), and (9), respectively.

(9)   Ethan [gave away] his CDs and Rasmus his old guitar. (Gapping)

(10)   Ethan sold and Rasmus gave away [all his CDs]. (RNR)

(11)   Harvey [gave] a book to Ethan and a record to Rasmus. (ACC)

In RNR, a single constituent located in the right-peripheral position is associated with both conjuncts. In both ACC and gapping, a finite verb is associated with both (or more) conjuncts but only present in the leftmost one. Additionally in ACC, the subject of the first conjunct is also associated with the second conjunct but only present in the former. These phenomena illustrate what appears to be coordination of standard constituents with elements not normally defined as constituents (a stranded transitive verb in (10), a cluster of NP and PP in (11), and a cluster of NPs in (9)).

To handle such constructions the grammar must be permitted to (a) coordinate noncanonical constituents, (b) generate coordinated constituents parts of which are subject to an operation akin to deletion, or (c) coordinate VPs with nonsentential utterances. As we will see, HPSG analyses of these constructions make use of all three options, including the option expressed in (b), that coordinated structures may contain unpronounced material.

3 Evidence for and against invisible material at the ellipsis site

This section is concerned with NSUs and PAE since this is where the contentious issues arise of where ellipsis is licensed (Sections 3.3 and 3.4) and whether there

is invisible syntactic material in an ellipsis site (Sections 3.1 and 3.2). Below we consider evidence for and against invisible structure found in the ellipsis literature. As we will see, the evidence is based not only on intuitive judgments, but also on experimental and corpus data, the latter being more typical of the HPSG tradition.

3.1 Connectivity effects

Connectivity effects refer to parallels between NSUs and their counterparts in sentential structures, thus speaking in favor of the existence of silent sentential structure. We focus on two kinds here: case-matching effects and preposition-stranding effects (for other examples of connectivity effects, see Ginzburg & Miller 2018). It's been known since Ross (1967) that NSUs exhibit case-matching effects, that is, they are typically marked for the same case that is marked on their counterparts in sentential structures. (12) illustrates this for German, where case matching is seen between a *wh*-phrase functioning as an NSU and its counterpart in the antecedent (Merchant 2005b: 663):

(12) Er will jemandem   schmeicheln, aber sie   wissen nicht wem /
      he will someone.DAT flatter,   but they know   not   who.DAT
      * wen.
        who.ACC
      'He wants to flatter someone, but they don't know whom.'

Case-matching effects are crosslinguistically robust in that they are found in the vast majority of languages with overt case marking systems, and therefore, they have been taken as strong evidence for the reality of silent structure. The argument is that the pattern of case matching follows straightforwardly if an NSU is embedded in silent syntactic material whose content includes the same lexical head that assigns case to the NSU's counterpart in the antecedent clause to assign case to the NSU (Merchant 2001; 2005a). However, a language like Hungarian poses a problem for this reasoning (Jacobson 2016). While Hungarian has verbs that assign one of two cases to their object NPs in overt clauses with no meaning difference, case matching is still required between an NSU and its counterpart, whichever case is marked on the counterpart. To see this, consider (13) from Jacobson (2016: 356). The verb *hasonlit* assigns either sublative (SUBL) or allative (ALL) case to its object, but if SUBL is selected for an NU's counterpart, the NSU must match this case.

(13) A: Ki-re   hasonlit   Péter?
          who.SUBL resembles Peter
      'Who does Peter resemble?'
      B: János-ra   / * János-hoz.
          János.SUBL   János.ALL
      'János.'

[Jacobson (2016)](#) notes that there is some speaker variation regarding the (un)acceptability of case mismatch here at the same time that all speakers agree that either case is fine in a corresponding nonelliptical response to ([13](#)A). This last point is important, because it shows that the requirement of—or at least a preference for—matching case features applies to NSUs to a greater extent than it does to their nonelliptical equivalents, challenging connectivity effects.

Similarly problematic for case-based parallels between NSUs and their sentential counterparts are some Korean data. Korean NSUs can drop case markers more freely than their counterparts in nonelliptical clauses can, a point made in [Morgan (1989)](#) and [Kim (2015)](#). Observe the example in ([14](#)) from [Morgan (1989)](#): 237).

(14) A: Nwukwu-ka ku chaek-ul   sa-ass-ni?
          who-NOM   the book-ACC buy-PST-QUE
      'Who bought the book?'
      B: Yongsu-ka   / Yongsu / * Yongsu-lul.
          Yongsu-NOM Yongsu   Yongsu-ACC
      'Yongsu.'
      B′: Yongsu-ka   / * Yongsu ku chaek-ul   sa-ass-e
          Yongsu-NOM   Yongsu the book-ACC buy-PST-DECL
      'Yongsu bought the book'

When an NSU corresponds to a nominative subject in the antecedent (as in [14](#)B), it can be either marked for nominative or caseless. However, replacing the same NSU with a full sentential answer, as in ([14](#)B′), rules out case drop from the subject. This strongly suggests that the case-marked and caseless NSUs couldn't have identical source sentences if they were to derive via PF-deletion.[5] Data like these led [Morgan (1989)](#) to propose that not all NSUs have a sentential derivation, an idea later picked up in [Barton (1998)](#).

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[5]Nominative differs in this respect from three other structural cases, dative, accusative and genitive, in that the latter may also be dropped from nonelliptical clauses (see [Morgan 1989](#); [Lee 2016](#); [Kim 2016](#)).

The same pattern is associated with semantic case. That is, in (15), if an NSU is case-marked, it needs to be marked for comitative case like its counterpart in the A-sentence, and, in addition, it may be caseless. However, being caseless is not an option for the NSU's counterpart in a sentential response to A (Kim 2015).

(15)   A: Nwukwu-wa hapsek-ul   ha-yess-e?
            who-COM   sitting.together-ACC do-PST-QUE
       'With whom did you sit together?'
       B: Mimi-wa. / Mimi.
            Mimi-SRC   Mimi
       'With Mimi.' / 'Mimi.'

The generalization for Korean is then that NSUs may be optionally realized as caseless but may never be marked for a different case than is marked on their counterparts.

Overall, case-marking facts show that there is some morphosyntactic identity between NSUs and their antecedents, though not to the extent that NSUs have exactly the features that they would have if they were constituents embedded in sentential structures. The Hungarian facts also suggest that those aspects of the argument structure of the appropriate lexical heads present in the antecedent that relate to case licensing are relevant for an analysis of NSUs.[6]

The second kind of connectivity effects goes back to Merchant (2001; 2005a) and highlights apparent links between the features of NSUs and *wh-* and focus movement (leftward movement of a focus-bearing expression). The idea is that prepositions behave the same under *wh-* and focus movement as they do under clausal ellipsis, that is, they pied-pipe or strand in the same environments. If a language (e.g., English) permits preposition stranding under *wh-* and focus movement (*What did Harvey paint the wall with?* vs *With what did Harvey paint the wall?*), then NSUs may surface with or without prepositions, as illustrated in (16) for sluicing and BAE (see Section 4 for a theoretical analysis of this variation).

