Identity and Interpretation: Syntactic and Pragmatic Constraints on the Acceptability of Sluicing[*]

Margaret Kroll & Deniz Rudin

University of California, Santa Cruz

1. Introduction

Sluicing is an ellipsis phenomenon in which the TP of an interrogative is elided, stranding an overt wh-phrase.

(1) Bernie knows that [someone voted for Trump]$_A$, but he doesn't know who <~~voted for Trump~~>$_E$.

Since its original observation in Ross (1969), most researchers have agreed that ellipsis in sluicing constructions is licensed via an identity condition that holds between some antecedent material (A) and elided (or missing) material (E). The exact nature of this identity condition has characterized the force of the majority of the work on the topic since. In this paper, we focus on possible and impossible mismatches between antecedent and elided content in sluicing constructions. We use these data to advocate for a novel account of sluicing in which syntactic grammaticality constraints and pragmatic licensing constraints work together to account for the full array of sluicing data.

The paper proceeds as follows. In section 2 we lay out the current empirical terrain of possible and impossible sluicing mismatches. Section 3 reviews previous accounts of sluicing and situates the current project within this landscape. Section 4 lays out our syntactic identity condition, and section 5 discussed our pragmatic interpretation condition. Section 6 concludes.

2. The empirical terrain

This section outlines the empirical terrain of sluicing as it stands currently. The test for a complete identity condition on sluicing is twofold: it must be flexible enough to allow for attested mismatches between antecedent and ellipsis sites in sluicing constructions, while being strict enough to rule out impossible mismatches. Multiple types of attested mismatches have been given in the literature; these are given below in examples (2)-(8).

First, a methodological aside on the data used throughout: the novel corpus examples given here were identified by undergraduate annotators trained by the Santa Cruz Ellipsis Project and were verified by graduate students and faculty working on the Ellipsis Project. Many examples presented have more than one possible interpretation for the pre-sluice (i.e. the un-elided form of the example). The claim is not that the pre-sluices provided here are the *only* interpretation available for each example, but merely that they are felicitous, freely available interpretations.

Possible Sluicing Mismatches

(2) SPROUTING (Chung et al. 1995/2011, Merchant 2001, AnderBois 2014):
[John called me]$_A$, but I don't know with whose phone <~~he called me~~>$_E$.

(3) FINITENESS MISMATCHES (Merchant 2001 pg. 22, 2005):
The baseball player went public with his desire [to be traded]$_A$. He doesn't care where <~~he is traded~~>$_E$.

(4) TENSE MISMATCHES (Merchant 2005):
[Your plant is alive]$_A$, but you can never be sure for how long <~~it will be alive~~>$_E$.

(5) GERUND ANTECEDENTS (Merchant 2001, 2016):
[Gardening]$_A$ is very fun once you learn how <~~to garden~~>$_E$.

(6) ILLOCUTIONARY FORCE MISMATCHES (Merchant 2001):
[Always save a little from each paycheck]$_A$. Once you're older, you'll understand why <~~you should always save a little from each paycheck~~>$_E$.

(7) MODALITY MISMATCHES (Rudin 2017, Merchant 2001 ch. 5):[1]
 a. Although Sally sees that [she must defeat her competitors$_i$]$_A$, she relies on Susie to tell her how <~~to defeat them$_i$~~>$_E$.
 b. This is a problem$_i$ that [physics must solve t_i]$_A$, but for a long time it wasn't clear how <~~physics could solve it$_i$~~>$_E$.

(8) POLARITY MISMATCHES (Kroll 2016a, 2016b):
 a. I don't think that Trump$_i$ will comply with the investigators, but I don't know why <~~he$_i$ won't comply with the investigators~~>$_E$.

---

[1]The modality and polarity mismatch data comes from collaborative work on the Santa Cruz Ellipsis Project http://ohlone.ucsc.edu/SCEC/.

b. *Context: On the day the Japanese invaded Pearl Harbor, Hummel was rounded up and locked in an internment camp along with 2,000 other foreigners...*
"I don't know why <~~I wasn't scared~~>$_E$, but [I really cannot remember being scared]$_A$," Hummel said. "It all seemed like great fun."

However, there are also substantive restrictions on the types of mismatches allowed. Mismatches that have been observed to be impossible are given below in examples (9)-(11).

Impossible Sluicing Mismatches

(9) ACTIVE/PASSIVE MISMATCHES (Merchant 2013b):
*[John was murdered]$_A$, but I don't know who <~~murdered him~~>$_E$.

