

## Predicting perspectival orientation for appositives\*

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### 1 Introduction

In Harris & Potts 2009, we present corpus and experimental evidence indicating that (i) appositives and expressives are generally speaker-oriented — i.e., they are generally intended to convey speaker commitments and generally interpreted as such — but that (ii) certain discourse conditions can counteract this preference to such a degree that non-speaker-orientation becomes the dominant interpretation (see also Wang *et al.* 2005, Karttunen & Zaenen 2005, Amaral *et al.* 2007).

Results from our previous work also show that non-speaker-oriented readings arise even for appositives and expressives that are not embedded below attitude predicates like *say* and *believe*; matrix-level appositives and expressives can, when conditions are right, be reliably understood as expressing, in some complex sense, the views of an agent other than the speaker. On this basis, we reject the view that the relevant perspectival shifting is handled exclusively via binding by attitude verbs (Schlenker 2003, Schlenker 2007, Sauerland 2007), concluding instead that it is controlled by interacting, defeasible morphosemantic and pragmatic factors.

Our present goal is to better understand the nature of the factors governing perspectival anchoring and the ways in which they interact. Though it seems that perspective orientation for appositives and expressives is not signaled by any particular set of dedicated markers (morphemes, gestures, intonational tunes) of what the speaker intends, it is nonetheless the case that they are reliably interpreted by hearers in a way that accords with speaker intentions. How can this be?

Due to space limitations, we focus on appositives here, discussing expressives only in passing (see also Harris 2009). The next section seeks to characterize speaker-oriented and non-speaker-oriented readings, highlighting the complexity of the perspectival information involved. Section 3 reviews the appositives experiment of Harris & Potts 2009. Though that experiment shows that non-speaker-orientation can happen at the matrix level, it also indicates that syntactic embedding facilitates such readings (Section 3.1). Section 3.2 offers preliminary evidence that certain perspectivally-charged language in the preceding context description also facilitates non-speaker-orientation. Section 4 reports on a pilot production study conducted to further inform this issue by identifying intonational and gestural features that are highly indicative of non-speaker-orientation. Though the results of this study are not decisive, we think they point the way to successful future work in this area.

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## 2 A closer look at (non-)speaker-orientation

To get at the underlying notions of speaker-orientation and perspective shifting that we aim to explore empirically, we first define a general notion of agent-orientation:

- (1) Let *A* be an agent. A clause *C* with denotation *p* is *A-oriented* in utterance *U* if, and only if, in uttering *U*, the speaker expresses, with *C*, that *A* is committed to *p*.

Speaker-orientation is the special case of *A*-orientation where *A* is the speaker. Appositives are overwhelmingly speaker-oriented. Of the 34 examples in our Embedded Appositives Corpus (Potts & Harris 2009) that were validated by two independent assessors and ourselves, 32 appear to be speaker-oriented in this sense. Most convey speaker asides intended to flesh out and contextualize the content expressed around them. Example (2) is typical:

- (2) In a publicity blitz with clear racial undertones, they [supporters of then-Dominican President Joaquin Balaguer] allege Washington secretly is backing top opposition candidate Jose Francisco Pena Gomez, who is black, [...]

The allegation does not include the uncontroversial background fact that Gomez is black. This information is offered by the author as a general, text-level commitment, despite its appearance in the syntactic complement of *allege*, and despite the fact that the other propositional content of that embedded clause is not speaker-oriented.

*Non-speaker-orientation* occurs whenever there is *A*-orientation for some agent who is not the speaker. Languages have lots of devices for explicitly signaling this kind of orientation. For example, in *According to Kate, groundhogs climb trees*, the main clause is clearly Kate-oriented. Many attitude predications perform this function (among others) as well. In the case of an appositive clause, though, there is no straightforward way to mark orientation. In a phrase like *Dan, who is, according to Kate, a world-class bowler*, the proposition that Dan is a world-class bowler is Kate-oriented, but the orientation of the entire appositive clause *who is, according to Kate, a world-class bowler* is not specified, so the hearer must infer it.

Definition (1) allows that an *A*-oriented clause *C* might be consistent with the commitments of another agent *B*, and discourse participants might even conclude, via pragmatic enrichment, that *B* is committed to the content of *C*. This is plausibly the case in (2), where it is very likely that the speaker and the matrix subject believe the content of the appositive. Nevertheless, in the perspectively-charged contexts we study below, the perspectival information tends to be divisive and thus pragmatically exclusive.

