

VP ELLIPSIS WITHOUT PARALLEL BINDING: TOWARDS A QUD APPROACH

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SUMMARY: We observe a new reading (the **sticky reading**) of pronouns in VP ellipsis, which is distinct from the strict and sloppy readings. This reading is problematic for standard theories of VPE, which are tailored to force parallel binding. We sketch an alternative theory based on a question-based model of information structure.

STRICT, SLOPPY, AND STICKY READINGS

Pronouns under VPE famously give rise to *Strict* and *Sloppy* readings (Sag, 1976).

Either both pronouns are interpreted as free, or both pronouns are interpreted as bound. *Mixed readings* are disallowed.

- (1) [Each of the boys in John^T's class]^x cited **his**₁ paper.
Tom^T didn't (cite **his**₂ paper).

		his ₁	his ₂
Strict:	<i>J</i>	<i>J</i>	
Sloppy:	<i>x</i>	<i>T</i>	
*Mixed 1:	<i>x</i>	<i>J</i>	
*Mixed 2:	<i>J</i>	<i>T</i>	

Existing theories of VPE are set-up to enforce *binding parallelism*, either via a semantic condition (Rooth, 1992), or a syntactic condition (Sag, 1976; Fiengo & May, 1994).

What we dub the **Sticky Reading**, which is a special kind of mixed reading, is an exception to the generalisation that VPE must involve parallel binding.

- (2) [None of the authors]^x proofread his_x paper.
So the editor did (proofread **them**) (instead). (them = the authors' papers)

THE IDENTITY CONDITION

We formulate our identity condition in terms of the Question under Discussion (Roberts 2012), which in turn is based on alternative semantics for focus (Rooth 1992). We only discuss simple cases where both the clause containing the elliptical VP (E-Cl) and the clause containing the antecedent VP (A-Cl) are matrix clauses.

- **Focus Condition:** The focus value of E-Cl, $\llbracket \text{E-Cl} \rrbracket_f^g$, entails that of A-Cl, $\llbracket \text{A-Cl} \rrbracket_f^g$.
- **Discourse Condition:** E-Cl is discourse dependent on A-Cl.

THE FOCUS CONDITION

One crucial difference between the sticky reading and other mixed readings is that under the sticky reading, the two sentences are about the same set of objects. The focus condition captures this notion. Identifying focus values of sentences as questions, we define entailment for focus values as (non-contextual) question entailment.

$\llbracket S_1 \rrbracket_f^g$ entails $\llbracket S_2 \rrbracket_f^g$ if every complete answer to S_1 is a complete answer to S_2 .

For (2):

- (3) $\llbracket [\text{the Editor}]_F \text{ did (proofread them)} \rrbracket_f^g = \{x \text{ proofread the authors' papers} \mid x \in D_e\}$
(4) $\llbracket [[\text{NONE}]_F \text{ of the authors}]^x \text{ proofread his}_x \text{ paper} \rrbracket_f^g = \{Q(\lambda x. x \text{ is an author})(\lambda x. x \text{ proofread } x\text{'s paper}) \mid Q \in D_{\langle et, \langle et, t \rangle \rangle}\}$

Every complete answer to (3) is a complete answer to (4), so (3) entails (4).

Prediction: When the entire DP is focused, the sticky reading is unavailable.

- (5) [None of the Authors]_F^x proofread his_x paper.
*So the editor did (proofread them) (instead).

- (6) $\llbracket [\text{none of the Authors}]_F^x \text{ proofread his}_x \text{ paper} \rrbracket_f^g = \{Q(\lambda x. x \text{ proofread } x\text{'s paper}) \mid Q \in D_{\langle et, t \rangle}\}$

Since (3) does not entail (6), the focus condition is not met.

Generally, under strict and sloppy readings, $\llbracket \text{E-Cl} \rrbracket_f^g = \llbracket \text{A-Cl} \rrbracket_f^g$, thus the focus condition holds. Under (unavailable) mixed readings, the entailment does not hold.

THE DISCOURSE CONDITION

VPE is known to be sensitive to discourse relations between A-Cl and E-Cl (Hardt & Romero 2004, Kehler 2002, Kehler & Büring 2008).

- (7) Agnes arrived after John ate.

But Bill didn't (*eat / arrive after John ate) (Hardt & Romero 2004)

We observe that the sticky reading is more limited in distribution than the strict and sloppy readings (see (9) and (10)).

In the QUD model (Roberts 2012), each discourse move (assertion or question) needs to be *discourse dependent* on some prior question move.

- **ASSERTION:** Assertion A is discourse dependent on question Q if A is a partial answer to Q and A is congruent to Q (the Question-Answer Congruence Condition; QACC).
- **QUESTION:** For discourse dependencies between questions, we define the notion of a *follow-up question* (Roberts 2012 only considers subquestions).

