

The Semantics of Corrections

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1 Introduction

Consider the sentences in (1):

- (1) a. Andrew, *uh*, *sorry*, [Anders]_F ate a taco. (full correction)
b. Anders made, *uh*, *sorry*, [ate]_F a taco. (elliptical correction)
c. Anders made, *uh*, *sorry*, he [ate]_F a taco. (anaphoric correction)

In each sentence:

- the speaker makes a mistake,
- signals that they’ve made a mistake (*uh*, *sorry*), and finally
- corrects their mistake.¹

We will refer to:

- the underlined material as the ANCHOR (a.k.a. *reparandum*; see Shriberg 1994)
- the italicized material as the TRIGGER (a.k.a. editing term)
- all subsequent material as the CORRECTION (a.k.a. alteration + continuation)
- the anchor-correction pair as the (ERROR) CORRECTION STRUCTURE

We will abstain from explicitly annotating subsequent examples.

- ‘repair’ / ‘revision’ cases comparable to the above have been given significant attention in psychology (e.g. Levelt 1983), psycholinguistics (e.g. Clark & Fox Tree 2002, Ferreira et al. 2004), conversation analysis (e.g.

¹We expect that many of the generalizations we propose about self-corrections will extend to cross-speaker corrections, but we will not be discussing such data here.

Schegloff et al. 1977) and computational linguistics (e.g. Heeman & Allen 1999, Hough & Purver 2012)

- but these phenomena have not been given much attention in generative linguistics, with the recent exception of Ginzburg et al. (2014)
- Ginzburg et al. (2014): this is an unwarranted oversight; data from corrections can provide an important window into various phenomena of interest to linguistic theory
- Ginzburg et al. (2014) analyze error corrections as a special type of clarification requests (Purver 2004)
- clarification requests (CRs): “in the aftermath of an utterance *u* a variety of questions concerning *u* and definable from *u* and its grammatical type become available [...] These questions regulate the subject matter and ellipsis potential of CRs concerning *u* and generally have a short lifespan in context.” (Ginzburg et al. 2014: 37)
- “We propose that a very similar account applies to disfluencies. As the utterance unfolds incrementally there arise questions about what has happened so far (e.g., what did the speaker mean with sub-utterance *u*₁?) or what is still to come (e.g., what word does the speaker mean to utter after sub-utterance *u*₂?). Or slightly more technically, we suggest that incrementally certain utterance monitoring and utterance planning questions can be pushed on to QUD.” (Ginzburg et al. 2014: 37)

Ginzburg et al. 2014 analyze corrections within an incremental dialogue-understanding framework, and seek to unify them with other forms of disfluency. We will pursue a novel empirical investigation focusing specifically on correction structures from a grammatical perspective, though what we unearth will be of interest to theories of incremental interpretation. We will be particularly concerned with interactions between correction structures and:

- i. contrastive focus
- ii. anaphora to quantificational dependencies
- iii. propositional anaphora

Roadmap

- §2 We begin by considering (and casting doubt on) the intuitive analysis that error correction structures are a form of revision that creates a single proposition out of (parts of) the anchor and correction.
- §3 We then look at the data in closer detail and argue that the anchor and correction are parsed as separate clauses, based on facts involving contrastive focus, telescoping, and propositional anaphora.
- §4 We follow up with a brief proposal for a formal semantics and formal pragmatics of corrections.
- §5 Finally, we summarize and outline potential directions for future work.

2 The Snip & Glue Approach

Previous analyses (notably [Ferreira et al. 2004](#), [Heeman & Allen 1999](#), [Ginzburg et al. 2014](#)), though couched in very different frameworks, all pursue versions of a ‘snip & glue’ approach:

- the interpretation of correction structures proceeds by removing mistaken material and replacing it with corrected material
 - the mistaken portion of the anchor is deleted (snip)
 - and the correction is attached to what remains of the anchor (glue)
- the result of the interpretational process is a single meaning assigned to a single sentence

We have three empirical arguments that any snip & glue treatment of corrections (on its own) is inadequate:

- i. Error correction structures are a kind of contrastive structure
- ii. Anaphora in error correction structures behaves like anaphora between sentences
- iii. Propositional anaphora to either half of the correction structure is possible

In the next section, we elaborate on each of these claims in turn.

3 The Empirical Ground

Three Types of Corrections

I ELLIPTICAL CORRECTIONS: error correction structures in which the correction is missing otherwise obligatory syntactic material.