(16)   A: I know what Harvey painted the wall with.
       B: (With) what?/(With) primer.

If there indeed was a link between between preposition stranding and NSUs, then we would not expect prepositionless NSUs in languages without preposition stranding. This expectation is disconfirmed by an ever-growing list of non-preposition stranding languages that do feature prepositionless NSUs: Brazilian

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[6]Hungarian and Korean are in fact not the only problematic languages; for a list, see Vicente (2015).

Portuguese (Almeida & Yoshida 2007), Spanish and French (Rodrigues et al. 2009), Greek (Molimpakis 2018), Bahasa Indonesia (Fortin 2007), Russian (Philippova 2014), Polish (Szczegielniak 2008; Sag & Nykiel 2011; Nykiel 2013), Bulgarian (Abels 2017), Serbo-Croatian (Stjepanović 2008; 2012), Mauritian Abeillé & Hassamal (2019), and Arabic (Leung 2014; Alshaalan & Abels 2020). A few of these studies have presented experimental evidence that prepositionless NSUs are acceptable, though — for reasons still poorly understood — they typically do not reach the same level of acceptability as their variants with prepositions do (see Nykiel 2013 for Polish, Molimpakis 2018 for Greek, and Alshaalan & Abels 2020 for Saudi Arabic). It is worth noting in this regard that the work on connectivity effects that follows the HPSG tradition is based on a solid foundation of empirical evidence to a larger extent than work grounded in the Minimalist tradition (see Sag & Nykiel 2011; Nykiel 2013 for experimental work on Polish, and Nykiel 2015; 2017; Nykiel & Hawkins 2020 for corpus work on English).

It is evident from this research that there is no grammatical constraint on NSUs that keeps track of what preposition-stranding possibilities exist in any given language. On the other hand, it doesn't seem sufficient to assume that NSUs can freely drop prepositions, given examples of sprouting like (17), in which prepositions are not omissible (see Chung et al. 1995 on the non-omissibility of prepositions under sprouting). The difference between (16) and (17) is that there is an explicit phrase the NSU orresponds to (in the HPSG literature this phrase is termed a Salient Utterance (Ginzburg & Sag 2000: 313) or a Focus-Establishing Constituent Ginzburg 2012) in the former but not in the latter.

(17)   A: I know Harvey painted the wall.
       B: *(With) what?/Yeah, *(with) primer.

The challenge posed by (17) is how to ensure the NSU is a PP matching the implicit PP argument in the A-sentence (see the discussion around (40) for further detail). This challenge has not received much attention in the HPSG literature, though see Kim (2015).

3.2 Island effects

One of the predictions of the view that NSUs are underlyingly sentential is that they should respect island constraints on long-distance movement. But as illustrated below, NSUs (both sluicing and BAE) exhibit island-violating behavior. The NSU in (18) would be illicitly extracted out of an adjunct (*Where does Harriet drink scotch that comes from?*) and the NSU in (19) would be extracted out of

a complex NP (*The Gay Rifle Club, the administration has issued a statement that it is willing to meet with*).[7]

(18) A: Harriet drinks scotch that comes from a very special part of Scotland.
B: Where? (Culicover & Jackendoff 2005: 245)

(19) A: The administration has issued a statement that it is willing to meet with one of the student groups.
B: Yeah, right—the Gay Rifle Club. (Culicover & Jackendoff 2005: 245)

Among Culicover & Jackendoff's (2005: 245) examples of well-formed island-violating NSUs are also sprouted NSUs (those that correspond to implicit phrases in the antecedent) like (20)–(21).

(20) A: John met a woman who speaks French.
B: With an English accent?

(21) A: For John to flirt with at the party would be scandalous.
B: Even with his wife?

Other scholars assume that sprouted NSUs are one of the two kinds of NSUs that respect island constraints, the other kind being contrastive NSUs, illustrated in (22) (Chung et al. 1995; Merchant 2001; Griffiths & Lipták 2014).

(22) A: Does Abby speak the same Balkan language that Ben speaks?
B: *No, Charlie. (Merchant 2001)

Schmeh et al. (2015) further explore the acceptability of NSUs preceded by the response particle *no* like those in (22) compared to NSUs introduced by the response particle *yes*, depicted in (23). (22) and (23) differ in terms of discourse function in that the latter supplements the antecedent rather than correcting it, a discourse function signaled by the response particle *Yes*.

(23) A: John met a guy who speaks a very unusual language.
B: Yes, Albanian. (Culicover & Jackendoff 2005: 245)

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[7]Merchant (2005a) argued that BAE, unlike sluicing, does respect island constraints, an argument that was later challenged (see e.g, Culicover & Jackendoff 2005; Griffiths & Lipták 2014). However, Merchant (2005b) focused specifically on pairs of *wh*-interrogatives and answers to them, running into the difficulty of testing for island-violating behavior, since a well-formed *wh*-interrogative antecedent couldn't be constructed.

Schmeh et al. (2015) find that corrections lead to lower acceptability ratings compared to supplementations and propose that this follows from the fact that corrections induce greater processing difficulty than supplementations do, and hence the acceptability difference between (22) and (23). This finding makes it plausible that the perceived degradation of island-violating NSUs could ultimately be attributed to nonsyntactic factors, e.g., the difficulty of successfully computing a meaning for them.

In contrast to NSUs, many instances of PAE appear to respect island constraints, as would be expected if there was unpronounced structure from which material was extracted. An example of a relative clause island is depicted in (24) (note that the corresponding sluicing NSU is fine).

(24) * They want to hire someone who speaks a Balkan language, but I don't remember which they do [~~want to hire someone who speaks t~~].
       (Merchant 2001: 6)

(24) contrasts with well-formed island-violating examples like (25a) and (25b), as observed by Miller (2014) and Ginzburg & Miller (2018).[8]

(25) a. He managed to find someone who speaks a Romance language, but a Germanic language, he didn't [~~manage to find someone who speaks t~~].
      b. He was able to find a bakery where they make good baguette, but croissants, he couldn't [~~find a bakery where they make good t~~].

As Ginzburg & Miller (2018) rightly point out, we do not yet have a complete understanding of when or why island effects show up in PAE. Its behavior is at best inconsistent, failing to provide convincing evidence for silent structure.

3.3 Structural mismatches

Because structural mismatches are rare or absent from NSUs (see Merchant 2005a; 2013),[9] this section focuses on PAE and developments surrounding the question

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[8]Miller (2014) cites numerous corpus examples of island-violating pseudogapping.

[9]Given the assumption that canonical sprouting NSUs have VP antecedents, as in (17), Ginzburg & Miller (2018) cite examples—originally from Beecher (2008)—of sprouting NSUs with nominal, hence mismatched, antecedents, e.g., (i).

