Ellipsis: A survey of analytical approaches

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1 Introduction: The phenomena

The term *ellipsis* has been applied to a wide range of phenomena across the centuries, from any situation in which words appear to be missing (in St. Isidore's definition), to a much narrower range of particular constructions.[1] Ellipsis continues to be of central interest to theorists of language exactly because it represents a situation where the usual form/meaning mappings, the algorithms, structures, rules, and constraints that in nonelliptical sentences allow us to map sounds and gestures onto their corresponding meanings, break down. In fact, in ellipsis, the usual mappings seem to be entirely absent. In ellipsis, there is meaning without form.

VP-ellipsis and sluicing are two of the best investigated instances of ellipsis and generally show remarkable similarities in the demands they make of the discourse, both usually necessitating some equivalent antecedent which is subject to some kind of parallelism. It is no exaggeration to say that debates over the nature of this parallelism have formed the core of most of the generative work on ellipsis over the last forty years. Almost all conceivable positions on the parallelism question have been explored and advanced, and these debates are important exactly because they are often used to argue for the necessity of one or another kind of linguistic representation. Most of the debate is located in the arena of semantics and abstract syntactic structures—it is clear that surface syntactic or phonological parallelism is not at stake—and as such, elliptical structures often play an important role in fundamental ontological debates in linguistics. The logic is clear: if the parallelism or identity conditions found in ellipsis resolution require reference to certain kinds of objects, then our theories of linguistic competence must countenance objects of that kind.

In generative linguistics, research has focused largely on two sets of constructions.[2] Central examples of the first set, drawn from English, include sluicing as in (1), predicate or verb phrase ellipsis (VP-ellipsis) as in (2), and NP-ellipsis (or N′-ellipsis, or more broadly, nominal ellipsis)

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[1] Great thanks to the excellent reviews, and to the editors for their encouragement and patience, and to Jeroen van Craenenbroeck for many years of productive discussion of these issues.

[2] There are many other kinds of phenomena that go under the rubric of ellipsis as well, some better investigated than others, including argument drop, article drop, haplology, diary language and headlinese, subjectless infinitivals, copula drop, situational ellipses, small clauses, and many more; some are context-sensitive, and some are not. For various (and still incomplete) taxonomies of the missing, see Klein 1985 and Hennig 2013:447f.

as in (3). Ellipsis of at least one of these kinds seems to be found in every language in which it has been looked for, though a systematic cross-linguistic theory of the distribution of ellipsis types remains to be formulated.

(1)   Lauren can play something, but I don't know what.

(2)   Lauren can play the guitar and Mike can, too.

(3)   Lauren can play five instruments, and Mike can play six.

In each case, the second clause can be understood as in (4)-(6).

(4)   Lauren can play something, but I don't know what Lauren can play.

(5)   Lauren can play the guitar and Mike can play the guitar, too.

(6)   Lauren can play five instruments, and Mike can play six instruments.

These three kinds of ellipsis are distinguished as well by the fact that distributional facts lead us to expect to find structural elements corresponding to the perceived interpretations: wh-phrases as in (1) require clausal sources, auxiliaries like *can* in (2) take VP complements, and determiner-like elements such as *six* in (3) require nominal complements. In other words, selectional or subcategorizational properties of particular elements require us to posit elided structures in (1)-(3), if we adopt the null hypothesis that these properties are uniform across (1)-(6).

A second set of constructions in which ellipsis has been invoked include stripping (or 'bare argument ellipsis') in (7), gapping in (8), fragment answers in (9), as well as a host of other cases that fall under the general rubric of 'conjunction reduction':

(7)   a. Lauren can play the guitar, {and Mike, too/and Mike as well/but not Mike}.

      b. Lauren can play the guitar better than Mike.

(8)   a. Lauren can play the guitar, and Mike the violin.

      b. Lauren can play the guitar better than Mike the violin.

(9)   Q: Who can play the guitar?
      A: (Not) Lauren.

All of these structures[3] have been the focus of intense theoretical interest over the past four decades, and vast bibliographies can be compiled for each of the above phenomena. I can make no pretense of bibliographic completeness here, and refer the reader to excellent recent surveys for a more detailed treatment of the literature, especially Hartmann 2000, Johnson 2001, Winkler and Schwabe 2003, Winkler 2005, Goldberg 2005, Reich 2008, van Craenenbroeck 2010b, van Craenenbroeck and Merchant 2013, and the introduction to Johnson 2008. In what follows, I will examine some representative examples of approaches to the above and discuss their relative merits.

In analyzing ellipsis, three questions have occupied much of the literature. The first is given in (10), what I will call the **structure** question.

(10)   In elliptical constructions, is there syntactic structure that is unpronounced?

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[3]I've omitted pseudogapping, a construction that seems to mix properties of gapping and VP-ellipsis; see Gengel 2013.

The answer that is given to (10) has far-reaching implications for the theory of grammar. If the answer is positive, we must countenance theories of grammars that permit unpronounced phrases and heads. If the answer is negative, there is the possibility that syntax may be 'wyhiwyg' ('what you hear is what you get'), with no unpronounced elements. The debate on this question bears some resemblance to debates in the mid-20th century about the nature of abstractness and the phoneme: there are good reasons to prefer a parsimonious theory of any domain of data, but not at the expense of coverage of the facts. Some of the various strands of evidence that have been brought to bear in attempts to answer (10) are laid out in the next section and compared in detail in sections 3 and 4.

The second major question is what I will call the **identity** question:

(11)   What is the relationship between the understood material in ellipsis and its antecedent?

This question has generally been answered in terms of various kinds of posited identity relations: elided material (call it XP_E) must be identical or parallel to or resolvable by some antecedent phrase (YP_A), where the identity (or parallelism, or resolution) may be semantic or syntactic, or some mix of the two. The various approaches to the identity question are addressed in section 6.

Putting these first two questions schematically, then, we have the following:

1. Is there syntax internal to the ellipsis site?

2. The understood material is identical to some antecedent. Is the relevant kind of identity syntactic (defined over phrase markers or syntactic derivations of some sort) or semantic (defined over semantic representations or computations of some sort)?

Table 1 organizes a representative selection of the literature by the answers it proposes to these two questions; few if any of the works deal with all kinds of ellipsis: the table assigns them to the various categories based on the kinds of ellipsis they do discuss, though this should not impute to any of them necessarily a uniform theory of ellipsis (most deal only with VP-ellipsis in English). Further, the row labeled 'both' includes theories that are hybrid in various ways involving an admixture of syntactic and semantic requirements, sometimes uniformly, and sometimes varying by construction or context.

======INSERT TABLE 1 HERE=========

A third major question, which so far has not attracted quite the attention the above two questions have, is the **licensing** question:

(12)   What heads or positions or structures allow for 'ellipsis', and what are the locality conditions on the relation between these structures and ellipsis?

The licensing question was traditionally addressed by writing the structural description of a deletion transformation to be sensitive to whatever conditions the theorist thought relevant (for example, in Ross 1969, Sag 1976, and Hankamer 1979). It has been addressed in work that does not assume a transformation of deletion by Zagona 1982, Lobeck 1995, Johnson 2001, Merchant
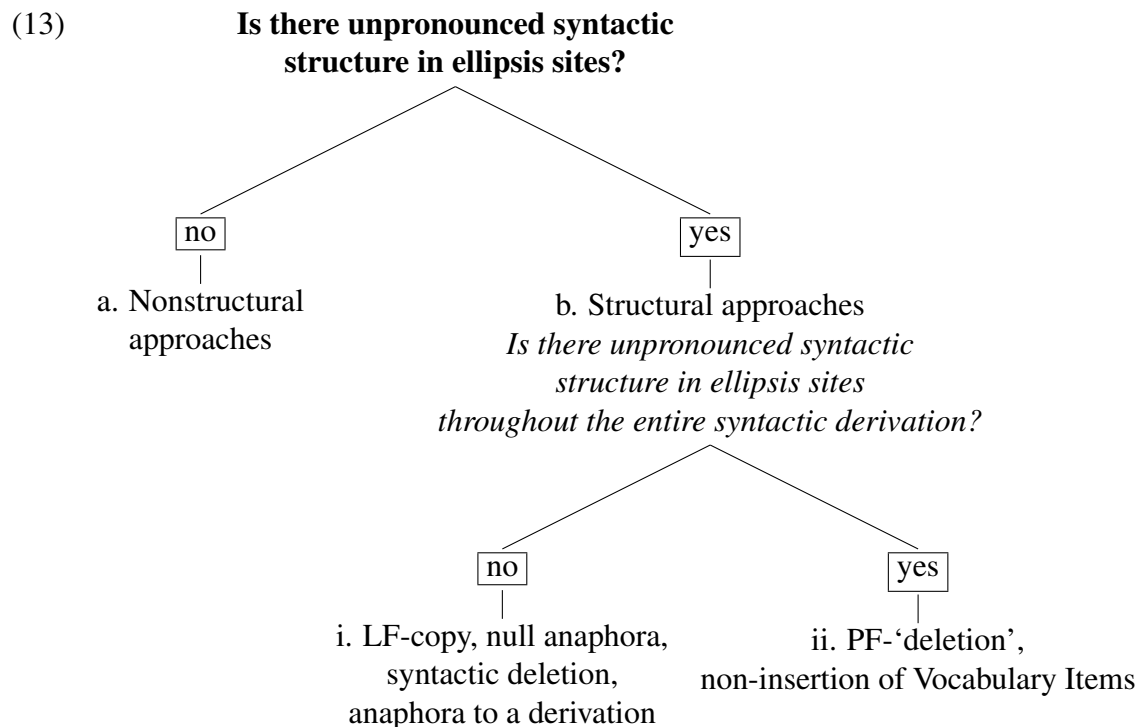
3

