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Two types of reverse sluicing in English:

Focusing on discourse

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Introduction

Sluicing and reverse sluicing

Canonical sluicing in English (Hankamer and Sag 1976; Chung et al. 1995; Merchant 2001)

(1) Lois was talking (**to someone**), but I don't know *who*.
CORRELATE / ANTECEDENT — REMNANT

Sentential interpretation and form-function mismatch

(2) Kim likes someone, but I don't know *who*.
= '… I don't know *who* Kim likes.' (Sag and Nykiel 2011: 189-190)

Reverse sluicing in English (i.a., Giannakidou and Merchant 1998; Ha 2008; Lipták 2012)

- Differing in the position of the antecedent

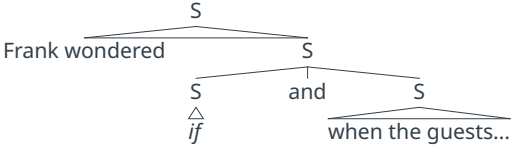
(3) a. The homeowner wasn't sure **why**, but his house had been snuck into the previous night.
(= '… **why** his house had been… ') (Gullifer 2004: 2)

b. Frank wondered **if** and *when* the guests would arrive.
(= '… **if** the guests… and *when* the guests… .") (Giannakidou and Merchant 1998: 249)

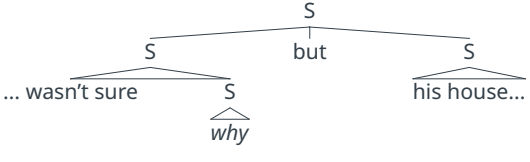
Research questions

Different structures, inconsistent previous analyses

(4) a. **Coordinated reverse sluicing** (structure by Giannakidou and Merchant 1998)



b. **Non-coordinated reverse sluicing** (adapted from canonical sluicing structure by Merchant 2001)



Research questions

- Are these two have any differences in their usage patterns? If so, different how? (i.e., licensing condition, sentential interpretation)
- How about their syntactic structure and form-function mismatch?

Key properties

Canonical and reverse sluicing: Similarities

Surface anaphor and overt linguistic antecedent (Hankamer and Sag 1976)

(5) a. A: Someone's just been shot.
B: Yeah, I wonder *who*.

b. [A produces a gun, points it offstage and fires, whereupon a scream is heard]
B: #Jesus, I wonder *who*.

Remnant: [QUE +] feature (i.a., Merchant 2001):

(6) a. Anne invited someone, but I don't know $who_{[QUE+]}$. (Merchant 2001: 53)

b. I don't know $who_{[QUE+]}$, but Anne invited someone.

(7) a. It's not clear $if_{[QUE+]}$ or when the police will arrest the demonstrators.

b. *I didn't remember $that_{[QUE-]}$ or when Jack got married. (Giannakidou and Merchant 1998: 250)

Canonical and reverse sluicing: Differences

Overt and covert correlate

(8) Canonical sluicing

a. She's reading. I can't imagine *what*. [sprouting]

b. She's reading *something*. I can't imagine *what*. (Chung et al. 1995: 4) [merger]

(9) Reverse sluicing

a. I can't imagine *what*, but she's reading (something). [merger/sprouting]

b. I don't know **if** or *(*when*) she will come. [merger/*sprouting]

Syntactic distribution

(10) a. She's reading. I can't imagine *what*. (Chung et al. 1995: 4)

b. I can't imagine *what*, but she's reading.

(11) a. A: She's reading. B: *What?* [canonical]

b. A: **What?* B: She's reading. [non-coordinated reverse]

(12) a. He wondered *whether* or *which day* the guests would arrive. (Giannakidou and Merchant 1998: 238)

b. A: The guests would arrive next week.
B: **Whether* and *which day* would they arrive? [coordinated reverse]

Canonical and reverse sluicing: Differences (Cont'd)

Syntactic categories, grammatical functions, and restrictions

(13) Non-coordinated reverse sluicing: Restrictions on remnant
⇒ All grammatical functions and *wh*-words, but not Cs

a. You can't imagine *what/why/how fast/with whom*, but he's writing *something*. (Ross 1969: 252)

b. *I don't know *whether/if*, but Susan hit Johnny. (Cho 2014: 26, adapted)

(14) Coordinated reverse sluicing: Restrictions on correlate...?
⇒ Only adjunct *wh*-words (generatlization & data from Giannakidou and Merchant 1998: 238-240)

a. *Lucy was wondering *whether* and **who** might come to her party. [*subject]

b. *I can't remember *whether* or **which patient** he had bathed/shaved. [*object]

c. Frank wondered *whether* and **which day** the guests would arrive. [adjunct]

