Remarks on sluicing

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Abstract

Sluicing is widely regarded as requiring an analysis via deletion operations. We examine critically and reassess the motivation for a deletion analysis of Sluicing, offering cross-linguistic and language-internal evidence in support of a fundamentally semantic constructional alternative like the one proposed by Ginzburg and Sag (2000).

1 Introduction

Sluicing, one of the most discussed ellipsis phenomena in natural languages, presents interesting challenges for nontransformational theories of grammar like HPSG. The wh-expression isolated in Sluicing (the Sluicing ‘remnant’), which may function as either a main or embedded interrogative clause, typically appears with a corresponding element in the immediate linguistic context (the ‘correlate’), as illustrated in (1)–(2):

(1) a. Someone left the room yesterday, but I don’t know who.
    b. Someone left the room yesterday. I wonder who.

(2) A: Someone left the room yesterday.
    B: Who?

But Sluicing remnants sometimes appear without correlates, a phenomenon dubbed ‘sprouting’ by Chung et al. (1995):

(3) a. They gave away the farm, but I don’t know to whom.
    b. They gave away the farm. I don’t know to whom.

(4) A: They gave away the farm.
    B: To whom?

There are three theories of Sluicing that have been discussed in the literature. The first of these is the Deletion theory (Ross 1969, Sag 1976, Merchant 2001), where a transformational operation deletes a redundant S (or IP) that immediately follows an interrogative wh-expression that has been fronted, as sketched in (5):

1We would like to thank Barbara Citko, Donka Farkás, Jonathan Ginzburg, Vera Gribanova, Julia Horvath, Polly Jacobson, Shalom Lappin, Jason Merchant, Chris Potts, Susanne Winkler, and all the participants at the Stanford Ellips’Event (April, 2011) and at the HPSG 2011 Conference in Seattle. Thanks also to the American Philosophical Society and the Polish Ministry of Education (research grant NN104097538 to Joanna Nykiel) for their support of Nykiel’s travel and research.
(5) a. ...but I don’t know \([CP [\d Q ] [IP Kim likes [who]]]\). \(\sim \) Wh-Movement

b. ...but I don’t know \([CP [\d Q who_i] [IP Kim likes \_ i ]]\). \(\sim \) Sluicing

c. ...but I don’t know \([CP [\d Q who_i] [IP e ]]\).

(where deletion of IP is possible just in case \([\text{someone i [Kim likes i ]}]\)) is ‘\(e\)-GIVEN’.)

In the second approach to Sluicing, usually referred to as ‘LF Copying’, LF (LOGICAL FORM) is taken to be a level of syntactic representation that contributes to the determination of linguistic meaning. In LF-Copying theories, the antecedent clause provides an LF representation that is copied into the skeletal LF of the remnant structure, as indicated in (6):

(6) \([\text{Someone x} [IP x left the room yesterday]}\).

but I don’t know \([CP [who x] [IP e ]]\). \(\sim \)

but I don’t know \([CP [who x] [IP x left the room yesterday]}]\).

Finally, there is a ‘Direct Interpretation’ approach to Sluicing, where the remnant clause is generated ‘as is’ and assigned an interpretation on the basis of the surrounding context. In the GS00 analysis, which is the basis for the analysis we adopt here, Sluicing remnant clauses are licensed by a construction that fits into a broader family of ellipsis constructions, including those responsible for sentence fragment and short answers to \(wh\)-questions and others that license reprise uses of Sluicing and non-\(wh\) fragments. This construction, which can be informally rendered as a ‘\(S \rightarrow XP[wh]\)’ production, is discussed further in section 8 below.

As of this writing, there seems to be broad agreement among ellipsis researchers that some version of Merchant’s deletion theory must be correct for Sluicing, if not for ellipsis phenomena in general. This conclusion, if correct, could be deeply troubling for researchers in HPSG, since the transformational operations (movement, deletion) that are essential to Merchant’s theory seem broadly inconsistent with HPSG theory. Indeed, they are an anathema to any theory based squarely on principles of linguistic models as solutions to sets of constraints, i.e. the foundations of model-theoretic grammar.

In this paper, we sketch a line of argument (which we develop in more detail elsewhere) to the effect that:

1. Merchant’s particular assumptions about the nature of the redundancy pre-condition for Sluicing are problematic, but can be corrected by appeal to the identity condition proposed in Sag and Hankamer (1984).

\(^{1}\)See Williams 1977 and Chung, Ladusaw, & McCloskey 1995, among others.

\(^{2}\)See Ginzburg and Sag 2000 (henceforth GS00) and Culicover & Jackendoff 2005.
2. The arguments in the literature for deletion-based theories of Sluicing are flawed, including, for example, Merchant’s ‘P-Stranding Universal’.

3. There is syntactic and semantic evidence against deletion-based theories of Sluicing, but consistent with Direct Interpretation models.

4. A minor update of GS00’s proposal in order to incorporate incremental context restrictions can explain new data that is inconsistent with competing models.