(10) CAUSATIVE/INCHOATIVE MISMATCHES (Merchant 2005):
*[The jug broke]$_A$, but I don't know who <~~broke the jug~~>$_E$.

(11) DOUBLE OBJECT/OBLIQUE OBJECT MISMATCHES (Merchant 2005):
a. *[They embroidered something with peace signs]$_A$, but I don't know on what <~~they embroidered peace signs~~>$_E$.
b. *[They embroidered something on their jackets]$_A$, but I don't know with what <~~they embroidered their jackets~~>$_E$.

A complete theory of the identity condition on sluicing must be permissive enough to allow the acceptable mismatches in (2)-(8), while being rigid enough to rule out the unacceptable mismatches in examples (9)-(11).

3. Previous Accounts

3.1 The e-GIVENness Account

In his seminal book, Merchant (2001) observes that a strict syntactic identity condition between antecedent and ellipsis sites, as proposed in Ross (1969), is too strict to capture the entire range of possible data. For example, the antecedent and ellipsis sites in (12) below contain a finiteness mismatch and therefore fail a strict syntactic identity condition.

(12) FINITENESS MISMATCHES:
[Sally cooks every night]$_A$. She learned how <~~to cook~~>$_E$ from her father.

Based on the possibility of syntactic mismatches between antecedent and ellipsis sites in sluicing constructions, Merchant proposes a purely semantic identity condition in terms of mutual entailment between the sluicing antecedent and ellipsis sites, which he calls e-GIVENness. Under e-GIVENness, given formally below, a TP can be elided iff it is entailed by a salient antecedent, modulo existential and focus closure.[2]

---

[2]e-GIVENness is largely a bidirectional version of Schwarzschild's (1999) GIVENness condition. See Schwarzschild (1999) and Merchant (2001) Ch. 1 for the relevant discussions of existential and focus closure and the motivation for the bidirectionality of e-GIVENness.

(13) a. <u>e-GIVENness:</u>
An expression E counts as e-GIVEN
iff E has a salient antecedent A and,
modulo $\exists$ type-shifting:
i) A entails F-clo(E), and
ii) E entails F-clo(A)

b. <u>Focus condition on TP-ellipsis:</u>
A TP α can be deleted only if α
is e-GIVEN

3.2   Challenges to e-GIVENness

Subsequent work has raised empirical challenges for the e-GIVENness condition on sluicing, suggesting that it is both too weak and too strong.

Mutual Entailment (alone) is Too Weak

One line of work argues that semantic identity can't be the only identity condition licensing sluices. Merchant (2005/2013b) and Chung (2005/2013) argue that there are also substantive syntactic restrictions on sluicing. For instance, it has been observed that active/passive mismatches are impossible under sluicing, as shown in (14). The authors argue that this impossibility is unexplained under a purely semantic entailment identity condition, as active and passive versions of identical propositions entail one another.

(14) ACTIVE/PASSIVE MISMATCHES:
*[John was murdered]$_A$, but I don't know who <~~murdered him~~>$_E$.

Mutual Entailment is Too Strong

Another line of work (Kroll 2016a, 2016b, Rudin 2017) argues that e-GIVENness is too strong a condition on sluicing. Specifically, e-GIVENness incorrectly rules out mismatches in modality and polarity of the kind robustly attested in recent corpus work (q.v. §2). For example, (15) contains a mismatch in polarity between its antecedent and elided content. There is no relevant semantic identity condition that holds between the antecedent and elided content, as the propositions expressed in each are opposites.[3]

(15) POLARITY MISMATCHES:
Context: Students were given the option to do an extra credit problem, but were required to mark which problem they did on a spreadsheet. There is no mark next to John's name. The TA says:
Either [John$_j$ didn't do an extra credit problem]$_A$, or he$_j$ didn't mark which one$_i$
<~~he$_j$ did t_i~~>$_E$.

---

[3]Jason Merchant (pc) points out that these data run counter to the claim made in Merchant (2013a, pg. 15) that negation present in the antecedent of a sluicing construction requires a corresponding negation present in the ellipsis site.

