Remarks on Sluicing

Ivan A. Sag (Stanford University)
and
Joanna Nykiel (University of Silesia)

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Abstract

Sluicing is widely regarded as requiring an analysis via deletion operations, a potentially problematic conclusion for non-transformational frameworks like HPSG. 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):

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(5) a. ...but I don't know [$_{CP}$ [$_{+Q}$] [$_{IP}$ Kim likes **[who]**]]. $\rightsquigarrow_{Wh\text{-}Movement}$

b. ...but I don't know [$_{CP}$ [$_{+Q}$ **who**$_i$] [$_{IP}$ Kim likes __ $_i$]]. $\rightsquigarrow_{Sluicing}$

c. ...but I don't know [$_{CP}$ [$_{+Q}$ **who**$_i$] [$_{IP}$ *e*]].

(where deletion of IP is possible just in case '[**someone i** [Kim likes **i**]]' is '*e*-GIVEN'.)

In the second approach to Sluicing, usually referred to as 'LF Copying',[1] L(ogical)F(orm) 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) **[Someone x]** [$_{IP}$ **x** left the room yesterday] .

but I don't know [$_{CP}$ **[who x]** [$_{IP}$ *e*]].$\rightsquigarrow$

but I don't know [$_{CP}$ **[who x]** [$_{IP}$ **x** left the room yesterday]].

Finally, there is a 'Direct Interpretation' approach to Sluicing,[2] 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 precondition 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 which, based on GS00, 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 ~~want something~~.

b. These people have gall bladders, but I don't ~~have a gall bladder~~.

c. I went home when they wouldn't ~~go home~~.

d. I can't play quarterback. I don't even know how ~~to play quarterback~~.

e. I remember meeting him, but I don't remember when ~~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 **him**$_C$?
B: Of course they will __ . [__ $= \lambda x[like(x, C)]$]

(9) A: Do you think they'll like **me**?
B: Of course they will __ . [__ $= \lambda x[like(x, A)]; \neq \lambda x[like(x, B)]$]

Sag and Hankamer offer a purely semantic identity condition as part of their treatment of VP-Ellipsis, which is sketched in (10):[3]

[3]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 simplfying assumption, though nothing hinges on it.

(10) 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 (1995, 2001) is similar, but weaker:

(11) a. An expression E counts as *e*-GIVEN iff E has a salient antecedent A and, modulo $\exists$-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 (1995, 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~~.
$\exists$-clo(VP_a) = F-clo(VP_a) = $\exists$x.x visit Lee.
$\exists$-clo(VP_e) = F-clo(VP_e) = $\exists$x.x 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:

(15) a. $\exists$-clo(VP$_a$) = F-clo(VP$_a$)
= $\exists$x.x will beat someone at chess.

$\exists$-clo(VP$_e$) = F-clo(VP$_e$)
= $\exists$x.x will lose to someone at chess.

b. VP$_a$ and 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), 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 VP-Ellipsis, but Sag & Hankamer's (1984)'s semantic theory of VP-Ellipsis solves the puzzle straightforwardly. Since only the VP sense is relevant to the possibility of deletion, the in-context mutual entailment of the existential closures of distinct 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 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 evaluated in the new context. Hence LF-Copying theories, without some arbitrary and otherwise completely 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) a. 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?

d. A: I saw it. B: You saw WHAT? [Nonechoic Reprise Use]

Merchant (2004) seeks to rebutt 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 nonsentential 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, 200) 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

[4]Note that this 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=apLe_iB0V_U), where (16b) appears without a linguistic antecedent and hence is itself 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 analysis of Sluicing has an air or implausibility from the outset, making it somewhat unintuitive that it 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 hätte 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 Sluiced examples like the following, which exhibit the critical case mismatch, are unquestionably ungrammatical, unlike their non-elliptical counterparts, which

[5]This 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:[6]

(20) a. Mari segített egy fiunak de nem tudom, hogy kinek/*kit
Mary helped.IND a boy.D but not I-know.DEF Q who.D/who.A

b. Mari segített egy fiut de nem tudom, hogy kit/*kinek
Mary helped.IND a boy.A but not I-know.DEF Q who.A/who.D
'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) A Language L will allow preposition-stranding under Sluicing just in case L 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.