		Is there syntax in the ellipsis site?	
		Yes	No
Is identity syntactic or semantic?	Syntactic	Sag 1976, Williams 1977, Fiengo & May 1994, Chung et al. 1995, Fox 2000, etc.	N/A (incoherent)
	Semantic	Sag and Hankamer 1984, Merchant 2001, van Craenenbroeck 2010b, Aelbrecht 2010, etc.	Keenan 1971, Hardt 1993, Dalrymple et al. 1991, Ginzburg & Sag 2000, Culicover & Jackendoff 2005, etc.
	Both	Kehler 2002, Chung 2013, Merchant 2013d	N/A (incoherent)

Table 1: Some previous research on the two ellipsis questions

2001, Aelbrecht 2010, van Craenenbroeck 2010b,van Craenenbroeck and Lipták 2013, and Miller 2011; all but the last owe a great debt to Lobeck 1995, whose approach is based on a kind of Empty Category Principle applied to a null *pro*-like element.

2 Approaches to the syntax of ellipsis

The reasons for theoretical interest in elliptical structures is obvious: in each case, the usual form-meaning correspondence appears to break down—there is meaning in ellipsis without form. In broad terms, there have been two answers to the puzzle posed by ellipsis structures: the non-structural and the structural. The nonstructural approach responds by supplementing the theory of meanings, creating or exploiting devices that can generate meanings in the absence of syntactic structure. The structural approach places the burden on the syntax, and claims that the meanings are derived by (ideally all and only) the mechanisms at play in other contexts; it distinguishes itself from the nonstructural approach by positing structure which is not pronounced. Within structural approaches, two main lines of investigation can be distinguished: those that posit essentially ordinary syntax, subject to some kind of 'deletion' to render the syntax unpronounced, and those that posit a null lexical element which is replaced or identified at some level of representation not relevant to the pronunciation (at LF or in some semantic/pragmatic component). Schematically, these various tacks can be distinguished by their answers to the following questions (see also Winkler and Schwabe 2003 and Stainton 2006 for more detailed taxonomies):

(13)   **Is there unpronounced syntactic**
               structure in ellipsis sites?

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                    ┌──────────┴──────────┐
                  ┌────┐                ┌─────┐
                  │ no │                │ yes │
                  └────┘                └─────┘
```

a. Nonstructural   b. Structural approaches
   approaches   *Is there unpronounced syntactic*
                                  structure in ellipsis sites
                          throughout the entire syntactic derivation?

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                    ┌──────────┴──────────┐
                  ┌────┐                ┌─────┐
                  │ no │                │ yes │
                  └────┘                └─────┘
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i. LF-copy, null anaphora,   ii. PF-'deletion',
   syntactic deletion,   non-insertion of Vocabulary Items
  anaphora to a derivation

Recent advocates of nonstructural approaches to ellipsis include Ginzburg and Sag 2000 and Culicover and Jackendoff 2005. Concretely, they propose that e.g., a sluicing example like that in (4) contains no syntactic material corresponding to the usual clausal source for wh-phrases. Instead, the wh-phrase is the sole daughter of an S node which is the complement to *know*:

(14)   John can play something, but I don't know $[_S$ what $]$.

The S node in this account, which has the construction type *sluiced-interrogative-clause*, is endowed with featural machinery designed to account for the observed interpretation (among other things). Culicover and Jackendoff's approach is similar: for them, the S node is notated 'IL' (for indirect licensing) and the wh-phrase is an orphan; the semantics then is constructed with a free variable F whose value is constructed from the context via 'indirect licensing'.

(15)   Syntax: $[_S$ what$^{ORPH}]^{IL}$ Semantics: Q[F(what)]

Among structural approaches, those that do not implement deletion on the PF side of the derivation either posit null elements in the syntax or deletion of syntactic elements. On theories with null elements, either the null element is a single, designated terminal, as in Hardt 1993 and Lobeck 1995, or there are a plethora of null elements, as in Wasow 1972 and Ludlow 2005. These two options assign the structures in (16a,b) to examples like (4) as the representations that feed pronunciation.
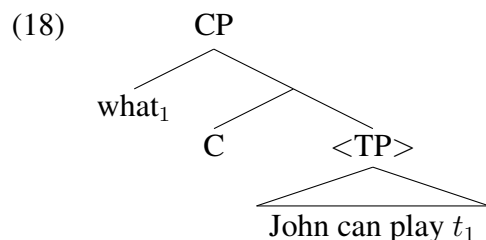
(16)   a. I don't know $[_{CP}$ what $[_{IP}$ e $]]$ (Spell-Out)
       b. I don't know $[_{CP}$ what$_4$ $[_{IP}$ e_1 e_2 e_3 $t_4]]$

The null elements are either replaced by an operation of structure copying before the structure is interpreted, yielding (17) (as in Wasow 1972, Shopen 1972, Williams 1977, Fiengo and May

1994, Chung et al. 1995, Lappin 1999, Fortin 2007), or are interpreted by nonsyntactic algorithms for anaphoric elements (as in Hardt 1993 and Merchant 2014).[4]

(17)   I don't know [$_{CP}$ what$_4$ [$_{IP}$ John can play t_4]] (LF/interpreted structure)

Finally, we find the traditional generative solution to ellipsis, in which syntactic structures are subject to nonpronunciation, either as the result of some operation of deletion (which operates either in the syntax before Spell-Out or after Spell-Out in the derivation to PF, as variously in Ross 1969, Sag 1976, Hankamer 1979, Lasnik 2001, Saab 2009, Baltin 2012, Kobele 2012, Merchant 2015b) or as a phonological reflex of prosodic algorithms (in the PF↝phonology mapping or in the phonology sensu stricto, as in Merchant 2001, Johnson 2004, van Craenenbroeck 2010b, Aelbrecht 2010, and others). Under such approaches, a sluiced clause appears as follows, where angled brackets enclose 'deleted' or, more neutrally, unpronounced material:

(18)