3.3 The Current Landscape

We divide the current landscape of sluicing theories into roughly two camps, what we are calling *semantics+* theories and *hybrid* theories.[4]

(I) Semantics+

Semantics+ theories consist of a predominantly semantic identity condition, with supplemental constraints on non-semantic aspects of identity. These include the continuation-based analysis of Barker (2013)—which generates the same predictions as a semantic identity condition, but whose type-logical grammar includes provisions for Case-matching—and AnderBois (2014)'s Inquisitive Entailment, which requires entailment between the inquisitive content of full CPs rather than merely the semantic content of the elided TP, and follows Merchant (2007) in adopting the constraint No New Morphemes, requiring that E not include any morphemes that aren't in A.[5] As these accounts are *more* restrictive than e-GIVENness, the objections outlined here that e-GIVENness is too restrictive to account for the entire range of mismatch data apply equally to these accounts, as well.

(II) Hybrid

Hybrid theories are those which include both substantive syntactic and substantive semantic conditions on the grammaticality of sluicing.[6] These include Chung (2013), who argues that in addition to a semantic identity condition like e-GIVENness, the wh-remnant left behind by sluicing must be the argument of a predicate that is argument-structurally identical to its antecedent predicate, and must be assigned Case by a Case-assigner identical to its antecedent.[7]

While this categorization is not intended to be exhaustive in nature, it is a general sketch of the landscape in which we situate our proposal.

3.4 Goal of the Current Project

The current project advocates for a new type of approach to the acceptability of sluicing, which we call the dual-perspective approach. The dual perspective approach argues that there is both a grammar and a pragmatics of sluicing. While the full range of data is problematic from either perspective in isolation, it becomes tractable when both are considered simultaneously. Specifically, we make the following two proposals for this account. First,

---

[4]Certain theories, such as Ginzburg & Sag (2000) and Barros (2014), fall outside the scope of this division in relying on syntactic as well as pragmatic constraints. As the syntactic constraints in these two theories can also be argued to be theoretically stipulative, we believe our current objections to the discussed theories here can be extended to these theories as well. Note, though, that the pragmatic aspect of the current talk shares much in spirit with these proposals.

[5]Note that example (24) here shows this generalization to be empirically inaccurate.

[6]Hybrid syntactic/semantic theories of ellipsis have their roots in analyses of Verb Phrase Ellipsis proposed by Rooth (1992), Tancredi (1992) and Heim (1997).

[7]Merchant (2013b) also argues for non-trivial syntactic restrictions on ellipsis, in virtue of the impossibility of voice mismatches under sluicing.

that the grammar of sluicing liberally allows mismatches of the type shown in §2. The grammatical identity condition serves only to rule out those mismatches shown to be robustly impossible. Our second proposal addresses what makes a grammatical mismatch available or unavailable for any particular sluice in context. Our second proposal is that there is a pragmatics of sluicing; namely, that cooperative speakers only elide material if their interlocutors will be able to recover their intended interpretation. This pragmatics is conceptually necessary and conceptually independent of the grammaticality of elliptical constructions.

The goals of the current paper are as follows. We present a purely syntactic identity condition that allows all mismatches that haven't been shown to be syntactically impossible. We then present a pragmatic condition that restricts the set of such mismatches that are available in any given context. We propose that these two conditions together correctly account for all attested mismatches while correctly ruling out all mismatches that have been shown to be impossible. More detailed accounts of the syntactic identity condition and pragmatic interpretation condition proposed in this talk can be found in Rudin (2017) and Kroll (2016a/b), respectively.

4.   The syntax of sluicing (précis of Rudin 2017)

Any condition requiring some form of syntactic identity between antecedent and ellipsis site must permit the grammatical mismatches from §2. Because some mismatches are possible, total syntactic identity is not feasible. An alternative to total identity is to evaluate syntactic identity head by head, applying the requirement of syntactic identity to a (potentially proper) subset of the heads contained within the elided constituent.[8]

This perspective facilitates the following intuition, prompted by the grammaticality of sprouting: syntactic identity conditions on sluicing should ignore material that doesn't go unpronounced by virtue of the ellipsis—i.e., the syntactic identity condition should phrases that has 'moved out' of the ellipsis site and escaped deletion thereby. This can be implemented with a head-based syntactic identity condition for sluicing that ignores traces/lower copies.[9]

(16)   SYNTACTIC IDENTITY CONDITION (to be revised):
       Given a prospective ellipsis site **E** and its antecedent **A**, ellipsis of any head $h \in$ **E** is licit only if either h is a non-maximal element in a movement-dependency chain or h has a STRUCTURE-MATCHING CORRELATE $n \in$ **A**.