(i)   We're on to the semi-finals, though I don't know who against.

Further examples where NSUs refer to an NP or AP antecedent appear in COCA:

(ii)   A: Well, it's a defense mechanism. B: Defense against what?

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of which contexts license it. In a seminal study of anaphora, Hankamer & Sag (1976) classified PAE as a surface anaphor with syntactic features closely matching those of an antecedent present in the linguistic context. They argued in particular that PAE is not licensed if it mismatches its antecedent in voice. Compare the following two examples from Hankamer & Sag (1976: 327).

(26) a. * The children asked to be squirted with the hose, so we did.
      b.   The children asked to be squirted with the hose, so they were.

This proposal places tighter structural constraints on PAE than on other verbal anaphors (e.g., *do it/that*) in terms of identity between an ellipsis site and its antecedent and has prompted extensive evaluation in a number of corpus and experimental studies in the decades following Hankamer & Sag (1976). Below are examples of acceptable structural mismatches reported in the literature, ranging from voice mismatch (27a) to nominal antecedents (27b) to split antecedents (27c).[10]

(27) a. This information could have been released by Gorbachev, but he chose not to [release it]. (Hardt 1993: 37)
      b. Mubarak's survival is impossible to predict and, even if he does [survive], his plan to make his son his heir apparent is now in serious jeopardy. (Miller & Hemforth 2014)
      c. Wendy is eager to sail around the world and Bruce is eager to climb Mt. Kilimanjaro, but neither of them can [do the things they want], because money is too tight. (Webber 1979)

There are two opposing views that have emerged from the empirical work regarding the acceptability and grammaticality of structural mismatches under

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(iii) Our Book of Mormon talks about the day of the Lamanite, when the church would make a special effort to build and reclaim a fallen people. And some people will say, Well, fallen from what?

The NSUs in (ii)–(iii) repeat the lexical heads whose complements are being sprouted (*defense* and *fallen*), that is, they contain more material than is usual for NSUs (cf. (i)). It seems that without this additional material it would be difficult to integrate the NSUs into the propositions provided by the antecedents and hence to arrive at the intended interpretations.

[10]Miller (2014) also reports cases of structural mismatch with English comparative pseudogapping, as in (i):

(i) These savory waffles are ideal for brunch, served with a salad as you would a quiche. (Mag).

PAE. The first view takes mismatches to be grammatical and connects degradation in acceptability to violation of certain independent discourse (Kehler 2002; Miller 2011; 2014; Miller & Hemforth 2014; Miller & Pullum 2014) or processing constraints (Kim et al. 2011). Two types of PAE have been identified on this view through extensive corpus work (a characteristic of the HPSG research style)— auxiliary choice PAE and subject choice PAE—each with different discourse requirements with respect to the antecedent (Miller 2011; Miller & Hemforth 2014; Miller & Pullum 2014). The second view assumes that there is a grammatical ban on structural mismatch but violations thereof may be repaired under certain conditions; repairs are associated with differential processing costs compared to matching ellipses and antecedents (Arregui et al. 2006; Grant et al. 2012). If we follow the first view, it is perhaps unexpected that voice mismatch should consistently incur a greater acceptability penalty under PAE than when no ellipsis is involved, as recently reported in Kim & Runner (2018).[11] Kim & Runner (2018) stops short of drawing firm conclusions regarding the grammaticality of structural mismatches, but one possibility is that the observed mismatch effects reflect a construction-specific constraint on PAE. HPSG analyses take structurally mismatched instances of PAE to be unproblematic and fully grammatical, while also recognizing construction-specific constraints: discourse or processing constraints formulated for PAE may or may not extend to other elliptical constructions, such as NSUs (see Abeillé et al. 2016; Ginzburg & Miller 2018 for this point).

3.4 Nonlinguistic antecedents

Like structural mismatches, the availability of nonlinguistic antecedents for an ellipsis points to the fact that it needn't be interpreted by reference to and licensed by a structurally identical antecedent. Although this option is somewhat limited, PAE does tolerate nonlinguistic antecedents, as shown in (28)–(29) (see also Hankamer & Sag 1976; Schachter 1977).

(28)   Mabel shoved a plate into Tate's hands before heading for the sisters' favorite table in the shop. "You shouldn't have." She meant it. The sisters had to pool their limited resources just to get by. (Miller & Pullum 2014: ex. 23)

(29)   Once in my room, I took the pills out. "Should I?" I asked myself. (Miller & Pullum 2014: ex. 22a)

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[11]But see Abeillé et al. (2016) for experimental results that show no acceptability penalty for voice mismatch in French Right Node Raising.

Miller & Pullum (2014) provide an extensive critique of the earlier work on the ability of PAE to take nonlinguistic antecedents, arguing for a streamlined discourse-based explanation that neatly captures the attested examples as well as examples of structural mismatch like those discussed in Section 3.3. The important point here is again that PAE is subject to construction-specific constraints which limit its use with nonlinguistic antecedents.

NSUs appear in various nonlinguistic contexts as well. Ginzburg & Miller (2018) distinguish three classes of such NSUs: sluices (30), exclamative sluices (31), and declarative fragments (32).

(30)   (In an elevator) What floor? (Ginzburg & Sag 2000: 298)

(31)   It makes people "easy to control and easy to handle," he said, "but, God forbid, at what a cost!"

(32)   BOBADILLA turns, gestures to one of the other men, who comes forward and gives him a roll of parchment, bearing the royal seal. "My letters of appointment." (COCA)

In addition to being problematic from the licensing point of view, NSUs like these have been put forward as evidence against the idea that they are underlyingly sentential, because it is unclear what the structure that underlies them would be (see Ginzburg & Sag 2000; Culicover & Jackendoff 2005; Stainton 2006).[12]

4 Analyses of NSUs

It is worth noting at the outset that the analyses of NSUs within the framework of HPSG are based on an elaborate theory of dialog (Ginzburg 1994; Ginzburg & Cooper 2004; 2014; Larsson 2002; Purver 2006; Fernández Rovira 2006; Fernández & Ginzburg 2002; Fernández et al. 2007; Ginzburg & Fernández 2010; Ginzburg et al. 2014; Ginzburg 2012; 2013; Kim & Abeillé 2019) and on a wider range of data than is common practice in the ellipsis literature. Existing analyses of NSUs go back to Ginzburg & Sag (2000), who recognize declarative fragments (33) and two kinds of sluicing NSUs, direct sluices (34) and reprise sluices (35) (the relevant fragments are bolded). The difference between direct and reprise sluices lies in the fact that the latter are requests for clarification of any part of

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[12]This is not to say that a sentential analysis of fragments without linguistic antecedents hasn't been attempted. For details of a proposal involving a 'limited ellipsis' strategy, see Merchant (2005a) and Merchant (2010).

the antecedent. For instance, in (35) the referent of *that* is unclear to the interlocutor.