The proposal we adopt, based on GS00, but cast within a construction-based conception of HPSG that is also known as SIGN-BASED CONSTRUCTION GRAMMAR (SBCG), provides a principled account of the wide range of data we examine.

2 The Semantic Basis of Ellipsis

Ellipsis is fundamentally semantic in nature: the content of an elliptical utterance is determined by the content of an appropriate linguistic antecedent. Deletion provides a seemingly simple account of the interpretation of elliptical utterances. But what is the identity condition licensing ellipsis? The syntactic form of the remnant and the antecedent may differ in ellipsis, as Sag (1976) observed for VP-Ellipsis and Merchant (2001) for Sluicing:

(7) a. Kim doesn’t want anything, but Lee does \textit{want something}.
   
b. These people have gall bladders, but I don’t \textit{have a gall bladder}.
   
c. I went home when they wouldn’t \textit{go home}.
   
d. I can’t play quarterback. I don’t even know how \textit{to play quarterback}.
   
e. I remember meeting him, but I don’t remember when \textit{I met him}.

Facts like these are reconciled with ellipsis theory by Sag and Hankamer (1984), who discuss further related VP-Ellipsis data like (8):

(8) A: Do you think they’ll like \textit{him}_C?
   B: Of course they will \underline{\_} \ . [ \underline{\_} = \lambda x [\text{like}(x, C)] ]

(9) A: Do you think they’ll like \textit{me}?
   B: Of course they will \underline{\_} \ . [ \underline{\_} = \lambda x [\text{like}(x, A)]; \neq \lambda x [\text{like}(x, B)] ]

Sag and Hankamer offer a purely semantic identity condition as part of their treatment of VP-Ellipsis, which is sketched in (10):

\begin{itemize}
  \item Sag and Hankamer were following Sag (1976) in assuming that gaps could not be rebound in ellipsis, an assumption that is now known to be false. We will continue to make this simplifying assumption, though nothing hinges on it.
\end{itemize}
Delete VP$_e$ in S$_e$ only if:

1. c$_e$ is the Kaplan-context of S$_e$,
2. c$_a$ is the Kaplan-context of some sentence S$_a$ not subsequent to S$_e$ in discourse, and
3. there is some VP$_a$ in S$_a$ s.t. for all assignments f,

\[
[[\text{VP}_e]]^{c_e f} = [[\text{VP}_a]]^{c_a f}.
\]

The deletion theory of VP-Ellipsis offered by Merchant (2001) is similar, but weaker:

(11) a. An expression E counts as e-GIVEN iff E has a salient antecedent A and, modulo ∃-type shifting,

1. A entails F-clo(E), and
2. E entails F-clo(A)

b. Focus condition on VP-ellipsis:

VP$_e$ can be deleted only if VP$_e$ is e-GIVEN.

In particular, his approach weakens the identity condition from identity of sense (the meaning of a linguistic expression fixed in a given context, as shown in (10)), to a condition requiring that the deletion target be ‘e-GIVEN’, where this notion is defined as in (11a).

If we ‘update’ Merchant’s (2001) analysis so that it is consistent with the data discussed in Sag and Hankamer (1984), we arrive at the modified theory of Sluicing shown in (12):

(12) a. A VP$_e$ can be deleted only if VP$_e$ is e-GIVEN.

b. A VP$_e$ can be deleted only if there is a (salient) VP$_a$ in the surrounding context s.t. for all assignments f:

1. \([[[\text{F-clo}(\text{VP}_e)]]^{c_e f} \vdash [[[\text{F-clo}(\text{VP}_a)]]]^{c_a f}\) and
2. \([[[\text{F-clo}(\text{VP}_a)]]]^{c_a f} \vdash [[[\text{F-clo}(\text{VP}_e)]]]^{c_e f}\).

c. i.e. only if \([[[\text{F-clo}(\text{VP}_e)]]]^{c_e f} = [[[\text{F-clo}(\text{VP}_a)]]]^{c_a f}\)

In familiar cases like (13), Merchant’s analysis would then license ellipsis:

(13) Kim will visit Lee, and then Sandy will visit Lee.

\[\exists \text{-clo}(\text{VP}_a) = \text{F-clo}(\text{VP}_a) = \exists x . x \text{ visit Lee.}\]
\[\exists \text{-clo}(\text{VP}_e) = \text{F-clo}(\text{VP}_e) = \exists x . x \text{ visit Lee.}\]

Mutual entailment holds, so VP-ellipsis is possible.

But a serious problem for Merchant’s e-GIVEN identity condition has been isolated by Hartman (2009), who observes the ‘Relational Opposites Puzzle’ exemplified in (14):
(14) *John will beat someone at chess, and then Mary will lose to someone at chess.