Supplementary definitions:

(17)   STRUCTURE-MATCHING:
       A node n STRUCTURE-MATCHES a head h iff h and n are dominated by an identical sequence of immediately dominating notes (within the domain of identity).

---

[8]For concreteness, we can consider a 'head' to be a syntactic terminal node post-vocabulary insertion.

[9]Though this may seem stipulative, it is a natural move given the assumption that ellipsis is phonological deletion—why should the phonology care about material that wasn't going to be pronounced anyway?

(Where a 'sequence of immediately dominating notes' above a node *n* is the label of *n*'s mother, followed by the label of *n*'s mother's mother, and so on.)

(18) CORRELATE:
A node *n* can be a correlate of a head *h* iff the content of *n* is either lexically or referentially identical to *h*.[10]

The condition in (16) will allow for sprouting, while ruling out the impossible mismatches from §2. For instance, consider the argument structure mismatch in (11b), repeated here:

(19) *[They embroidered something on their jackets]$_A$, but I don't know with what ~~they embroidered their jackets~~$_E$.

In this case, the deleted heads in the DP *their jackets* in E do have correlates in A, but those correlates are not structure-matching: the antecedent DP is inside a PP, but the elided DP is not.

This first pass at a condition is too strong: it doesn't allow for mismatches of the kind shown to be possible in §2. The empirical generalization that can be made about these mismatches is that the mismatches that are grammatical are all above the verbal domain; the mismatches that are ungrammatical are inside of it.

Intuitively, sluicing privileges content that originates within the verbal domain (the verb and its arguments) over content that doesn't (cf. Langacker's (1974) notion of 'objective content'). This intuition can be implemented by restricting the head-based syntactic identity condition to heads that originate within the 'eventive core' of the elided clause, or its highest *v*P that is associated with an event-introducing verb.[11]

(20) SYNTACTIC IDENTITY CONDITION (final):
Given a prospective ellipsis site **E** and its antecedent **A**, non-pronunciation of the phonological content associated with any head $h \in$ **E** is licit only if at least one of the following conditions hold

a. *h*'s external merge site is outside of **E**'s eventive core[12]

b. *h* has a STRUCTURE-MATCHING CORRELATE $i \in$ **A**.

This revised condition now permits the attested mismatches from the previous section: it (roughly speaking) allows all mismatches above the *v*P.

---

[10]See appendix A for more details on correlates.

[11]The relevance of event-introducing verbs has to do with the possibility of modal mismatches in languages with modal verbs, like German. For reasons of space, a full elaboration of this argument is impossible here—see Rudin (2017) for the full story.

[12]Because the syntactic condition must ignore material that has moved out of the ellipsis site, this condition must be assessed at some stage of the syntax after all visible movement operations have occurred, either surface syntax or LF. Because (in English) subjects move out of the verbal domain, and subject mismatches are impossible under sluicing, we must talk about material that *originated within* the eventive core rather than material that is within it at the time the syntactic identity condition is assessed.

(21) Sally knows that there is always the potential for [awful things to happen]$_A$, but she doesn't know when ~~<awful things {will, might} happen>~~$_E$.
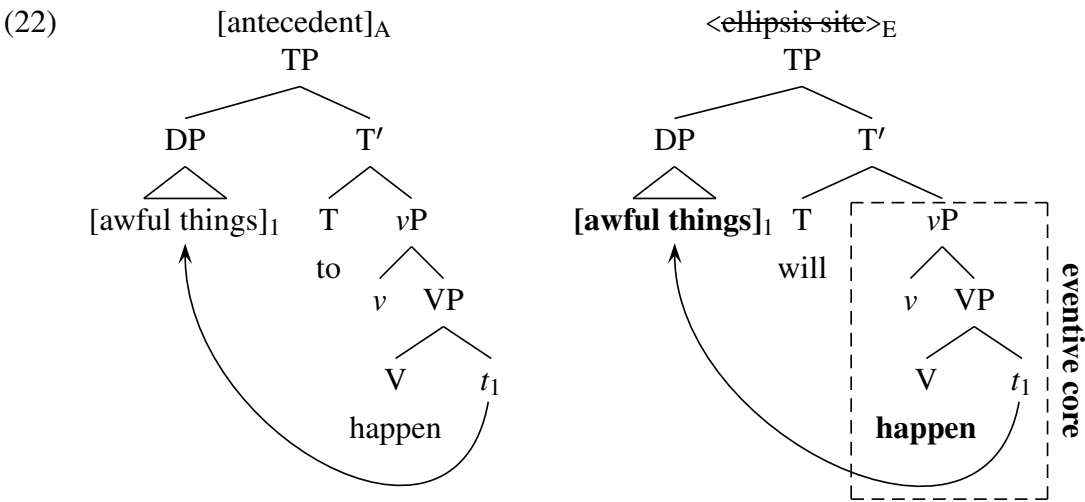
(22)   [antecedent]$_A$ ~~<ellipsis site>~~$_E$

In (22), material originating in the eventive core of E is bolded; material not bolded is not required to have a structure-matching correlate in the antecedent, and is therefore freely mismatchable.