Example (3), from an opinionated article about the biologist Alfred Kinsey, is one of Potts & Harris's (2009) two clear examples of non-speaker-oriented embedded appositives. The example is particularly instructive about the nature of perspective shifting in the sense that we are exploring.

- (3) Far out on the grassy knoll of sexology, there is a cult of procastity researchers who claim that the late Alfred Kinsey was a secret sex criminal, a Hoosier Dr. Mengele, who bent his numbers toward the bisexual and the bizarre in a grand conspiracy to queer the nation and usher in an era of free sex with kids.

In terms of (1), the clause *C* is *a Hoosier Dr. Mengele*. In writing *C*, the author of this text seems to convey that the group referred to with *cult of procastity researchers* (our agent *A*) is committed to the proposition that Kinsey is a Hoosier Dr. Mengele. Of course, the author might be *wrong*, in whole or in part, about this commitment; there is no guarantee that *A* would endorse the content. So the content is not literally shifted off of the speaker and onto another agent. We have a perspective shift only insofar as the speaker has conveyed information about someone else's (purported) commitments.

Example (3) uses charged emotional language to set up two opposing perspectives. The author's view is conveyed by words like *cult*, the opening indirect reference to conspiracy theorists,<sup>1</sup> and the distancing achieved by *claim*. The contrasting perspective of the procastity researchers is characterized (by the author) with phrases like *the bisexual and the bizarre* and *queer the nation*. Given these opposing perspectives, the only sensible interpretation of the appositive *a Hoosier Dr. Mengele* is a non-speaker one. Thus, whereas appositives seem to be speaker-oriented by default, that default may be handily overcome by careful manipulation of the perspectives involved. The experiments described in the coming sections capitalize on precisely this kind of perspectival juxtaposition.

Such perspectival shifting is not unique to appositives. Even apparently simple main-clause declaratives can be shifted if the right linguistic and discourse conditions obtain. Attested examples involving shifted expressives and related devices are given in Potts 2007, Potts To appear, and Harris & Potts 2009. Such discourse moves are risky for the speaker because they challenge the hearer's usual assumptions, but the risks can be mitigated with careful planning and careful delivery. We turn now to trying to understand the techniques speakers employ to push hearers towards non-speaker-oriented interpretations.

### 3 Written comprehension study

The appositives experiment of Harris & Potts 2009 involved materials consisting of an invariant context and a target sentence containing an appositive clause, which was either embedded under a verb of saying (condition A) or unembedded (condition B). Following the lead of Amaral *et al.* (2007), we created contexts with two central properties: (i) the speaker's perspective was clearly distinguished from that of another individual *A* and (ii) the appositive's content was sensible from the perspective of *A* but not the speaker. Fig. 1 illustrates with an item from the experiment. Here, the context first distances the speaker from her roommate's beliefs, and later the appositive elaborates on those beliefs, making speaker-orientation implausible. Though the individual items differ considerably in their basic form (see below and App. A), they all involve this basic perspectival dynamic.

Potts (2005) hypothesizes that appositives are speaker-oriented even in highly biased contexts like this, which predicts that our items will be seen as anomalous or inconsistent discourses. This is not what we found, however. On the contrary, we found that non-speaker-oriented readings were dominant for both the embedded

<sup>1</sup>Conspiracy theories of the 1963 Kennedy assassination have it that shots were fired at the president from a 'grassy knoll'.

and unembedded conditions. Fig. 2(a) summarizes the results by condition. Here and throughout, we have combined the Speaker and Both responses into a single category Non-subject. We are motivated to organize the data this way by the fact that we do not understand the nature of Both responses. These responses could represent genuine perspective-sharing, which would help make the case for non-speaker-oriented readings. However, they could be semantically speaker-oriented with pragmatic ‘leakage’ (Karttunen 1973, Lasersohn 2007) to the other agent, or non-speaker-oriented with pragmatic leakage to the speaker. Since our concern is with the prevalence of Subject readings, we have elected to play it safe, counting all Both readings as Non-subject, accepting that this might bias against our hypothesis by obscuring some non-speaker-oriented judgments.<sup>2</sup>

<b>Context</b> I am increasingly worried about my roommate. She seems to be growing paranoid.	
<b>Target</b>	
A. The other day, she told me that we need to watch out for the mailman, a possible government spy.	
B. The other day, she refused to talk with the mailman, a possible government spy.	
Whose view is it that the mailman might be a government spy?	
<b>Response</b>	
a. Mine	Speaker
b. My roommate’s	Subject
c. Mine and my roommate’s	Both