(33) "I was wrong." Her brown eyes twinkled. "Wrong about what?" "**That night**." (COCA)

(34) "You're waiting," she said softly. "**For what?**" (COCA)

(35) "Can we please not say a lot about that?" "**About what?**" (COCA)

The different types of these fragments are derived from the Ginzburg & Sag (2000: 333) hierarchy of clausal types depicted in Figure 1.
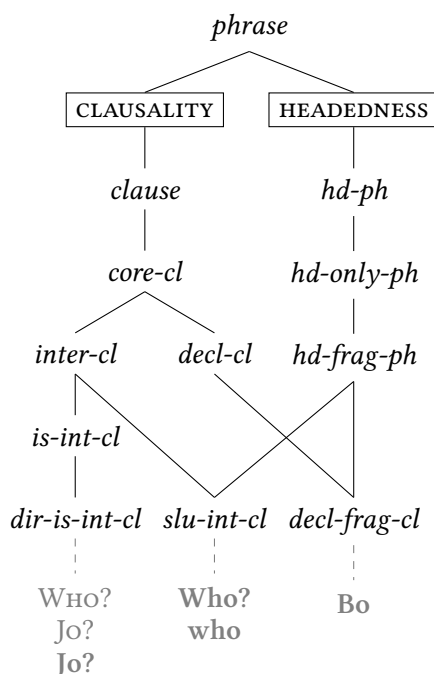

Figure 1: Clausal hierarchy for fragments (Ginzburg & Sag 2000: 333)

NSUs like declarative fragments (decl-frag-cl) are associated with type hd-frag-ph (headed-fragment phrase) and decl-cl (declarative clause), while direct sluices (slu-int-cl) and reprise sluices (dir-is-int-cl) are associated with type hd-frag-ph and inter-cl (interrogative clause). The type slu-int-cl is permitted to appear in independent and embedded clauses, hence it is underspecified for the head feature

IC (independent clause). This specification contrasts with that of declarative fragments and reprise sluices, with both specified as [IC +].[13] Ginzburg & Sag (2000: 304) make use of the constraint shown in (36), in which the two contextual attributes SAL-UTT and MAX-QUD play key roles in ellipsis resolution (we have added information about the MAX-QUD to generate NSUs):

(36)   Head-Fragment Construction:

$$\begin{bmatrix} \text{CAT} & s \\ \text{CTXT} & \begin{bmatrix} \text{MAX-QUD } \lambda\{\pi^i\} \\ \text{SAL-UTT} & \left\{\begin{bmatrix} \text{CAT} & \boxed{2} \\ \text{CONT}|\text{IND } i \end{bmatrix}\right\} \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \text{CAT } \boxed{2} \\ \text{CONT}|\text{IND } i \end{bmatrix}$$

This constructional constraint first allows any phrasal category to function as an NU, that is, can be mapped onto a sentential utterance as long as it corresponds to a Salient Utterance (SAL-UTT).[14] This means that the head daughter's syntactic category must match that of the SAL-UTT, which is an attribute supplied by the surrounding context as a (sub)utterance of another contextual attribute—the Maximal Question under Discussion (MAX-QUD).

The context gets updated with every new question-under-discussion, and MAX-QUD represents the most recent question-under-discussion, while SAL-UTT is the (sub)utterance with the widest scope within MAX-QUD. To put it informally, SAL-UTT represents a (sub)utterance of a MAX-QUD that has not been resolved yet. Its feature CAT supplies information relevant for establishing morphosyntactic identity with an NU, that is, syntactic category and case information, and (36) requires that an NSU match this information.

For illustration, consider the following exchange including a declarative fragment:

(37)   A: What did Barry break?
       B: The mike.

In this dialogue, the fragment *The mike* functions as the SAL-UTT. Thus the constructional constraint in (36) would license an NSU structure like the following: As illustrated here, uttering the *wh*-question in (37A) evokes the QUD asking the value of the variable *i* linked to the object that Barry broke. The fragment answer

---

[13]In Ginzburg & Sag (2000: 305), the feature [IC +] serves to block NSUs from appearing in embedded clauses, as in *A: What do they like? B: *I doubt bagels.*

[14]Ginzburg (2012) uses the notion of the Dialog Game Board (DGB) to keep track of all information relating to the common ground between interlocutors. The DGB is also the locus of contextual updates arising from each new question-under-discussion that is introduced.
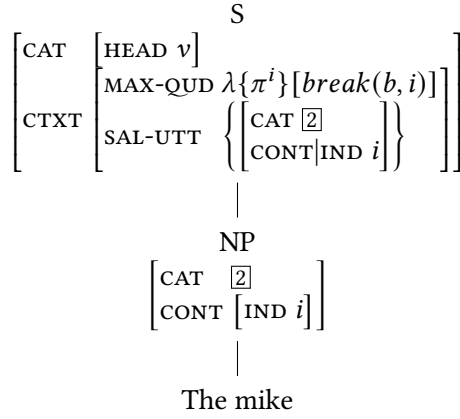
$$
S
$$

$$
\begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD } v \end{bmatrix} \\ & \begin{bmatrix} \text{MAX-QUD } \lambda\{\pi^i\}[break(b,i)] \end{bmatrix} \\ \text{CTXT} & \text{SAL-UTT} & \left\{ \begin{bmatrix} \text{CAT } \boxed{2} \\ \text{CONT}|\text{IND } i \end{bmatrix} \right\} \end{bmatrix}
$$

$$
|
$$

$$
NP
$$

$$
\begin{bmatrix} \text{CAT} & \boxed{2} \\ \text{CONT} & \begin{bmatrix} \text{IND } i \end{bmatrix} \end{bmatrix}
$$

$$
|
$$

The mike

Figure 2: Structure of the declarative fragment clause

The mike matches that value. The structured dialogue thus plays a key role in the retrieval of the propositional semantics for the NSU.

(36) has the advantage that it gives us a way of capturing the problems that Merchant (2001; 2005a) faces with respect to misalignments between preposition stranding under *wh-* and focus movement and the realization of NSUs as NPs or PPs, as discussed in Section 3.1. Because the categories of SAL-UTT discussed in Ginzburg & Sag (2000) are limited to nominal, SAL-UTTs can surface either as NPs or PPs. As long as both of these categories are stored as overt phrases in the updated contextual information, an NSU's CAT feature will be able to match either of them (See Sag & Nykiel (2011) for discussion of this possibility with respect to Polish and Abeillé & Hassamal (2019) with respect to Mauritian).

Another advantage of this analysis of NSUs is that the content of MAX-QUD can be supplied by either linguistic or nonlinguistic context. MAX-QUD provides the propositional semantics for an NSU and is, typically, a unary question. In the prototypical case, MAX-QUD arises from the most recent *wh*-question uttered in a given context, as in (37), but can also arise (via accommodation) from other forms found in the context, such as constituents in direct sluicing (38) or from a nonlinguistic context (39).

(38) A: A friend of mine broke the mike.
      B: Who?

