

Ellipsis

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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 on two sets of constructions. Central examples of the first set, drawn from English, include sluicing as in (1),

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

verb phrase ellipsis (VP-ellipsis) as in (2), and NP-ellipsis (or N'-ellipsis) 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) John can play something, but I don't know what.
- (2) John can play the guitar and Mary can, too.
- (3) John can play five instruments, and Mary can play six.

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

- (4) John can play something, but I don't know what John can play.
- (5) John can play the guitar and Mary can play the guitar, too.
- (6) John can play five instruments, and Mary 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, modals 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 assumption that these properties are uniform across the grammar.

The 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) John can play the guitar, {and Mary, too/and Mary as well/but not Mary}.
John can play the guitar better than Mary.
- (8) John can play the guitar, and Mary the violin.
John can play the guitar better than Mary the violin.
- (9) Q: Who can play the guitar?
A: (Not) John.

All of these structures² have been the focus of intense theoretical interest over the past four decades, and vast bibliographies can be compiled for each of the

²I've omitted pseudogapping, a construction that seems to mix properties of gapping and VP-ellipsis; see Merchant 2008 for some discussion and references.

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, Craenenbroeck 2004, Winkler 2005, Goldberg 2005, Reich to appear, 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?

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. 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 to some antecedent phrase (YP_A), where the identity 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 of some sort) or semantic (defined over semantic representations of some sort)?

Table 1 organizes a selection of the literature by the answers it proposes to these two questions, though it represents a simplification of the literature, as it

omits approaches (discussed below) which involve an admixture of syntactic and semantic requirements.

		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, etc. Kehler 2002	N/A (incoherent)
	Semantic	Merchant 2001 van Craenenbroeck 2010 Aelbrecht 2010, etc.	Keenan 1971, Hardt 1993, Dalrymple et al. 1991 Ginzburg & Sag 2000, Culicover & Jackendoff 2005, etc.

Table 1: Some previous research on the two ellipsis questions

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 has been addressed by Zagana 1982, Lobeck 1995, Johnson 2001, Merchant 2001, van Craenenbroeck 2010, and Aelbrecht 2010: these latter owe a great debt to Lobeck 1995, whose approach is based on a kind of ECP 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 nonstructural 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):

Is there unpronounced syntactic structure in ellipsis sites?	
<input type="checkbox"/> no	<input type="checkbox"/> yes
a. Nonstructural approaches	b. Structural approaches
(13)	<i>Is there unpronounced syntactic structure in ellipsis sites throughout the entire derivation?</i>
	<input type="checkbox"/> no <input type="checkbox"/> yes
	i. LF-copy, null anaphora ii. PF-‘deletion’

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 posit null elements in the syntax come in two varieties: 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

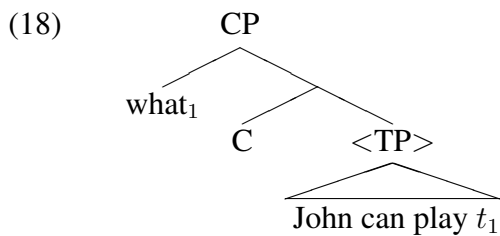
Wasow 1972 and Ludlow 2005. These two options assign the structures in (16a,b) to examples like (4) as the representations that feed pronunciation.

- (16) a. I don't know [_{CP} what [_{IP} e]] (Spell-Out)
 b. I don't know [_{CP} what₄ [_{IP} e₁ e₂ e₃ t₄]]

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).

- (17) I don't know [_{CP} what₄ [_{IP} John can play t₄]] (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 in Ross 1969, Sag 1976, Hankamer 1979, and Lasnik 2001) 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). Under such approaches, a sluiced clause appears as follows, where angled brackets enclose 'deleted' or, more neutrally, unpronounced material:



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.

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, of course. Detecting and arguing for such 'missing' structures is analogous to searching for 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 connectivity effects; nonstructural approaches take their lead from nonconnectivity effects. Connectivity effects occur when some part of the 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

Broadly speaking, there are eight sets of facts which have been used to argue for unpronounced structure in ellipsis: locality effects, P-stranding effects, case matching effects, the distribution of complementizers, of infinitivals, and of predicate answers, the presence of intermediate reconstruction effects in sluicing (Agüero-Bautista 2007, and the facts of 'spading' (which shows evidence for an underlying cleft, as van Craenenbroeck 2010 argues). In the remainder of this section, I lay out the facts from the first six sets of facts, and refer the reader to the literature just cited for the last two.

3.1 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 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.

3.1.1 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, Haik 1987, Postal 2001, Lasnik 2001, Fox and Lasnik 2003, Kennedy and Merchant 2000, Merchant 2001, Merchant 2008, and Kennedy 2003.