(15) **New data!**

a. "We want to create a group chain that will be branded with the company's image, track how many people are involved in the volunteer efforts, how many hours they volunteered, and *whether* and **how much money** was raised," Lee said. [subject; COCA 2009 NEWS]

b. Irish girls peeled apples, roasted nuts, unraveled yarn, stared into mirrors, [...] , and played with fire to find out *whether* and **whom** they would marry. [object; COCA 2001 MAG]

Semantic and pragmatic properties

Pragmatic focus (c.f., Merchant 2001)

(16) a. I don't know WHO, but John met SOMEONE.
b. *I don't know WHO, but JOHN met someone.

(17) a. The journalists want to know IF and WHEN the suspect will make a statement. (Ha 2008: 3)
b. *The journalists want to know IF and when the suspect WILL make a statement.

Sentential interpretation and parallelism (Merchant 2001: 30; in **most** cases)

(18) Abby called Ben an idiot, but I don't know **who else**.
⇝ ... but I don't know **who else** ⟨she called an idiot / #she insulted⟩.

(19) a. I don't know **who**, but someone called Ben an idiot.
⇝ I don't know *who* ⟨called Ben an idiot / #insulted Ben⟩, but ...
b. The question is not **if**, but *when* Abby called Ben an idiot.
⇝ The question is not *if* ⟨Abby called Ben an idiot / #Abby insulted Ben⟩ but ...

Previous analyses

Two previous analyses

Due to the lack of consensus, previous analyses vary from each other:

Syntactic approach

- **LF-copying analysis** (Giannakidou and Merchant 1998)
- **Rignt-Node-Raising analysis** (Ha 2008)
- Other possible candidates:
  PF-deletion analysis (Ellipsis, Merchant 2001), Structure-sharing analysis (Citko and Gračanin-Yüksek 2013)

Semantic approach

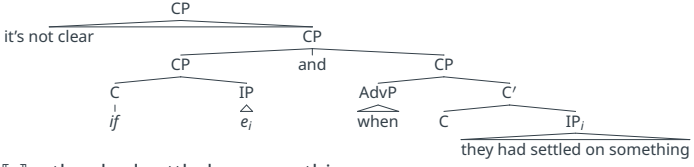
- **Semantic *e*-GIVENness** (Merchant 2001)

LF-copying analysis

Anaphoric null *e* analysis by Chung et al. (1995):

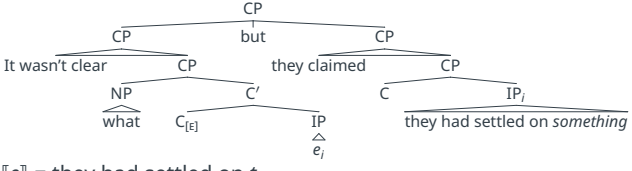
(20) John met someone $_i$, but I don't know *who* e_i.
$[\![e]\!]$ = *John met* t_{who}

(21) **Coordinated reverse sluicing** (Giannakidou and Merchant 1998)
It's not clear *if* e_i **or** *when* the police will arrest the demonstrators $_i$.



$[\![e]\!]$ = they had settled on something

(22) **Non-coordinated reverse sluicing** (adapted from Chung et al. 1995: 13-14)
It wasn't clear *what* e_i, **but** they claimed they had settled on something $_i$.



$[\![e]\!]$ = they had settled on t_{what}

LF-copying analysis: Empirical challenges

Coordinated reverse sluicing: Argument correlates

- Giannakidou and Merchant (1998: 240) claim coordinated reverse sluicing **must** take an adjunct remnant (or, must be sprouting) to support their analysis.

(23) **Counterexamples**

a. [...] , and we're in the process of trying to gather the facts as a prelude to determine **whether** and **what discipline** is appropriate. [SUBJ; COCA 2017 MAG]
⇒ determine [$_{CP}$ ***whether** is appropriate] and [$_{CP}$ **what discipline** is appropriate]

b. The unified Germany may, in exercising its unrestricted sovereignity, decide freely and by itself **if** and **which alliance** it wants to be a member of. [PP COMP; COCA 1990 NEWS]
⇒ ... decide [$_{CP}$ ***if** ⟨it wants to be a member of⟩] and [$_{CP}$ **which alliance** it wants to be a member of]

LF-copying analysis: Empirical challenges (Cont'd)

Cataphoric *e* and the Backward Anaphora Constraint:

(24) Backward Anaphora Constraint (BAC) (BAC; Langacker 1969; summarized in Ha 2008: 122)
An anaphora preceding its antecedent needs to be contained in **a subordinate clause**.