Follow-Up Questions

A question FUQ is a *follow-up question* to another question Q (in discourse D) if any of the following is the case:

- **Subquestion:** Q has not been completely answered in D and Q entails FUQ .
- **Reason:** A partial answer p to Q has been given in D before FUQ such that a partial answer to FUQ explains p .
- **Consequence:** A partial answer p to Q has been given in D before FUQ such that p explains a partial answer to FUQ .
- **Concessive:** A partial answer p to Q has been given in D before FUQ , and p makes a partial answer to FUQ unlikely.

This list is tentative. More relations could be added (cf. *Coherence Theory*; Kehler 2002). We represent discourse dependencies with indentation:

- (8) Q1: Who is going to NY?
A1: Each of the boys is going to NY.
Q2: Why are they all going to NY? (reason)
A2: In order to attend SALT.
Q3: Are the girls also going to NY? (subquestion)
A3: No, only Mary is going to NY.

The sticky reading of (2) can be analyzed as involving implicit questions.

- (9) Q1: ([Which of the authors]^x proofread his_x paper?)
A1: [None of the authors]^x proofread his_x paper.
Q2: (So then who proofread the authors' papers?) (consequence)
A2: The editor did (proofread them) instead.

When two assertions answer the same question, they stand in a PARALLEL relation (often signalled by *but*, *too*, etc.). Only strict and sloppy readings are available with parallel sentences (A1-A2).

- (10) Q1: Who^x proofread his_x (own) paper?
A1: [None of the SEMANTICISTS]^x proofread his_x paper.

A2: But one syntactician^y did (proofread his_y paper).

A2': #But one syntactician^y did (proofread them).

A2' is not congruent to Q1, hence no strict or sloppy reading. It does answer a FUQ , hence allowing a sticky reading.

Due to QACC, question antecedents do not license the sticky reading.

- (11) Q: [Which of the authors]^x proofread his_x paper?
A: #The editor did (proofread them).

On the other hand, the sticky reading is available in questions, because QACC does not apply to such a pair.

- (12) A: [None of the authors]^x proofread his_x paper.
Q: Then who did (proofread them)?

ALTERNATIVE ACCOUNT: TELESCOPING?

Dalrymple et al. (1991) suggest that one interpretation of (13) corresponds to the universal quantifier taking extra-sentential scope and binding a singular pronoun in both A-Cl and E-Cl, (*telescoping*; Poesio and Zucchi, 1992, Keshet, 2008).

- (13) [Every author]^x [_{t_x} proofread his_x paper, and then Bill did (proofread his_x paper)].

Under this analysis (13) involves parallel binding. But this telescoping analysis fails to generalize to other cases of sticky readings.

1. Incorrect truth conditions with negative quantifiers:

- (14) [None of the authors]^x [_{t_x} proofread his_x paper. So the editor did (proofread his_x paper)]. (≠ $\exists x[\text{author}(x) \ \& \ x \text{ did not proofread } x\text{'s paper}]$)

2. **Scope Islands:** A universal quantifier cannot scope out of an embedded finite clause; telescoping is blocked, but the sticky reading is still there.

- (15) John told me that [every author]^x proofread his_x paper.
In that case, the editor mustn't have (*proofread his_x paper)/(proofread them).

3. **Collectivity:** The telescoping analysis only generates the distributive reading.

- (16) [None of the authors]^x proofread his_x paper.
So three sub-editors had to (proofread his paper)/(proofread them) instead.
a. DISTRIBUTIVE: Each of the sub-editors proofread all the papers.
b. COLLECTIVE/CUMULATIVE: Each sub-editor proofread a subset of the papers, and all the papers were proofread by some sub-editor.

4. **Discourse conditions on telescoping:** Keshet (2008) observes that telescoping is unavailable in certain discourse configurations, e.g. the explanation relation:

- (17) #Each of my friends is dishonest. Because he's a politician.

The sticky reading is available in such cases.

- (18) Each of the authors didn't proofread his paper. Because the editor did.

REFERENCES: Dalrymple, Shieber, and Pereira (1991) Ellipsis and higher-order unification. Fiengo & May (1994) *Indices and identity*. Hardt & Romero (2004) Ellipsis and the structure of discourse. Kehler (2002) *Coherence, reference, and the theory of grammar*. Keshet (2008) Telescoping and scope economy. Poesio & Zucchi (1992) On telescoping. Roberts (2012) Information structure: towards an integrated formal theory of pragmatics. Rooth (1992) Ellipsis redundancy and reduction redundancy. Sag (1976) *Deletion and logical form*.