```
                CP
          ┌──────┴──────┐
       what₁            │
               ┌────────┴────────┐
               C            <TP>
                        ┌────┴────┐
                    John can play t₁
```

For the most part, the differences between the various implementations seem to be fairly minor, though important for certain architectural deliberations. These differences are taken up in more detail in section 5 below.

It is also important to note that several authors have proposed revisiting and maintaining the 'surface' vs. 'deep' anaphoric dichotomy of Hankamer and Sag 1976, allowing for the possibility that certain 'surface' anaphors (including relatives of VP-ellipsis and perhaps VP-ellipsis itself) may be due to deletion or replacement at PF alongside 'deep' anaphors (null or overt), such as those found in Null Complement Anaphora or exophoric fragments (see Sag and Hankamer 1984, Merchant 2010, Baltin 2012, Bentzen et al. 2013, Miller and Pullum 2013, Merchant 2013c, 2014).

2.1   Structural and nonstructural approaches compared

How does one decide whether some piece of syntactic structure is or isn't there, particularly when that structure in any case does not lead to any pronounced difference? Indirectly, by necessity. Detecting and arguing for such 'missing' structures is analogous to searching for and determining the properties of a black hole: one can tell it's there only by its effects on surrounding material. The logic of the hunt for elided structure is similar. If one finds effects that seem to be due to missing material, there is an argument that such structure exists. In other words, if effects are found which we would otherwise attribute to properties of structure X in similar, nonelliptical, cases, but structure X is, by hypothesis, internal to the ellipsis site, then X exists. If, on the other hand, expected properties are missing, one could conclude that structure X is absent.

Structural approaches are based on what I call connectivity effects; nonstructural approaches take their lead from nonconnectivity effects. Connectivity effects occur when some part of the

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[4]Kobele 2015 presents a system where the parser looks for memoized antecedents; the grammar, however, generates elided structures with an operation of deletion.

clause that contains the ellipsis shows 'connectivity' to some other, supposed, unpronounced part; nonconnectivity is when this does not occur, despite a prior expectation that it would. In what follows, the main lines of evidence for each approach are presented.

3   Evidence for structure in ellipsis

There are more than thirteen sets of facts which have been used to argue for unpronounced structure in ellipsis: lower origin effects, locality effects, P-stranding effects, case matching effects, agreement effects, the distribution of complementizers, of infinitivals, and of predicate answers, binding theoretic effects (Ott 2014, Ott and de Vries 2015), the presence of intermediate reconstruction effects in sluicing (Agüero-Bautista 2007), the facts of 'spading' (which shows evidence for an underlying cleft, as van Craenenbroeck 2010b argues), the licensing of parasitic gaps inside ellipses (Yoshida et al. 2015a), the existence of syntactic priming effects (Xiang et al. 2014), and others. In the remainder of this section, I briefly illustrate the facts from the first eight sets, and refer the reader to the literature just cited for the last five and others.

3.1   Lower origin effects

A variety of elements can be moved out of putative ellipsis sites. However such dependencies are analyzed, they involve an origin site (or tail to a chain, or an equivalent device) inside the ellipsis site. Such moved elements include A′ elements (interrogative phrases, relative pronouns, topicalized phrases, comparative operators, etc.), A-moved elements (subjects of passives, raising verbs, and unaccusatives), and head elements. Examples of the first are plentiful in sluicing, antecedent-contained deletions, and comparative ellipsis; examples of A-moved elements are equally easy to find (see Aelbrecht 2010). The following is an example of a topicalized phrase that is across-the-board extracted from an elided VP (from Wallace Stegner's 1987 novel *Crossing to Safety*):

(19)   But *De Amicitia* I could make a stab at, and could have at any time in the last thirty-four years.

For head movement, careful work on a series of constructions has shown that certain languages with verb movement also have verb phrase ellipsis, resulting in structures in which the verb is stranded outside the VP (verb-stranding verb phrase ellipsis), or more generally, X-stranding XP-ellipsis, as dubbed by Lipták and Saab 2014. Representative work includes Huang 1988, McCloskey 1991, Cyrino and Matos 2002, 2005, Goldberg 2005, Gribanova 2013a, 2013b, Lopes and Santos 2014, Thoms 2014, Bennett et al. 2015. The clearest kind of example comes from a language that lacks pro-drop, topic-drop, or other processes that license null arguments of finite verbs, yet still have verb movement; the best known such case is that of Irish (example from McCloskey 1991:273), which is VSO in finite clauses, with the verb moving to a position outside the verbal projection whose specifier hosts subjects:

(20)   Dúirt mé go   gceannóinn   é agus cheannaigh.
         said I   that buy.Condit.1s it and bought
         'I said that I would buy it and I did.'

As McCloskey shows, it is extraordinarily difficult to reconcile such examples with what is known of the grammar of Irish verbs and arguments without positing an ellipsis that targets a verbal projection whose head has been extracted to a position outside the ellipsis site.

3.2 Locality effects

The evidence from locality effects is distributed across a number of domains, but all of it has the same basic form: some kind of locality constraint (typically but not exclusively island constraints) are observed to hold of elements whose putative origin site is inside the understood missing material. If *any* of these island constraints are due to restrictions on syntactic (broadly speaking) representations, then their presence in elliptical structures argues that those representations must be present.

3.2.1 VP-ellipsis

The first set of locality effects come from VP-ellipsis, where relative operators, wh-phrases, topicalized phrases, parasitic gap operators, and comparative operators all show sensitivity to islands, even when the tail of the dependency is inside an ellipsis site. The examples below are culled from and discussed in Sag 1976, Haïk 1987, Postal 2001, Lasnik 2001, Fox and Lasnik 2003, Kennedy and Merchant 2000, and Merchant 2001, 2008.

(21) a. *I read every book you introduced me to a guy who did.

 b. *Abby wants to hire someone who speaks a Balkan language, but I don't remember which (Balkan language) Ben does. <want to hire someone who speaks *t* >

 c. *Abby knows five people who have dogs, but cats, she doesn't <know five people who have>.

 d. *Which film did you refuse to see because Roger was so revolted when he did after renting?[5]

3.2.2 Fragment answers

Similar effects are found in some fragment answers to implicit salient questions, as discussed in Morgan 1973, Merchant 2004, Arregi 2011, Temmerman 2013, Weir 2014, Griffiths and Lipták 2014, and Barros et al. 2015 (though section 4.1.2 below for complications).

(22) a. Will each candidate talk *about taxes*?

 b. No, *about foreign policy*.

 c. No, each candidate will talk *about foreign policy*.

(23) a. Did each candidate$_2$ agree on who will ask him$_2$ *about taxes* (at tonight's debate)?

 b. *No, *about foreign policy*.

 c. No, each candidate$_2$ agreed on who will ask him$_2$ *about foreign policy* (at tonight's debate).

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[5]As Postal 2001 discusses, it is important to have a parasitic gap in this example, as it forces the missing VP to host a wh-trace, yielding the observed island effect. Without the parasitic gap, this example would be acceptable, as an example of 'vehicle change' (see Fiengo and May 1994).

3.2.3 Stripping/Bare Argument Ellipsis

Examples of 'stripping', whose analysis appears to have much in common with that of fragment answers, show a locality effect between the correlate and the 'bare argument' (in Reinhart 1991's term; see Depiante 2001, Lechner 2001, Merchant 2009, Wurmbrand 2013, Yoshida et al. 2015b).

(24)   a. The man stole *the car* after midnight, but not *the diamonds*.

       b. *They caught the man who'd stolen *the car* after searching for him, but not *the diamonds*.

3.2.4 Gapping

Gapping, which is probably just a version of stripping with more than one remnant, unsurprisingly behaves like stripping in this regard as well (Johnson 1996, Johnson 2009, Coppock 2001, Winkler 2005, Toosarvandani 2013):

(25)   *Some wanted to hire the woman who worked on Greek, and others Albanian.

(26)   *She* discussed my question which *letters* we wrote and *he* which *books*. (Winkler 2005:61 (22b))

3.2.5 Contrast sluicing

Finally, note that even when a sluiced wh-phrase has an explicit correlate, we still find locality effects when the relation between the correlate and the wh-phrase is one of contrast, as originally noted in Merchant 2008:148: "Sluicing with indefinite correlates repairs islands, but Sluicing with focused correlates does not."