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

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 a cleft or cleft-like clause, as sketched in (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 $whom_i$]].$\rightsquigarrow$

b. ..., but we didn't know [[to $whom_i$] they spoke to $\_\_ _i$].$\rightsquigarrow$

c. ..., but we didn't know [[to $whom_i$] ~~they spoke to __~~].$\rightsquigarrow$

d. ..., but we didn't know [[~~to~~ $whom_i$]].

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) oberve 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 possible that the pattern of preposition omission under sluicing is modulated by the phrasal complexity of the correlate, which is turn highly correlated with the phrasal complexity of the remnant *wh*-expression. (*Someone*/*who* and *some student*/*which student* are more likely as correlate/remnant pairs than *someone*/*which student* and *some student*/*who*.) Phrasal complexity is an alternative to the intuitive sounding but nebulous 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 (usualy 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 such extractions. However, Hofmeister and colleagues[7] have argued that the difference between these two types of *wh*-phrase is a special case of a much broader and independently observable 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 overall the 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 of 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 a *wh*-phrase and its correlate increases 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 Sluiced *wh*-

[7] See Hofmeister 2007, 2009, Hofmeister et al. 2007, Hofmeister and Sag 2010, and Hofmeister et al. 2011.

phrase, that is, a *which*-NP phrase where the head NP is usually absent due to the repeated name penalty.[8] 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 Sluiced *wh*-phrase. This is done, we propose, by including a preposition in such a Sluiced *wh*-phrase 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), explaining 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 sluiced *wh*-phrase is encountered, its correlate is retrieved rather than the *wh*-phrase 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'. However, we shift the burden of facilitating the retrieval process to correlates – it is their complexity that determines the forms that Sluiced phrases might take.

7 Polish and the P-Stranding Generalization

Sluiced phrases 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 sluiced phrases in Spanish and Brazilian Portuguese. As shown in

[8]The repeated name penalty refers to the processing difficulty of accessing prominent antecedents by means of too explicit an anaphor. For more information, see Almor (1999), Garrod et al. (1994), Gordon et al. (1993, 1999, 2004) and Swaab et al. (2004).

(26), the case of the Polish Sluicing remnant must correspond to the case of the correlate, which is genitive in (26). But an NP pivot in the analogue of the structure assumed by Rodrigues et al. must bear instrumental case in Polish, as illustrated in (27):

(26) Adam regularnie dostaje prezenty od kogoś/ jakiejś 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).'

(27) Adam regularnie dostaje prezenty od kogoś/jakiejś dziewczyny, ale nie
Adam regularly gets presents from someone.G/some girl.G, but not
wiem kim/*kogo jest osoba od której Adam dostaje prezenty.
I.know who.I/*who.G is person from whom.G Adam gets presents

'Adam regularly gets presents from someone, but I don't know who is the person 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 preposition-less *which*-NP phrases and their non-complex counterparts (bare interrogative pronouns). The underlying cleft structure he assumes for a sluiced *which*-NP phrase is shown in (28):

(28) Adam regularnie dostaje prezenty od jakiejś 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 sluiced *which*-NP phrases 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 garners 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. Notice that the phrase *which girl* given in (29), which is an acceptable sluice, cannot be derived from the cleft construction in (28) through movement and deletion. That is because Szczegielniak's analysis hinges on the determiner *which* being fronted alone in the cleft. Fronting the entire NP *which girl* would lead to illicit preposition stranding shown in (30):

(29) Adam regularnie dostaje prezenty od jakiejś dziewczyny,
Adam regularly gets presents from some girl.G
ale nie wiem jakiej dziewczyny.
but not I.know which girl.G

'Adam regularly gets presents from some girl, but I don't know which girl.'