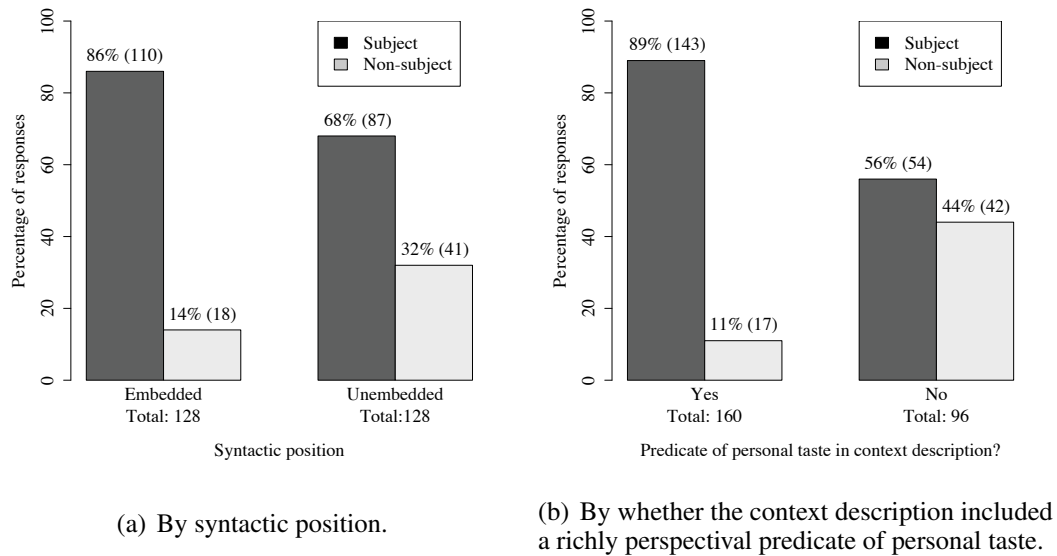
**Figure 1:** Sample item from the appositives experiment of Harris & Potts 2009. For all items, the context was perspectively rich. The experiment manipulated a single factor: embedded (A) or unembedded (B) appositive. Participants were asked to decide which agent’s perspective was reflected in the appositive content: (a) the speaker’s, (b) the subject’s, or (c) both.

### 3.1 Embedding

It is evident from Fig. 2 that perspective shifting with appositives is possible in both embedded and unembedded environments. If conditions are right, non-speaker-oriented readings emerge regardless of whether there is an embedding predicate. This is not to say, though, that syntactic embedding is uninformative. We used a linear mixed effects logit model (Jaeger 2008) with participants and items as random effects to test whether the difference between the proportion of Subject responses for

<sup>2</sup>For more on this decision, see Harris & Potts 2009. The statistical analysis is substantively the same when we remove the Both responses from the data entirely, and it grows stronger when we add them to the Subject category.

the two conditions (the two black bars in Fig. 2(a)) is statistically significant.<sup>3</sup> We found that embedding was indeed a highly relevant factor in determining perspectival orientation; the embedded coefficient is 1.44 with a standard error of 0.36;  $p < 0.001$ . Thus, it seems that embedding is a genuine facilitator of shifted readings.



**Figure 2:** Experiment 1 response data, with the Speaker and Both responses grouped into a single Non-subject category.

### 3.2 Perspectivally-rich context descriptions

The expressives experiment that we described alongside the appositives experiment in Harris & Potts 2009 suggests another potentially useful feature in determining perspectival information. For expressives, we manipulated just individual predicates in the context description, leaving the target sentence constant, as in (4).

- (4) My classmate Sheila said that her history professor gave her a high/low grade. The jerk always favors long papers.

Here, the choice of *high* vs. *low* has a dramatic affect on our overall understanding of the situation. With the *high* version, the speaker seems to be using *the jerk* as a way of griping about Sheila's high grade, attributing it solely to the length of the paper. The *low* version furnishes Sheila with justification for regarding her history professor as a jerk, thereby paving the way for a non-speaker reading of the epithet in the second sentence. This manipulation was successful in the sense that varying the context systematically influenced the proportion of speaker and non-speaker readings.

<sup>3</sup>In all cases, the reported models were first compared to others, using the top-down model-fitting technique discussed in Crawley (2007). We kept the simplest model that explained the highest amount of variance.