(27)   She knows a guy who has *five dogs*, but I don't know how many *cats*.

       a. = <he [=the guy who has the five dogs] has *t*>

       b. $\neq$ <she knows a guy who has *t*]>

   See also Merchant 2001, Vicente 2008, Griffiths and Lipták 2014, and Barros et al. 2015 (and note that accounting for the full range of facts requires something like MaxElide, as Merchant 2008:152 and Fox and Lasnik 2003:153 fn 10 point out, *pace* Messick and Thoms 2016).

3.3 The P-stranding generalization

The third major strand of evidence for structure internal to ellipsis sites comes from the distribution of preposition-stranding under wh-movement out of putative ellipsis sites cross-linguistically. Both under sluicing and in fragment answers, there is a strong (if not always perfect, apparently not random or accidental) correlation between languages that allow P-stranding in non-elliptical contexts and in sluicing/fragment answers. If what regulates P-stranding cross-linguistically is some kind of morphosyntactic condition, and not due to differing semantics across languages (an assumption I know of no serious challenge to; see Abels 2003 for insightful discussion), then the fact that this correlation holds in seemingly elliptical contexts is quite telling.

Sluicing data from representative languages is given here, reproduced from Merchant 2001; (28) represents P-stranding languages (as seen in the (b) controls), while (29) illustrates non-P-stranding languages.

(28) **English**

    a. Peter was talking with someone, but I don't know (with) who(m).

    b. Who was he talking with?

(29) **Greek**

    a. I   Anna milise me   kapjon,   alla dhe ksero   *(me) pjon.
       the Anna talked with someone but not I.know   with who

    b.   * Pjon milise   me?
         who talked.3s with

This parallelism is expected on structural approaches, since the grammatical constraints that govern preposition-stranding will be operative in these (elliptical) structures as well.

The parallelism, however, is far from perfect, and numerous empirical caveats to this generalization have been raised in the recent literature: see section 4.3 below.

3.4   Case matching

As first pointed out in Ross 1969, case matching effects found in sluicing (and fragment answers, Merchant 2004, and contrastive left-dislocation, Ott 2014) are straightforwardly accounted for if the relevant case assigners are syntactically present, though unpronounced. Ross's particular example comes from German, where *schmeicheln* 'flatter' assigns dative, while *loben* 'praise' assigns accusative:

(30) **German**

    a. Er will jemandem   schmeicheln, aber sie wissen nicht, { *wer   / *wen   /
       he wants someone.DAT flatter   but they know not   who.NOM who.ACC
       wem   }.
       who.DAT
       'He wants to flatter someone, but they don't know who.'

    b. Er will jemanden   loben, aber sie wissen nicht, { *wer   / wen   /
       he wants someone.ACC praise but they know not   who.NOM who.ACC
       *wem}.
       who.DAT
       'He wants to praise someone, but they don't know who.'

See Barros 2014 for fuller discussion of case matching that appears to hold even in certain cases where we would expect a cleft or other non-isomorphic source.

3.5   Complementizer deletion

If fragment answers involve ellipsis (Morgan 1973) preceded by movement of the fragment out of an elided clause (Merchant 2004, Merchant et al. 2013; see also Thoms 2016), then the following

pattern is accounted for, given that displaced complementizer phrases require overt complementizers. (The well-formed response variant that lacks that initial complementizer in (32) is not elliptical: it is an indirect answer, not a direct answer; see Merchant et al. 2013 for discussion of this difference.)

(31) What does no-one believe?
      #(That) I'm taller than I really am.
      a. No-one believes (that) I'm taller than I really am.
      b. *(That) I'm taller than I really am, no-one believes.

(32) What are you ashamed of?
      (That) I ignored you.
      a. *I'm ashamed of that I ignored you.
      b. That I ignored you, I'm ashamed of.

3.6 Infinitivals: Raising vs. control

A similar distinction is found in the distribution of short answers using infinitival clauses: only control infinitivals can be clefted, and only control infinitivals can serve as fragment answers (Merchant 2004).

(33) a. *It's [to get asylum in Europe] that the refugees tend.
      b. Q: What do the refugees tend to do?
         A: *To get asylum in Europe.

(34) a. It's [to get asylum in Europe] that the refugees want.
      b. Q: What do the refugees want to do?
         A: To get asylum in Europe.

This is expected if the control CP can be fronted, but the raising TP cannot be; see Landau 2013.

3.7 Predicate answers

Finally, predicate answers show a distribution which is somewhat puzzling if the connection between question and answer is mediated solely be some semantic/pragmatic relation, and not by syntactic structure (Hankamer 1979, Merchant 2004).

(35) a. A: What did he do for his sister?
         B: Funded *(her).
      b. *He did funded her for his sister.

As Hankamer 1979 pointed out using slightly different terms, the minimal fragment answer to a question whose semantics demand only an element of type *<e,et>*, for example, cannot be answered with a simple verb (of type *<e,et>*). Instead, the minimal fragment must be a VP (of type *<et>*), despite therefore necessarily including redundant, given information (in the form of the pronoun). This pattern is expected if the short answer involves movement of a phrase to a

clause-peripheral position: since English lacks long head movement (and also remnant topicalization of VPs, as Müller 1998 discusses), only the entire VP will be available to form the answer. On nonstructural approaches that base-generate words subject only to semantic or pragmatic answerhood conditions, this restriction is mysterious. Equally mysterious for theories that impose category matching between the wh-phrase and the answer (such as Jacobson 2016) is well-formedness of a tensed VP *funded her* where such a VP is ill-formed as the complement of a tensed *do*, shown in (35b). Overall, these facts point to the conclusion that constraints on form—mediated by structure—are active in elliptical constructions.

3.8 Agreement triggers

Targets of agreement can be controlled by elements internal to putative ellipsis sites: this is well documented for predicate ellipses and certain kinds of nominal ellipsis (see Saab 2009, Merchant 2013a, 2014, Saab and Lipták To appear) and can be seen also in the following set of data. Subject-verb agreement in English for number does not always track notional or semantic number: pluralia tantum such as *nuptials* trigger plural agreement on the verb, unlike its singular synonym *wedding*:

(36) a. Beth's wedding was in Bond Chapel, and Rachel's wedding was in Rockefeller Chapel.
      b. Beth's nuptials were in Bond Chapel, and Rachel's nuptials were in Rockefeller Chapel.

   Nominal ellipsis preserves the syntactic properties of agreement:

(37) a. Beth's wedding was in Bond Chapel, and Rachel's was in Rockefeller Chapel.
      b. Beth's nuptials were in Bond Chapel, and Rachel's were in Rockefeller Chapel.

(38) a. *Beth's wedding was in Bond Chapel, and Rachel's were in Rockefeller Chapel.
      b. *Beth's nuptials were in Bond Chapel, and Rachel's was in Rockefeller Chapel.

Agreement thus appears to be sensitive to unpronounced structure: the grammatical plural feature on the antecedent of the ellipsis, *nuptials*, must be encoded locally in the NP subject to ensure plural agreement.

As Culicover and Jackendoff (2005:11 fn 8) put it, the presence of these kinds of connectivity effects would represent "impressive evidence of the reality of the invisible structure" (while reporting that they don't find consistent island effects in cases like (23b), they don't consider the remaining facts).

The conclusion pointed to by the above kinds of data would seem to be that there is (regular, but unpronounced) syntactic structure inside ellipsis sites.

4   Evidence against structure in ellipsis

Some kinds of data, however, seem to point to the opposite conclusion: that there is no structure inside ellipsis sites (at least no structure that has the properties of its putative nonelliptical counterpart).

4.1 Absence of locality effects

The strongest piece of evidence in favor of the nonstructural approaches comes from the lack of island effects in certain ellipsis contexts, such as in many sluicing structures, in certain fragment answers, possibly in certain gapping examples, and in certain kinds of comparative ellipsis.

4.1.1 Sluicing

As Ross 1969 famously first observed, the putative wh-extraction out of ellipsis sites in sluicing appears insensitive to islands:

(39) They want to hire someone who speaks a Balkan language, but I don't remember which.

(40) Every linguist$_1$ argued with a philosopher who took issue with one of his$_1$ claims, but I can't remember which one of his$_1$ claims. (adapted from Lasnik 2001)

Though this observation holds in the first instance for cases in which the wh-phrase corresponds to an overt indefinite, Culicover and Jackendoff 2005:258 fn 17 produce one example with a merely implicit correlate which they judge acceptable (example modeled on one from Chung et al. 1995, where the opposite judgment is reported):

