

# SLUICING(:) BETWEEN STRUCTURE AND INFERENCE\*

Sandra Chung, William Ladusaw, James McCloskey  
University of California, Santa Cruz  
schung@ucsc.edu, ladusaw@ucsc.edu, mcclosk@ucsc.edu

Investigations of sluicing since Chung, Ladusaw, and McCloskey 1995 have profitably explored two approaches to this ellipsis process that differ significantly from ours. In one, the ellipsis site is created by deletion of a fully articulated TP in which *Wh*-movement has applied. In the other, the ellipsis site contains no internal structure at all, and its reference is resolved via pragmatic inference. Here we reconsider some of the theoretical issues, focusing on sprouting, the subtype of sluicing in which the remnant of ellipsis has no overt correlate in the antecedent clause. We discuss evidence, some of it new, which suggests that sprouting involves the re-use of existing material, much as we originally proposed.

## 1. Goals

In this paper, we reconsider some of the theoretical issues raised by sluicing, taking as a starting point our 1995 article in *Natural Language Semantics* (henceforth CLM). Our aims are to (i) incorporate some of the insights and empirical discoveries that have emerged since (especially in the work of Jason Merchant), (ii) refocus attention on the subtype of sluicing that we earlier called sprouting, and (iii) pursue an analysis driven by the core intuition that at least this species of ellipsis involves the re-use of existing linguistic material. Our goal in this will be to illuminate the interaction between formal linguistic structure and discourse interpretation in ellipsis processing.

Sluicing is the ellipsis of all but the interrogative phrase of a constituent question. In CLM, we distinguished two subtypes of sluicing, which we called *merger* and *sprouting*. In merger, the interrogative phrase that is the remnant of ellipsis has an overt *correlate* in the antecedent clause, as shown in (1) (with the correlate italicized):

- (1) a. They've made an offer to *a phonologist*, but I'm not sure which one.  
b. She insulted *somebody* but she won't tell me who.

In sprouting, the interrogative phrase that is the remnant of ellipsis has no overt correlate within the antecedent clause, as seen in (2):

- (2) a. They were firing, but at what was unclear.  
b. She applied for the position but nobody could figure out why.  
c. He finished on time, but with whose help?

---

\*We are very happy to dedicate this paper to Judith Aissen, our friend and colleague of many years. The research reported on here grows out of a Symposium on Ellipsis which was held at the 2006 Meeting of the Linguistic Society of America in Albuquerque, New Mexico. We are grateful to all who took part for their help. We are especially grateful to Jason Merchant for the excellence of his ongoing work in this area and for the many insights and challenges that he continues to provide.

In such cases, the remnant *Wh*-phrase can correspond to an implicit argument of the predicate of the antecedent (as in (2a)), or an adjunct (as in (2b) and (2c)).

At the workshop out of which this paper grew, three approaches, broadly speaking, to the analysis of ellipsis emerged:

APPROACH 1: The ellipsis site is an anaphoric element without internal structure, whose reference must be resolved in the same way as the reference of any anaphoric element is resolved, by way of pragmatic inference. It is unclear to us whether anyone currently adopts this approach in its pure form, but its appeal is clear.

APPROACH 2: The ellipsis site is empty and unstructured at surface structure, but its content is supplied by re-using (recycling, copying) an already built syntactic structure, with its interpretation, from some accessible point elsewhere in the discourse (Williams 1977, Fiengo and May 1994, Lappin 1999, CLM).

APPROACH 3: The ellipsis site has internal structure, which is constructed in exactly the same way as any audible piece of syntactic structure. The ellipsis site may, however, go unpronounced—be rendered silent—if it is sufficiently similar to some antecedent XP in some accessible position elsewhere in the discourse (Ross 1969, Sag 1976, Hankamer 1979, Lasnik 2001, Merchant 2001).

Of these, the second and third approaches are much closer to each other than either is to the first, since both assume detailed syntactic structure within the ellipsis site; they differ, however, in what they assume about how that structure comes to be there.

Following CLM, Merchant 2001—and, ultimately, Ross 1969—we hold that at some point in the derivation of examples like (1) and (2) the ellipsis site contains a fully fleshed-out syntactic object; there is ‘syntax in the silence’, to use Merchant’s term. The phenomena discussed below show sensitivity to syntactic properties that we take to be difficult to integrate into an approach to sluicing which assumes only mechanisms of pragmatic inference. We assume that the remnant *Wh*-phrase is contained within a CP (see especially Merchant 2001:Chap. 2). We further assume that what is missing in sluicing is the complement of whatever head it is in a given language that attracts interrogative *Wh*-phrases to its specifier—Manetta 2005, 2006, Grebenyova 2006. That is, what is missing in sluicing is all but the edge of a phase defined by a head which drives *Wh*-Movement to its specifier.

This general characterization yields for English the conclusion that the missing material in a sluicing construction is the TP complement of interrogative C. Therefore, (2a) has the skeletal structure shown in (3).

(3) They were firing, but [<sub>CP</sub> at what C [<sub>TP</sub> \_\_\_\_\_ ] ] was unclear

Sluicing, then, involves either the reduction to silence of the TP complement of C (as in APPROACH 3, e.g. Romero 1998, Merchant 2001), or else the recovery of a suitable TP from the discourse context, supplying the content for the empty TP in (3), as in APPROACH 2 (for instance, CLM).

APPROACH 3 (deletion under identity or givenness) is the standard view in current research in the Principles and Parameters framework and in the Minimalist Program. Jason Merchant’s (2001) book, along with important work done around the same time by Maribel Romero (1998)

and Howard Lasnik (1999), were particularly important in establishing that view. In these works, the core properties of sluicing are taken to derive from semantic conditions—such as givenness and focal parallelism—which govern deaccenting and elision. For Merchant, for example, the crucial elements are those in (4):

- (4) a. Sluicing is derived by PF deletion of a fully articulated TP in which *Wh*-movement has applied.
- b. This deletion (like deletion in general) is subject to a semantic licensing condition, in that TP can be deleted only if it is E-GIVEN.