Though we did not design the appositives experiment with this approach in mind, it is illuminating to look again at the materials to see if they show similar effects. Five of the eight contexts are described using charged predicates of personal taste: *paranoid*, *absurdly optimistic*, *huge snob*, *crazier than ever*, and *outlandish*. The effect in each case is to create implicit contrasts with the appositive content. For Fig. 1, *paranoid* unfavorably compares the matrix subject's perspective to her own. In item 2 of the appendix, *absurdly optimistic* contrasts with *a sure winner*. And so forth for the others containing this perspectively-rich language. For the remaining items, the language is less judgmental and tends to leave more room for the speaker to endorse the appositive. Thus, we might expect the presence of charged predicates of personal taste in the context description to have a positive influence on the proportion of Subject responses. This is what we find in post hoc analysis. Fig. 2(b) breaks the data down by context-type.

We again fit a logit model, with the presence of a predicate of personal taste in the context as the sole predictor. The coefficient (*ppt*) was 2.18 with a standard error of 0.59, and so the presence of a predicate of personal taste significantly affected whether the appositive would be interpreted as non-speaker-oriented;  $p < 0.001$ . Thus, we tentatively conclude that predicates of personal taste, when used in contexts like this, have a positive impact on the prevalence of non-speaker-oriented readings. We expect further experiments that directly manipulate the presence of perspectively-rich predicates to significantly influence the availability of Subject readings.

### 3.3 Integrating and extending the models

A major advantage of the logit approach is that we can easily combine the two results into a single predictive model. To determine how embedding and these perspectively-rich predicates interact in our data, we fit another series of models with *embedded* and *ppt* as factors. The best-fitting model was the one with a single predictor *embedded*. Given that the embedding factor reflected the central manipulation, this result is unsurprising. Of the models with both *embedded* and *ppt* as factors, the best-fitting model was the additive model summarized in (5), in which random effect error terms are omitted for clarity.

$$(5) \quad \text{Pr}(\text{Subject}) = \text{logit}^{-1}(\text{intercept} + \text{embedded}x + \text{ppt}y)$$

The fitted model for our data is

$$(6) \quad \text{Pr}(\text{Subject}) = \text{logit}^{-1}(-0.40 + 1.44x + 2.41y)$$

If the appositive is syntactically embedded,  $x = 1$ , else  $x = 0$ . If the context description contains a predicate of personal taste,  $y = 1$ , else  $y = 0$ . The predicted probability of a Subject response for a syntactically embedded appositive in a context containing a predicate of personal taste is  $\text{logit}^{-1}(-0.40 + (1.44 \cdot 1) + (2.41 \cdot 1)) = \text{logit}^{-1}(3.45) = 0.97$ . In other words, the probability of a non-speaker-oriented reading when the appositive was embedded and the context contained a predicate of personal taste was extremely high (97%).

How well did each factor predict a Subject response on its own? The predicted probability of Subject response for an unembedded appositive appearing in a context without a predicate of personal taste is  $\text{logit}^{-1}(-0.40 + (1.44 \cdot 1) + (2.41 \cdot 0)) =$

$\text{logit}^{-1}(1.04) = 0.74$ .<sup>4</sup> In contrast, the predicted probability of a Subject response for an unembedded appositive in a context containing a predicate of personal taste is  $\text{logit}^{-1}(-0.35 + (1.44 \cdot 0) + (2.41 \cdot 1)) = \text{logit}^{-1}(2.01) = 0.88$ . Thus, in our combined model, syntactic embedding was somewhat less reliably predictive of non-speaker-orientation (74%) than the presence of a perspectivally-rich predicate was (88%). Of course, this post hoc analysis cannot stand in for an experiment that manipulates the contextual descriptions in a more controlled way, as we did for the expressives experiment. It suggests, though, that contextual information of this sort can help to shape hearer interpretations.

We wish to emphasize that the contrasts and factors tested here are not the only leads one could pursue in studying perspectival shift; the literature provides a wealth of insights that could be turned into predictive factors and added to a model like (5). A few that seem especially promising:

- **Appositive type.** Wang *et al.* (2005) show that nominal appositives in which the anchoring noun and the appositive clause are indefinite (e.g., *a professor, a famous one*) often receive non-speaker-oriented readings. Thus, nominal appositives might be more likely to shift, and indefiniteness could be a contributor as well.
- **Linear position.** For appositives, the sentence-final position resembles a main-clause position (Del Gobbo 2003), which could favor speaker-oriented readings.
- **Embedding predicates.** Our examples involve three embedding predicates: *say*, *tell*, and *claim*. The literature on context-shifting and logophoricity would lead us to expect *say* to be the most capable of fostering different perspectives in context (Schlenker 2003, Anand & Nevins 2004). Thus, *say* might facilitate non-speaker-orientation.