(39) (Cab driver to passenger on the way to airport) A: Which airline?

The analysis of such direct sluices differs only slightly from that illustrated for (37), and in fact all existing analyses of NSUs (Sag & Nykiel 2011; Ginzburg 2012; Abeillé et al. 2014; Kim 2015; Abeillé & Hassamal 2019; Kim & Abeillé 2019) are based on (36). The direct sluice would have the structure given in Figure 3.
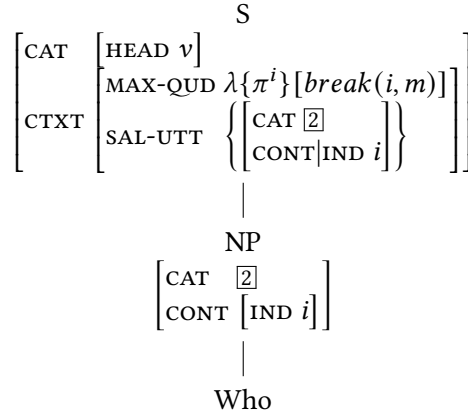
$$
S
$$

$$
\begin{bmatrix}
\text{CAT} & \begin{bmatrix} \text{HEAD } v \end{bmatrix} \\
& \begin{bmatrix} \text{MAX-QUD } \lambda\{\pi^i\}[break(i,m)] \\ \text{SAL-UTT} & \left\{ \begin{bmatrix} \text{CAT } \boxed{2} \\ \text{CONT}|\text{IND } i \end{bmatrix} \right\} \end{bmatrix}
\end{bmatrix}
$$

$$
NP
$$

$$
\begin{bmatrix}
\text{CAT} & \boxed{2} \\
\text{CONT} & \begin{bmatrix} \text{IND } i \end{bmatrix}
\end{bmatrix}
$$

$$
\text{Who}
$$

Figure 3: Structure of the sluiced interrogative clause

The analyses in Figure 2 and Figure 3 differ only in the value of the feature CONT (Content), the former being a proposition and the latter a question.[15]

This construction-based analysis, in which dialog updating plays a key role in the licensing of NSUs, also offers a direction for handling sprouting examples like the following from COCA:

(40)   a. "You're waiting," she said softly. "For what?" .

       b. "There are NATO losses, of course.Do you know of what?"

In both direct and embedded sluice here, the preceding antecedent clause includes no overt correlate for the NSU. The correlates are implicitly provided by the argument structure of the lexical heads *wait* and *losses*. We illustrate this idea

---

[15]In-situ languages like Korean and Mandarin allow pseudosluices (sluices with the copula verb), which has lead to proposals that posit cleft clauses as their sources (Merchant 2001). However, Kim (2015) suggests that a cleft-source analysis does not hold for languages like Korean since there is one clear difference between sluicing and cleft constructions: the former allows multiple remnants while clefts do not license multiple foci. See Kim (2015) for detailed discussion that differentiates sluicing in embedded clauses (psuedosluices with the copula verb) from direct sluicing in root clauses, as Ginzburg & Sag (2000: 329) do.

for the verb *wait*. Adopting the analysis of Ginzburg & Sag (2000), Kim (2015) suggest the following way of analyzing such sprouting sluices. Kim's analysis takes the unrealized oblique argument of the verb *wait* as an instance of indefinite null instantiation (*ini*), as represented in the lexical specification for *wait* in (41):[16]

(41) Lexical item for *wait*:

$$
\begin{bmatrix}
\text{PHON} & \langle\,wait\,\rangle \\
\text{ARG-ST} & \left\langle \text{NP}_i, \left(\text{PP}\begin{bmatrix} ini \\ \text{PFORM } for \\ \text{IND} \quad x \end{bmatrix} \right) \right\rangle \\
\text{CAT} & \begin{bmatrix} \text{SUBJ} & \langle \text{NP}_i \rangle \\ \text{COMPS} & \langle\,\rangle \end{bmatrix} \\
\text{CONT} & wait(i, x)
\end{bmatrix}
$$

The lexical information specifies that the second argument of *wait* can be an unrealized PP while the first argument needs to be an overt NP. Uttering the NSU *For what?* here would then activate this information, updating the DGB with the SAL-UTT represented by the unrealized PP, as in (42).

(42)
$$
\begin{bmatrix}
\text{CTXT}|\text{SAT-UTT} & \left\{ \begin{bmatrix} \text{CAT} & \text{PP}\begin{bmatrix} ini \\ \text{PFORM } for \\ \text{IND} \quad x \end{bmatrix} \\ \text{CONT} & wait.for(i, x) \end{bmatrix} \right\}
\end{bmatrix}
$$

The NSU *For what?*, matching this SAL-UTT, projects a well-formed NSU in accordance with (36). The implied PP *for someone* functioning as the SAL-UTT here would appear as a noncanonical synsem on the ARG-ST list of the verb *wait*, but not on its COMPS list (which contains only overtly realized arguments), and thereby be able to provide appropriate morphosyntactic identity information.

As mentioned in connection with examples (16) and (17), sprouting requires the presence of prepositions in NSUs. That is, the NSUs in (40a) and (40b) may not be NPs consisting of the wh-phrase *what* alone. The HPSG analysis presented above offers a solution for this requirement. Consider again the lexical specification of the predicate *wait*, this time with an overt PP argument appearing on the COMPS list, as in (43).

(43) Lexical item for *wait*:

---

[16]Kim (2015) adopts the idea of null instantiation from Ruppenhofer & Michaelis (2014).

$$
\begin{bmatrix}
\text{PHON} & \langle\, wait \,\rangle \\
\text{ARG-ST} & \langle \text{NP}_i, \boxed{2}\text{PP}_x \rangle \\
\text{CAT} & \begin{bmatrix}
\text{SUBJ} & \langle \text{NP}_i \rangle \\
\text{COMPS} & \left\langle \boxed{2}\text{PP}_x \begin{bmatrix} \text{PFORM} & for \\ \text{IND} & x \end{bmatrix} \right\rangle
\end{bmatrix} \\
\text{CONT} & wait\,(i, x)
\end{bmatrix}
$$

Since the PP argument is realized as an overt element on the verb's COMPS list, it, as well as its internal structure (the prepositional head *for* and its object NP), can supply two possible SAL-UTTs: a PP or an NP. An NSU whose CAT feature matches either of these two SAL–UTTs is licensed by (36). In contrast, the verb *wait* in (41) selects an optional PP as its argument. This PP, never realized as a COMPS-list element, is a noncanonical synsem with no internal structure. This means that, unlike the overt PP case, the context only activates PP information for an NSU to pick up as the matching SAL-UTT. [17]

The advantages of the nonsentential analyses sketched here follow from their ability to capture limited morphosyntactic parallelism between NSUs and SAL-UTT without having to account for why NSUs behave differently from constituents of sentential structures. The island-violating behavior of NSUs is unsurprising on this analysis, as are attested cases of structural mismatch and situationally controlled NSUs.[18] However, some loose ends still remain. (36) incorrectly rules out case mismatch in languages like Hungarian for speakers that do accept it (see discussion around example (13)).[19]

5 Analyses of predicate/argument ellipsis

The first issue in the analysis of PAE is the status of the elided expression. It is assumed to be a *pro* element due to its pronominal properties (see Lobeck 1995; López 2000; Kim 2006; Aelbrecht & Harwood 2015; Ginzburg & Miller 2018). For instance, PAE, with the exception of pseudogapping (44), applies only to phrasal categories (45), can cross utterance boundaries (46), can override island constraints ((47)–(48)), and is subject to the Backwards Anaphora Constraint ((49)–(50)).