E-givenness is in turn defined as in (5):

- (5) An expression E counts as E-GIVEN iff it has a salient antecedent A and,
  - 1. A entails the focus-closure of E
  - 2. E entails the focus-closure of A

What these requirements amount to in essence is the requirement that the non-focused portions of the antecedent TP and the elided TP must entail each other.

Such theories give an admirably successful account of merger, but they arguably do not generalize well to sprouting (see Chung 2005 and below). Here we take a different tack: taking the sprouting cases as our starting point, we explore the idea that the interpretation of this subtype of sluicing is best understood as involving the re-use of existing linguistic material (APPROACH 2).

## 2. Use and Re-Use

The central notion of *use* that we appeal to is, as might be expected, fundamentally pragmatic. To use linguistic material is to introduce it into the collaborative game of constructing shared contexts. Accepting this, to *re-use* linguistic material is to take an already-constructed syntactic object with an interpretation, one which has already been deployed in discourse processing, and to re-deploy it, with its interpretation, in a new and different context. We assume a model of discourse structure along the lines of that explored in Ginzburg 1996, Büring 2003, and Farkas and Bruce 2010, in which questions under discussion (Ginzburg's (1996) QUD) are recorded and in which the items so recorded are syntactic objects paired with their denotations. These syntactic objects are presumably LF representations in the sense familiar from Government and Binding Theory and its derivatives, and so may differ in important ways from the representations relevant for determining phonological form (in the framework of Chomsky 2001, for instance, all uninterpretable features will have been removed). We assume a framework for the interpretation of questions and sluices along lines developed by AnderBois 2010a,b, which has the great advantage of letting us better understand why disjoint terms pattern similarly to wide-scope indefinites in their ability to license sluicing (CLM:268–269). We will have more to say later about some of the interpretive issues.

The re-use of linguistic material must be carefully distinguished from independent, and distinct, introductions of an expression. In (6), we clearly want to say that there are two independent token expressions of the DP *a lawyer*.





### 3. Consequences—Old and New

#### 3.1. Albert's Generalization

In the cases for which this mechanism must be appealed to, there can be no amnestying of island and ECP effects. We thus understand an important property of sluicing. As noticed originally by Chris Albert, reported by CLM, and confirmed recently in experimental work by Yoshida et al. (2010), island violations are not repaired in sprouting (although they are famously repaired under merger; see Ross 1969, CLM, Merchant 2001).

Consider, for instance, the examples in (13):

- (13) a. \*Sandy was trying to work out which students would speak, but she refused to say who to.  
b. \*Agnes wondered how John could eat, but it's not clear what.  
c. \*That Tom will win is likely, but it's not clear which race.
- (14) a. \*Sandy is very curious to see which students will be able to solve the homework problem, but she won't say how.  
b. \*Clinton is anxious to find out which budget dilemmas Panetta would be willing to tackle, but he won't say how.

We will call this observation *Albert's Generalization*, for its discoverer.

If the operation responsible for creating multiple syntactic occurrences in Internal Merge is governed by the standard array of island and ECP effects, then we expect those effects to appear in the subtype of sluicing for which this operation is crucial—namely, in the sprouting cases.

#### 3.2. Fixed Diathesis Effects

We also understand another set of properties of sluicing. As observed first by Lori Levin (1982), the interpretation of the elided TP in sluicing is limited by lexical choices made in the antecedent TP. Compare (15a) with (15b), for instance.

- (15) a. He served the soup, but I don't know to who(m).  
b. He served some of the guests, but I don't know what.

The examples in (15) contrast sharply with the impossible (16):

- (16) \*He served the soup, but I don't know who(m).

The problem here is that there are, essentially, two distinct but related verbs *serve*, which can be illustrated crudely as in (17):

- (17) a. *serve*<sub>1</sub>: <server> <meal> <diner>  
          SUBJ     OBJ    DATIVE  
b. *serve*<sub>2</sub>: <server> <diner> <meal>  
          SUBJ     OBJ1  OBJ2

What goes wrong in a case like (16) is that the antecedent clause contains *serve*<sub>1</sub> while the elided clause contains *serve*<sub>2</sub>. This is an impossibility under our proposal, one which follows, on our view, from the fact that the missing material in a sluice is supplied by the re-use of a TP already constructed from an array of lexical choices. There can be no subsequent return to the lexicon in constructing the missing TP of the ellipsis site.<sup>2</sup>

The effect seems to be quite general. The examples in (18) show the same effect for the verb *send*.

- (18) a. He sent a package, but I can't find out who to.  
b. \*He sent a package, but I can't find out who.  
c. He sent a package, but I can't find out who he sent it to.  
d. ?He sent a package, but I can't find out who he sent it.

What goes wrong in (18b) is that the antecedent TP and the elided TP employ different argument structures for the verb *send*: the antecedent TP employs the argument structure illustrated in (18c), whereas the elided TP employs that illustrated in (18d).

Observations made by Jason Merchant (Merchant (2005a)) suggest the same conclusion. Beth Levin (2003) observed that the examples in (19a) and (19b) are close to synonymous, but involve different versions of the verb *embroider*.

- (19) a. They embroidered a table-cloth with peace signs.  
b. They embroidered peace signs on a table-cloth.