Here the predicate in the antecedent (*beat*) and the predicate in the ellipsis site (*lose*) are relational opposites. Because of this, the following facts hold:

\[
\exists \text{clo}(\text{VP}_a) = F \text{clo}(\text{VP}_a) = \exists x. x \text{ will beat someone at chess.}
\]

\[
\exists \text{clo}(\text{VP}_e) = F \text{clo}(\text{VP}_e) = \exists x. x \text{ will lose to someone at chess.}
\]

b. \(\text{VP}_a\) and \(\text{VP}_e\) satisfy mutual entailment modulo \(\exists\)-type shifting. (If someone will beat someone at chess, then someone will lose to someone at chess, and vice versa.)

Thus in (15), \(\text{VP}_e\) is \(e\)-GIVEN, which would license ellipsis in (14) under Merchant’s proposal. But ellipsis in (14) is clearly impossible.

This Relational Opposites Puzzle is problematic for Merchant’s (2001) account of \(\text{VP}\)-Ellipsis, but Sag & Hankamer’s (1984)’s semantic theory of \(\text{VP}\)-Ellipsis solves the puzzle straightforwardly. Since only the \(\text{VP}\) sense is relevant to the possibility of deletion, the in-context mutual entailment of the existential closures of distinct \(\text{VP}\)-senses is simply irrelevant to determining the possibility of deletion.

It should also be noted that the facts considered in this section are problematic for LF-Copying theories of ellipsis, e.g. the \(\text{VP}\)-Ellipsis theory of Williams (1977) and the theories of Sluicing developed in Chung et al. (1995, 2011)... Copying a piece of LF into a new syntactic context will lead to its being semantically interpreted in the new context. Hence LF-Copying theories, without some arbitrary and otherwise unmotivated codicil, also predict the wrong interaction of ellipsis and indexical interpretation. This point will prove to be relevant later, when we consider the direct interpretation theory of Sluicing in more detail.

### 3 Arguments against Deletion

There are two powerful arguments against deletion-based theories of Sluicing whose significance has, in our view, been insufficiently appreciated.

**Sluices without Sources:** As has been argued by GS00 and Culicover and Jackendoff (2005), there are numerous examples to be found which have no plausible source in a deletion-based analysis of Sluicing:

\[
(16) \text{ What floor? Where to? How many more? What else? WTF?}
\]
b. Guess who!, 4 ...

c. A: Would you like a drink? B: Yeah, how about scotch?


Merchant (2004) seeks to rebut this argument by correctly pointing out that the question of what should be regarded as Sluicing, as opposed to an instance of some other kind of non-sentential utterance, is indeed complex (for discussion, see GS00, Stanley 2000, Merchant 2004, Culicover and Jackendoff 2005, and Stainton 2006). However, if even one example of this kind is an instance of Sluicing, then the deletion-based analysis, at least in any current form, will be hard-pressed to accommodate it.

**Island Amnesty:** The deletion-based analysis of Sluicing crucially involves the application of *wh*-fronting prior to deletion. Since the hallmark property of *wh*-fronting that has taken center-stage in thousands of pages and several decades of syntactic research is their being subject to island constraints, the natural prediction would of course be that Sluicing obeys island constraints. But it is well known, ever since Ross’s (1969) discussion, that this is not the case:

(17) a. Bo talked to the people who discovered *something*, but we don’t know what (*Bo talked to the people who discovered). [CNPC/Subjacency]

b. Terry wrote an article about Lee and a book about *someone else from East Texas*, but we don’t know who (*Terry wrote an article about Lee and a book about) [CSC (Element Constraint)]

c. He wants a detailed list, but I don’t know how detailed (*he wants a list). [Left Branch Condition]

This obvious wild misprediction of deletion-based accounts has led researchers to propose (often with little or no independent motivation) non-Sluicing analyses for examples that otherwise share all relevant properties with uncontroversial instances of Sluicing. Other researchers (see, e.g. Merchant 2001, 2004) have attempted to rework the entire account of island constraints so as to circumvent the Sluicing dilemma, e.g. by localizing these constraints at the level of phonetic form (PF). We note in passing that the empirically correct observation about the Sluicing data, that they obey none of the grammatically imposed constraints on filler-gap dependencies, follows immediately from a direct theory like that of GS00, where Sluicing remnants are generated without appeal to filler-gap constructions. There

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4It is interesting to note that this example, which is the title of Ross’s (1969) seminal article on Sluicing, is an allusion to the introduction to the Woody Woodpecker cartoon show (available at http://www.youtube.com/watch?v=apLcxiB0Vj4), where (16b) appears without a linguistic antecedent. Hence the example is a counterexample to deletion-based theories of Sluicing.
are a variety of interacting factors, of course, including considerations of complexity, pragmatic plausibility, and prosody, some of which are discussed below.

Thus the deletion-based approach of Sluicing has an air or implausibility from the outset, which makes it somewhat surprising that this approach has become the analysis of choice within the syntactic community. In the next two sections, we consider putative arguments providing independent support for deletion, arguing that the relevant data in fact support the opposite conclusion.