With the help of statistical models like (5), defeasible generalizations like this can be integrated to yield a predictive theory of how morphosemantic and contextual information influences hearers' interpretations. What is more, one can also check for interactions between inputs, which has the potential to provide further insight into how the various cues play off each other.

#### 4 Pilot production study

Until now, we have relied on written text in one sense or another. We suspect, though, that information about perspectival orientation is conveyed not only by lexical content in the usual sense, but also by intonational cues, and perhaps other acoustic manipulations affecting voice quality, as well as physical gestures (body language, facial expressions, etc.). We now present a preliminary pilot study aimed at uncovering the role that these features play in production. The results are far from conclusive, but we think they harbor important clues which, when studied

<sup>4</sup>The model's predicted probability for Subject responses in embedded appositives (74%) is not identical to the empirical value in Fig. 2(a) (86%). The factors are not orthogonal, though, so we should not expect convergence. Some embedded appositives also appeared in context contained a predicate of personal taste, and Fig. 2(a) does not differentiate these cases, whereas our model does.

systematically, may disclose ways in which speakers report attitudes and beliefs with which they do not intend to be associated.

#### 4.1 Participants

Two female student actors from the greater Amherst theater community participated in the pilot study. They were invited to view the items as scenes in a performance in which perspectival information was crucial to conveying the central message of the scene. Participants were compensated at a rate of \$12 per hour.

#### 4.2 Materials and method

The materials for the pilot consisted of four pairs of sentences containing matrix attitude reports with embedded appositives, as in Fig. 3, interspersed with sixteen other target sentences and contexts from two unrelated subexperiments, in order to distract from the embedded appositive sentence type. To aid the phonological analysis of pitch movements within the appositive, we constructed the materials so that the appositive's head noun and the appositive relative itself contained primarily sonorants (see App. B for a full list of items).

**Background** *Lilly and her roommate Owen have come to believe that their mailman is spying on them. They disagree strongly about the mailman's motivations. Lilly thinks it is because he is a space alien. Owen disagrees completely; he thinks it is because the mailman is a government spy.*

SCENE 1: In this scene, Lilly is talking with her mother.

LILLY: Owen says that our mailman, who is a roaming alien, was looking in our basement window yesterday.

SCENE 2: In this scene, Owen is talking with his mother.

OWEN: Lilly says that our mailman, who is a roaming alien, was looking in our basement window yesterday.

**Figure 3:** Sample item from the pilot production study.

The experiment consisted of two parts. In the first part, participants read uncontextualized target sentences aloud. They were instructed to imagine having a casual conversation with a friend, and were asked to provide the context they had in mind when uttering the target. In the second part, participants were provided with contexts for the target sentences, and they were asked “to read the passage aloud in a way that accurately and unambiguously conveys whose perspective the belief belongs to”. The experimental conditions were labeled as ‘scenes’ in order to facilitate the idea that the target sentences were to be performed. Each item was accompanied by a single background context which sharply differentiated two opposing perspectives. The target sentences contrast minimally, manipulating only the subject of the matrix clause and consequently the perspective adopted by the participant. For example, in scene 1 of Fig. 3, the speaker takes on the role of Lilly, who would assent to the content of the appositive. Thus, in performing this scene, the actor was to convey that the appositive was true, if perhaps controversial. In scene 2, however, the speaker



must take Owen's perspective, in which the appositive content is *not* endorsed by the speaker. Here, the speaker must convey that the aside is not to be linked to her own perspective, but rather to the subject of the attitude predicate in which the appositive is embedded.

The participants read each target sentence at least twice, but were encouraged to repeat the sentence until they were satisfied that their performance conveyed the subtleties of the scene. Audio and video recordings were taken of each part for analysis. For reasons of space, we report on only the second part of the experiment.

### 4.3 Analysis

We give a relatively informal and impressionistic analysis here. Although we obtained a fairly healthy number of audio and video trials (52 sentence tokens), they were produced by just two participants and hence might not be truly representative. Thus, we concentrate on describing a few strategies for achieving non-speaker-orientation that make intuitive and theoretical sense to us and that are consistent with our pilot data.