Despite the semantic equivalence of (19a) and (19b), it is impossible, as Merchant points out, to mix and match different versions of the verb under sluicing. That is, one cannot have a remnant *Wh*-phrase which implies one version of the verb *embroider* while the antecedent TP is built around a different one. This is seen in the dual impossibility of (20):

- (20) a. \*They embroidered something with peace signs, but I don't know what on.  
b. \*They embroidered something on the table-cloth, but I don't know what with.<sup>3</sup>

Observations such as these pose severe challenges for purely inference-based approaches to ellipsis resolution.

Merchant (2005a) has observed a similar effect in cases such as (21), involving the causative-inchoative alternation. In English, an example such as (21):

- (21) They plan to close one of the schools, but they won't tell us which one.

---

<sup>2</sup>The lexical entries in (17) are meant to be illustrative only. The central conclusion is unaffected if the different argument structures for *serve* are realized syntactically via different arrays of functional heads ('light verbs') within the *v*P. Such differences still reflect different lexical choices.

<sup>3</sup>(20b) is well-formed on a different and irrelevant reading—according to which the *with*-PP is an instrument rather than a third argument of *embroider*.

cannot be interpreted as in (22):

(22) They plan to close one of the schools, but they won't tell us which one will close.

Once again, this falls under our larger observation, since causative and inchoative *close* must reflect distinct lexical choices—the first used in the antecedent, the second (impossible) in the ellipsis site. Merchant (2005a) observes that the point can be made more clearly in a language where the case system lets one identify the grammatical function of the remnant interrogative phrase. Greek is such a language, and once more (as can be seen in (23b)), the effect is as we now expect it to be:

- (23) a. Eklisan ena dhromo, alla dhen ksero pjon.  
close-PL3 a-ACC road-ACC but not know-S1 which-ACC  
'They closed a road, but I don't know which.'  
b. \*Eklisan ena dhromo, alla dhen ksero pjios.  
close-PL3 a-ACC road-ACC but not know-S1 which-NOM  
'They closed a road, but I don't know which.'

(23b) must reflect the inchoative form of *close* in the ellipsis site, but the transitive form in the antecedent clause—an impossible situation, given our general proposal.

The same pattern can be seen at work in the opposite direction in a case such as (24):

(24) \*The window suddenly closed, but I don't know who.

In a case such as this, we have the inchoative form in the antecedent and the transitive form in the ellipsis site—an impossibility given our proposal. This is a case where it is particularly clear that a treatment of sluicing based solely on pragmatic inference would not be adequate to the facts. For (24), it is hard to see why the antecedent clause would not make salient a proposition like *Someone suddenly closed the window*.

Finally, this set of observations further extends to the impossibility of voice mismatches under sluicing (see Merchant 2001, Chung 2005, AnderBois 2010b):

- (25) a. The candidate was abducted but we don't know who by/by who.  
b. \*Somebody abducted the candidate, but we don't know by who.  
c. Somebody abducted the candidate, but we don't know by who he was abducted.

As long as active and passive structures involve different lexical selections (in one sense or another), we can understand the ill-formedness of (25b) in the same terms as (24) and earlier examples: the lexical resources used in the ellipsis site must necessarily be the same as those out of which the antecedent TP is constructed. This we see as one of the consequences of re-use of existing linguistic material.<sup>4</sup>

Verb phrase ellipsis, as is well known, behaves differently (Kehler 2002:53):

---

<sup>4</sup>Eric Potsdam (2007) observes that voice mismatches seem to be possible under sluicing in Malagasy. We must take the position that such observations provide evidence for Pearson's (2005) reanalysis of 'voice' in Malagasy in terms of something like *Wh*-Agreement—see also Chung 2005 and Potsdam (2007:fn.11) for discussion of alternatives.



- (26)
- a. This problem was to have been looked into, but obviously nobody did.
  - b. In March, four fireworks manufacturers asked that the decision be reversed, and on Monday the ICC did.
  - c. Actually I have implemented it with a manager, but it doesn't have to be.
  - d. The janitor should remove the trash whenever it is apparent that it needs to be.

Following Merchant 2007, 2008, we take cases like (26) to involve ellipsis of the complement of the voice-determining head—a level of structure at which active and passive verbal phrases are indistinguishable, both in terms of the lexical resources used in their construction and in terms of the structures projected.

### 3.3. Chung's Generalization

We are also now in a position to understand a more recent discovery. Merchant (2001) demonstrated that exactly those languages which permit preposition stranding under *Wh*-movement also permit prepositions to be stranded in the elided TP of sluicing. Chung 2005 has observed that even in preposition-stranding languages, prepositions cannot be stranded in the elided TP in sprouting cases—when the interrogative phrase that is the remnant of ellipsis has no overt correlate in the antecedent clause. Compare (27), in which the interrogative phrase is a PP, with (28), in which the interrogative phrase is the object of a stranded preposition.

- (27)
- a. They're jealous but it's unclear of who/who of.
  - b. Last night he was very afraid, but he couldn't tell us of what/what of.
  - c. Mary was flirting, but they couldn't say with who/who with.
  - d. We're donating our car, but it's unclear to which organization.
  - e. The UN is transforming itself, but into what is unclear.
- (28)
- a. \*They're jealous but it's unclear who.
  - b. \*Last night he was very afraid, but he couldn't tell us what.
  - c. \*Mary was flirting, but they couldn't say who.
  - d. \*We're donating our car, but it's unclear which organization.
  - e. \*The UN is transforming itself, but what is unclear.

Of course, preposition stranding in the absence of ellipsis is unproblematic:

- (29)
- a. They're jealous but it's unclear who they're jealous of.
  - b. Last night he was very afraid, but he couldn't tell us what he was very afraid of.
  - c. Mary was flirting, but they couldn't say who she was flirting with.
  - d. We're donating our car, but it's unclear which organization we're donating it to.
  - e. The UN is transforming itself, but what it is transforming itself into is unclear.