4 Case Matching Effects

The first and oldest argument for a deletion-based analysis of Sluicing was made by Ross (1969) in his discussion of German contrasts like the following:

(18) a. Er will jemandem schmeicheln, aber sie wissen nicht, wem/*wen.
    he wants someone.D to.flatter but they know not who.D/who.A
    ‘He wants to flatter someone, but they don’t know who.’

    b. Er meinte, er hätt geholfen, aber wir wüssten nicht, wem/*wen.
    he thought he had helped but we knew not who.D/who.A
    ‘He claims he had helped, but we couldn’t say who’

The argument is simply that the verb has to be there at an underlying level in order to assign case to the remnant prior to deletion. In Merchant’s theory, the Sluicing transformation does not require syntactic identity between the deletion target and its antecedent. Rather, case matching is explained indirectly by assuming derivations where case marking feeds WH-Movement, which feeds Sluicing. That is, E-Givenness must be mediated by verb identity, which has object case identity as a side effect.

The indirect analysis of case matching, where the identity condition is purely semantic, works for German because the elided verb governs a unique case. However, if there were a language with a verb whose object allowed a case alternation, then the prediction of the deletion-based analysis is clear: the remnant object and its correlate should be able to realize distinct cases.

Hungarian is such a language. As examples like the following show, the verb segít ‘help’ allows either a dative or an accusative object:5

(19) Mari segített egy fiunak/fiut
    Mary helped.IND a boy.D/boy.A
    ‘Mary helped some boy.’

But Sluicing examples like the following, which exhibit the critical case mismatch, are unquestionably ungrammatical, unlike their non-elliptical counterparts, which

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5This importance of this test case for evaluating indirect theories of ellipsis was first pointed out by Polly Jacobson (see Jacobson 2009 and various earlier oral presentations).
are merely degraded, presumably due to parallelism pressures on repeated expressions in contexts such as these:  

\[(20)\]

\[\begin{align*}
\text{a. } & \text{Mari segített egy fiunak de nem tudom, hogy kinek/*kit} \\
& \text{Mary helped.IND a boy.D but not I-know.DEF Q who.D/who.A}
\end{align*}\]

\[\begin{align*}
\text{b. } & \text{Mari segített egy fiut de nem tudom, hogy kit/*kinek} \\
& \text{Mary helped.IND a boy.A but not I-know.DEF Q who.A/who.D}
\end{align*}\]

‘Mary helped a boy, but I don’t know who’

In sum, case matching in Sluicing is not an indirect effect, as entailed by the deletion-based analysis. Rather, a grammatical constraint must dictate directly that there be identity of (category and) case between the remnant and its correlate.

5 The P-Stranding Universal

In numerous publications, Merchant has defended a universal generalization that he calls the P-Stranding Generalization (PSG):

\[(21)\]

\[\text{A Language } L \text{ will allow preposition-stranding under Sluicing just in case } L \text{ allows preposition stranding under regular WH-Movement. (Merchant 2001, 107)}\]

In support of PSG, Merchant argues that human languages are bifurcated as shown in (22):

\[(22)\] **Preposition-Stranding Languages**

- English:
  - Peter was talking with someone, but I don’t know (with) who.
  - Who was he talking with?
- Frisian, Swedish, Norwegian, Danish, Icelandic

\[(23)\] **Non-Preposition-Stranding Languages**

- German:
  - Anna hat mit jemandem gesprochen, aber ich weiss nicht *(mit) wem.
  - Anna has with someone.D spoken, but I know not *(with) whom.D
  - *Wem hat sie mit gesprochen?
- Greek, Yiddish, Czech, Russian, Slovene, Polish, Bulgarian, Persian, Serbo-Croatian, Hebrew, Moroccan Arabic, Basque.

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\[6\] Special thanks to Polly Jacobson, Donka Farkás, Jula Horvath, and (indirectly) Zoltán Szabó, for their help in sorting out the Hungarian data.

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The PSG follows in a deletion-based theory that assumes derivations where WH-Movement feeds Sluicing. By contrast, the PSG is potentially problematic for theories, like those of GS00 and Culicover and Jackendoff 2005, where the analysis of Sluicing does not involve a filler-gap dependency, and hence the behavior of the two phenomena are not predicted to be correlated.

The literature abounds with challenges to the PSG. Potentially problematic data have been noted in all the following languages: English (Chung et al. 1995, Fortin 2007), Spanish (Vicente 2006, 2008, Rodrigues et al. 2009), Polish (Szczegielniak 2008, Nykiel and Sag 2009), Czech (Caha 2011), Bahasa Indonesia (Fortin 2007), Amis (Wei 2011), Serbo-Croatian (Stjepanović 2008), Farsi (Toosarvandani 2008), and Brazilian Portuguese (Almeida and Yoshida 2007, Lasnik 2007, Rodrigues et al. 2009). Some researchers (e.g. Vicente 2008, Rodrigues et al. 2009, Szczegielniak 2008, van Craenenbroeck 2010) have tried to reconcile these data with the PSG by proposing that the relevant examples in a particular language are not derived via Sluicing, but rather through a process of ‘Pseudo-Sluicing’ (Merchant, 2001), an independent deletion transformation formulated to derive the Sluicing-output doppelgangers from a different source, e.g. a cleft or cleft-like clause such as (24):

(24) Kim spoke to someone, but I don’t know who it was.