- (2) a. Anders made, uh, sorry, [ate]_F a taco.
- b. Anders made a taco, uh, sorry, [ate]_F.
- c. Anders made a taco, uh, sorry, a [chalupa]_F.
- d. Andrew made a taco, uh, sorry, [Anders]_F.

- These structures are the only kind examined at length by previous theorists; it’s clear to see why a snip & glue approach to them is intuitively satisfying.

II FULL CORRECTIONS: error correction structures in which the correction does not rely on the anchor for its interpretation.

- (3) a. Andrew, uh, sorry, [Anders]_F ate a taco.
- b. Andrew ate, uh, sorry, [Anders]_F ate a taco.
- c. Andrew ate a taco. Uh, sorry, [Anders]_F ate a taco.

- These structures are less obviously addressed by the snip & glue approach, but an intuitive approach might be to simply discard the anchor entirely.

III ANAPHORIC CORRECTIONS: the correction contains pronominal elements that rely on material from the anchor for their interpretation.

- (4) a. Anders made, uh, sorry, he [ate]_F a taco.
- b. Anders made a taco, uh, sorry, he [ate]_F it.
- c. Anders made a taco, uh, sorry, [ate]_F it.
- d. Every boy made, uh, sorry, he [ate]_F a taco.
- e. Every boy made some tacos, uh, sorry, they [ate]_F them.

- These structures are problematic for snip & glue; the anaphoric dependencies suggest that anchor and correction are not interpretationally merged.

We argue that all three types of corrections deserve a unified account, and that the snip & glue family of approaches on its own cannot provide such an account.

3.1 Corrections and Contrast

Corrections must contain at least one focus-marked element:

- (5) FOCUS PLACEMENT GOES ON LOCUS OF CORRECTION
 - a. Andrew, uh, sorry, [Anders]_F ate a taco.
 - b. ? Andrew, uh, sorry, Anders ate a [taco]_F.
- (6) MULTIPLE LOCI = MULTIPLE FOCI
 - a. Anders made a taco, uh, sorry, [ate]_F a [chalupa]_F.
 - b. ? Anders made a taco, uh, sorry, [ate]_F a chalupa.
 - c. ? Anders made a taco, uh, sorry, ate a [chalupa]_F.
- this is contrastive focus: focus placement in the correction must correspond to the location of mistakes in the anchor, because those are the only places where the anchor and correction differ

We assume [Rooth \(1992\)](#)’s definition of contrast:

- (7) CONTRASTING PHRASES ([Rooth 1992](#)):
 Construe a phrase α as contrasting with a phrase β iff $\llbracket \beta \rrbracket^o \in \llbracket \alpha \rrbracket^f$.
- in order for the anchor and correction to be viewed as contrastive, each needs to have an independently calculable semantic value
- a snip & glue account where the result is one semantic value built by combining the correction with cannibalized parts from the anchor will need to do something quite gymnastic to account for the focus facts

3.2 Corrections and Telescoping

The set of quantifiers that participate in telescoping is quite small (examples from/based on [Roberts 1987](#)):

- (8) a. {Every, Each} boy walked to the stage. He shook the President’s hand and returned to his seat.²
- b. * {No, Most, Half of the, Twenty} boys walked to the stage. He shook the President’s hand and returned to his seat.

²Generally a plural pronoun strategy is preferred to the telescoping strategy, but telescoping is at least marginally grammatical. We’ve found in our own experimental work that the same is true for telescoping in corrections.

The set of quantifiers that can be picked up cross-sententially by a plural pronoun is larger:

- (9) a. {Every, Each} boy walked to the stage. They shook the President’s hand and returned to their seats.
- b. {Most, Half of the, Twenty} boys walked to the stage. They shook the President’s hand and returned to their seats.
- c. * No boy(s) walked to the stage. They shook the President’s hand and returned to their seats.

Strikingly, we see the exact same restrictions applying to relations between quantifiers and pronouns in error correction structures:

- (10) a. {Every, Each} boy made, uh, sorry, he [ate]_F three tacos.³
- b. * {No, Most, Half of the, Twenty} boys made, uh, sorry, he [ate]_F three tacos.
- (11) a. {Every, Each} boy made, uh, sorry, they [ate]_F some tacos.
- b. {Most, Half of the, Twenty} boys made, uh, sorry, they [ate]_F some tacos.
- c. * No boy(s) made, uh, sorry, they [ate]_F some tacos.⁴
- anaphora between anchors and corrections behaves like anaphora between *separate sentences*, not like within-sentence binding
- the telescoping facts are unexpected for snip & glue accounts, which merge anchor and correction into a single sentence.