The puzzle here is why (28a–e) cannot be derived from (29a–e). We call this *Chung's Generalization*, also for its discoverer.

These observations are deeply puzzling for APPROACH 3—specifically, for the view that ellipsis is the reduction to silence of a syntactic object whose content is 'given' in some sense

(among many others, see Romero 1998, Merchant 2001). On that view, it is hard to see how we might distinguish the derivation in (30) from that in (31). Note the even more severe difficulty posed by these observations for APPROACH 1, which involves only mechanisms of pragmatic inference. Such theories too easily locate suitably salient content with which to fill out the interpretation of the *Wh*-phrase. There is no challenge whatever in computing in context what the interpretations of (28) ought to be.

- (30) a. She is jealous, but we don't know [ of who [ she is jealous of who ]].  
 b. She is jealous, but we don't know [ of who [ ]].
- (31) a. She is jealous, but we don't know [ who [she is jealous of who ]]  
 b. \*She is jealous, but we don't know [ who [ ]].

But these observations already follow inevitably from our proposals. (28a), for example, would begin with the fragment in (32):

- (32) [ unclear [<sub>CP</sub> who C [<sub>TP</sub> ]]]

Re-using the antecedent TP will produce (33):

- (33) [ unclear [<sub>CP</sub> who C [<sub>TP</sub> they're jealous ]]]

But from (33), the only structure that can be created by way of the Internal Merge operation is that in (34), which subsumes a violation of the lexical requirements of the adjective *jealous*.

- (34) [ unclear [<sub>CP</sub> *who* C [<sub>TP</sub> they're jealous *who* ]]]

So as long as those requirements must be respected—either at the point at which the DP *who* is (re)merged, or else at LF (if there is such a level), then the impossibility of (28a) is expected rather than puzzling. In fact, on this view, (28a) is impossible for exactly the same reason that (35) is impossible—a unification which seems entirely natural:

- (35) \*Who are they jealous?

As far as we are aware, there is no comparably natural treatment of these observations available at present under other approaches to sluicing.

#### 4. A Complementary Difficulty

The problem posed by the observations of (28) for versions of APPROACH 3 under a condition of givenness is that the requirement of givenness appears to be met but sluicing fails. But there is also a range of cases in which the requirement of givenness clearly is not met, but in which sluicing nevertheless succeeds (Chung 2005).

- (36) a. He put in a bid but I couldn't tell on whose behalf.  
 b. She went to the movies but we don't know who with.  
 c. She finished the project but we don't know with whose help.

- d. He's on the no-fly list but it's totally unclear for how long.
- (37)
- a. She was babbling away, but about what, I have no idea. (RTE radio, December 31, 2005)
  - b. ... with Argentina and Brazil increasingly worried about where they would get their oil and at what price. (*New York Times*, May 5, 2006)
  - c. I agree with the NYT Executive Editor that the public did benefit from the Times' disclosures about NSA and Treasury surveillance, though it's impossible to know at what cost. (David Ignatius, *Washington Post*, July 5, 2006)
  - d. Batwoman is set for a comicbook return. But what as? (<http://news.bbc.co.uk/>, Friday, June 2, 2006)

Cases such as (37) are handled without elaboration by the proposal sketched earlier. It is at best unclear how they can be understood in a world in which sluicing is deletion under semantic 'identity' or givenness. Such a view would require that the pairs of propositions in (38)–(43) be in the required relation (equivalence, mutual entailment, or whatever):

- (38)
- a. [ he put in a bid ]
  - b. [ he put in a bid on someone's behalf ]
- (39)
- a. [ she went to the movies ]
  - b. [ she went to the movies with someone ]
- (40)
- a. [ she finished the project ]
  - b. [ she finished the project with someone's help ]
- (41)
- a. [ he's on the no-fly list ]
  - b. [ he's on the no-fly list for some length of time ]
- (42)
- a. [ she's babbling away ]
  - b. [ she's babbling away about something ]
- (43)
- a. [ where they would get their oil ]
  - b. [ where they would get their oil at some price ]

But in none of these cases does the proposition expressed by the (a) example entail the proposition expressed by the (b) example. In the case of (43), for instance, getting oil does not entail that the oil be obtained for a price (there are many ways of obtaining oil other than buying it). Similarly for (42)—one can babble without babbling about anything. And in (38), the proposition that he put in a bid does not entail that he put in a bid on someone's behalf. We believe that the observation is quite general.

Given that the (b) examples entail the (a) examples, accommodation is sometimes suggested as a means of upgrading the interpretation of the antecedent clause in such cases so that equivalence or mutual entailment could be achieved (see Fox 1999 for one such proposal). The challenge, it seems to us, would be to constrain accommodation so that it would permit sluicing in (37), for instance, but not in many of the ill-formed cases that we considered earlier—in (24), (25b), or in (28), for example.

In contrast, our proposal handles all of these cases without elaboration, because it requires only that the elided TP be a monotonic extension, both syntactically and semantically, of the antecedent TP. Internal merge can add new material to an antecedent clause in the ellipsis site, as long as lexical and morphosyntactic requirements are satisfied. From this it follows that there will be no general requirement that the interpretation of the antecedent clause be equivalent to, or even entail, the interpretation of the elided clause.

Nominal-internal cases (Chung 2005) make the same point:

- (44)
- a. She's reading something, but I don't know from which textbook.
  - b. She's eating a pizza, but I don't know from which restaurant.
  - c. She's editing a manuscript, but I don't know from what period.

Such cases are perfectly natural, but there is no entailment here from the interpretation of the antecedent to the interpretation of the missing TP.