The details of this alternative analysis, as well as its independent motivation (beyond the observation that the cleft construction allows NP pivots in languages that don’t allow P-stranding), are seldom supplied.

Other researchers (e.g. Stjepanović 2008) have tried to salvage the PSG by invoking a P-Deletion Transformation whose existence would give rise to derivations like the following:

(25) a. ..., but we didn’t know [[+Q] they spoke [to whom_1]].\(\mapsto\)

b. ..., but we didn’t know [[to whom_1] they spoke to \(\_\_\_\_\_\)\(\mapsto\)

c. ..., but we didn’t know [[to whom_1] they spoke to \(\_\_\_\_\_\)\(\mapsto\)

d. ..., but we didn’t know [[\(\_\_\_\_\_\_\) whom_1]].

P-Deletion would be specific to the output of the Sluicing transformation and, as far as we are aware, is not independently motivated in any language. If the P-Deletion proposal is accepted under these circumstances, then it is plain that any set of data could be made consistent with the PSG. That is, without independent motivation for P-Deletion, e.g. its existence in some context other than Sluicing, the PSG becomes devoid of empirical content. Thus, as Rodrigues et al. (2009) observe in their discussion of putative Spanish Pseudo-Sluicing: ‘The strongest implication of this analysis is that all languages that appear to violate this generalization [= the PSG - IAS/JN] should be reducible to a pseudosluicing analysis.’
However, we argue in section 7 that there is at least one language – Polish – whose interrogative-clause, Sluicing-like ellipsis would have to be treated as Pseudo-Sluicing if the PSG is assumed, cannot be so treated. Before turning to the Polish data, we must enter into a small digression about the interaction of Sluicing and phrasal complexity.

6 Sluicing and Phrasal Complexity

It is quite likely that the pattern of preposition omission under Sluicing is modulated by both the phrasal complexity of the correlate and that of the remnant wh-expression. Phrasal complexity is an alternative to the intuitive sounding but delphic notion of ‘D(iscourse)-linking’ introduced by Pesetsky (1987). Pesetsky offered D-linking as an explanation of differences in the behavior of interrogative which-NP phrases (D-linked) and bare interrogative pronouns (usually non-D-linked) with regard to Superiority effects (Which book did which student read? is more acceptable than What did who read?)

Which-NP phrases have been shown to improve the acceptability of multiple wh-interrogatives. However, Hofmeister and colleagues⁷ have argued that the difference between these two types of wh-phrase is a special case of a much broader and independently motivated phenomenon. Which-NP phrases, since they are more complex than bare interrogative pronouns, facilitate the processing of filler-gap dependencies at the point where a filler must be retrieved from working memory and integrated into the sentence interpretation. This effect produces characteristic reading time differences, correlated with variation in the overall acceptability level of relevant sentences.

We hypothesized that there are two reasons why preposition omission in Sluicing is sensitive to differences in the phrasal complexity of correlates and remnants. First, given that Sluicing is an anaphoric construction, we expect remnants to reflect the degree of accessibility of their correlates, following the predictions of Accessibility Theory (Ariel 1990, 2001). Accessibility Theory highlights the role of (potential) antecedents and anaphors in the process of retrieving linguistic material from memory. As speakers access and re-access utterances in the discourse they have processed, they mark them according to how accessible (prominent or salient) they perceive them to be. Using forms richer in lexical information signals and serves to retrieve low-accessibility antecedents. On the other hand, such forms may themselves become accessible antecedents as discourse evolves.

For Sluicing, the phrasal complexity of both a wh-phrase and its correlate increase with the amount of lexical information they encode. A more complex NP becomes a more accessible correlate, which is in turn reflected by the form of a remnant, which is typically a which-NP phrase where the head NP is usually absent.

due to the repeated name penalty. We make the further prediction that in case the correlate is a PP here, the preposition is not required in the remnant. If, however, a less complex phrase (e.g. an indefinite pronoun) serves as the correlate, it is retrieved using a more explicit form of the remnant. This is done, we propose, by including a preposition in such a remnant in order to compensate for the low degree of accessibility of the phrase’s correlate.

The second reason why we explore the effect of complexity under Sluicing is that the complexity of the correlate may play a role similar to the complexity of the filler in filler-gap constructions. The mediating effect of increased complexity in Superiority violations and extractions from islands is evident in English and much cross-linguistic data (Hofmeister et al. 2007, Hofmeister 2009, Hofmeister et al. 2011). This is because complex phrases are understood as providing more specific semantic and syntactic information, and thus receive stronger mental representations that are more accessible for subsequent reference. This provides a means of explaining which N/who contrasts not by syntactic constraints, but by appeal to memory retrieval.