(41) Bob found a plumber who fixed the sink, but I'm not sure with what.

Since this relative clause is veridical, this is not a counterexample; such sluices are discussed in chapter 5 of Merchant 2001, where they are given a non-island source, with an E-type pronominal subject, equivalent here to *...but I'm not sure with what he [=that plumber Bob found] fixed the sink*. See AnderBois 2014 for additional discussion of the properties of such sluices, and Griffiths and Lipták 2014 for a comprehensive attempt to distinguish apparent island-sensitive from non-island-sensitive sluices, following Merchant 2008, as well as Barros et al. 2015.

4.1.2 Fragment answers

Similar observations have been made for certain fragment answers (in Culicover and Jackendoff 2005:244ff., Stainton 2006).

(42) Is Sviatoslav pro-communist or anti-communist these days?
      —Pro. [*Pro, Sviatoslav is [*t*-communist these days.]

(43) A: John met a woman who speaks French.
      B: And Bengali? [*And Bengali, did John meet a woman who speaks French t?]

Interpreting these data requires some care, however. First, sometimes bound prefixes can appear without their hosts, as in (44). Second, the interpretation of the fragment in (43)B is that in (45a-c) (readings which the presumably nonelliptical (45d,e) can have as well, in this context), and does not appear to have the expected 'island-violating' reading given in rough paraphrase by (45f). While this set of facts is expected on the structural approach, it is not clear how the nonstructural approach rules out the interpretation in (45f) for (43)B.

(44) Sviatslav is pro-communist and Derzhinsky is anti-.

(45) a. = Did John meet a woman who speaks French and Bengali?
      b. = Does she speak French and Bengali?
      c. = And does she speak Bengali (too)?
      d. = And what about Bengali?
      e. = And how about Bengali?
      f. ≠ And did John also meet a different woman who speaks Bengali (in addition to meeting the woman who speaks French)?

Casielles 2006 and Stainton 2006 also adduce fragment answer examples out of islands that seem quite acceptable.

It is also true, as Progovac et al. 2006b point out, that without a comprehensive theory of islands it may be difficult to properly assess the importance of island sensitivities (they suggest, following others, that perhaps some islands are semantic or pragmatic in nature, not syntactic); much more work is needed to ascertain the full empirical lay of the land in this domain as well. See Merchant et al. 2013 for some experimental investigation of fragments.

4.1.3 Gapping

Culicover and Jackendoff 2005:273 also adduce one example, in (46), for which they claim acceptability; to their example I add the attested examples in (47).

(46) **Robin** knows a lot of reasons why **dogs** are good pets, and **Leslie**, **cats**.

(47) a. He spoke in the kind of tone a lawyer might use to address a jury, or a serious professor of history his students. (Tom McCarthy, *Remainder*, Vintage: New York, 2005, p.236.)
      b. If this narrative were a quotidian account of the history of Russia, this chapter would be a proletarian's account of the Great October Soviet Socialist Revolution of 1917, if a history of France, the beheading of Marie Antoinette, if a chronicle of America, the assassination of Abraham Lincoln by John Wilkes Booth. (Marisha Pessl, *Special topics in calamity physics*, Vintage: New York, 2006, p. 311.)
      c. No, this was the torturous, clammy kind, when one's pillow slowly takes on the properties of a block of wood and one's sheets, the air of the Everglades. (*op.cit.*, p. 347.)

4.1.4 Ellipsis in comparatives

Kennedy and Merchant 2000 argue that examples like (48a) involve a degree phrase extracting from a left branch (here, attributive) position within a noun phrase, structurally parallel to (48b).

(48) a. Brio wrote a more interesting novel than Pico did.
      b. *How interesting did Pico write a _ novel?

Nonstructural approaches have a ready explanation for this state of affairs, if one assumes that island effects come about only in movement structures. By parity of reasoning, one could have a structural account which eschews movement in these particular structures, as Lobeck 1995 and Chung et al. 1995 pursue, which derives the same effect. These structures are difficult only for 'deletion' approaches that fall under (13b.ii) and those null structure accounts like Wasow's and Williams's that posit regular null structures as well.

4.2 Case mismatches

Certain short NP answers display an unexpected case, given a simple equivalence between elliptical and non-elliptical structures. English subject questions can be answered with fragments in the accusative, where such pronouns would be ill-formed in non-elliptical sentences:

(49) A: Who wants a slice of pizza?
      B: Me! (*Me want(s) a slice a pizza).

Such mismatches are discussed in Morgan 1973, Barton 1990, 2006, and Progovac et al. 2006a. Note that while such mismatches are not found as robustly in sluicing, as Barros 2014 in particular discusses, there do seem to be a handful of problematic cases (see the list in Vicente 2015).

4.3 Exceptions to the P-stranding generalization

Although the P-stranding generalization seemed to hold across a substantial set of data, Merchant 2001 did note some apparent exceptions, such as that in (50) from Italian, remarking that "[i]n some cases and in some languages, it seems that speakers are willing to accept a bare wh-phrase in place of the PP, though I have not yet determined with sufficient clarity under what conditions this is possible, or whether or not this is a systematic property of a class of prepositions or languages" (Merchant 2001:100).

(50) a. Pietro ha parlato con qualcuno, ma non so   ?(con) chi.
          Pietro has spoken with someone but not I.know   with who
          'Pietro has spoken with someone, but I don't know (with) who.'
      b. *Chi ha parlato Pietro con?
           who has spoken Pietro with
          'Who has Pietro spoken with?'

This sub-area has been explored in more detail in recent years, with investigations of data in Serbo-Croatian by Stjepanović 2008, 2012, Brazilian Portuguese by Almeida and Yoshida 2007, a variety of Romance languages by Rodrigues et al. 2009 and Vicente 2008, Indonesian by Fortin 2007, Polish and others by Szczegelniak 2005 and Nykiel and Sag 2008, and in several languages by van Craenenbroeck 2010a, Barros 2014, and Barros et al. 2015. While Nykiel and Sag 2008 take such nonconnectivity effects as in (50) to be straightforward support for a nonstructural approach to ellipsis, most of these authors attempt to find some pattern in the putative counterexamples such that these examples are subject to a different analysis (and thus not undermining the structural account).

Stjepanović 2008, 2012, Rodrigues et al. 2009, Vicente 2008, and van Craenenbroeck 2010a, for example, variously point out that there are environments (even in languages like Spanish that otherwise seem to allow P-less wh-phrases in 'regular' sluices) which strictly enforce the P-stranding ban—that is, where the preposition becomes obligatory, as expected on a structural account. These environments include the remnants in gapping and pseudogapping, the counterweight to pseudocleft clauses, fronted CPs, and in sluices with *else*-modification (only the latter illustrated here):

(51)   Juan ha   hablado con   una chica rubia,   pero no   sé   *(con) qué   chica más.
          Juan has spoken   with a   girl   blonde but   not I.know   with what girl   other
          'Juan talked to a blonde girl, but I don't know (with) what other (kind of) girl.'

As these authors point out, it is exactly in these contexts that a copular source for the elided clause, what we may call *pseudosluicing*,[6] is unavailable, as seen in (52a); for this reason they suggest (in agreement with Szczegelniak 2005 for Polish) that the P-less 'sluices' in fact derive from a copular or reduced cleft-like source, as in (52b) (where material in angled brackets is elided):

(52)   a.   * Juan ha   hablado con   una chica rubia,   pero no   sé   qué   chica más   es *pro*.
                Juan has spoken   with a   girl   blonde but   not I.know what girl   other is   it
                (lit. 'Juan talked to a blonde girl, but I don't know what other (kind of) girl it was.')

             b.   Juan ha   hablado con   una chica rubia,   pero no   sé   cual   < es *pro* >.
                Juan has spoken   with a   girl   blonde but   not I.know which   is it
                'Juan talked to a blonde girl, but I don't know which one.'

Positing cleft and copular sources for fragments and sluices has been successful in accounting for other restrictions as well, such as those found with nonintersective adjectives (from Barros 2014:31 and Ueno 2015:119, respectively):

(53)   #She married a heavy drinker, but I don't know how heavy. (cf. #How heavy was he/the drinker?)

(54)   He gave me a tall order. #How tall? (cf. #How tall was it?)

One kind of apparent exception to the P-stranding generalization is problematic in particular for the system of Jacobson 2016, in which matching is enforced between the category of the correlate and that of the remnant. But in pairs like (55), the wh-phrase is an simple NP, while the fragment answer is a PP; crucially, the preposition *at* here is semantically vacuous.