---

[17]We thank Anne Abeillé for pointing this out to us.

[18]The rarity of NSUs with nonlinguistic antecedents can be understood as a function of how easily a situational context can give rise to a MAX-QUD and thus license ellipsis. See Miller & Pullum (2014) for this point with regard to PAE.

[19]See, however, Kim (2015) for a proposal that introduces a case hierarchy specific to Korean to explain limited case mismatch in this language.

(44)   Your weight affects your voice. It does mine, anyway. (Miller 2014)

(45)   Mary will meet Bill at Stanford because she didn't __ at Harvard.

(46)   A: Tom won't leave Seoul soon.
        B: I don't think Mary will __ either.

(47)   John didn't hit a home run, but I know a woman who did. (CNPC)

(48)   That Betsy won the batting crown is not surprising, but that Peter
        didn't know she did __ is indeed surprising. (SSC)

(49)   * Sue didn't [e] but John ate meat.

(50)   Because Sue didn't [e], John ate meat.

One way to account for PAE closely tracks analyses of *pro*-drop phenomena. We do not need to posit a phonologically empty pronoun if a level of argument structure is available where we can encode the required pronominal properties (see Bresnan 1982; Ginzburg & Sag 2000; Kim 2006; Ginzburg & Miller 2018). In the framework of HPSG, we represent this possibility as the Argument Realization Principle (51), permitting mismatch between argument structure and syntactic valence features (Ginzburg & Sag 2000):[20]

> AVM: Stefan, take care of the space after ⊖

(51)   Argument Realization Principle (ARP):

$$v\text{-}wd \Rightarrow \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{SUBJ} & \boxed{1} \\ \text{COMPS} & \boxed{2} \ominus list(noncanonical) \end{bmatrix} \\ \text{ARG-ST} & \boxed{1} \oplus \boxed{2} \end{bmatrix}$$

The ARP tells us that a noncanonical element in the argument structure, of which *pro* is a subtype, need not be realized in the syntax. For example, as represented in (52), the auxiliary verb *can* in examples like *John can't dance, but Sandy can.* has a *pro* VP as its second argument, that is, this VP is not instantiated as the syntactic complement of the verb (Kim 2006):

(52)   Lexical description for *can*:

---

[20]Expressions have two subtypes: overt and covert ones, the latter of which has two subtypes, *pro* and *gap*. See Sag (2012b) for details.

Draft of 15th July 2020, 13:23

$$
\begin{bmatrix}
\textit{v-wd} \\
\text{PHON} \quad \langle \textit{can} \rangle \\
\text{CAT} \quad
\begin{bmatrix}
\text{HEAD|VFORM } \textit{fin} \\
\text{SUBJ} \qquad \langle \boxed{1} \rangle \\
\text{COMPS} \qquad \langle \rangle
\end{bmatrix} \\
\text{ARG-ST } \langle \boxed{1} \text{NP,VP}[\textit{pro}] \rangle
\end{bmatrix}
$$

Given this, English PAE can be analyzed as a language-particular VP *pro* drop phenomenon, triggered by a constraint like (53).

(53)   Aux-Ellipsis Construction:
$$
\begin{bmatrix}
\textit{aux-v-lxm} \\
\text{ARG-ST } \langle \boxed{1} \text{XP, } \boxed{2} \text{YP} \rangle
\end{bmatrix}
\mapsto
\begin{bmatrix}
\textit{aux-pae-wd} \\
\text{ARG-ST } \langle \boxed{1} \text{XP, } \boxed{2} \text{YP}[\textit{pro}] \rangle
\end{bmatrix}
$$

What this tells us is that an auxiliary verb selecting two arguments can be projected onto an elided auxiliary verb whose second argument is realized as a small *pro*. This argument is not mapped onto any grammatical function on the COMPS list. The output auxiliary in (52) will then project a structure like the one in Figure 4. The head daughter's COMPS list (VP[bse]) is empty because the second
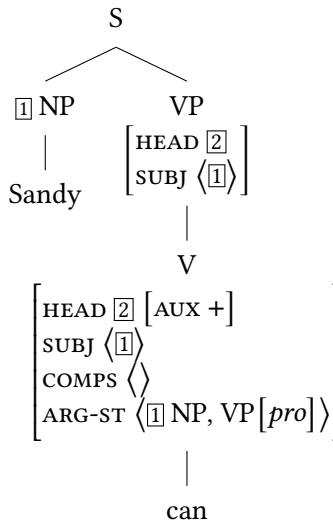
Figure 4: Structure of a VPE

element in the ARG-ST is a *pro*.[21]

---

[21]PAE is different from NCA (e.g., *I asked Tracy to bring the horses into the barn but she refused*)

We saw in Section 3.3 that PAE does not require structural identity with its antecedent, which is supplied by the surrounding context. Therefore, ellipsis resolution is not based on syntactic reconstruction in HPSG analyses but rather on structured discourse information (Ginzburg & Sag 2000). The *pro* analysis outlined above expects structural mismatches, because the relevant antecedent information is the information that the DGB provides via the MAX-QUD in each case, and hence no structural-match requirement is enforced on PAE.[22] This means in turn that HPSG analyses of PAE do not face the problem of having to rule out, or rule in, cases of structural mismatch or nonlinguistic antecedents, because their acceptability can be captured as reflecting discourse-based and construction-specific constraints on PAE.

6 Analyses of nonconstituent coordination and gapping

Constructions such as gapping, RNR, and ACC have also often been taken to belong to elliptical constructions. Each of these constructions has received relatively little attention in the research on elliptical constructions, possibly because of their syntactic and semantic complexities. In this section, we focus on HPSG analyses of gapping, leaving more detailed discussion of RNR and ACC to Abeillé & Chaves (2020), Chapter 16 of this volume and references therein.

6.1 Gapping

Gapping is also a type of ellipsis that allows a finite verb to be unexpressed in the non-initial conjuncts.

(54)   a.   Some ate bread, and others rice.
       b.   Kim can play the guitar, and Lee the violin.

HPSG analyses of gapping fall into two kinds: one kind draws on Beavers & Sag's (2004) deletion-based analysis of nonconstituent coordination (Chaves 2009) and the other on Ginzburg & Sag's (2000) analysis of NSUs (Abeillé et al.