## 5. Semantic Consequences of Re-Use

In the view presented here, the empirical patterns surveyed above are seen as consequences of understanding sluicing as the re-use of existing linguistic material. So far we have been concerned with the lexical and syntactic consequences of re-use—with the phenomena that support the assumption that 'the syntax in the silence' is simply an interpreted syntactic object, which has already been used in the discourse and which now serves as a resource in interpreting the sluice.

We now consider the semantic consequences of this re-use. In particular, we investigate whether the syntactic re-occurrences of TP's in sluices are understood as uses of the TP's in the strongest pragmatic sense—that the syntactic object in the ellipsis site counts as being introduced into the collaborative game of constructing shared contexts.

We conclude that in the case of sluicing, it does not—in contrast to (some) other types of ellipsis, notably VP ellipsis. We will see that sluices are understood as if the re-use of a familiar linguistic expression constitutes re-use of its interpretation as well.

Here we will make the case by examining the interpretation of referential indefinites which are subject to a novelty condition on their discourse reference (Heim 1982). As a result of the novelty condition, each syntactic token of an indefinite introduces a new discourse referent. That is, (45a) is interpreted as involving two perpetrators, in contrast to (45b).

- (45)
- a. Someone committed a crime on Monday and someone committed a crime on Tuesday.
  - b. Someone committed a crime on Monday and he committed a crime on Tuesday.

We will follow common terminology and say that each token of *someone* above introduces a distinct discourse referent. Similarly, in (46) Jill and Jack know similar things, but we assume that their knowledge involves distinct perpetrators.

- (46) Jill knows that someone committed a crime, and Jack knows that someone committed a crime.

The embedded questions in (47) behave similarly, in that the two syntactic tokens of the indefinite *a crime* are associated with distinct discourse referents.

- (47) Jill asked where someone had committed a crime, and Jack asked when someone had committed a crime.

The association of an indefinite with a discourse referent can be used as a probe for the act of using the indefinite. Each use, in this strongly pragmatic sense, is expected to involve creation of a new discourse referent. If we want to know whether a distinct syntactic occurrence of an indefinite counts as a distinct pragmatic use of the indefinite, we can use this probe. Distinct discourse referents indicate distinct pragmatic uses; same discourse referent indicates that the second syntactic occurrence doesn't count pragmatically as a use—but rather, in our terms, as a re-use.

If ellipsis in general involves the re-use of a familiar linguistic expression, we should ask whether that re-occurrence counts as a new pragmatic use of the expression. If re-occurrence constitutes a new use, then indefinites occurring in an ellipsis ought to trigger new discourse referents despite their silence. If re-occurrence does not constitute a new use, but merely re-use, then the indefinite will not be associated with the creation of a new discourse referent: the interpretation of the second occurrence would involve the discourse marker associated with its first (and only) independent use.

Our current work suggests that ellipses are not uniform in this regard. Sluicing, at least, involves re-occurrences that are not interpreted pragmatically as new uses. In most cases, the material in the elided TP seems to be unable to introduce new discourse referents. Compare (47) with (48):

- (48) Jill asked where someone had committed a crime, and Jack asked when.

The only natural interpretation of this example, it seems, is that Jack's question is about the same perpetrator, and the same crime, that Jill's question is about; in other words, (48) can be paraphrased 'Jill asked where person *x* had committed crime *y*, and Jack asked when *x* had committed *y*'. This is the interpretation that would be expected if the discourse markers employed in the antecedent TP are carried over into the interpretation of the elided TP. Similarly, in (49):

- (49) Where someone commits a crime doesn't determine how.

the only natural interpretation is that it is false that where the random person *x* commits crime *y* determines how *x* commits *y*.

The non-synonymy of (47) and (48) is replicated in the example pairs in (50)–(54). In each pair, the indefinite that putatively occurs in the sluice in the (b) example cannot be understood as introducing a new discourse referent:

- (50) a. We know what someone was reading, but we don't know to who someone was reading.  
b. We know what someone was reading, but we don't know to who.
- (51) a. Although we know who someone spoke to, we don't know what someone spoke (to

- someone) about.
- b. Although we know who someone spoke to, we don't know what about.
- (52) a. Jill wondered why Tracy dated a student, and Fred wondered for how long Tracy dated a student.  
b. Jill wondered why Tracy dated a student, and Fred wondered for how long.
- (53) a. A high government official was critical of the *New York Times*, but it's not clear what other newspapers a high government official was critical of.  
b. A high government official was critical of the *New York Times*, but it's not clear what other newspapers.
- (54) a. Someone from Santa Cruz talked to SAM, but we're not sure who else someone from Santa Cruz talked to.  
b. Someone from Santa Cruz talked to SAM, but we're not sure who else.

At one level, the observation that the same discourse markers are employed in the elided TP as in the antecedent TP seems expected. It ought to follow immediately from our proposal that sluicing involves re-use of existing linguistic material; specifically, from the claim that the content of the elided TP is supplied by copying of the antecedent TP, including its intepretation and associated discourse markers. (We appeal to copying rather than the Internal Merge operation here, because the relation must be able to operate across sentences uttered by different participants in discourse.)

However, the patterns illustrated in (50)–(54) are profoundly surprising when viewed from the perspective of a general theory of ellipsis.

Since Hankamer and Sag 1976, it has been recognized that one of the hallmarks of ellipsis is precisely the ability of elided material to introduce new discourse referents. Consider, for instance, the VP ellipsis in (55a), which has an interpretation synonymous with (55b)—one in which each syntactic token of *a book* introduces a new discourse marker.

- (55) a. Kate is reading a book, and I am too.  
b. Kate is reading a book, and I am reading a book too.

The ability of elided material to introduce new discourse referents lies behind the missing antecedent phenomenon, which is used by Hankamer and Sag as a diagnostic of ellipsis as opposed to deep anaphora (Grinder and Postal 1971, Hankamer and Sag 1976).