3.3 Corrections and Propositional Anaphora

Error correction structures allow propositional anaphora with *that* to either the interpretation of the anchor or the interpretation of the correction:

- (12) a. **A:** Anders ate fifty, uh, sorry, he ate [five]_F tacos.
B: That would’ve been crazy!

³We were first made aware of examples of this kind by [Milward & Cooper \(1994\)](#), though those authors do not note their theoretical significance.

⁴Cases like this are better with polarity reversal:

- (1) No boy made, uh, sorry, they [did]_F make some tacos.

- b. **A:** Anders ate fifty, uh, sorry, he ate [five]_F tacos.
B: That’s much easier to believe!

- unclear how this would be explained from the perspective of a snip & glue account;
- but this is what we expect given the hypothesis in (14) below.

4 Proposal

- we argued that error correction structures are contrastive structures (in 3.1)
- it is easy to see how the correction can be construed as contrasting with the anchor if both anchor and correction are complete—as in (13a)
- however, assessing the contrast relation is trickier if the anchor or the correction (or both) are incomplete—as in (13b)

- (13) a. Anders ate a taco. Uh, sorry, Anders ate a [chalupa]_F.
b. Anders ate, uh, sorry, [made]_F a taco.

In order for the contrastive relation implied by focus on *made* in (13b) to be licit, missing portions of both the anchor and correction must be filled in such that the requisite relation of set membership holds. Our working theory of the interpretation of correction structures is given in 14:

- (14) a. CONTRAST-DRIVEN THEORY OF CORRECTION INTERPRETATION (BROAD STROKES):
Fill in missing material in the anchor and correction in whatever way will result in the ordinary semantic value of the anchor being a member of the focus semantic value of the correction.
- our basic (novel, as far as we can tell) proposal: we need to establish a Contrast relation between the anchor and the correction; looking to the study of discourse relations might help determine how this relation drives interpretation of missing material
 - for example, this is one of the two definitions of CONTRAST in Kehler (2000: 543): “Infer $p(a_1, a_2, \dots)$ from the assertion of S_0 and $p(b_1, b_2, \dots)$ from the assertion of S_1 , where for some property vector \vec{q} , $q_i(a_i)$ and $\neg q_i(b_i)$ for some i .

- b. CONTRAST-DRIVEN THEORY OF CORRECTION INTERPRETATION (THINNER STROKES):
Formalization in Compositional DRT (CDRT; Muskens 1996); not today.

We propose the following additional semantic/pragmatic component associated with the interpretation of error correction structures (closely following the proposal in Ginzburg et al. 2014):

- (15) THE DISCOURSE EFFECT OF ERROR CORRECTION STRUCTURES:
Upon calculation of the relation of contrast between the correction and the anchor:
- the speaker’s commitment to the anchor is cancelled
 - the speaker’s commitment to the correction is asserted

5 Conclusion

We have argued in this talk that in error correction structures, the anchor and the correction are given separate interpretations, in opposition to standard accounts in which the output of an error correction structure is a single unified interpretation for the entire structure.

- on the basis of focus placement facts, we have argued that error correction structures are a species of contrast structure
- on the basis of telescoping facts, we have argued that the anchor and correction are treated as separate sentences
- on the basis of propositional anaphora facts, we have argued that the interpretation of the anchor is still accessible after the correction has been completed

In light of these facts, we conclude that snip & glue accounts of error correction are inadequate on their own.

Error correction structures are a wonderful empirical playground; we’re excited with the possibilities for future work. Of particular note are the following empirical avenues:

- what is the structure of elliptical corrections?
 - must corrections be constituents?
 - what is the relation between elliptical corrections and fragment answers?
 - what is the relation between elliptical corrections and better-studied forms of ellipsis, like gapping?
- what can correction structures tell us about incremental processing?
 - how do listeners recognize that they’re in an error correction structure?
 - are there processing costs associated with ‘filling in’ missing material?
 - what happens when the target of the correction is ambiguous?

We’d like to conclude by letting these questions resonate.

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