(55)   Q: Which kids was Abby most angry at?
          A: At the ones who keep stealing her mail.

As I wrote in Merchant 2016, "while a movement-based deletion theory of ellipsis can make use of the usual mechanisms for handling the syntax/semantics mismatches that go under the rubric of reconstruction (here, the preposition *at* in the answer reconstructs), theories like that of Jacobson 2016 ... predict that such pairs will be ill-formed."

In sum, the data from preposition stranding under sluicing (and fragment answers and elsewhere) is quite complex, and has become the subject of a rich vein of work. Whether or not the data uniformly support a structural analysis, clearly it forms an important area of debate. For analysts who pursue nonstructural approaches, mismatches (or nonconnectivity) are very welcome, since such mismatches would indicate that the constraints on preposition stranding in nonelliptical

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[6]The term *pseudosluicing*, as originally used in Merchant 1998 and van Craenenbroeck 2010b:79-81, covered complex copular sources that included a cleft or cleft-like clause like *it is X that ...*, with independent null subjects and copulas, but we can extend the term to cover ellipsis of simple copular clauses that lack the relative-clause-like part as well, such as simple *it is X*, irrespective of whether null variants of *it* and *be* are available in the language.

dependency structures are independent of the constraints on the presence of prepositions in ellipsis. But one last point remains to made be in this respect, one which has not been made in the literature on these questions to my knowledge: if the conditions on P-stranding under nonelliptical wh-movement and those on prepositions in elliptical environments are in fact independent, what prevents us from expecting to find a language like the one below, call it 'reverse-English'?

(56) A possible language if the claim that P-stranding wh-movement is independent from P-less wh-phrases in sluicing were true:
    a. Who did she talk to? *To whom did she talk?
    b. She talked to someone, but I don't know { *who | to whom}.

'Reverse-English' would be like child spoken English (and many adult varieties, too) in requiring P-stranding in nonelliptical questions, but like some strict version of German in requiring the presence of the P in sluices in which the correlate of the wh-phrase is governed by a P. If these constraints are truly independent, such a language should strike us as just as natural as the Spanish that allows P-less sluiced wh-phrases. Since the nonstructural analyses make no reference to the conditions on wh-displacement, writing constraints that impose such a requirement should be simple.

In total, this kind of evidence seems to favor structural approaches to some kinds of ellipsis. If these approaches are correct, we must search elsewhere for an explanation of the sometime lack of island effects (see Merchant 2008, Abels 2009, Temmerman 2013, Bošković 2014, Griffiths and Lipták 2014, Barros et al. 2015 for some recent approaches), and other non-connectivity effects that are sometimes adduced (such as the so-called 'vehicle change' effects of Fiengo and May 1994, Merchant 2013b). Several proposals have been advanced to account for these effects, which have been discussed extensively in the recent literature; with respect to deciding whether or not structure must be posited internal to the ellipsis site, it seems clear that it is completely unimportant which particular proposal for island and other repair effects is correct. While one can imagine many possible ways to account for repair effects, or the absence of expected grammatical sensitivities (one influential strand of thinking ties them all to properties of the syntax-phonology interface systems), it is essentially impossible to imagine an account of island effects and P-stranding that would make their presence in the elliptical structures seen here accidental or orthogonal to their presence in non-elliptical structures. At present, I see little prospect for building such a theory that would not essentially have to reimport the constraints needed for non-elliptical structure.

5   Null anaphora and 'deletion'

Within structural approaches, two tacks can be discerned: the null anaphora approach and 'deletion'. The latter ranges from the traditional formulation of a deletion transformation (as in Ross 1969 and Hankamer 1979 among many others) to more recent proposals with implementational details more consistent with recent views of syntax and morphology. On all these approaches, the syntax of an ellipsis site is in general just the same as the syntax of its nonelliptical counterpart, but subject to some kind of operation or constraint which results in no pronounced material.
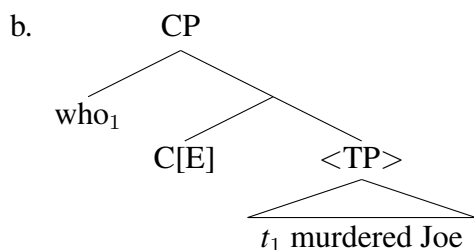
In modern incarnations, the difference between an elliptical and nonelliptical XP, for example, is often cast solely in terms of the presence or absence of a feature in the structure which signals to

the phonology that the phonological value of the XP is null (Merchant 2001, van Craenenbroeck and Lipták 2006, Vicente 2006, Ha 2008, Toosarvandani 2008, 2009, Aelbrecht 2009, Corver and van Koppen 2010, 2011, van Craenenbroeck 2010b), or that Vocabulary Insertion does not take place at the level of where the morphological structure is computed (Saab 2009, Saab and Zdrojewski 2012, Temmerman 2012, Merchant 2015a). Such a feature—call it the E-feature for 'ellipsis-feature'—should, ideally, be the sole repository of all information about the ellipsis. That is, it should have a syntax, a semantics, and a phonology. The syntax of this feature should serve to delimit what heads or other structures can host it (the 'licensing' question), the semantics could be used to impose an identity condition (see section 6 below: the E-feature is an anaphoric device that introduces a pointer that is resolved by re-using a derivation or its output, or triggering a search for an already constructed derivation or structure—e.g., anaphora to a meaning), and the phonology would be a trigger for a rule or constraint syncopating the phrase's phonological value (or triggering non-Insertion on all dominated terminal nodes). There are several ways to imagine implementing such a feature, and different versions are pursued by different authors. The main advantage to such accounts is that nothing more need be said about the syntax, and all connectivity effects follow straightforwardly. For example, the origin site of the displaced wh-phrase in a sluicing example like (57) is inside the unpronounced sentential node: no additional, sluicing-specific mechanism need be employed to base-generate the phrase in specCP, nor to account for its selectional properties (the fact that *angry* idiosyncratically selects a PP headed by *at*):
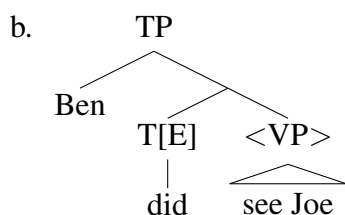
(57)   Amy seemed angry, but we didn't know $[_{PP}$ at who $]_1$ <she seemed angry t_1>.

The [E] feature can be added to the feature matrix of the 'licensing' head (certain Cs for sluicing, certain Ts for VP-ellipsis, etc.), as in the following structures, or more complex relations between E and the elided material can be entertained (as in van Craenenbroeck and Lipták 2006 and Aelbrecht 2010).

(58)   a.   Someone murdered Joe, but we don't know who.
       b.

             CP
            /   \
        who$_1$
               /   \
           C[E]   <TP>
                     /   \
                  t_1 murdered Joe

(59)   a.   Abby didn't see Joe, but Ben did.
       b.

             TP
            /   \
         Ben
              /   \
          T[E]   <VP>
           | /   \
          did   see Joe

The alternative is to insert an empty place-holder node in the structure, which acts like a null anaphor and which must be replaced at LF by full structure (on LF-copy approaches like Chung et al. 1995) or otherwise filled in or interpreted. One advantage of this family of approaches is that

it assimilates the local licensing conditions on null VPs, TPs, and NPs as they appear in elliptical constructions to the more general licensing conditions on null elements; Lobeck 1995 pursues this line, as does Johnson 2001 with a different emphasis. But this advantage may be entirely illusory, since the equivalent deletion approach using a feature can capture these restrictions with arguably the same level of sophistication: we simply place the same conditions on appearance on E that we did on *pro*. That is, we can call E an anaphoric element subject to the same licensing and discourse constraints on appearance that adhere to *pro* on theories that employ *pro*. It is no more or less explanatory to claim that *pro* is subject to the Binding Theory by virtue of a featural specification [+pronominal, −anaphoric] than it is to say that E is subject to the same constraints by specifying it as [+pron.,−ana.]: this is just to claim that E is a discourse-anaphoric element with local syntactic requirements on its appearance. Lobeck's attempt to reduce the distribution of elliptical *e* entirely to that of *pro* failed: that analysis forced to supplement the conditions on *pro* with an extra codicil specifying that *e* must appear in a context of 'strong agreement', but the definition of strong agreement does not track anything independent: English *each* but not *every* must be a 'strong agreer.' In the end, the 'strong agreers' were all and only the heads that licensed ellipsis: obviously, this approach has nothing to recommend it over an equivalent listing of the heads that E can appear on (and the latter approach at least places inter- and intra-linguistic variation in the class of head licensers in the most plausible domain: that of the lexicon).