- (56) a. \*I've never ridden a camel, and it was of the two-humped variety.  
b. I've never ridden a camel, but Ivan has, and it was of the two-humped variety.

If the missing antecedent phenomenon is truly characteristic of ellipsis, then we need to ask whether it is sluicing that is atypical in its interpretation and, if so, why it should be.

We conjecture here that the contrast is correlated with the size of the ellipsis site. Sluicing and VP ellipsis differ in whether the content that must be supplied by copying of an antecedent XP is larger or smaller than the domain of existential closure, which we take to be the smallest constituent in which all the predicate's arguments have had a chance to be introduced (see Chung and Ladusaw 2004). In sluicing, the missing content is larger than the domain of existential closure, so that the

re-used expression has a complete interpretation in terms of a discourse model. The re-occurrence of the expression in the sluice simply provides that model to the interpretation.

In VP ellipsis, on the other hand, the missing content is smaller than the domain of existential closure, so any indefinites that are copied over from the antecedent VP can become existentially closed ‘again’ in the new domain, with the result that new discourse markers will be introduced. From this follow examples like (56b) (on the relevant interpretation), and the missing antecedent phenomenon.

The observation that there are cases of sluicing in which the elided material cannot introduce new discourse referents is both novel and—we believe—undeniable for examples of the type (50)–(54).

It remains to be seen whether the observation is fully general; notice, to begin with, that the examples cited above all involve sprouting. Even without a definitive answer, however, we can bring the preceding discussion to bear on another sluicing pattern that CLM could not account for, namely, the phenomenon of vehicle change.

### 5.1. Sluicing, E-type Anaphora, and Vehicle Change

As Romero (1998:67–69) and Merchant (2001:201–204) observe, and as Kyle Rawlins has also pointed out to us, theories of sluicing that impose a syntactic identity condition on the elided TP and the antecedent TP encounter a challenge in examples like (57).

- (57)
- a. The Deans know who resigned, but they’re not sure for what reasons.
  - b. He told us which kids were eating, but he couldn’t tell us how much.
  - c. That’s a gazebo. But I don’t know who built it or why. (Merchant 2001:201)
  - d. What interveners are able to ‘get out of the way’, and how? (Merchant 2001:202)
  - e. Always, when a female physicist has been nominated, she wants to know for which award.
  - f. Every female physicist who has been nominated wants to know for which award.

In cases like this, we cannot express what the elliptical sentence means without the ellipsis by simply pronouncing the supposed antecedent in place of the ellipsis. We must change the indefinite DP or the interrogative phrase to a pronoun. Following Fiengo and May 1994, we will refer to this phenomenon as *vehicle change*. The elided TP’s in (57) have interpretations equivalent to the interpretations of the non-elided questions in (58), which contain E-type pronouns.

- (58)
- a. The Deans know who resigned, but they’re not sure for what reasons he resigned.
  - b. He told us which kids were eating, but he couldn’t tell us how much they were eating.
  - c. That’s a gazebo. But I don’t know who built it or why s/he built it.
  - d. What interveners are able to ‘get out of the way’, and how are they able to get out of the way?
  - e. Always, when a female physicist has been nominated, she wants to know for which award she has been nominated.
  - f. Every female physicist who has been nominated wants to know for which award she

has been nominated.

But if the non-elided questions in (58) are the source of the ellipses in (57), then sluicing cannot require syntactic identity, because the E-type pronouns in the elided TP aren't identical to anything in the antecedent TP.

Such a syntactic mismatch, if real, could not be easily handled by CLM (or by Chung 2005). But in the context of our discussion of the interpretive consequences of the re-use of linguistic material in sluicing, it is natural to ask whether the syntactic mismatch in (57) is real or apparent. If we are right that sluicing involves the re-use of a fully interpreted TP from previous discourse, but that this re-use does not allow new discourse markers to be introduced, then a way of rising to the challenge posed by (57) is at hand.

The elided TP's in these examples do not, as a matter of morphosyntactic substance, contain pronouns at all. The E-type pronoun effect in interpretation is the natural result of the assumption that the antecedent TP is copied with its closed interpretation, including discourse markers.

Specifically, after copying, (57a) has the structure shown in (59).

(59) The Deans know [<sub>CP</sub> *who*<sub>1</sub> [<sub>TP</sub> *who*<sub>2</sub> resigned]], but they're not sure [<sub>CP</sub> for what reasons [<sub>TP</sub> *who*<sub>3</sub> resigned]].

In (59), *who*<sub>1</sub> and *who*<sub>2</sub> are different syntactic occurrences of a single token of *who*, related by Internal Merge. In the ellipsis, *who*<sub>3</sub> is a further syntactic occurrence of this token of *who*, related to the other two by the larger re-use of TP that sluicing involves. The E-type pronoun interpretation of *who*<sub>3</sub> is, on this view, a natural consequence of the assumptions needed to interpret structures like the antecedent, in which multiple syntactic occurrences of a phrase correspond to a single pragmatic use.

This, we think, is a satisfying resolution to one of the most difficult issues faced by the account of sluicing we advanced some fifteen years ago and return to here.

## 6. The Broader Picture and Some Open Issues

Part of the excitement of research on ellipsis is that every new investigation seems to raise as many questions as it resolves. In this spirit, we would like to conclude by pointing to some issues raised by the line of thought pursued here.

First, how far-reaching is the generalization that new discourse referents cannot be introduced by material inside the ellipsis in sluicing? The judgements we reported for examples (50)–(54) strike us as very clear. But other types of examples suggest that material inside the ellipsis site might be able to introduce new discourse markers after all. Consider (60).

(60) MARY was swindled by a lawyer, and it's not clear WHO ELSE.