5. The pragmatics of sluicing (précis of Kroll 2016a)

We've seen that the syntactic identity condition given here correctly rules out impossible mismatch categories in sluicing constructions. However, it over-generates the availability of possible interpretations of ellipsis sites. It is not the case that the antecedent and ellipsis sites in sluiced constructions can always mismatch in, for example, polarity or modality: the mismatch must be pragmatically licensed. To illustrate, examples (23a) and (23b) contain minimally different contexts and sluices; however, while the sluice in (23a) is acceptable, the sluice in (23b) is not.

(23)   a. **Context:** Students in a semantics class were given a set of extra credit problems, which they could choose to do exactly one of. If they chose to do a problem, they were required to mark the number of that problem on a spreadsheet. The professor and TA look at the spreadsheet and see that nothing is marked down under John's name. The TA says to the professor:

      Possible Sluice: Either [John$_j$ didn't do an extra credit problem]$_A$, <u>or</u> he$_j$ didn't mark which one$_i$ ~~<he$_j$ did t_i>~~$_E$.

  b. **Context:** Students in a semantics class were given a set of extra credit problems, which they could choose to do up to half of. All students were required to put a mark on a spreadsheet next to each question, indicating whether they did or didn't do it. The professor and TA look at the spreadsheet and see that John has not put a mark next to all of the questions. The TA says to the professor:

> **Impossible Sluice:** [John$_j$ marked which problems he did]$_A$, <u>but</u> he$_j$ didn't mark which ones$_i$ <~~#he$_j$ didn't do t$_i$~~>$_E$.

Note that example (23b) is acceptable in its un-elided form. It is also not the case that the example is unacceptable because of the addition of negation in the ellipsis site, which is attested in corpus examples such as the following:

(24) **Context:** On Dec. 10, [Senator] McCain sent a letter to the FCC urging the five-member board to end two years of deliberations and decide whether Paxson Communications should be given a license for a Pittsburgh station. Angela J. Campbell, an attorney for opponents to the deal, told the Globe that McCain's letter likely 'tipped' the scales in favor of the decision.

Sluice: Senator McCain said, '[Do it by December 15]$_A$ or explain why <~~you didn't do it by December 15~~>$_E$,' and the commission jumped to it and did it that very day, Campbell told the Globe.

We argue here that examples such as (23b) should not be ruled out by a syntactic constraint on possible structure mismatches, since mismatches in polarity are possible and attested, as we see in (23a). Instead, we propose that examples such as (23b) are properly filtered out by our pragmatics.

5.1 Pragmatic Interpretation Condition

Our pragmatic interpretation condition optimally constrains the availability of mismatches by requiring contextual entailment between the local context and the ellipsis site. Informally, a TP can be elided iff it expresses a proposition that is entailed by its local context (c_L) and is uniquely salient.

(25) LOCAL GIVENNESS:
A TP α can be deleted iff $\mathrm{ExClo}(\llbracket \alpha \rrbracket^{w,g})$ expresses a proposition p, such that $c_L \subseteq p$ and p is uniquely salient.

Section 5.2 gives a case study of how the pragmatic interpretation condition works.

5.2 Deriving Exclusive Disjunction Polarity Reversal Sluices

(26) Either [John$_j$ didn't do an extra credit problem]$_A$, or he$_j$ didn't mark which one$_i$ <~~he$_j$ did t$_i$~~>$_E$.[13]

The utterance of (26) asserts that either (A) John didn't do an e.c. problem or (E) John did an e.c. problem. The disjunction is exclusive because the two disjuncts are opposites: they cannot both be true (or false) at the same time. The analysis of (26) given here uses

---

[13]Note that the wh-phrase *which one* is d-linked in the sense of Pesetsky (1987), meaning that it ranges over a salient set in the discourse. As the d-linking is orthogonal to the example here, we suppress this issue for the sake of expositional clarity.