---

in having an infinitival VP complement of a nonauxiliary verb (here the verb *refused*) unexpressed. Both PAE and NCA are licensed by the ARP, but NCA is sensitive only to a limited set of main verbs, and its exact nature is still controversial. NCA has received relatively little attention in modern syntactic theory, including in HPSG.

[22]In the derivational analysis of Merchant (2013), cases of structural mismatch are licensed by the postulation of the functional projection VoiceP above an IP: the understood VP is linked to its antecedent under the IP.

Draft of 15th July 2020, 13:23

2014).[23] The latter analyses align gapping with analyses of NSUs, as discussed in Section 4, more than with analyses of nonconstituent coordination, and for this reason gapping could be classified together with other NSUs. We use the analysis in Abeillé et al. (2014) for illustration below.

Abeillé et al. (2014), focusing on French and Romanian, offer a construction- and discourse-based HPSG approach to gapping where the second headless gapped conjunct is taken to be an NSU type of fragment. Their analysis places no syntactic parallelism requirements on the first conjunct and the gapped conjunct, given data like (55).

(55)   Pat has become [crazy]$_{AP}$ and Chris [an incredible bore]$_{NP}$.

Instead of requiring strong syntactic parallelism between the two clauses, their analysis limits gapping remnants to elements of the argument structure of the verbal head present in the antecedent and absent from the rightmost conjunct, which reflects the intuition articulated in Hankamer (1971). Abeillé et al. (2014) adopt the assumption that coordination phrases are nonheaded constructions in which each conjunct shares the same valence (SUBJ and COMPS) and nonlocal (SLASH) features while its head (HEAD) value is not fixed but contains an upper bound (supertype) to accommodate examples like (55). On this analysis, the gapped conjunct *Chris an incredible bore* in (55) is an NSU with two cluster daughters, as represented by the simplified structure in Figure 5:

---

[23]For a semantic approach to gapping, the reader is referred to Park et al. (2019), who offer an analysis of scope ambiguities under gapping where the syntax assumed is of the NSU type and the semantics is cast in the framework of Lexical Resource Semantics.
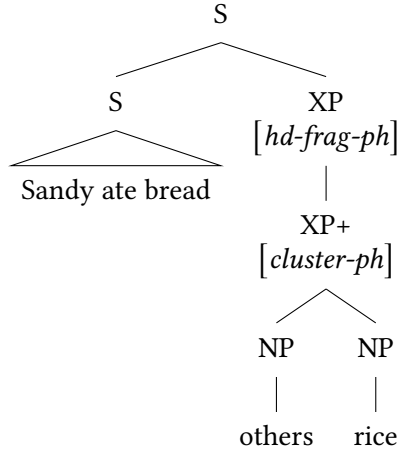
Figure 5: Simplified structure of a gapping construction

The gapped conjunct in Figure 5 functions as an NSU whose single daughter is a cluster phrase with two cluster daughters.[24] The required syntactic parallelism between gapping remnants and their counterparts in the antecedent is operationalized by adopting the contextual attribute SAL-UTT, which is introduced for all NSUs, as in (56).

(56)   Syntactic constraints on *head-fragment-ph* (Abeillé et al. 2014: (53)):

$$\textit{head-fragment-ph} \Rightarrow \begin{bmatrix} \text{CNXT|SAL-UTT} \left\langle \begin{bmatrix} \text{HEAD } H_1 \\ \text{MAJOR } + \end{bmatrix}, ..., \begin{bmatrix} \text{HEAD } H_n \\ \text{MAJOR } + \end{bmatrix} \right\rangle \\ \text{CAT|HEAD|CLUSTER} \left\langle \begin{bmatrix} \text{HEAD } H_1 \end{bmatrix}, ..., \begin{bmatrix} \text{HEAD } H_n \end{bmatrix} \right\rangle \end{bmatrix}$$

The syntactic identity between gapping remnants and their counterparts is achieved here by ensuring that each list member of the SAL-UTT structure-shares its HEAD value with the corresponding cluster element.[25] With the syntactic parallelism between the first and the gapped conjuncts captured this way, the analysis even allows gapping remnants to appear in a different order than their counterparts in the antecedent (57) (see Sag et al. 1985: 156–158):

(57)   A policeman walked in at 11, and at 12, a fireman.

---

[24]The notion of a cluster refers to any sequence of dependents and was introduced in Mouret (2006)'s analysis of ACC.

[25]The feature MAJOR makes each expression a major constituent functioning as a dependent of some verbal projection, blocking remnants from being deeply embedded in the gapped clause.

Draft of 15th July 2020, 13:23

This ordering flexibility is licensed as long as some symmetric discourse relation holds between the two conjuncts. Abeillé et al. (2014) localize this symmetric discourse relation to the BACKGROUND contextual feature of the Gapping Construction, which is a sub-construction of coordination.

6.2 Right Node Raising

In typical examples of RNR, as shown in the examples below, the element to the immediate right of a parallel structure is shared with the left conjunct:

(58)   a. Kim prepares and Lee eats [the pasta].
        b. Kim played and Lee sang [some Rock and Roll songs at Jane's party].

The bracketed shared material can be either a constituent as in (58a) or a non-constituent as in (58b).

RNR has consistently attracted HPSG analyses involving silent material, whose detailed discussion can be found in Abeillé & Chaves (2020), Chapter 16 of this volume. All existing analyses of RNR (Abeillé et al. 2016; Beavers & Sag 2004; Chaves 2008; Chaves 2014; Crysmann 2003; Shiraishi et al. 2019; Yatabe 2001; 2012) agree on this point, although some of them propose more than one mechanism for accounting for different kinds of nonconstituent coordination (Chaves 2014; Yatabe 2001; 2012; Yatabe & Tam 2019). One strand of research within the RNR literatures adopts a linearization-based approach employed more generally in analyses of NCC (Yatabe 2001; 2012) and another proposes a deletion-like operation (Abeillé et al. 2016; Chaves 2014; Shiraishi et al. 2019).

The kind of material that may be RNRaised and the range of structural mismatches permitted between the left and right conjuncts have been the subject of recent debate.[26] For instance, Chaves (2014: 839–840) demonstrates that, besides more typical examples like (58), there is a range of phenomena classifiable as RNR that exhibit various argument-structure mismatches ((59a)–(59b)) and can target material below the word level ((59c)–(59d)).

(59)   a. Sue gave me—but I don't think I will ever read—[a book about relativity].
        b. Never let me—or insist that I—[pick the seats].
        c. We ordered the hard- but they got us the soft-[cover edition].

---

[26] Although we refer to the material on the left and right as conjuncts, it is been known since Hudson (1976; 1989) that RNR extends to other syntactic environments than coordination (see Chaves 2014 for stressing this point).

    d. Your theory under- and my theory over[generates].

Furthermore, RNR can target strings that are not subject to any known syntactic operations, such as rightward movement (Chaves 2014: 865).