- (19) 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?³
- e. *They met a five inches taller man than you did.⁴

3.1.2 Fragment answers

Similar effects are found in fragment answers to implicit salient questions, as discussed in Morgan 1973 and Merchant 2004, though see Culicover and Jackendoff 2005, and Stainton 2006 for additional, conflicting data (see section 4.1.2 below).

- (20) a. Does Abby speak *Greek* fluently?
- b. No, *Albanian*.
- c. No, she speaks *Albanian* fluently.
- (21) a. Did Abby claim she speaks *Greek* fluently?
- b. No, *Albanian*.
- c. No, she claimed she speaks *Albanian* fluently.
- (22) a. Will each candidate talk *about taxes*?

³As 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).

⁴Without the *than*-clause that hosts the deviant left-branch extraction, this example is grammatical.

- b. No, *about foreign policy*.
 - c. No, each candidate will talk *about foreign policy*.
- (23)
- a. Did each candidate₂ agree on who will ask him₂ *about taxes* (at tonight's debate)?
 - b. *No, *about foreign policy*.
 - c. No, each candidate₂ agreed on who will ask him₂ *about foreign policy* (at tonight's debate).

3.1.3 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 Lechner 2001 and Merchant 2009 for discussion).

- (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*.

3.1.4 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 2006, Coppock 2001, Winkler 2005):

- (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))

3.1.5 Sluicing from inside DPs

Lasnik and Park 2003 show that sluicing of adjunct PPs associated with subjects are subject to conditions on extraction from subjects.

- (27) *Books were sold to John, but I don't know on which shelf.

3.1.6 Sluicing over implicit correlates

The former case may form a subcase (depending on some subtle judgments about extracting PPs from NPs in nonsubject positions as well) of the more general ban on long-distance sluicing of *wh*-phrases with implicit correlates, first noted by Chung et al. 1995, and discussed in Merchant 2001 and Hardt and Romero 2004.⁵

- (28) Tony sent Mo a picture that he painted, but it's not clear with what.
- a. = <Tony sent him the picture $t_{withwhat}$ >
 - b. ≠ <Tony sent him a picture that he [painted $t_{withwhat}$]>

3.1.7 Contrast sluicing

Finally, we 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 (Merchant 2001, Vicente 2008).

- (29) 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. ≠ <she knows a guy who has t]>

3.2 The P-stranding generalization

The second 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 (an assumption I know of no serious challenge to), then the fact that this correlation holds in seemingly elliptical contexts is quite telling.

⁵A reviewer correctly notes that the problem here is stronger than mere island-sensitivity, and that the general ban with these 'sprouting' cases (see Chung et al. 1995 and Chung et al. 2010 for discussion) is not directly reducible to constraints on the movement of these *wh*-phrases in nonelliptical counterparts, making the argument for structure more indirect in this case.

Sluicing data from representative languages is given here, reproduced from Merchant 2001; (30)-(31) represent P-stranding languages (as seen in the (b) controls), while (32)-(34) illustrate non-P-stranding languages.

(30) **English**

- a. Peter was talking with someone, but I don't know (with) who(m).
- b. Who was he talking with?

(31) **Swedish**

- a. Peter har talat med någon; jag vet inte (med) vem.
Peter has talked with someone I know not with who
'Peter talked with someone, but I don't know who.'
- b. Vem har Peter talat med?
who has Peter talked with
'Who has Peter talked with?'

(32) **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

(33) **Russian**

- a. Anja govorila s kem-to, no ne znaju *(s) kem.
Anja spoke with someone, but not I.know with who
- b. *Kem ona govorila s?
who she talked with

(34) **German**

- a. Er wollte mit jemandem tanzen, aber ich weiss nicht, *(mit)
he wanted with someone to.dance but I know not with
wem.
who
- b. *Wem wollte er mit tanzen?
who wanted he with to.dance

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 4.2 below.

3.3 Case matching

As first pointed out in Ross 1969, case matching effects found in sluicing (and fragment answers, Merchant 2004) 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:

(35) **German**

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

3.4 Complementizer deletion

If fragment answers involve ellipsis (Morgan 1973) preceded by movement of the fragment out of an elided clause (Merchant 2004), then the following pattern is accounted for, given that displaced CPs require overt complementizers.

- (36) 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.
- (37) 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.

3.5 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.

- (38) a. *It's [to procrastinate] that people tend.
- b. Q: What do people tend to do?
 A: *To procrastinate.
- (39) a. It's [to get a job in Europe] that she really wants.
- b. Q: What does she really want?
 A: To get a job in Europe.

3.6 Predicate answers

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

- (40) a. A: What did he do for his sister?
 B: Funded *(her).
- b. He did [fund(ed) her] for his sister.