Other cataphora in subordinated clause (c.f., Ha 2008; Lipták 2012)

(25) a. Because Jeff did e_i, his children had *to go to church last Sunday*$_i$.
b. *Jeff did e_i and his children had *to go to church last Sunday*$_i$, too. (VP ellipsis, Ha 2008: 122)

Non-subordinated null *e*

(26) a. It's not clear *if* e_i or when *the police will arrest the demonstrators*$_i$.
b. It wasn't clear *what* e_i, but they claimed they had settled on *something*$_i$.

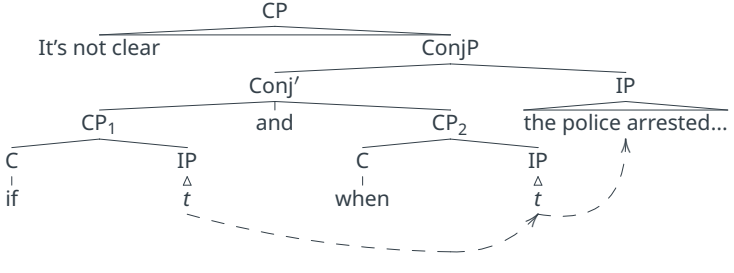
Right-Node-Raising analysis

The Right-Node-Raising (RNR) analysis assumes that…

i) The IP of the antecedent originates in the first CP, then
ii) it moves to the IP position of the second CP, and finally
iii) it gets extraposed outside the two CPs (Ha 2008):

Then, it successfully predicts English coordinated reverse sluicing:

(27) It's not clear [$_{ConjP}$ [$_{ConjP}$ [$_{CP}$ *if* t_i] and [$_{CP}$ when t_i] [$_{IP}$ the police arrested the demonstrators$_i$]].



Right-Node-Raising analysis: Empirical challenge

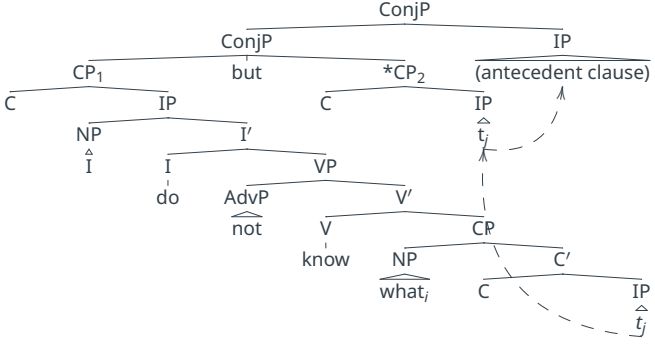
Non-coordinated reverse sluicing with an argument remnant

(28) I don't know exactly *what*, but he ate something bad.

a. **Case 1: Underlier matching antecedent**
I don't know exactly [$_{CP_1}$ ***what***$_i$ ⟨he ate t_i *something bad*⟩$_j$], but
[$_{CP_2}$ ⟨he ate t_i *something bad*⟩$_j$] he ate t_i *something bad*$_j$.

b. **Case 2: Underlier matching elided materials**
I don't know exactly [$_{CP_1}$ *what*$_i$ ⟨he ate t_i⟩], [$_{CP_2}$ but ⟨he ate t_i⟩] he ate t_i. (≠ he ate something bad)

(29)



Parallelism and absence of syntactic structure to copy

Reconstruction may not syntactic

(30) a. **Polarity mismatch?**
All of us will die some day. It is not the matter of **if**, but *when*.
(= 'it is **not** the matter of **if** ⟨we will die⟩ but ⟨it is (?**not**) the matter of⟩ *when* we will die')

b. **NP antecedent**
British authorities warning ever since 9/11 that a terrorist attack on British soil is not a question of **if** but *when*.
(= '... not a question of { **if** / but *when* } they attack on British soil')

Then, neither of the two syntactic approaches can account for the linguistic properties of the constructions in question.