(60)   a. I thought it was going to be a good but it ended up being a very bad [reception].

       b. Tonight a group of men, tomorrow night he himself, [would go out there somewhere and wait].

RNRaised material can also be discontinuous, as in (61) (Chaves 2014: 868; Whitman 2009: 238–240).

(61)   a. Please move from the exit rows if you are unwilling or unable [to perform the necessary actions] without injury.

       b. The blast upended and nearly sliced [an armored Chevrolet Suburban] in half.

This evidence leads Chaves (2014) to propose that RNR is a nonuniform phenomenon, comprising extraposition, VPN′-ellipsis, and true RNR. Of the three, only true RNR should be accounted for via the mechanism of optional surface-based deletion that is sensitive to morph form identity and targets any linearized strings, whether constituents or otherwise.[27] Chaves' (2014: 874) constraint licensing true RNR is given in (62) as an informal version (α = a morphophonologic constituent, $^+$ = a $^+$ = a Kleene plus):

(62)   Backward Periphery Deletion Construction:
       Given a sequence of morphophonologic constituents $\alpha_1^+\ \alpha_2^+\ \alpha_3^+\ \alpha_4^+\ \alpha_5^*$, then the output $\alpha_1^+\ \alpha_3^+\ \alpha_4^+\ \alpha_5^*$ iff α_2^+ and α_4^+ are identical up to morph forms.

(62) takes the morphophonology of a phrase to be computed as the linear combination of the phonologies of the daughters, allowing deletion to apply locally.[28]

---

[27]Whenever RNR can instead be analyzed as either VPN'-ellipsis or extraposition, Chaves proposes separate mechanisms for deriving them: the direct interpretation approach described in the previous sections for NSUs and predicate/argument ellipsis and an analysis employing the feature EXTRA to record extraposed material along the lines of Kim & Sag; Kay & Sag), respectively.

[28]For more detail on linearization-based analyses of RNR, the interested reader is referred to Yatabe (2001; 2012), who distinguish between syntactic RNR and phonological RNR, based on the amount of morphosyntactic identity holding between RNRaised material and the requirements imposed on the slots it occupies in the structure, and represent this distinction by treating the RNRaised material as either a separate domain object on the mother's DOM list (syntactic RNR) or embedded in a larger domain object corresponding to the right conjunct (phonological RNR).

Another deletion-based analysis of RNR is due to (Abeillé et al. 2016; Shiraishi et al. 2019), differing from Chaves (2014) in terms of identity conditions on deletion. Abeillé et al. (2016) argue for a finer-grained analysis of French RNR without morphophonological identity. Their empirical evidence reveals a split between functional and lexical categories in French such that the former permit mismatch between the two conjuncts (where determiners or prepositions differ) under RNR, while the latter do not. Shiraishi et al. (2019) provide further corpus and experimental evidence that morphophonological identity is too strong a constraint on RNR, given the range of acceptable mismatches between the verbal forms of the material missing from the left conjunct and those of the material that is shared between both conjuncts.

6.3 Argument Cluster Coordination

As noted earlier, ACC is a type of non-constituent coordination, as illustrated in (63):

(63)   a.   John gave [a book to Mary] and [a record to Jane].
       b.   John gave [Mary a book] and [Jane a record].

As for the treatment of ACC, the existing HPSG analyses have articulated two main views: ellipsis (Yatabe 2001; Crysmann 2003; Beavers & Sag 2004) and non-standard constituents (Mouret 2006). For discussion of the non-elliptical view, which takes ACC to be a special type of coordination, we refer the reader to Abeillé & Chaves (2020), Chapter 16 of this volume and references therein. Here we just focus on the ellipsis view, which better fits this chapter. This view is based on examples like the ones in (64):

(64)   a.   Jan travels to Rome tomorrow, [to Paris on Friday], and will fly to
            Tokyo on Sunday.
       b.   Jan wanted to study medicine when he was 11, [law when he was 13],
            and to study nothing at all when he was 18.

As pointed out by Beavers & Sag (2004), such examples challenge non-ellipsis analyses, given the traditional assumption that only constituents of like category can coordinate. The status of the bracketed conjuncts is quite questionable, since they are not VPs like the other two fellow conjuncts. To address this issue, surface-oriented HPSG analyses employ a key idea from linearization theory where the level of an order domain is operationalized as the DOM list obeying

the Coordination Construction given in (65), which is a simplified version of the one in Beavers & Sag (2004: (27)):[29]

(65)
$$\begin{bmatrix} \text{MTR} \; \left[\text{DOM} \; \boxed{A} \oplus \boxed{B_1} \oplus \boxed{C} \oplus \boxed{B_2} \oplus \boxed{D} \right] \\ \text{DTRS} \; \left\langle \begin{bmatrix} \text{DOM} \; \boxed{A} \oplus \boxed{B_1}[\textit{ne-list}] \oplus \boxed{X} \end{bmatrix}, \\ \begin{bmatrix} \text{DOM} \; \boxed{C}[(\textit{conj})] \oplus \boxed{Y} \oplus \boxed{B_g}[\textit{ne-list}] \oplus \boxed{D} \end{bmatrix} \right\rangle \end{bmatrix}$$

The content of the DOM list consists of prosodic constituents (constituents with no information about their internal morphosyntax) and offers a way of accounting for coordination of noncanonical constituents. In analyses of ACC, the elements present on the mother's DOM list are those present overtly on the DOM lists of both conjuncts, as well as those present overtly on the DOM list of the left, but not the right, conjunct. The DOM value of the mother in (65) begins with material A (empty or otherwise) from the left conjunct, some material from the left conjunct B_1, the conjunct's coordinator C (if present), some material B_2 from the right conjunct, and ends with some material D from the right conjunct. To derive NCC as in (63), the left-most element on the mother's DOM list, representing material present overtly only in the left conjunct (here the verb *gave*), may not be empty.[30]

7 Summary

This chapter has reviewed three types of ellipsis, nonsentential utterances, predicate ellipsis, and nonconstituent coordination, corresponding to three kinds of analysis within HPSG. The pattern that emerges from this overview is that HPSG favors the 'what you see is what get' approach to ellipsis and limits a deletion-based approach, common in the minimalist literature on ellipsis, to a subset of nonconstituent coordination phenomena.

---

[29]For simplicity, we represent only the DOM value, suppressing all the other information. For more details on the role of the DOM list in HPSG accounts of constituent order, the reader is referred to Müller (2020a), Chapter 10 of this volume.

[30]See Beavers & Sag (2004) for discussion of semantic issues in NCC.

Abbreviations

NSUs	Nonsentential utterances
BAE	Bare Argument Ellipsis
VPE	Verb Phrase Ellipsis
NCA	Null Complement Anaphora
SAL-UTT	Salient Utterance
MAX-QUD	Maximal-Question-under-Discussion
DGB	Dialog Game Board

Acknowledgements

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