As Hankamer 1979 pointed out, 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). Again, this points to the conclusion that constraints on form—mediated by structure—are active in elliptical constructions.

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:

- (41) They want hire someone who speaks a Balkan language, but I don't remember which.
- (42) Every linguist₁ argued with a philosopher who took issue with one of his₁ claims, but I can't remember which one of his₁ 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):

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

4.1.2 Fragment answers

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

- (44) Is Sviatoslav pro-communist or anti-communist these days?
—Pro. [*Pro, Sviatoslav is [*t*-communist these days.]
- (45) 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 (46). Second, the interpretation of the fragment in (45)B is that in (47a-c) (readings which the clearly nonelliptical (47d,e) can have as well, in this context), and does not appear to have the expected ‘island-violating’ reading given in rough paraphrase by (47f). While this set of facts is expected on the structural approach, it is not clear how the nonstructural approach rules out the interpretation in (47f) for (45)B.

- (46) Sviatslav is pro-communist and Derzhinsky is anti-.
- (47) 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. 2006 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.

4.1.3 Gapping

Culicover and Jackendoff 2005:273 also adduce one example, in (48), for which they claim acceptability; to their example I add the attested examples in (49).

- (48) **Robin** knows a lot reasons why **dogs** are good pets, and **Leslie**, **cats**.
- (49) 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 (50a) involve a degree phrase extracting from a left branch (here, attributive) position within a noun phrase, structurally parallel to (50b).

- (50) 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 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 (51) 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 systemic property of a class of prepositions or languages” (Merchant 2001:100).

- (51) 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 Stjepanovic To appear, Brazilian Portuguese by Almeida and Yoshida 2007, a variety of Romance languages by Rodrigues et al. To appear and Vicente 2008, Indonesian by Fortin 2007, Polish and others by Szczegelnik 2005 and Nykiel and Sag 2008, and in several languages by van Craenenbroeck 2008. While Nykiel and Sag 2008 take such nonconnectivity effects as in (51) 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).

Stjepanovic To appear, Rodrigues et al. To appear, Vicente 2008, and van Craenenbroeck 2008, 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):

- (52) Juan ha hablado con una chica rubia, pero no sé *(con) qué
Juan has spoken with a girl blonde but not I.know with what
chica más.
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 (so-called *pseudosluicing*) is unavailable, as seen in (53a); for this reason they suggest (in agreement with Szczegelnik 2005 for Polish) that the P-less ‘sluices’ in fact derive from a copular or reduced cleft-like source, as in (53b) (where material in angled brackets is elided):

- (53) a. * Juan ha hablado con una chica rubia, pero no sé qué
Juan has spoken with a girl blonde but not I.know what
chica más es pro.
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
Juan has spoken with a girl blonde but not I.know which is
pro >.
it
‘Juan talked to a blonde girl, but I don’t know which one.’

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 or not, 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 dependency structures are independent of the constraints on the presence of prepositions in ellipsis. But one last point remains to 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 ‘crazy-English’?

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

‘Crazy-English’ would be like English (or perhaps Swedish) in allowing—even 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, and other non-connectivity effects that are sometimes adduced (such as the so-called ‘vehicle change’ effects of Fiengo and May 1994). 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’

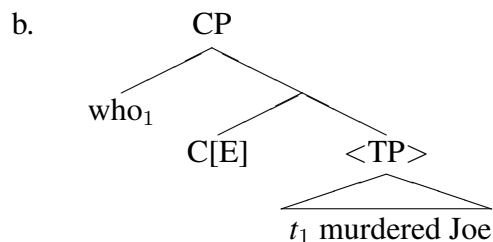
Within structural approaches, two tacks can be discerned: the null anaphora approach and ‘deletion’. The latter ranges from the traditional formulation of a deletion transformation (as in Ross 1969 and Hankamer 1979 among many others) to more recent proposals (such as the ‘E-feature’ in Merchant 2001, Craenenbroeck 2004, Aelbrecht 2009, van Craenenbroeck and Lipták 2006, Toosarvandani 2008, Toosarvandani 2009, Vicente 2006, ? Corver and van Koppen 2007, and Ha 2007; see also Johnson 2008). On this approach, 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 induces nonpronunciation.

In modern incarnations, the difference between an elliptical and nonelliptical VP, for example, is solely in the presence or absence of a feature on in the structure which signals to the phonology that the phonological value of the VP is null. 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 can host it (the ‘licensing’ question: see Lobeck 1995), the semantics could be used to impose an identity condition (see section 6 below), and the phonology would be a trigger for a rule or constraint syncopating the phrase’s phonological value. 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 (55) 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:

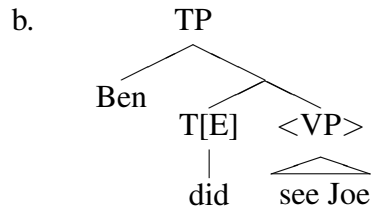
- (55) Amy seemed angry, but we didn’t know [_{PP} at who]_I <she seemed angry *t*_I>.