Semantic approach

Licensing condition and *e*-GIVENness (Merchant 2001)

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

a. *A* entails *F-clo*(*E*) and

b. *E* entails *F-clo*(*A*)

(ex) She is eating [*something*]$_F$, but I don't know [*what*]$_F$ ⟨she is eating⟩.

a. F-clo(*A*) = F-clo(∃*x*.eat(*s*, *x*)) = ∃*x*.eat(*s*, *x*)

b. F-clo(*E*) = F-clo(λ*x*.eat(*s*, *x*)) = ∃*x*.eat(*s*, *x*)

∴ *A* entails F-clo(*E*), and *E* entails F-clo(*A*) ⇒ **mutual entailment**

Licensing condition and *e*-GIVENness (Merchant 2001) (Cont'd)

Non-coordinated reverse sluicing ✓

(32) I don't know $[what]_F$ ⟨she is eating⟩, but she is eating $[something]_F$.

a. F-clo(E) = F-clo(λx.eat(s, x)) = $\exists x$.eat(s, x)

b. F-clo(A) = F-clo($\exists x$.eat(s, x)) = $\exists x$.eat(s, x)

∴ A entails F-clo(E), and E entails F-clo(A) ⇒ **mutual entailment**

Coordinated reverse sluicing ✗

- Type mismatch
- No mutual entailment ('*if*/*whether* p' ⊭ p)

(33) I don't know *if* ⟨John will come⟩ or $[when]_F$ John will come.

a. F-clo(A) = F-clo($\exists t$.come(s) & $at(t)$) = $\exists t$.come(s) & $at(t)$

b. F-clo(E) = *F-clo({come(s), ¬come(s)})

∴ A does not entail F-clo(E), and E does not entail F-clo(A) ⇒ **no mutual entailment**

Discussion

Syntactic parallelism and restriction?

- **No strict structural/semantic parallelism** (cf., Culicover and Jackendoff 2005; Nykiel and Kim 2022)

(34) Our goal should be regime change. The question is not *whether*, but *how and when*.
= '... whether ⟨#our goal should be regime change⟩, but how ⟨our goal ...⟩.'

- **Restriction: No argument remnant?** (cf., Giannakidou and Merchant 1998: 239):

(35) *Lucy was wondering *whether* and *who* might come to her party.

(36) **Counterexamples**

a. We had watched and fretted almost as soon as the leaves dropped in early winter to see **whether** and **how many buds** were beginning to form. [SUBJ; COCA 2000 NEWS]

b. I was wondering **if** and **where** you were planning to maybe *visit* with the president and his family [...], to offer some additional support? [VP COMP; COCA 1998 SPOK]

A revised licensing condition for Coordinated reverse sluicing

New data!

- **Pragmatic restriction**

(37)	a. It's **clear** *if* and *when* she will come.	⊨	she will come (*p*)	COMMITMENT to *p*
	b. I **wonder** *if* and *when* she will come.	⊨	she will come (*p*)	No COMMITMENT to *p*
	c. *I **doubt** *if* and *when* she will come.	⊨	she will come (*p*)	COMMITMENT to ¬*p*

A revised licensing condition for Coordinated reverse sluicing (Cont'd)

Given this, I propose one of the possible licensing conditions for coordinated reverse sluicing:

(38) **Licensing condition of coordinated reverse sluicing**:
Coordinated reverse sluicing can be licensed in embedded environment *iff*,
for a proposition *p* presupposed/entailed by the antecedent,
the attitude-bearer does not make a commitment to $\neg p$.

Example

(39) We don't know *if* or when John will come.

a. Antecedent = *when John will come*

b. *when John will come* $\models$ John will come (*P*)

c. the attitude bearer '*we*' do not make a commitment to $\neg P$

$\Rightarrow$ Licensing condition ✓

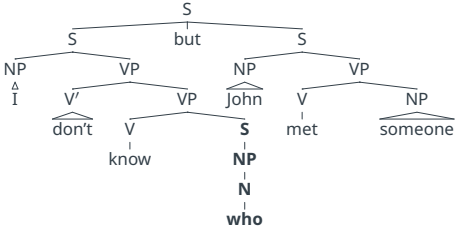
A discourse-based analysis

A non-derivational, discourse-based approach

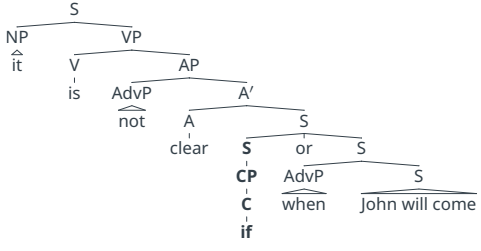
A direct-interpretation approach

- Adopts basic external structures from previous analyses (cf., Chung et al. 1995; Giannakidou and Merchant 1998; Merchant 2001)
- No underlying structure
- **XP directly projects to a S-level expression** (based on *hd-frag-cxt*; Ginzburg and Sag 2000)
- Pragmatic resolution

(40) a. **Non-coordinated Reverse Sluicing**
I don't know *who*, but John met someone.



b. **Coordinated Reverse Sluicing**
I wonder if and when John will come.