Building on this research, we may treat both examples with simple correlates and those with complex correlates as grammatical (i.e. allowed by the grammar), accounting for the variable acceptability of such examples in terms of independently motivated aspects of memory and retrieval, rather than grammar. The difference between Sluicing and filler-gap constructions is that when a remnant is encountered in Sluicing, its correlate is retrieved rather than the remnant itself. (By contrast, when a gap is encountered, what is retrieved is the very dislocated wh-phrase that was processed earlier). A more complex correlate should be easier to retrieve, because it provides more specific semantic and syntactic information than a less complex correlate. On this view of Sluicing, there is no grammatical connection between preposition stranding in wh-extraction and preposition omission in Sluicing remnants. The proposal we are defending here is reminiscent of the remark made in passing by Frazier and Clifton (2011: 43) that ‘perhaps activating the antecedent is easier with a D-linked interrogative […] The D-linked interrogative may simply serve as a better retrieval cue’. This is part of the story, but not the whole story. In addition, when the antecedent is firmly established in memory by a complex correlate, as in (26a), P-omission is facilitated as well. We predict that the same should be true in the case of more complex prepositions, as in (26b):

(26) a. Kim had lunch yesterday with someone she claims was a member of the original Virginia Tea Party organization, but I still don’t know who(m). she had lunch with yesterday. (≥ I still don’t know with whom.)

b. The dog ran right up to someone, but I don’t know who(m). the dog ran
We are currently exploring predictions such as these in a number of languages (see also the next section).

7 Polish and the P-Stranding Generalization

Sluiced phrases (remnants) without prepositions in Polish cannot be derived from cleft-like structures analogous to those that Rodrigues et al. (2009) posit as the source for prepositionless remnants in Spanish and Brazilian Portuguese. As shown in (27), the case of the Polish Sluicing remnant must correspond to the case of the correlate, which is genitive in (27):

(27) Adam regularnie dostaje prezenty od kogoś/ jakieś dziewczyny,
    Adam regularly gets presents from someone.G/some girl.G
    ale nie wiem kogo/ jakiej.
    but not I.know who.G/which.G
    ‘Adam regularly gets presents from someone/some girl, but I don’t know
    who/which (girl).’

But an NP pivot in the analogue of the structure assumed by Rodrigues et al. must bear instrumental case in Polish, as illustrated in (28). While the undeleted version is fine in (28), the deleted one, producing the instrumental remnant, is not.

(28) Adam regularnie dostaje prezenty od kogoś/ jakieś dziewczyny, ale nie
    Adam regularly gets presents from someone.G/some girl.G, but not
    wiem kim (*jest osoba/dziewczyna od której Adam dostaje prezenty.)
    I.know who.I (*is person.N/girl.N from whom.G Adam gets presents)
    ‘Adam regularly gets presents from someone/some girl, but I don’t know
    who is the person/girl Adam regularly gets presents from.’

Any proposal that posits Pseudo-Sluicing from cleft-like sources must be carefully examined for this kind of obvious misprediction.

An alternative cleft structure is proposed by Szczegielniak (2008) as a way of accounting for an observed difference in acceptability between prepositionless which-NP phrases and their non-complex counterparts (bare interrogative pronouns). The underlying cleft structure he assumes for a which-NP remnant clause is shown in (29):

(29) Adam regularnie dostaje prezenty od jakieś dziewczyny, ale nie wiem
    Adam regularly gets presents from some girl.G but not I.know
    jakiej.G
    to od dziewczyny Adam regularnie dostaje prezenty.
    which.G it from girl.G Adam regularly gets presents.
    ‘Adam regularly gets presents from some girl, but I don’t know which (girl)
    it is that Adam regularly gets presents from.’
Szczegielniak’s (2008) argument is that which-NP remnants are the only phrases that allow preposition omission in Polish, and that this is due to the fact that in the cleft sources, prepositions are stranded rather than pied-piped with the which-NPs. While Szczegielniak offers some support for his analysis, he fails to demonstrate that the proposed underlying cleft structure is fully acceptable in Polish (see Nykiel, under revision, for experimental evidence showing that it is not).

Another reason to doubt Szczegielniak’s analysis is that it does not appear to offer any possibility of deriving prepositionless which-NP phrases where the NPs are present. This is because of the impossibility of P-stranding in Polish. For example, Szczegielniak’s analysis is inconsistent with contrasts like the following, where a well-formed instance of Sluicing would have to be derived from a completely ungrammatical structure, as indicated:

(30) Adam regularnie dostaje prezenty od jakiejś dziewczyny, but not I.know which girl. (*it from Adam regularly gets presents)
    Ale nie wiem jakiej dziewczyny (*to od Adam regularnie dostaje prezenty.)
    ‘Adam regularly gets presents from some girl, but I don’t know which girl it is that Adam regularly gets presents from.’