6   The identity conditions on ellipsis

The second major question arising in ellipsis concerns the identification of the elliptical material. That is, how does one calculate what the 'missing' material means? Clearly ellipsis is anaphoric, broadly speaking, and depends on its context to get its meaning: an ellipsis site apparently has no intrinsic lexical content at all. Theories that derive the attested meanings for ellipses do so on the basis of identity of the ellipsis to some antecedent, or of 'parallelism' or 'resolution' of the ellipsis, terms that are partially overlapping but generally equivalent for our purposes here. It is generally assumed that ellipsis requires an antecedent (perhaps only implicit or inferred, in the case of exophoric ellipses), on the basis of which the meaning is derived. But what kind of antecedent does ellipsis need? And what is the relation that must hold between an ellipsis and its antecedent?

There are broadly three kinds of answers to these questions: ones that posit that the relation between the ellipsis and its antecedent involves a kind of identity of (or anaphora to) meaning, ones that posit a kind of identity of structure, and ones that use a bit of both. This terminology is meant to be neutral between theories that take the relation between an ellipsis site and its antecedent to be one of anaphoric 'resolution', recoverability, 'parallelism,' or identity: for most purposes, these terms are picking out the same relation. Clearly what is not at stake is anything like surface identity, given examples like the following:

(60)   a. Jake ate the sandwich even though his friend told him not to.

   b. Jake ate the sandwich even though his friend told him not to eat the sandwich.

(61)   "In the meantime, enjoy the ride."
   "I am." (John Updike, *Terrorist*, Ballantine: New York, 2006, p. 186.)

(62)   A: Pires   tin tsanda   mazi su? [Greek]
       took.2s the bag.ACC with you

'Did you take the bag with you?'
B: Yes, I did.

Since the bare form of the verb following *to* in (60b) is not surface identical to the past form of the verb in the antecedent VP, any identity relation that elided such a verb phrase in (60a) based on morphological or phonological identity with its antecedent would be clearly wrong. Likewise for the imperative and the progressive participle, as the pair in (61) shows. Finally, this point can be seen in an even more striking way when we consider ellipsis licensed across speakers using different languages, as in (62), which reports a conversation between two bilingual speakers of English and Greek; we must assume that the English ellipsis in B's response in (62) is sensitive not to the overt form of the antecedent in Greek, but rather to more abstract properties not immediately obvious in the 'surface' form of the Greek (see Merchant 2015b).

6.1   Semantic identity and information structure

Although the vast majority of the generative research on ellipsis in the years from 1965 to the mid 1990s (e.g. Chomsky 1965, Ross 1969, Sag 1976, Hankamer and Sag 1976, Williams 1977, Hankamer 1979, Chao 1987, Rooth 1992, Lappin 1992, Fiengo and May 1994, Chung et al. 1995, Lappin 1996, and many others) worked with the assumption that the identity relation was to be stated over phrase markers (whether D-structure, deep structure, LF, or something else—often, it should be noted, *faute de mieux*), since the early 1990s ever more proposals have been made that state the identity relation over semantic representations or which take the resolution of ellipsis to be essentially semantic (Dalrymple et al. 1991, Jacobson 1992, Hardt 1993, 1999, Gardent et al. 1998, Kempson et al. 1999, Asher et al. 2001, Ginzburg and Sag 2000, Merchant 2001, Hendriks 2004, Hendriks and Spenader 2005, van Craenenbroeck 2010b, Yoshida 2010, and many others; perhaps the earliest analysis in this vein is Keenan 1971, with Sag and Hankamer 1984 an important precursor as well).

Sometimes the proponents of semantic approaches base their choice on the ability of these approaches to more directly deal with scopal interactions in ellipsis, and the distribution of strict and sloppy readings of pronouns (Dalrymple et al. 1991 is one such example). But such interactions are not necessarily a direct argument for a semantic identity relation, despite first appearances. First, these effects have been dealt with in syntactic identity approaches as well, sometimes with greater empirical success (see Fox 2000, for example). Second, taking such phenomena as arguing for or against *any* version of an identity condition *on ellipsis* is misguided. Tancredi 1992 showed conclusively that the problem of delimiting a number of phenomena traditionally thought to belong solely to the domain of ellipsis in fact formed merely a subpart of the problem of structuring discourse coherently, in particular with respect to focus and deaccenting. Thus traditional concerns of strict vs. sloppy identity, Tancredi showed, could not be addressed merely by looking at elliptical structures, but had to be approached from deaccented structures (similarly for scopal parallelism effects, the Dahl (many pronouns) puzzles, and the many clauses puzzles; see Fiengo and May 1994). Tancredi's great contribution, and one whose impact is sadly often underestimated, was to show that theories of ellipsis *per se* did not have to deal with these phenomena at all, and that any theory of say, the distribution of strict/sloppy readings that made reference to ellipsis was mistaken.[7]

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[7]And note that a semantic identity theory need not accept the claim that there is no unpronounced syntactic struc-

Instead, the best arguments for semantic identity theories come from a large set of mismatches between the syntactic structure of the antecedent and that of the purported elided phrase. Some of these were the focus of Dalrymple 1991 and were enumerated at greater length in Fiengo and May 1994, who dubbed them 'vehicle change' effects. Although Fiengo and May 1994 use the term 'vehicle change' for about a dozen phenomena, I will illustrate only two here: pronoun/name equivalences, and polarity item/nonpolarity item equivalences. Important additional recent mismatch discoveries include Malagasy voice mismatches (Potsdam 2007), spading (van Craenenbroeck 2010b) and various pseudosluice phenomena (Barros 2014), category switches (Fu et al. 2001, Johnson 2001, Merchant 2013b), sprouted implicit arguments and adjuncts (Chung et al. 1995, 2010, Merchant 2001, AnderBois 2014), missing expressives (Potts et al. 2009), as well as the other phenomena discussed in chapter 1 of Merchant 2001 involving finiteness mismatches, word order, clitics, and other issues.

Pronoun/name 'vehicle change' is illustrated by the following data (I illustrate only with names, though the problem is fully general and extends to all R-expressions); although sluicing and VP-ellipsis are licit in (63), the indicated coreference between the pronoun and c-commanded name in the presumptive nonelliptical equivalents in (64) is ruled out.

(63) a. They arrested Alex$_3$, though he$_3$ didn't know why.

     b. They arrested Alex$_3$, though he$_3$ thought they wouldn't.

(64) a. *He$_3$ didn't know why they arrested Alex$_3$.

     b. *He$_3$ thought they wouldn't arrest Alex$_3$.

A similar mismatch between grammatical ellipses and their ungrammatical putative nonelliptical counterparts is found with polarity items, as noted in Sag 1976:157f. (and discussed in Merchant 2013b):

(65) John didn't see anyone, but Mary did.

     a. ... but Mary did see someone.

     b. ... *but Mary did see anyone.

     c. $\exists x.see(Mary, x)$

(66) John saw someone, but Mary didn't.

     a. $\neq$ ... but Mary didn't see someone.

     b. ... but Mary didn't see anyone.

     c. $\neg\exists x.see(Mary, x)$

While the semantics of names and pronouns on the one hand, and polarity and nonpolarity indefinites on the other, can reasonably be construed as equivalent (under a single assignment function g, if $[\![he_3]\!]^g$ = Alex, then any proposition containing he_3 evaluated with respect to g will have the same truth conditions as that proposition where $Alex$ replaces he_3; likewise for the basic semantic contributions of polarity items), but it is difficult to see how he and $Alex$ could be syntactically equivalent.

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ture: it's perfectly consistent to claim that while ellipsis sites have syntactic structures, the fact that they are unpronounced is due to a semantic/pragmatic requirement being satisfied. The structure question and the identity question are partially independent; see Table 1.

6.2 Syntactic identity