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 2009).

- (56) a. Someone murdered Joe, but we don’t know who.



- (57) a. Abby didn’t see Joe, but Ben did.



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 is relatively small, since the equivalent deletion approach using a feature can capture these restrictions with arguably the same level of sophistication.

Instead, the most persuasive argument in favor of the null anaphor approach over deletion approaches comes from a set of facts discovered independently by Hardt 1999 and Schwarz 2000, which has come to be known as the ‘sloppy ellipsis’ puzzle. The puzzle is illustrated by the following sentences.

- (58) I’ll help you if you want me to. I’ll kiss you even if you don’t <>.
- a. <> = <want me to help you> (STRICT)
 - b. <> = <want me to kiss you> (SLOPPY)

As indicated in (58a) and (58b), this sentence allows two readings. The first reading, labelled ‘strict’, is that in which the missing VP in the second sentence is taken to mean ‘want me to help you’; in this reading, the embedded VP inside the missing VP takes the same meaning as the embedded VP inside its antecedent want me to, hence the label ‘strict’. It is the second reading, that given in (58b) and labelled ‘sloppy’, which is the point of interest, however. In this second reading, the missing VP has the meaning ‘want me to kiss you’; this meaning partly corresponds to that of its antecedent in the first sentence *want me to (help you)*, and partly to the more local antecedent VP in its own sentence, *kiss you*. Represented as full structures, this second meaning corresponds to that articulated by the sentences in (59).

- (59) a. I’ll help you if you [_{VP₁} want me to <[_{VP₂} help you] >].

- b. I'll kiss you even if you don't $\langle [_{VP_3} \text{ want me to kiss you}] \rangle$.

Generally put, following Hardt and Schwarz, the fact can be stated as in (60).

- (60) An elided VP_2 embedded inside a VP_1 , where VP_1 is the antecedent to a VP_3 , can get a 'sloppy' interpretation inside VP_3 .

As both authors point out, the puzzle is deepened by the fact that ellipsis in the antecedent VP is a necessary component in this puzzle; there is no corresponding sloppy reading in merely deaccented VPs, no 'sloppy deaccenting puzzle':

- (61) I'll help you if you want me to help you. I'll kiss you even if you don't $\langle \rangle$.
- a. $\langle \rangle = \langle \text{want me to help you} \rangle$ (STRICT)
- b. $\langle \rangle \neq \langle \text{want me to kiss you} \rangle$ (*SLOPPY)

Both Hardt and Schwarz take these facts as militating against a syntactic, structural representation of (at least) the most embedded VP, the one that gets a sloppy reading. Making use of the same solution given to parallel sloppy identity facts in the realm of pronominal antecedence, both authors propose (with differing technical implementations) that the solution to the sloppy ellipsis puzzle requires two things: first, that the most embedded VP be represented as a variable in the semantics (call this the variable solution), and second, that the VP that is translated as this variable be absent or an empty proform in the syntax. Extracting the commonalities of the two approaches, these analyses posit the following structure for (58) on its sloppy reading.

- (62) I'll help you if you $[_{VP_1} \text{ want me to } e_2]$. I'll kiss you even if you don't e_3 .

The translations of the relevant VPs proceed as given:

- (63) a. $e_2 = \lambda x. \text{help}(\text{you})(x)$
 b. $\llbracket VP_1 \rrbracket = \lambda y. \text{want}(e_2(\text{me}))(y)$
 c. $e_3 = \llbracket VP_1 \rrbracket = \lambda y. \text{want}(e_2(\text{me}))(y)$ (SLOPPY)

At this point, the translation of the missing VP e_3 contains a free variable over VP meanings, e_2 . For Hardt, e_2 in (63c) can be assigned a new value via center shift; for Schwarz, the antecedent VPs help you and kiss you scope out of their clauses, providing distinct binders for the variable. The results of these operations are given in (64).

- (64) Hardt: $\lambda y.want(e_4(me))(y)$, where $e_4 = \lambda x.kiss(you)(x) \rightsquigarrow$
 $\lambda y.want(kiss(you)(me))(y)$ (SLOPPY)
 Schwarz: LF: [kiss you]₄ [I'll t₄ even if you don't <want me to e₄ >]

Both analyses derive the fact that there's no sloppy reading with the deaccented VP in (61). The relevant representation is in (65), with the translations in (65a) and (65b). Since (65b) contains no variable, no sloppy reading is possible. The heart of the solution is the lack of an elided VP in the first antecedent: it is this VP which can introduce a variable over VP meanings and which allows for the sloppy reading.