While we agree that phrasal complexity is involved in preposition omission in Sluicing, we assume that its involvement follows from the encoding and retrieval of linguistic signs from memory, as discussed in the previous section. We conducted several acceptability judgment experiments testing the interaction of Sluicing and phrasal complexity, whose results we now discuss briefly.9

We found that the possibility of preposition omission is a graded phenomenon in Polish. It is sensitive to manipulations of the phrasal complexity of a PP correlate for a given remnant. Either the preposition or the prepositional object can be the target of such manipulations. For correlates containing multisyllabic prepositions, remnants without prepositions are marginally different from their counterparts with prepositions.

(31) Anna poszła zamiast kogoś, but not I.remember (instead of) who. (*it from Anna went instead of somebody, but I don’t remember who.)
    Ale nie pamiętam (zamiast) kogo.
    ‘Anna went instead of somebody, but I don’t remember who.’

Similarly, when we have an NP correlate and a which-NP phrase remnant (matching in complexity) acceptability is unaffected by P-omission in the remnant clause:

(32) Anna pracowała nad jakimś projektem,
    but not I.remember (on) what (project).I
    Ale nie pamiętam (nad) jakim (projektem)
    ‘Anna worked on a project, but I don’t remember which project it was that Anna worked on.’

9Space limitations prevent us from providing detail here regarding the design of the experiments and statistical analysis of the results.
If phrasal complexity is decreased such that correlates contain monosyllabic prepositions, omission of such prepositions from the remnants significantly lowers acceptability scores:

(33) Anna poszła do kogoś, ale nie pamiętam (do) kogo.
    Anna went 
    to somebody.G but not 
    I remember (to) who.G
    ‘Anna went to somebody, but I don’t remember who.’

For non-complex correlates – indefinite pronouns paired with bare interrogative pronouns – preposition omission, too, is degraded:

(34) Anna pracowała nad czymś, ale nie pamiętam (nad) czym
    Anna worked 
    on something.I but not 
    I remember (on) what.I
    ‘Anna worked on something, but I don’t remember what.’

One might propose that an increase in phrasal complexity has a mitigating effect on an otherwise categorical violation, and that preposition omission is one of these. As a way of verifying whether this is so, we manipulated the phrasal complexity of remnant \textit{wh}-phrases in a related construction, sprouting. Here, there are no overt correlates and preposition omission is categorically unacceptable. We found no difference in acceptability between \textit{which}-\textit{NP} phrases (35) and bare interrogative pronouns (36):

(35) Ekspedient się zdenerwował, ale nie wiem *(na) którego klienta.
    assistant REFL got angry 
    but not 
    I know *(with) which customer.A
    ‘The assistant got angry, but I don’t know with which customer.’

(36) Ekspedient się zdenerwował, ale nie wiem *(na) kogo.
    assistant REFL got angry 
    but not 
    I know *(with) who.A
    ‘The assistant got angry, but I don’t know with who.’

This result shows that an increase in the phrasal complexity of the remnant fails to improve the acceptability of a categorical violation. Hence, preposition omission in Sluicing, unlike preposition omission in sprouting, cannot be a categorical violation for its sensitivity to manipulations of phrasal complexity.

Given our assumption, formulated in the previous section, that the effect of phrasal complexity is distributed between the correlate and the remnant, we conducted another experiment. Here, some items instantiated cataphoric Sluicing, e.g. (37), where the order of correlate and remnant was reversed such that the remnant preceded its correlate. Cataphoric Sluicing was compared with the baseline – regular (anaphoric) Sluicing, where correlates preceded remnants, as in (38):
Preposition omission was significantly degraded in cataphoric Sluicing as compared to (1) anaphoric Sluicing and (2) preposition retention in both anaphoric and cataphoric Sluicing. We attribute this result to the fact that a correlate processed prior to a remnant creates a mental representation whose accessibility determines the form of the remnant following that correlate. If a correlate follows a remnant, we expect a degradation in the acceptability of preposition omission due to the difficulty of resolving the remnant before the correlate is encountered. Intuitively, including prepositions in remnants preceding their correlates reduces some of the ambiguity associated with such phrases, which, if prepositionless, could serve as either verbal or prepositional objects in Polish.

In light of these considerations, we conclude that the grammar of Polish should not impose any restriction against the possibility of P-omission in Sluicing – the observed pattern of graded acceptability can be described, even explained, in terms of independently motivated considerations of differential processing complexity. Thus, even if it is possible to find independently motivated, adequate alternative analyses of all the apparent counterexamples to PSG from the other languages cited above (which, as far as we know is not the case), there is at least one language that stands as a true counterexample to the PSG and to the consequences of PSG noted by Rodrigues et al. (2009). Since the PSG is entailed by the ‘movement followed by deletion’ analysis standardly assumed in current discussions, we believe this provides more than sufficient motivation for considering non-transformational, construction-based alternatives like the one proposed by GS00.

8 The GS00 Analysis

Space limitations prevent us from embarking upon an extensive discussion of the GS00 analysis of Sluicing and the revisions to it that we feel are called for. However, it is worth commenting on how that analysis, as it stands, deals with the various issues we have raised in this paper.