Karttunen's (1974) proposal of the local contexts for exclusive disjunction constructions. Specifically, Karttunen gives the following asymmetric proposal for disjunctive constructions:

Karttunen's (1974) Local Context for Exclusive Disjunction:
For propositions **p**, **q** such that **p** $\vee$ **q** is uttered in a context c:

$\mathbf{c_L}$ for **p** = **c**,

$\mathbf{c_L}$ for **q** = **c** + ¬**p**.

The proposal says that the local context for the first disjunct of an exclusive disjunction construction is the global conversational context. The local context for the second disjunct is the global conversational context intersected with the negation of the first disjunct. The intuition for this proposal is that for an exclusive disjunction to be true one of the disjuncts must be true, but not both. Therefore, the context in which the first disjunct is admitted is just the global conversational context, but the context in which the second disjunct is admitted takes into account its opposition to the first disjunct, and so all the worlds in which the first disjunct holds are excluded.

Application of Local Givenness to (26):

i. *Denotation of* A*:*
$[\![A]\!]^{w,g} = \{w : \neg\exists x[\textbf{extra credit problem}(x)(w) \wedge \textbf{do}(x)(j)(w)]\}$

ii. *Denotation and Existential Closure of* E*:*
$ExClo([\![E]\!]^{w,g}) = \{w : \exists x[\textbf{extra credit problem}(x)(w) \wedge \textbf{do}(x)(j)(w)]\}$

iii. *Karttunen's Local Context for* A *and* E
$c_{L\text{-}A} = c = W$
$c_{L\text{-}E} = c + \neg A = W \cap \{w : \neg\neg\exists x[\textbf{extra credit problem}(x)(w) \wedge \textbf{do}(x)(j)(w)]\}$

iv. *Local Givenness:*
$c_{L\text{-}E} \subseteq ExClo([\![E]\!]^{w,g}) = \{w : \neg\neg\exists x[\textbf{extra credit problem}(x)(w) \wedge \textbf{do}(x)(j)(w)]\} \subseteq$
$\{w : \exists x[\textbf{extra credit problem}(x)(w) \wedge \textbf{do}(x)(j)(w)]\}$

Local Givenness is satisfied in step (iv) because the local context for E entails the proposition expressed by E, assuming a classical logic in which a doubly negated proposition equals its unnegated equivalent. We therefore correctly predict felicitous elision of E.

Recall the impossible sluice from (23b), repeated below. How does the current account rule this out?

Impossible Sluice: [John$_j$ marked which problems he did]$_A$, <u>but</u> he$_j$ didn't mark which ones$_i$ <#he$_j$ didn't do t$_i$>$_E$.

The local contextual entailment of the elided phrase comes from the presuppositional properties of the disjunction operator; replacing the disjunction operator with 'but' changes the contextual entailments such that Local Givenness is no longer satisfied, and we correctly rule out the impossible interpretation of (23b).[14]

6.   Conclusion

In this paper, we've advocated for a dual-perspective approach to sluicing. There are three main ideas that form the backbone of what we've advocated here. The first is that there is both a grammar and a pragmatics of sluicing. The second idea is that these two perspectives complement each other well: what is problematic to account for from one perspective is easy to account for from the other. Last, this approach is different from a hybrid approach to the grammaticality of sluices because we argue that the two perspectives are independent, and independently necessary. Instead of proposing a hybrid system of syntactic and semantic constraints on the grammaticality of sluicing, we've taken grammatical restrictions on sluicing to be unitary and syntactic. Meaning doesn't enter the system via constraints on the *grammaticality* of sluicing; rather the role played by our pragmatic proposal is to take the set of grammatically possible interpretations for a sluice and filter it down to the one that is actually available in any given context.

Though we've focused on sluicing in this paper, we believe the dual-perspective approach may be applicable to ellipsis more broadly. We hope this approach can be profitably extended to the analysis of other elliptical constructions.

Appendix A: More on Correlates

The syntactic condition presented in §4 relies crucially on the notion of a CORRELATE.

(27)   CORRELATE:
       A node n can be a correlate of a head h iff the content of n is either lexically or referentially identical to h.

Lexical identity is straightforward. Referential identity is defined in terms of coindexation.[15] Consider the following data (comparable cases are discussed in Merchant 2001, ch. 5):

(28)   a. **I don't know who$_1$ t_1 said what$_2$**, or why <~~they$_1$ said it$_2$~~>$_E$.