- (65) I'll help you if you [_{VP₁} want me to help you]. I'll kiss you even if you don't e₃.
- a. $\llbracket \text{VP}_1 \rrbracket = \lambda y.want(help(you)(me))(y)$
 - b. $e_3 = \llbracket \text{VP}_1 \rrbracket = \lambda y.want(help(you)(me))(y)$

The variable solution works by analyzing the elided VP₂ as a variable over VP-meanings. This key insight is, I believe, entirely correct. But both Hardt and Schwarz draw a larger conclusion from this insight, basing on it their claims that a deletion approach to ellipsis cannot accommodate these cases. This claim rests on the assumption that the easiest way to get the variable solution to work in the semantics is if in the syntax, the missing VP is simply an unpronounced pronominal.

But this syntactic assumption runs into a number of problems. For both Hardt and Schwarz, it becomes an interesting question to decide what the nature of this necessarily unpronounced pronoun is, and whether it obeys syntactic licensing conditions on null elements, how it is learned and represented in the lexicon, etc. Tomioka 2004 further points out a number of problems in particular for Schwarz's implementation, which involves covert movement of the antecedent VP to a position from which it can bind the variables. Tomioka notes that this posited movement would have to have a number of surprising properties which would distinguish it from better understood species of phrasal movement. First, he notes that weak crossover effects are absent in such structures, contrary to expectation. Second, he shows that the sloppy ellipsis puzzle can be found in NP-ellipsis and sluicing contexts, where movement of the antecedent is much less plausible. Finally, he points out that this VP-movement would have to be island-violating. For all these reasons, there is good cause to try to find a way to implement the variable solution without these syntactic mechanisms.

In fact, it is possible to find such an implementation. The crucial difference lies in creating a way to introduce the variable in the mapping from syntax to semantics. If PF deletion is triggered by an E feature on the licensing head (generally T for VP-ellipsis), as discussed above, then there will be a way to recognize which VPs in an antecedent have themselves been subject to ellipsis; call the ‘deleted’ constituent ‘E-marked’ (shown by $:E$):

- (66) a. I’ll help you if you $[_{VP_1}$ want me $[_{TP}$ to $[E]$ $<[_{VP_2:E}$ help you] $>]$
 b. I’ll kiss you even if you don’t $[E]$ $<[_{VP_3:E}$ want me to $[E]$ $<[_{VP_4:E}$ kiss you] $>]$ $>$

The relevant definitions for licensing ellipsis are the following (and see section 6 below for more discussion).

- (67) A constituent α can be elided if α is e-given.
 (68) e-givenness: An expression X is *e-given* iff X has a salient antecedent A and, modulo existential type-shifting,
 (i) A entails $E\text{-clo}(X)$, and
 (ii) X entails $E\text{-clo}(A)$.
 (69) The E-closure of α ($E\text{-clo}(\alpha)$) is the result of replacing all E-marked subelements of α with variables of the appropriate type

VP_2 and VP_4 are E-marked, hence by (68) are replaced by a bound variable, $\phi_{\langle e,t \rangle}$, allowing VP_3 to satisfy (67):

- (70) $E\text{-clo}(VP_1) = E\text{-clo}(VP_3) = \exists x.\exists\phi.x$ wants me to ϕ

There is then no sloppy reading in (61) because there is no E-feature in the antecedent:

- (71) $E\text{-clo}(VP_1) = \exists x.x$ wants me to help you
 $E\text{-clo}(VP_3) = \exists x.\exists\phi.x$ wants me to ϕ
 $E\text{-clo}(VP_1) \neq E\text{-clo}(VP_3)$, hence VP_3 is not e-given, so VP_3 cannot be elided

There is thus no need for a derivational view of satisfaction of structural isomorphism of LF phrase markers (Tomioka 2004).

If null elements (like overt pronouns) cannot be extracted out of, then the null anaphora analysis of the sloppy ellipsis puzzle seems to have an advantage over

the deletion account, given that sloppy ellipsis sites cannot host wh-traces, as seen in the following data:⁶

- (72) a. *The patient failed to take the medications his doctor wanted him to. He also failed to do the exercises his physical therapist did $\langle \rangle$. $\langle \rangle$ = \langle wanted him to do t \rangle
- b. *Ben GOT more Valentines than I expected him to because he GAVE OUT more than I did $\langle \rangle$. $\langle \rangle$ = \langle expected him to give out t \rangle
- c. *I READ the books you asked me to. I also CITED a bunch you didn't $\langle \rangle$. $\langle \rangle$ = \langle ask me to cite t \rangle
- d. *Fred READ the books he was supposed to. He also REVIEWED the ones he was $\langle \rangle$. $\langle \rangle$ = \langle supposed to review t \rangle
- e. *Fred READ more books than he was supposed to. He also REVIEWED more than he was $\langle \rangle$. $\langle \rangle$ = \langle supposed to review t \rangle
- f. *I RECORDED the songs Abby asked me to, and I also PLAYED the ones Ben did $\langle \rangle$. $\langle \rangle$ = \langle ask me to play t \rangle