The Basics: GS00’s Sluicing Construction is formulated as in (39):
where $\Sigma$ is a nonempty set of parameters.

According to (39), the ‘Maximal-Question-Under-Discussion’ (MAX-QUD) in the dialogue provides the basis for an interpretation of the remnant clause. In addition, there must be a match re. both syntactic category (CAT) and semantic index (IND) between the remnant and the correlate (identified as the salient utterance (SAL-UTT) associated with the MAX-QUD in the immediate context), as indicated. **The Semantic Identity Condition:** Since this analysis defines the interpretation of a Sluiced clause in terms of the MAX-QUD, it provides a fundamentally semantic/pragmatic account of Sluicing. Since there is no syntactic identity condition, we are not surprised to find examples of Sluicing where there is no clear antecedent clause. Though the form of the prior dialogue is a powerful force in shaping the questions under discussion in a dialogue, it is possible for the immediate extralinguistic context to affect these as well, as indicated by some of the examples in (16) above. The immediacy of the relevant context, whether linguistically expressed or not, also follows from the GS00 account of Sluicing, since the value of MAX-QUD, the basis for the interpretation of the Sluiced clause, is constantly being updated as a dialogue progresses. Moreover, since the MAX-QUD is part of the Dialogue Game Board, where the objective facts of the dialogue are recorded (see Ginzburg 2011), it follows that the denotation of any given referring expression is grounded objectively, rather than from the perspective of any single dialogue participant. This provides an immediate account of the constraints on indexical resolution in ellipsis observed by Sag and Hankamer (1984) which we discussed in section 2 above. Our earlier discussion was in terms of VP-Ellipsis, but as examples like (40) make clear, exactly the same constraints apply in Sluicing:

(40) A: Someone is following me.

B: I wonder who \_\_ . [ \_\_ = is following A; \_\_ = is following B].

**Case Matching Effects:** The category of the Sluicing remnant must match that of the correlate (encoded as the SAL-UTT in (39)). Thus all the problems of cleft-based analyses reviewed in section 5 are avoided, as is the problem of restrictions on Sluicing that are observed when a verb’s object allows multiple case realizations, as we saw in Hungarian. Since the category identity requirement directly

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(39) 

\[
\begin{align*}
\text{SYN} & \quad S \\
\text{SEM} & \quad \lambda \Sigma \Phi \\
\text{CNTXT} & \quad \text{SAL-UTT} \\
\text{MAX-QUD} & \quad \lambda \{ \} \Phi \\
\end{align*}
\]

\[
\rightarrow 
\begin{align*}
\text{SYN} & \quad \text{[CAT } X]\] \\
\text{SEM} & \quad \text{[IND } i]\} \\
\text{STORE} & \quad \Sigma \\
\end{align*}
\]

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\^GS00, building on previous work by Ginzburg, Hull, Keenan and others, argue that questions are propositional abstracts.
relates the Sluicing remnant and its correlate, and since the CASE feature specification is part of the CATEGORY value, this analysis correctly enforces remnant-correlate case identity, which, as we saw, posed difficulties for indirect analyses (like Merchant’s) of case matching in Sluicing.

**Island Amnesty and the PSG:** Ross (1969) noted that in order for a deletion-based analysis of Sluicing to work, wh-movement would have to apply in violation of island constraints. This problem also plagues Merchant’s deletion analysis, which must transform the theory of syntactic islands to be about PF representations, not the syntactic representations that are directly manipulated by movement operations. The direct theory of GS00, by contrast, solves this problem simply: the remnants are directly generated; no island-sensitive operations are involved. Similarly, the fact that there is no cross-linguistic correlation of P-stranding and the possibility of P-omission in Sluicing is explained by the GS00 account, where the remnant clause involves no filler-gap dependency and hence no expectation that properties of wh-movement will be projected into the grammar of Sluicing. On the deletion-based analysis of Sluicing, however, the absence of this correlation, given the impossibility of generalizing the Pseudo-Sluicing analysis to the full range of counterexamples, remains an unexplained problem.

9 Conclusion

In this paper, we have reassessed the data that have been offered and widely accepted as evidence for a deletion-based analysis of Sluicing. We have reexamined the identity condition involved in deletion in general, arguing against Merchant’s e-GIVENness condition in favor of the contextualized identity of sense condition proposed by Sag and Hankamer (1984). We have also expanded the range of data relevant to the discussion of case-matching effects in Sluicing, arguing against an indirect account of the sort embraced by deletion-based approaches. In addition, we have called into question Merchant’s P-Stranding Generalization and reassessed the importance of the island amnesty effect that has exercised so many researchers since Ross discovered it.

Sluicing is a fundamentally semantic phenomenon whose remnant constituents are directly generated without extraction or deletion. Sluicing lends itself very nicely to a construction-based account of the sort developed by GS00, which, as we have indicated, and intend to show in more detail elsewhere, provides a satisfying account of its syntactic and semantic properties which avoids all the problems raised here for analyses based on movement and deletion.

References


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