In (60), the elided question seems to be about who other than Mary was swindled, with no requirement that the lawyer be the same one who swindled Mary. What distinguishes this example from those discussed earlier is that *else* is associated with a *Wh*-phrase which, in its origin site, c-commands the indefinite in the ellipsis. When this relation does not hold, as in (61), the more



general pattern re-emerges: the ellipsis introduces no new discourse referents.

(61) A lawyer swindled MARY, and it's not clear WHO ELSE.

Clearly there is some systematicity to the contrast between (60), on the one hand, and (50)–(54) and (61), on the other. Consider also (62):

(62) Joe was swindled by a lawyer—Mary doesn't know how many times.

The elided question in (62) allows an interpretation in which every time Joe was swindled, he was swindled by a different lawyer. In this interpretation, the indefinite in the re-used TP must have narrow scope. What we are tempted to propose for interpretations of this type is that the meaning of the indefinite is composed by Restrict (in the sense of Chung and Ladusaw 2004)—a mode of composition that would lead to the indefinite being associated with no discourse marker at all. The antecedent clause in (62), in other words, would be roughly synonymous with *Joe was lawyer-swindled*.

Some initial evidence appears to support this view. When distinct discourse markers are introduced by distinct syntactic tokens of an indefinite, they can collectively serve as antecedents for a plural pronoun.

(63) A woman committed a crime on Monday and a woman committed a crime on Tuesday.  
They were the same woman.

The same is true even when some of the markers are introduced within VP ellipsis.

(64) Kate has ridden a camel and Ivan has, too. They were the same camel.

But in contrast to the naturalness of these examples, there is something distinctly odd about the plural pronoun in (65):

(65) #Joe was swindled by a lawyer—Mary doesn't know how many times. They were the same lawyer.

This oddness we take as an indication that the narrow-scope reading of *a lawyer* in (62) involves Restrict, and no discourse marker is introduced. If so, there is no counterevidence here to our claim that no new discourse referents are introduced inside the ellipsis in sluicing. Clearly, though, further probing is required.

Another large issue is how the observations and arguments developed here are to be integrated with the body of evidence (developed by Merchant 2001 especially) which argues in favor of PF deletion approaches to sluicing. We fully recognize the force of these arguments. What is striking is that the evidence in question seems to come entirely from the merger cases. Put differently, PF deletion accounts, like Merchant's, offer admirably successful accounts of merger, but deal less well with sprouting. Our approach does a good job of handling sprouting, but is less successful when faced with the merger cases (and especially the connectivity effects they exhibit). What remains elusive is a successful unified account of sluicing. Presumably, such a unification

will involve a reconceiving of the apparent choice between deletion and re-use, a reconceiving that we cannot yet imagine.<sup>5</sup>

Finally, our discussion adds to the list of known contrasts between sluicing and VP ellipsis: tolerance of voice mismatches, island repair, cross-linguistic generality, and now the missing antecedent phenomenon. The contrast we discuss here raises a question about the pragmatic consequences of the ‘re-use’ of processed linguistic material as a resource for interpreting ellipsis sites. If VP ellipsis and sluicing are to be treated uniformly, then it must be the case that re-use of a coherently interpreted TP-sized unit differs in a principled way from re-use of a VP-sized unit, in terms of the pragmatic consequences. This strikes us as a speculation well worth exploring.

## References

- AnderBois, Scott. 2010a. Focus and un informativity in (Yukatek) questions. Manuscript, available at <http://anderbois.googlepages.com>.
- AnderBois, Scott. 2010b. Sluicing as anaphora to issues. Paper presented at SALT 20, University of British Columbia and Simon Fraser University, April 29–May 1, 2010.
- Büring, Daniel. 2003. On d-trees, beans, and accents. *Linguistics and Philosophy* 26:511–545.
- Chomsky, Noam. 2001. Derivation by phase. in *Ken Hale: A life in language*, ed. Michael Kenstowicz, 1–52. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 2008. On phases. in *Foundational issues in linguistic theory: Essays in honor of Jean-Roger Vergnaud*, eds. Robert Freidin, Carlos Otero, and Maria Luisa Zubizarreta, 133–166. Cambridge, Mass.: MIT Press.
- Chung, Sandra. 2005. Sluicing and the lexicon: The point of no return. in *BLS 31, Proceedings of the Thirty-First Annual Meeting of the Berkeley Linguistics Society*, eds. Rebecca Cover and Yuni Kim, 73–91. Berkeley, Calif.: Department of Linguistics, UC Berkeley.
- Chung, Sandra, and William Ladusaw. 2004. *Restriction and saturation*. Cambridge, Mass.: MIT Press.
- Chung, Sandra, William Ladusaw, and James McCloskey. 1995. Sluicing and logical form. *Natural Language Semantics* 3:239–282.
- Culicover, Peter, and Ray Jackendoff. 2005. *Simpler syntax*. Oxford and New York: Oxford University Press.
- Farkas, Donka, and Kim Bruce. 2010. On reacting to assertions and polar questions. *Journal of Semantics* 27:81–118.
- Fiengo, Robert, and Robert May. 1994. *Indices and identity*. Cambridge, Mass.: MIT Press.
- Fox, Danny. 1999. Focus, parallelism and accommodation. in *SALT 9*, eds. Tanya Mathews and Devon Strolovich. Department of Linguistics, Cornell University: CLC Publications.
- Fox, Danny, and Howard Lasnik. 2003. Successive-cyclic movement and island repair: The difference between sluicing and VP-ellipsis. *Linguistic Inquiry* 34:143–154.

---

<sup>5</sup> Recent work by Howard Lasnik (2009), responding in part to an earlier version of the material developed here, takes a step in this direction in maintaining deletion for the merger cases, but analyzing the sprouting cases by way of a combination of deletion and the kind of lowering that we appeal to in Section 2.