---

[14]Note that the unelided form of (23b) can host focus in the ellipsis clause:

(1)   John marked which problems he did, but he didn't mark which ones he DIDN'T do.

The fact that the elided clause is comfortable hosting focus is independent empirical confirmation of the notion that its interpretation is not a salient entailment of the local context.

[15]For previous avenues toward formalizing the notion that indexation is relevant to ellipsis-licensing, see Sag (1976), Rooth (1992), Fiengo & May (1994), and Heim (1997) (cf. critical discussion in Merchant 2001). The conflation of lexical and referential identity under ellipsis in (27) is a straightforward restatement of the notion of 'vehicle change' in Fiengo & May (1994).

b. **I think [a guy I know]₁ won a gold medal**, but I don't know when <~~he₁ won a gold medal~~>$_E$.

c. **Someone ate at [five burger restaurants]₁**, but I don't know who <~~ate at them₁~~>$_E$.

Examples (28a-28c) show that traces, wh elements, pronouns, and full DPs, including quantified DPs, can serve as correlates for each other.[16]

Appendix B: More on the Pragmatics

Context *c*: the set of worlds compatible with what is accepted as true by participants in a conversation at a particular point in the conversation (Stalnaker's 2002 *context set*).

Local context c_L: the set of worlds compatible with the presuppositions of the local proposition.

The local context allows propositions to be entered into the discourse as temporary assumptions without being entered into the global discourse context (Karttunen & Peters 1979, Heim 1983, Kadmon 2001).

Context update:

a. If c_L entails the presuppositions of a proposition *p*, then $c_L + p = \{c_L \cap p\}$

b. If c_L does not entail the presuppositions of *p*, then either:

   i. undefined, or

   ii. the presuppositions of *p* are accommodated, $c_L + p = \{(c_L \cap ps(p)) \cap p\}$

<u>Remember</u>
In some contexts, to not remember an eventuality *e* is to believe that *e* did not happen (see Karttunen's (1971) 'implicative' verb, Higginbotham's (2003) obligatory *de se* interpretation).

(29) [corpus example 91594, Santa Cruz Ellipsis Project]
Context: [O]n the day the Japanese invaded Pearl Harbor, Hummel was rounded up and locked in an internment camp along with about 2,000 other foreigners...
Sluice: "I don't know why <~~I wasn't scared~~>$_E$, but I really cannot remember being scared," [Hummel] said. "It all seemed like great fun."

Remember is not a neg-raiser. However, in certain contexts it licenses the pragmatic inference that ¬remember *p* → ¬*p*.

---

[16]Merchant (2013a) notes that NPIs can mismatch under ellipsis as well; his explanation for this is that NPIs like *anyone* and their non-NPI correspondents, like *someone*, are lexically identical—the NPI is the reflection of agreement with polarity.

Negative Non-factive Attitude Verbs: *Doubt*

    In some contexts, to doubt a proposition p is to weakly believe $\neg p$ (Asher 1987, Anand & Hacquard 2013).

(30)   [modified corpus example 99105, Santa Cruz Ellipsis Project]
        We doubt that Iraq$_i$ will comply with the mandate, but we don't know why <~~they$_i$ won't comply with the mandate~~>$_E$.

If to doubt a proposition p is to believe weakly that $\neg p$ or to have a preference for $\neg p$, then the inference *doubt p → believe ¬p* will hold in contexts in which the speaker's preference for, or belief that, $\neg p$ becomes salient or strong enough to push the commitments of the speaker to $\neg p$ over p. See Kroll (2016a/b) for full derivations of these examples.

References

Anand, Pranav, & Valentine Hacquard. 2013. Epistemics and attitudes. *Semantics and Pragmatics* 6.

AnderBois, Scott. 2014. The semantics of sluicing: Beyond truth conditions. *Language* 90:887–926.

Asher, Nicholas. 1987. A typology for attitude verbs and their anaphoric properties. *Linguistics and Philosophy* 10:125–197.

Barker, Chris. 2013. Scopability and sluicing. *Linguistics and Philosophy* 36:187–223.

Barros, Matthew. 2014. Sluicing and identity in ellipsis. Doctoral dissertation, Rutgers.

Chung, Sandra. 2005. Sluicing and the lexicon: The point of no return. In *BLS 31: General Session and Parasession on Prosodic Variation and Change*, ed. Rebecca T. Cover & Yuni Kim, 73–91. Berkeley Linguistics Society.