It is the attempted sloppy reading that is relevant since it is more generally the case that wh-extraction out of ellipsis sites is possible, even in complex structures like the ones above; the following control cases ((73b) from Kennedy 1999:154) show this:

- (73) a. I read the books you asked me to. I also read a bunch you didn't $\langle \rangle$. $\langle \rangle$ = \langle ask me to read \rangle
- b. Marcus bought every book I did, and I read every book Charles did $\langle \rangle$. $\langle \rangle$ = \langle bought \rangle .

But Tomioka 2004 presents (74), which would have the illicit representation in (75), in which who_2 lacks a variable to bind:

- (74) A: John has a very indirect way of telling you what he thinks. For instance, when he likes someone, he tells you who_1 he DOESN'T $\langle \rangle$. ($\langle \rangle$ = like t_1)
 B: Wait a minute. But when he HATES someone, he doesn't $\langle \rangle$. Instead, he tells you exactly who he hates. ($\langle \rangle$ = tell you who_2 he doesn't hate t_2)

- (75) $E\text{-clo}(VP_1) = E\text{-clo}(VP_3) = \# \exists x. \exists \phi. x$ tells you who_2 he doesn't ϕ

⁶Though banning extraction out of ellipsis sites in general would be wrong, given sluicing and ACD.

The difference between the two sets of examples is that in (72), the *wh*-element extracts out of the elided VP₃; in (74), the *wh*-extraction is internal to the elided VP. This provides a possible explanation: what is elided in (74) is in fact *<do that>*, as posited for unrelated cases in Merchant 2004; such an analysis is impossible for (72), since the *wh*-operator is outside the ellipsis site (vacuous quantification remains).

We can therefore see that a structure-based (‘deletion’) account of ellipsis is consistent with the sloppy ellipsis puzzle: the ellipsis site behaves like a variable in the semantics, but need not in the syntax. (See also Elbourne 2008 for another implementation, with a broader empirical basis.) Furthermore, refining the semantic identity condition vitiates the need to posit an unpronounced variable or the like in the syntax: the syntax of ellipsis remains the usual syntax of pronounced clauses, with the E feature.

6 The identity condition on ellipsis

The second major question arising in ellipsis concerns the nature of the identity relation. That is, how does one calculate what the ‘missing’ material means? Clearly ellipsis is anaphoric, broadly speaking, depending on its context to get its meaning: an ellipsis site has no intrinsic lexical content at all. We assume that ellipsis requires an antecedent, 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 two broad kinds of answers to these questions: ones that posit that the relation between the ellipsis and its antecedent involves a kind of identity of meaning, and ones that posit a kind of identity of structure. (Additionally, there are proposals that use a bit of both.) Clearly what is not at stake is anything like surface (nonelliptical equivalent) identity, given examples like the following:

- (76) 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.
- (77) “In the meantime, enjoy the ride.”
“I am.” (John Updike, *Terrorist*, Ballantine: New York, 2006, p. 186.)
- (78) 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 (76b) 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 (76a) 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 (77) 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 (78), which reports a conversation between two bilingual speakers of English and Greek; we must assume that the English ellipsis in B’s response in (78) 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.

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, Lappin 1996, Chung et al. 1995, 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 (Dalrymple et al. 1991, Hardt 1993, Hardt 1999, Kempson et al. 1999, Asher et al. 1997, Asher et al. 2001, Ginzburg and Sag 2000, Merchant 2001, Hendriks 2004, Hendriks and Spender 2005, van Craenenbroeck 2010, and many others; perhaps the earliest analysis in this vein is Keenan 1971).

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

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. 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 list only two here: pronoun/name equivalences, and polarity item/nonpolarity item equivalences.

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 (79), the indicated coreference between the pronoun and c-commanded name in the presumptive nonelliptical equivalents in (80) is ruled out.

- (79) a. They arrested Alex₃, though he₃ didn't know why.
 b. They arrested Alex₃, though he₃ thought they wouldn't.
- (80) a. *He₃ didn't know why they arrested Alex₃.
 b. *He₃ thought they wouldn't arrest Alex₃.

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

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

⁷And note that a semantic identity theory need not accept the claim that there is no unpronounced syntactic structure: 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 one are partially independent.