No syntactic underlier

Focusing on discourse: Meaning of questions on DGB (Ginzburg and Sag 2000)

(41) a. DGB (Dialogue Game Board): a set of attributes recording contextual parameters in the ongoing discourse

b. MAX-QUD (MAXimal Question-under-Discussion): the most salient discussable question in the given context (i.e., current discourse topic)

c. SAL-UTT (SALient-UTTerance): the (sub)utterance which receives the widest scope within MAX-QUD (i.e., focused material)

$$\begin{bmatrix} \text{DGB} & \begin{bmatrix} \text{MAX-QUD} & \ldots \\ \text{SAL-UTT} & \ldots \end{bmatrix} \end{bmatrix}$$

Ex. Canonical *wh*-question

(42) $[\textit{Who}]_F$ did you meet?

$$\begin{bmatrix} \text{FORM} & \langle \text{Who did you meet?} \rangle \\ \text{DGB} & \begin{bmatrix} \text{MAX-QUD} & \lambda x.\textit{meet}(\textit{you}, x) \\ \text{SAL-UTT} & \begin{bmatrix} \text{SYN} \mid \text{CAT} & \text{NP} \\ \text{SEM} & \begin{bmatrix} \text{IND} & i \\ \text{PARAM} & \textit{person} \end{bmatrix} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

No syntactic underlier (Cont'd)

No derivation: No underlying structure, no structural parallelism (cf., Construction Grammar; see, among many others, Ginzburg and Sag 2000; Goldberg 2006)

(43) **Head-Fragment Construction** (*hd-frag-cxt*; i.e., Kim 2015: 279)

$$\begin{bmatrix} \text{SYN S} \\ \text{DGB} \begin{bmatrix} \text{MAX-QUD} & \ldots \\ \text{SAL-UTT} & \begin{bmatrix} \text{SYN} \mid \text{CAT} & \boxed{1} \\ \text{SEM} \mid \text{IND} & \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \text{SYN} \mid \text{CAT} & \boxed{1} \\ \text{SEM} \mid \text{IND} & \boxed{2} \end{bmatrix}$$

(44) **Canonical sluicing**

A: I met someone yesterday.
B: I wonder $[who]_F$. / $[Who?]_F$

a. ANTECEDENT: $\exists x.meet(A, x)$
b. SAL-UTT: *who* [NP; x]
c. MAX-QUD: $\lambda x.meet(A, x)$

$$\begin{bmatrix} \text{SEM} & \lambda x.meet(A, x) \\ \text{DGB} \begin{bmatrix} \text{MAX-QUD} & \lambda x.meet(A, x) \\ \text{SAL-UTT} & \begin{bmatrix} \text{SYN} \mid \text{CAT} & \boxed{1} \\ \text{SEM} & \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

S

NP

$$\begin{bmatrix} \text{SYN} \mid \text{CAT} & \boxed{1}\ \text{NP} \\ \text{SEM} \mid \text{IND} & \boxed{2}\ person_x \end{bmatrix}$$

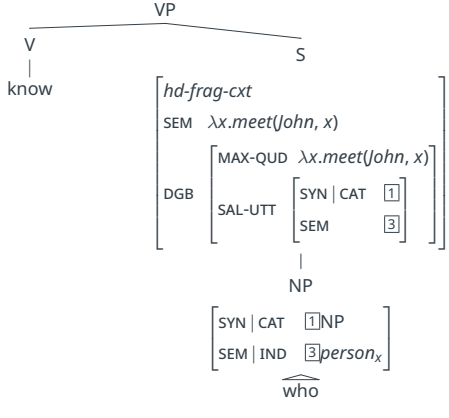
Who?

