What is sluicing?

**Definition:** Sluicing is a form of ellipsis that targets clauses under interrogative wh-phrases.

**Antecedent Clause:**
1. He finished the project, but we don’t know... who with whose help
   - [Chung, 2006]
2. Whenever there is a murder, the police will try to find out... who... if who
   - [Beecher, 2007]

**Ellided material:** [He finished it]

**Sluice:** A question with an elided clause that nonetheless receives a full question meaning

**Elided material:** The part of the sluice meaning that is not expressed overtly.

**The big question:** Under what conditions is sluicing acceptable?

**IDENTITY theories of sluicing**

2006: Sluicing is acceptable only if the elided material is identical to some antecedent constituent in the linguistic context.

**Identity theories predict (1) and (2):**
1. (1) is acceptable: elided material identical to antecedent clause.
2. (2b) is unacceptable: elided material not identical to antecedent clause.

**QUD theories of sluicing**

**Central claim:** Sluicing is acceptable only if the sluice denotes a Question under Discussion (QUD) that is salient in the context.

**Inquisitive Semantics approach to ‘QUD availability’**:
- QUDs are made salient by “inquisitive elements” (existential quantifiers, indefinites, disjunctions, or conditionals) in the antecedent clause.
- In the absence of inquisitive elements, as in (1), the theory relies on “issue bridging” whereby a suitable QUD is inferred.

**Roberts (1996/2012) approach to ‘QUD availability’**:
- QUDs are inferred based on both top-down context constraints and bottom-up information from the target utterance.
- Bottom-up cues are reasonably well understood, top-down constraints remain largely mysterious.

Our approach: measure ‘QUD availability’ experimentally (Expt 2)

**Strategy:** 2 experiments

**Test case:** sluices with nominal antecedents

(3) The only thing I can come up with is contamination, but I do not know what from.
   - [Beecher, 2007]

**IDENTITY theories**

- Sluices with nominal antecedents are categorically ungrammatical.
- Acceptability should track QUD availability

**QUD theories**

- Sluicing is acceptable only if the elided material is
  - a full question meaning
  - expressed overtly

**Antecedent NP**

- [Chung, 2006]

**Elided material**

- [Beecher, 2007]

**Sluicing**

- Provides the meaning of the elided material

**Antecedent**

- Targets some antecedent constituent in the linguistic context.

**Elided material**

- The part of the sluice meaning that is not expressed overtly.

**QUD theories of sluicing**

- Heinrich (2013)
- Head-based syntactic identity in sluicing.

**QUD theories**

- Head-based syntactic identity in sluicing.

**Experiment 1**

**Goal:** Test acceptability of sluices with nominal antecedents.

**Stimuli:**
- 30 sluices with nominal antecedents, like the following:
  - A: I can’t see your parents in the audience. Did you not tell them about your performance today?
  - B: I did, but I forgot to tell them... when it was going to start.

**Item protocol**

- 1. Engineer contexts to maximize acceptability of one case.
- 2. Generate 4 additional sluices in the same context by substituting different wh-phrases.
- 3. Cross contexts with sluices to generate 30 unique items.

**Design and participants:** 63 native English Mechanical Turk users rated 6 experimental items (1 per context) along with 12 (un)acceptable fillers.

**Filler items:** We included 12 (un)acceptable fillers (2:1 ratio), sampled from the literature and exemplified below:
- Acceptable: Mr. Henderson ate either a hamburger or a hotdog.
- Unacceptable: The boy was visibly happy, but it wasn’t clear what.

**Experiment 2**

**Goal:** Estimate QUD availability for items from Expt 1.

**Strategy:** Present participants with the full contexts of the sluices from Expt 1 and ask them to predict the upcoming embedded question.

**Stimuli:**
- A: I can’t see your parents in the audience. Did you not tell them about your performance today?
- B: I did, but I forgot to tell them... when it was going to start.

**Task:** Forced-choice passage continuation (“select the continuation that appears most likely to you”)

**Results:** The result of this forced-choice passage completion task is a (proper) probability distribution over continuations (questions) given contexts. These probabilities indicate the (relative) predictability of each sluice meaning given its context.

**Some nominal-antecedent sluices are ungrammatical:** Many of them pattern with unacceptable fillers (white bars), all of which are cases the literature treats as “grammatical.”

**QUD availability explains some of the variance in acceptability, whereby more predictable questions are more acceptable when sluiced.**

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**Conclusion**

We set out to compare to classes of theories of sluicing:
- Those that require identity between elided material and its antecedent; and those that require the sluiced question to be a salient QUD.

Our results favor QUD theories over identity theories:
1. We found a tremendous amount of variability in the acceptability of sluices with nominal antecedents, with some cases achieving peak acceptability (Expt 1).
2. Some (but not all) of the variance in acceptability can be explained in terms of ‘QUD availability’ (Expt 2).

**Is a salient QUD sufficient?**

Unlikely:
1. Our experimental measure of QUD availability explains some of the variance in acceptability, but a lot of residual variance remains unexplained (see Figure 2).
2. There are well-known cases of unacceptable sluicing that are challenging for QUD-only models, like (4):
   - (4a) Joe was murdered but we don’t know by who(m).
   - (4b) Joe was murdered by someone but we don’t know who.

Chung (2006) captures this pattern in her *New New Words* constraint that aligns well with identity theories and has since been adopted even by QUD theorists (AnderBois, 2014). However, that generalization runs into trouble elsewhere, including the nominal-antecedent sluices we examined here, which involve numerous “New Words.”

**References**