- Ginzburg, Jonathan. 1996. Dynamics and the semantics of dialogue. in *Language, logic, and computation*, ed. J. Seligman. Stanford, Calif.: CSLI Publications.
- Ginzburg, Jonathan, and Ivan Sag. 2000. *Interrogative investigations: The form, meaning and use of English interrogatives*. Stanford, Calif.: CSLI Publications.
- Grebenyova, Lydia. 2006. Sluicing puzzles in Russian. in *Proceedings of the Annual Workshop on Formal Approaches to Slavic linguistics 14 (FASL 14)*, 151–171. Ann Arbor, Michigan: Michigan Slavic Publications.
- Grinder, John, and Paul M. Postal. 1971. Missing antecedents. *Linguistic Inquiry* 2:269–312.
- Hankamer, Jorge. 1979. *Deletion in coordinate structures*. New York: Garland Publishing.
- Hankamer, Jorge, and Ivan Sag. 1976. Deep and surface anaphora. *Linguistic Inquiry* 7:391–428.
- Heim, Irene. 1982. The semantics of definite and indefinite noun phrases. Doctoral Dissertation, University of Massachusetts, Amherst.
- Kehler, Andrew. 2002. *Coherence in discourse*. Stanford, Calif.: CSLI Publications.
- Lappin, Shalom. 1999. An HPSG account of antecedent-contained ellipsis. in *Fragments: Studies in ellipsis and gapping*, eds. Shalom Lappin and Elabbas Benmamoun, 68–97. Oxford and New York: Oxford University Press.
- Lasnik, Howard. 1999. On feature strength: Three minimalist approaches to overt movement. *Linguistic Inquiry* 30:197–217.
- Lasnik, Howard. 2001. When can you save a structure by destroying it? in *Proceedings of the North East Linguistic Society 31*, eds. Minjoo Kim and Uri Strauss, 301–320. Amherst, Mass.: GLSA.
- Lasnik, Howard. 2009. Island repair, non-repair, and the organization of the grammar. in *Inter-Phases*, ed. Kleantes K. Grohmann, 339–353. Oxford and New York: Oxford University Press.
- Levin, Beth. 2003. Objecthood and object alternations. Handout from a talk given at the Department of Linguistics, UCLA, May 2nd 2003. Available at <http://www.stanford.edu/~belevin>.
- Levin, Lori. 1982. Sluicing: A lexical interpretation procedure. in *The mental representation of grammatical relations*, ed. Joan Bresnan, 590–654. Cambridge, Mass.: MIT Press.
- Manetta, Emily. 2005. *Wh*-expletives in Hindi-Urdu: The *v*P phase. Presented at the January 2006 meeting of the Linguistics Society of America, Albuquerque, New Mexico.
- Manetta, Emily. 2006. Peripheries in Kashmiri and Hindi-Urdu. Doctoral Dissertation, University of California, Santa Cruz.
- Merchant, Jason. 2001. *The syntax of silence: Sluicing, islands, and the theory of ellipsis*. Oxford and New York: Oxford University Press.
- Merchant, Jason. 2002. Swiping in Germanic. in *Studies in comparative Germanic syntax*, eds. C. Jan-Wouter Zwart and Werner Abraham, 289–315. Amsterdam: John Benjamins.
- Merchant, Jason. 2005a. Revisiting syntactic identity conditions. Paper presented at the Workshop on Identity in Ellipsis, UC Berkeley, October 8, 2005.
- Merchant, Jason. 2005b. Sluicing. in *The Blackwell companion to syntax*, eds. Martin Everaert and Henk van Riemsdijk. Oxford: Blackwell.
- Merchant, Jason. 2007. Voice and ellipsis. Manuscript, University of Chicago, available at <http://home.uchicago.edu/~merchant/publications.html>.

- Merchant, Jason. 2008. An asymmetry in voice mismatches in VP-ellipsis and pseudogapping. *Linguistic Inquiry* 39:169–179.
- Merchant, Jason. forthcoming. Variable island repair under ellipsis. in *Topics in ellipsis*, ed. Kyle Johnson. Cambridge: Cambridge University Press.
- Pearson, Matthew. 2005. The Malagasy subject/topic as an A-bar element. *Natural Language and Linguistic Theory* 24:381–457.
- Phillips, Colin. 2003. Linear order and constituency. *Linguistic Inquiry* 34:37–90.
- Phillips, Colin, and Shevaun Lewis. 2009. Derivational order in syntax: Evidence and architectural consequences. To appear in *Directions in Derivations*, C. Chesi, ed., Elsevier.
- Potsdam, Eric. 2007. Malagasy sluicing and its consequences for the identity condition on ellipsis. *Natural Language and Linguistic Theory* 25:577–613.
- Romero, Maribel. 1998. Focus and reconstruction effects in wh-phrases. Doctoral Dissertation, University of Massachusetts, Amherst.
- Ross, John R. 1969. Guess who? in *CLS 5: Papers from the fifth regional meeting of the Chicago Linguistic Society*, eds. Robert Binnick, Alice Davison, Georgia Green, and Jerry Morgan, 252–286. Chicago, Illinois: Chicago Linguistic Society.
- Sag, Ivan. 1976. Deletion and logical form. Doctoral Dissertation, MIT.
- Williams, Edwin. 1977. Discourse and logical form. *Linguistic Inquiry* 8:101–139.
- Yoshida, Masaya, Isaac Rottman, Jiyeon Lee, and Michael Walsh Dickey. 2010. Islands under the predicted structure. Poster presentation at the 23rd Annual CUNY Conference on Human Sentence Processing, March 18–21, 2010, New York University.