Application: Non-derivational, discourse-based approach

Non-coordinated reverse sluicing*

(45) I don't know *who*, but John met [*someone*]$_F$.

a. ANTECEDENT: $\exists x.meet(j, x)$
b. SAL-UTT: $person_x$[NP; x]
c. MAX-QUD: $\lambda x.meet(John, x)$



*The analysis parallels that of its canonical sluicing counterpart (e.g., *John met someone, but I don't know who.*; among others, Ginzburg and Sag 2000; Sag and Nykiel 2011; Kim 2015)

Application: Non-derivational, discourse-based approach (Cont'd)

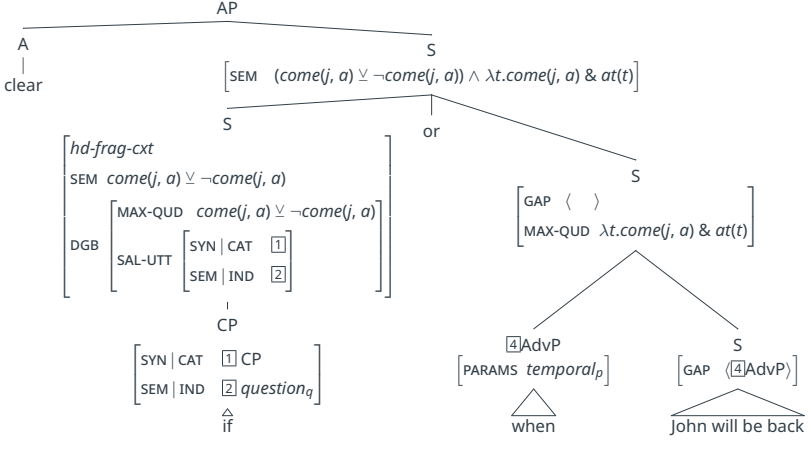
Coordinated reverse sluicing

(46) It's not clear *if* or [[*when*]$_F$ John will come to Austin]$_A$.

a. ANTECEDENT: $\lambda t.come(j, a)\ \&\ at(t) \models come(j, a)$

b. SAL-UTT: *if* [CP; *question*]

c. MAX-QUD: $\lambda P.P \veebar \neg P(come(j, a)) = come(j, a) \veebar \neg come(j, a)$ (= meaning of '*if*')



Problems to solve

Future study: Reversed polarity in sluicing

Licensing condition: Counterexample

(47) a. *I **doubt** *if* and *when* she will come. ⊨ she will **not** come.

b. I have **a doubt** about *if* and *when* she will come. ⊨ !!she will **not** come.

Polarity mismatch

- The effect of [*not* … *but* …] constructions (Toosarvandani 2012; Lee 2017)

(48) All of us will die some day. It is **not** the matter of *if*, but *when*.

a. It is **not** the matter of *if*, but *when*.
(= 'it is **not** the matter of *if* we will die, **but** it is (***not**) the matter of *when* we will die')

b. It is **not only** the matter of *if*, **but also** *when*.
(= 'it is **not** the matter of *if* we will die, **but also** it is *(**not**) the matter of *when* we will die')

c. It is **not** the matter of *if*, and *when*.
(= 'it is **not** the matter of *if* we will die, **and** it is *(**not**) the matter of *when* we will die')

(49) I don't think that California will comply, but I don't know *why* (Kroll 2019: 3)
(= '… IDK *why* California will **not** comply.')

Summary

Summary

- The study differentiates between coordinated and non-coordinated reverse sluicing, noting that although they are syntactically distinct, they behave similarly in interpretation.
- It addresses three central issues concerning ellipsis—licensing, syntax, and semantics—through both theoretical and empirical analysis.
- The study argues that derivational accounts fail to adequately capture the structural asymmetry and broken semantic parallelism found in non-coordinated reverse sluicing.
- The study proposes that reverse sluicing lacks syntactic structure at the ellipsis site and derives its interpretation from discourse context, adopting a non-derivational framework that allows phrasal expressions to project to the sentential level under proper discourse conditions.

Appendix

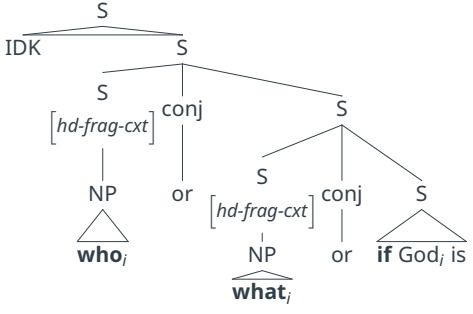
Appendix

- **Naturally occurring '*wh* & *if*/*whether*' strings**
  ⇒ Coordinated *wh*-questions (cf., Park and Kim 2025)

(50) a. He plans research to find out **how** and **if** he can identify the characteristics of leaders among range animals. (COCA 2000 ACAD)

b. That is, one can say, "I don't know **who** or **what** or **if** God is, but something happened in my life. [...]" (COCA 2009 MAG)

(51) I don't know **who** or **what** or **if** God is, but ...



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