(30) Adam regularnie dostaje prezenty od jakiejś dziewczyny,
Adam regularly gets presents from some girl.G
ale nie wiem *jakiej dziewczyny ~~to od Adam regularnie dostaje prezenty.~~
but not I.know *which girl.G it from 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.'

Overall, 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 are listed below. For reasons of space, we cannot go into detail here regarding the design of the experiments and statistical analysis of the results.

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 sluiced phrase. Either the preposition or the prepositional object can be the target of such manipulations. For correlates containing multisyllabic prepositions, Sluiced *wh*-phrases without prepositions are marginally different than their counterparts with prepositions.

(31) Anna poszła zamiast kogoś, ale nie pamiętam (zamiast) kogo.
Anna went instead of someone.G but not I.remember (instead of) who.G
'Anna went instead of somebody, but I don't remember who.'

Similarly, for NP correlates, prepositionless *which*-NP phrases (matching the complexity of the correlates) do not differ from *which*-NP phrases with prepositions.

(32) Anna pracowała nad jakimś projektem,
Anna worked on a project.I
ale nie pamiętam (nad) jakim (projektem)
but not I.remember (on) what (project).I

'Anna worked on a project, but I don't remember what (project).'

If phrasal complexity is decreased such that correlates contain monosyllabic prepositions, preposition omission 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 worry that differences in phrasal complexity have a mitigating effect on categorical violations, and perhaps preposition omission is one of them. As a way of verifying whether this is so, we manipulated the phrasal complexity of 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 sluiced *which*-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 suggests that increased phrasal complexity does not improve the acceptability of categorical violations. In addition, this is evidence that the mediating effect of phrasal complexity cannot be driven solely by the sluiced phrase.

To further investigate the role played by correlates, we conducted another experiment, where in some items the order of correlate and sluiced phrase was reversed such that the sluiced phrase preceded its correlate. Cataphoric Sluicing (37) was compared with the baseline – regular (anaphoric) Sluicing, where correlates preceded sluiced phrases (38).

(37) Nie wiem (przeciw) komu, ale większość posłów głosowała
not I know (against) who.D but majority congressmen.G voted
przeciw komuś.
against someone.D

'I don't know who, but the majority of the congressmen voted against someone.'

(38) Większość posłów głosowała przeciw komuś,
majority congressmen.G voted against someone.D
ale nie wiem (przeciw) komu.
but not I.know (against) who.D

'The majority of the congressmen voted against someone, but I don't know who.'

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 sluiced phrase creates a mental representation whose accessibility determines the form of the sluiced phrase following that correlate. If a correlate follows a sluiced phrase, we expect a degradation in the acceptability of preposition omission due to the difficulty of resolving the sluiced phrase before the correlate is encountered. Intuitively, including prepositions in sluiced phrases 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, 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):

(39) $$\begin{bmatrix} \textsc{syn} & \textsc{s} \\ \textsc{sem} & \lambda\Sigma\Phi \\ \textsc{cntxt} & \begin{bmatrix} \textsc{sal-utt} & \left\{ \begin{bmatrix} \textsc{syn} & [\textsc{cat}\ X] \\ \textsc{sem} & [\textsc{ind}\ i] \end{bmatrix} \right\} \\ \textsc{max-qud} & \lambda\{\ \}\Phi \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \textsc{syn} & [\textsc{cat}\ X] \\ \textsc{sem} & [\textsc{ind}\ i] \\ \textsc{store} & \Sigma \end{bmatrix}$$

where Σ is a nonempty set of parameters.

According to (39), the 'Maximal-Question-Under-Discussion' (MAX-QUD) in the dialogue[9] 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; $\neq$ 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

[9] 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 offerred 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.

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