Despite the success of semantic theories of elliptical identity, there are several sets of data that seem to require some syntactic identity. The first set of evidence I will mention here comes from the uneven distribution of voice mismatch effects in 'big' vs. 'small' ellipses, and the second from certain morphological facts; see also Chung 2013 for an important set of facts from English and Chamorro sprouting.

6.2.1 Voice mismatch under ellipsis

In 'big'/high ellipses—viz., sluicing, fragment answers, gapping, and stripping— elided material and antecedent phrase must match in voice: if the antecedent clause is in the passive, then the elided clause must also be in the passive, and likewise for the active, *mutatis mutandis*. This is illustrated for sluicing below (see Merchant 2013d for the other ellipsis types and data from additional languages).

(67) Sluicing

    a. *passive antecedent, active ellipsis:*
       ∗Joe was murdered, but we don't know who <murdered Joe>.

    b. *active antecedent, passive ellipsis:*
       ∗Someone murdered Joe, but we don't know who by <Joe was murdered>.

In contrast to big ellipses like sluicing, 'low' or little ellipses allow voice mismatches: the relevant ellipsis type is VP-ellipsis in English (see Merchant 2008 for discussion of pseudogapping, which I omit here). The first, attested example is from Hardt 1993; for further examples and discussion see Sag 1976, Dalrymple et al. 1991, Fiengo and May 1994, Johnson 2001, Kehler 2002, Frazier 2008, Arregui et al. 2006, Kim et al. 2011, San Pietro et al. 2012, and Merchant 2013d.

(68) VP-ellipsis

    a. *passive antecedent, active ellipsis:*
       This problem was to have been looked into, but obviously nobody did <look into this problem>.

    b. *active antecedent, passive ellipsis:*
   The janitor should remove the trash whenever it is apparent that it needs to be <removed>.

The uneven distribution of these voice matching effects does not seem to be arbitrary (in other words, it would be unexpected to find a language showing the reverse pattern of English), and can be fairly straightforwardly understood given recent proposals for the syntax of voice following Rivero 1990 and Kratzer 1996 which separate a Voice head from the rest of the VP. This separation allows for the differentiated targeting of nodes for ellipsis: in high ellipses (sluicing, etc.), a clausal node that necessarily includes Voice; in low ellipses (VP-ellipsis), the verbal projection that is complement to (or inside the complement of) Voice.

The structure for a representative example is given in (69). If the elided phrase XP_E and its antecedent YP_A must be identical, it's obvious why ellipsis fails in the sluicing case in (69) (since

TP deletion includes Voice head and therefore $TP_A \neq TP_E$) but succeeds with the articulated syntax in an ellipsis targeting a verbal projection (vP or VP) dominated by VoiceP (since the ellipsis excludes the Voice head, and so $VP_A = VP_E$).

(69)   a. *Joe was murdered (by someone), but we don't know who.

       b.
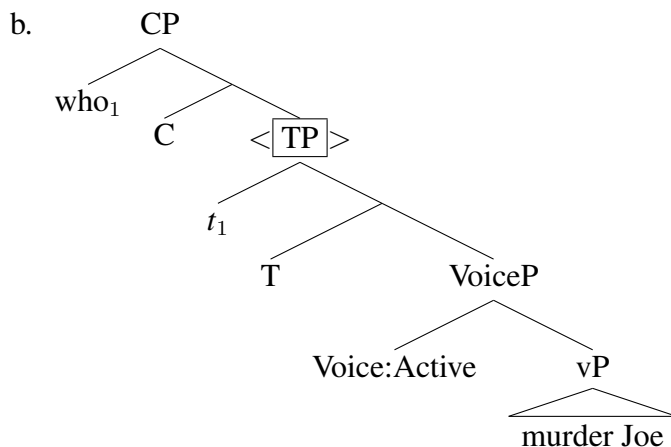
It's far less clear how current semantic identity proposals would handle this uneven distribution: most of them are designed to allow active/passive mismatches (such as Dalrymple et al. 1991 and Hardt 1993) and consider only VP-ellipsis data. Once the sluicing data is also brought into the picture, a uniform semantic analysis becomes harder to support.

6.2.2 Auxiliary form matching

A second argument for syntactic identity in ellipsis comes from the exceptional behavior of *be* under ellipsis (Warner 1985, Lasnik 1995, Potsdam 1997, Roberts 1998, Merchant 2015b). In general, verbs (both regular and irregular) don't require morphological identity:

(70)   a. Emily played beautifully at the recital and her sister will <play beautifully at the recital>, too.

       b. Emily took a break from her studies, and her sister will <take a break from her studies>, too.

       c. Emily sang the song {because|the way} she wanted to <sing the song>.

       d. Emily went to the park because she wanted to <go to the park>.

But forms of *be* do require morphological identity:

(71)   a. Emily will be (beautiful) at the recital, and her sister will <be (beautiful) at the recital>, too.

       b. *Emily was beautiful at the recital and her sister will, too.

       c. Emily will be elected to Congress just like her sister was.

       d. *Emily was elected to Congress {because|just like} she really wanted to.

Lasnik 1995 accounts for this distribution by positing that forms of *be* are inserted into the derivation fully inflected, while other verbs get their inflection in the course of the derivation. The

syntactic identity therefore is met before the inflection of most verbs, but can never be met for differing forms of *be*, since they differ at every level of representation.

This account, appealing as it may be, fails to account for the fact, noted in Merchant 2015b, that the identical effect appears when the antecedent is in Greek (or Spanish, or German); that paper proposes that the examples are ruled out by a non-parallel representation of the binding of the tense variables on *be* and on the predicate, precisely as long-distance and mixed bound readings are ruled out in the Dahl puzzle cases discussed in Fiengo and May 1994 and Fox 2000.

6.3 Hybrid theories

There is a large amount of data that any theory of ellipsis needs to account for. Some of that data seem more amenable to a semantic treatment, and some to a syntactic one. For this reason, some researchers have proposed hybrid theories that incorporate both semantic and syntactic identity conditions, but impose them under differing conditions or selectively. Examples of such proposals include Kehler 2002 (though see Frazier and Clifton 2006 for critical discussion), Chung 2006, 2013, Chung et al. 2010, van Craenenbroeck 2010a and Merchant 2013d. Some of these seek to embed a very narrow amount of syntactic sensitivity (perhaps just the case-assigning heads, or the Voice heads, or the heads that determine argument structure) into a broader semantic theory, others to make different elliptical constructions sensitive to different conditions. The proposal of Chung 2013, for example includes the following conditions:

(72)   The E feature imposes

    a. *e*-GIVEN*ness*: (or some other semantic equivalence or anaphoricity)
       $[\![E]\!] = \lambda p : e\text{-GIVEN}(p).p$, where an expression ϵ is *e*-GIVEN iff ϵ has a salient antecedent A such that $[\![A]\!] = \text{F-clo}(\epsilon)$ and $[\![\epsilon]\!] = \text{F-clo}(A)$, *and*

    b. *Limited syntactic identity*:

      i. *Argument structure condition*: If an extracted phrase is the argument of a predicate in the ellipsis site, that predicate must have an argument structure identical to that of the corresponding predicate in the antecedent clause; *and*

      ii. *Case condition:* If an extracted phrase is a DP, it must be Case-licensed in the ellipsis site by a head identical to the corresponding head in the antecedent clause.

All of the new crop of hybrid theories promise to contribute to our growing understanding of what is meant by recoverability, and of how far the grammar can go in accommodating antecedents that fail to share local grammatical properties with their elliptical counterparts without simply letting any and every possible conceivable linguistic expression serve as a source for the computation of the anaphoric identity or resolution found in ellipses.

7   Conclusions

Ellipsis continues to fascinate because its analysis goes directly to the heart of the main reason we study syntax: to discern the nature of the form/meaning correspondence. Theorizing in this domain requires one to tackle questions of basic ontology, and to make decisions about the nature of arguments for linguistic representations. Much work on ellipsis has taken it for granted that

elliptical structures (and the way we derive their meanings) should be parallel to nonelliptical structures, and that theorizing about the two should be uniform. Indeed, this imperative underlies much work in theoretical linguistics more generally, and has been named the 'structural uniformity' assumption:

> **Structural Uniformity** An apparently defective or misordered structure is regular in underlying structure and becomes distorted in the course of derivation. (Culicover and Jackendoff 2005:7)

Culicover and Jackendoff 2005 take this assumption to task and argue that in the domain of ellipsis in particular, it leads to unnecessary positing of unpronounced structures. One may respond that their own proposals, which eschew any kind of unpronounced structure at all, are an instance of a different kind of uniformity assumption:

> **Analytical Uniformity** If a certain kind of meaning or use can be made in the absence of syntactic guides to that meaning or use, then syntactic guides are never needed for computing that meaning or use.[8]

It is clear that, given the richness of the empirical database in ellipsis, given the complexity of the analytical problems to which ellipsis gives rise, and given the nature of the conclusions one can and must draw from the analysis of ellipsis, theorizing in this domain would do well to beware the 'uniforms' of any stripe.

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[8]Alternatively, if some device D can relate a form F and meaning M, then whenever we have M, D is being used.

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