- a. ... but Mary did see someone.
 - b. ... *but Mary did see anyone.
 - c. $\exists x.see(Mary, x)$
- (82) 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 $[[he_s]]^g = Alex$, then any proposition containing he_s evaluated with respect to g will have the same truth conditions as that proposition where *Alex* replaces he_s ; likewise for the basic semantic contributions of polarity items), but it is difficult to see how *he* and *Alex* could be syntactically equivalent.

6.2 Syntactic identity

Despite the success of semantic theories of elliptical identity, there are two sets of data that seem to require syntactic identity. The first set of evidence comes from the uneven distribution of voice mismatch effects in 'big' vs. 'small' ellipses, and the second from certain morphological facts.

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 2007 for the other ellipsis types and data from additional languages).

- (83) 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 2007, Arregui et al. 2006, and Merchant 2007 for further examples, discussion, and qualifications.)

(84) VP-ellipsis

a. *passive antecedent, active ellipsis:*

This problem was to have been looked into, but obviously nobody did.
<look into this problem>

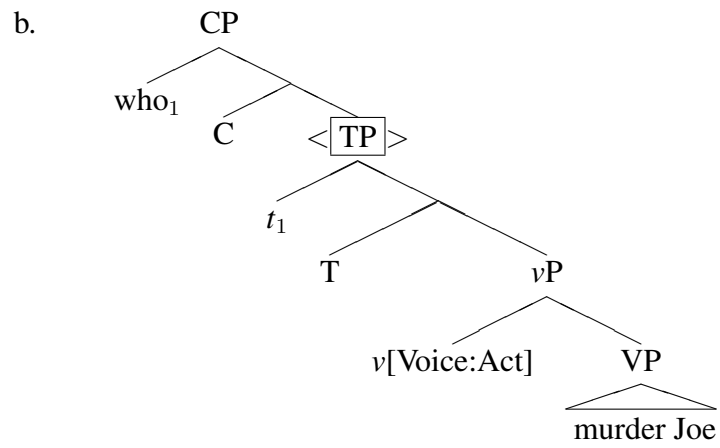
b. *active antecedent, passive ellipsis:*

The janitor should remove the trash whenever it is apparent that it needs to be <removed>.

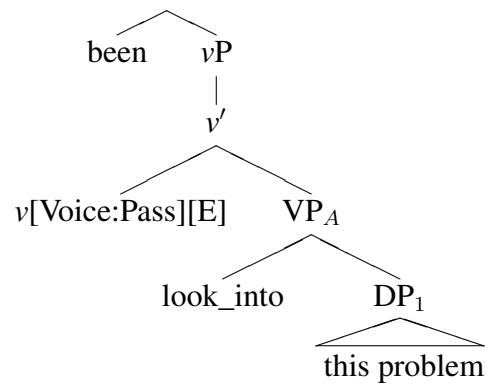
The uneven distribution of these voice matching effects does not seem to be arbitrary (in other words, it would be unexpected to find a language showing the reverse pattern of English), and can be fairly straightforwardly understood given recent proposals for the syntax of voice following Kratzer 1996 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.

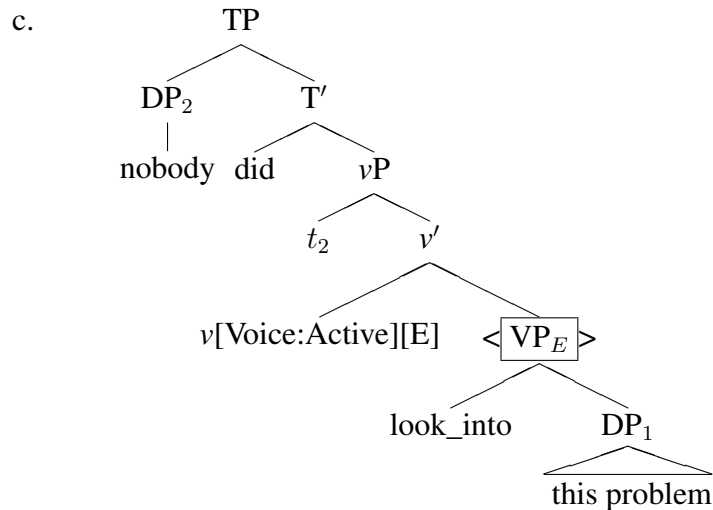
The structures for two representative examples are given in (85) and (86). If the elided phrase XP_E and its antecedent YP_A must be identical, it’s obvious why ellipsis fails in the sluicing case in (85) (since TP deletion includes Voice head and therefore $TP_A \neq TP_E$) but succeeds with the articulated syntax in (86) (since the ellipsis excludes the Voice head, and so $VP_A = VP_E$).