Chung, Sandra. 2013. Syntactic identity in sluicing: How much and why. *Linguistic Inquiry* 44:1–44.

Chung, Sandra, William Ladusaw, & James McCloskey. 1995. Sluicing and logical form. *Natural Language Semantics* 3:239–282.

Chung, Sandra, William Ladusaw, & James McCloskey. 2011. Sluicing(:) between structure and inference. In *Representing language: Essays in honor of Judith Aissen*, ed. Rodrígo Gutiérrez-Bravo, Line Mikkelsen, & Eric Potsdam, 31–50. UCSC Linguistics Research Center.

Fiengo, Robert, & Robert May. 1994. *Indices and identity*. MIT Press.

Ginzburg, Jonathan, & Ivan Sag. 2000. *Interrogative investigations: The form, meaning and use of English interrogatives*. Stanford, CA: CSLI Publications.

Heim, Irene. 1983. On the projection problem for presuppositions. In *Proceedings of the second West Coast Conference on Formal Linguistics*, 114–125.

Heim, Irene. 1997. Predicates or formulas? evidence from ellipsis. In *Proceedings of SALT 7*, ed. Aaron Lawson. Stanford University.

Higginbotham, James. 2003. Remembering, imagining, and the first person. In *Epistemology of language*, ed. Alex Barber, 496–533. Oxford University Press.

Kadmon, Nirit. 2001. *Formal pragmatics*. Wiley.

Karttunen, Lauri. 1971. Implicative verbs. *Language* .

Karttunen, Lauri. 1974. Presuppositions and linguistic context. *Theoretical Linguistics* 1:181–194.

Karttunen, Lauri, & Stanley Peters. 1979. Conventional implicature. In *Syntax and semantics 2: Presupposition*, ed. Choon-Kyu Oh & David Dinneen, 1–56. Academic Press.

Kroll, Margaret. 2016a. Polarity reversals under sluicing. Manuscript, UCSC.

Kroll, Margaret. 2016b. Polarity reversals under sluicing. Talk given at Sinn und Bedeutung 21.

Langacker, Ronald. 1974. Movement rules in functional perspective. *Language* 50.

Merchant, Jason. 2001. *The syntax of silence: Sluicing, islands, and the theory of ellipsis*. Oxford University Press.

Merchant, Jason. 2005. Revisiting syntactic identity conditions. Talk given at UC Berkeley workshop on ellipsis, October 2005.

Merchant, Jason. 2007. The syntactic representation of implicit arguments? Talk given at 'Funny indefinites: Workshop on Different Kinds of Specificity Across Languages'. Zentrum fuer Allgemeine Sprachwissenschaft, Berlin, July 2007.

Merchant, Jason. 2013a. Polarity items under ellipsis. In *Diagnosing syntax*, ed. Lisa L.-S. Cheng & Norbert Corver. Oxford University Press.

Merchant, Jason. 2013b. Voice and ellipsis. *Linguistic Inquiry* 44:77–108.

Merchant, Jason. 2016. Perfect and imperfect copies. Plenary lecture, Workshop on replication, University of Leipzig.

Pesetsky, David. 1987. Wh-in-situ: Movement and unselective binding. In *The representation of indefiniteness*, ed. Eric Reuland & Alice ter Meulen. MIT Press.

Rooth, Mats. 1992. Ellipsis redundancy and reduction redundancy. In *Proceedings of the Stuttgart Ellipsis Workshop*, ed. S. Berman & A. Hestvik. University of Stuttgart.

Ross, John Robert. 1969. Guess who? In *Proceedings of the Fifth Regional Meeting of the Chicago Linguistic Society*, ed. Robert Binnick, 252–286. University of Chicago.

Rudin, Deniz. 2017. Head-based syntactic identity in sluicing. Manuscript, UCSC.

Sag, Ivan. 1976. Deletion and logical form. Doctoral dissertation, MIT.

Stalnaker, Robert. 2002. Common ground. *Linguistics and Philosophy* 25:701–721.

Tancredi, Christopher. 1992. Deletion, deaccenting, and presupposition. Doctoral dissertation, MIT.

Margaret Kroll, Deniz Rudin
University of California, Santa Cruz
https://people.ucsc.edu/~drudin/
drudin@ucsc.edu
http://people.ucsc.edu/~makroll/
margaretkroll@ucsc.edu