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



- (86) a. This problem was to have been looked into, but obviously nobody did.
 b. [_{DP} This problem]₁ was to have vP





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.

The major alternative to accounting for this set of data comes from proposals by Frazier and Clifton and their co-workers, who argue that the acceptability judgments in this domain can best be accounted for with a theory of perfect matching with some elliptical repair allowed, and that this repair induces a processing cost (Arregui et al. 2006, Frazier 2007; see also Frazier and Clifton Jr. 2001, Frazier and Clifton 2005). In other words, all mismatches are ungrammatical, but repaired. When the parser can't find a matching antecedent, it builds a new one, then copies it in at LF to complete the structure.

Their major empirical points are the following:

1. The more parallel the antecedent and the elided phrase are, the higher the mean acceptability ratings in a judgment task are.
2. $\text{passive}_A \rightsquigarrow \text{active}_E$ are judged better than $\text{active}_A \rightsquigarrow \text{passive}_E$ (because passives are more often misremembered as actives than vice versa): mean ratings of 2.31 vs 1.66.
3. Addition of presupposition triggers (*already, too*) helps; subordination is better than coordination

For example, one set of their stimuli were the following, with the given preference judgments ($a > b$ means that a was preferred to b):

- (87) $a > b, c > d$
- a. The dessert was praised by the customer after the critic did already.
 - b. The dessert was praised by the customer and the critic did.
 - c. The customer praised the dessert after the appetizer was already.
 - d. The customer praised the dessert and the appetizer was.

The first question that this analysis raises is the following: do the results from the elliptical experiments differ significantly from their nonelliptical counterparts? That is, are the differences that Arregui et al. found in (87) any different from those we would find if we ran the experiment with the nonelliptical versions in (88)?

- (88) $a > b?, c > d?$
- a. The dessert was praised by the customer after the critic praised it already.
 - b. The dessert was praised by the customer and the critic praised it.
 - c. The customer praised the dessert after the appetizer was praised already.
 - d. The customer praised the dessert and the appetizer was praised.

The second is whether the results couldn't also be explained (with Arregui et al.'s explanation) as applying to the E-feature computation. The E-feature requires that the hearer go back and unpack all the morphemes of a possible antecedent—perhaps the memory for this level of detail fades quickly (or is unreliable), especially if other parts of the clauses are non-parallel. And the third is whether other grammatical features that are relevant to anaphoricity are harder to access (leading to reduced acceptability judgments for indicated coreference) when similar factors are in play?

Frazier 2007 claims that the *uneven* distribution between sluicing and VP-ellipsis (Arregui et al. 2006 looked only at VP-ellipsis, not sluicing) is due to additional processing loads in the sluicing (and other) cases: the latter involve a variable in the ellipsis site, while the VP-ellipsis cases we've seen so far don't. Also passive_A \rightsquigarrow active_E sluices should be relatively acceptable, since the *by*-phrase can 'provide the processor with evidence' for the repair (and similarly for examples involving sloppy identity; see Takahashi 2008).

This explanation is intuitive, and therefore appealing. It makes the prediction that the following sentences should be degraded, a judgment I leave to the reader and to further controlled experiments.

- (89) a. I stocked more cameras than should have been.
b. I was eager to see every room that could be.
c. The court required the bank to show the defense the same documents that the prosecution had been.
d. The information was eventually released that Gorbachev had earlier chosen not to.
- (90) [Alan and Ralph are neighbors who are pointlessly at odds with each other]
a. Alan₁ wanted the IRS to deposit his₁ tax refund directly in his₁ bank account, because Ralph₂ didn't want his₂ to be. <refunded directly in his₂ bank account>
b. Alan₁ wanted his₁ tax refund to be deposited directly in his₁ bank account, while Ralph₂ instructed the IRS not to. <deposit his₂ tax refund directly in his₂ bank account>

Pending the resolution of these questions, the strength of the argument for syntactic identity based on voice mismatches must be considered unsure.

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; see also McCloskey 1991 and Goldberg 2005 for related points). In general, verbs (both regular and irregular) don't require morphological identity:

- (91) a. Emily played beautifully at the recital and her sister will, too. <play beautifully at the recital>
b. Emily took a break from her studies, and her sister will, too. <take a break from her studies>
c. Emily sang the song {because|the way} she wanted to. <sing the song>

But forms of *be* do require morphological identity:

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

6.3 Hybrid theories

There is a large amount of data that a 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 Jr. 2006 for critical discussion), Chung 2006, Merchant 2007, and van Craenenbroeck 2008.

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. If some device D can relate a form F and meaning M, then whenever we have M, D is implicated. (If something doesn't work for everything, it can't work for anything. If something works for one thing, it can work for everything.)

It is clear that, given the richness of the empirical database in ellipsis, and 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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