#### 4.3.1 The prosodic dimension

We observed several prosodic cues that appeared when a participant tried to express a report that she did not endorse. Among the most prominent cues of non-speaker-orientation was an offsetting of the matrix subject to make it contrastive. Offsets included (i) contrastive focus, (ii) slight pauses or hesitations, and (iii) rises. Instances of contrastive focus and other offsetting devices on the matrix subject appeared far less often on targets uttered in speaker-oriented contexts (8% of scene 1 trials) than on targets uttered in non-speaker-oriented contexts (60% of scene 2 trials).

The use of contrastive focus to facilitate non-speaker-orientation has a straightforward interpretation within focus semantics (Rooth 1985, Kratzer 1991, Kadmon 2001). In (7), we adopt the perspective of a hearer who has heard only a sentence of the form  $'[A]_{CF}$  said that  $S_{APP}$ ', where F marks contrastive focus and  $S_{APP}$  is an embedded sentence containing an appositive clause. We assume that this hearer has been given no additional information about the context.

- (7)
- a. The focus semantic value of  $'[A]_{CF}$  said that  $S_{APP}$ ' is the set of propositions that  $X$  said that  $S_{APP}$ , where  $X$  is a member of the contextually supplied contrast set  $C$ .
  - b. The membership of the contrast set  $C$  is not knowable in detail, but the position of contrast is the subject of an attitude predication, so values of  $X$  for whom the sentence provides attitudinal information — the speaker and  $A$  — will be especially relevant.
  - c. By the above and general pragmatic considerations, the speaker expects inferences in terms of the proposition that  $A$  said that  $S_{APP}$  and the proposition that the speaker said that  $S_{APP}$ .
  - d. One of the (many) intended inferences could be contrastive — in which case  $A$  said that  $S_{APP}$  is true, since this was asserted (quality), and thus the speaker said that  $S_{APP}$  is false (inaccurate, misleading).

Importantly, the reasoning does not take us to a single, definite conclusion. The contrastive inference that strongly favors non-speaker-orientation is not an inevitable conclusion, but merely an available, potentially salient one.

The reasoning in (7) depends on the appositive being integrated into the embedded clause. Intonation seems to play a role in the degree of such integration as well (Watson & Gibson 2004, Potts 2005, Selkirk 2005). In speaker-oriented conditions, one participant sometimes isolated the relative pronoun at the beginning of the appositive, typically with a strong major-phrase boundary. This has the effect of ensuring that the appositive is not integrated prosodically into the embedded sentence. In the terms of Potts (2005), it could be taken as a clear marker of the ‘comma intonation’ that delivers speaker-orientation in that system. We conjecture that, conversely, missing phrase boundaries at the left edge of the appositive clause will facilitate integration of the sort that would push the reasoning in (7) through.

Participants used intonation to guide the audience in other ways as well. Both subjects tended to add an elongated pause in post-copula position within the appositive in non-speaker-oriented contexts (56% of the trials). No pauses were observed in this position in the speaker-oriented condition. Such pauses often co-occurred with partial quotation or facial and gestural cues indicating that the appositive content was to be regarded as dubious (Section 4.3.2).

The initial analysis was conducted in Praat (Boersma 2001). Each trial from each subject and condition was divided into three regions: (i) *Attitude* — from the start of the sentence until the relative pronoun starting the appositive, (ii) *Appositive* — the region containing the appositive relative, and (iii) *Final* — the remainder of the sentence, containing the predicate of the embedded clause. Several measures, including duration of the region and various pitch values, were collected for analysis. The data are summarized in Table 1.

Measure	Attitude		Appositive		Final	
	Speaker	Subject	Speaker	Subject	Speaker	Subject
Duration	1366.41	1532.88	1704.13	2007.13	1940.63	1866.79
Lowest Pitch	152.02	146.45	132.34	120.51	135.78	117.64
Highest Pitch	305.41	387.70	370.73	361.57	394.89	412.21
Pitch range	153.39	241.25	238.39	241.07	259.10	294.56

**Table 1:** Descriptive analysis of target sentences. Durations measured in milliseconds, pitch values in Hz.

On average, non-speaker-oriented conditions elicited longer durations on the first two regions of the sentence. This difference likely traces to the pauses that the subjects used to signal that they were being non-committal about the content. Additionally, these conditions elicited a greater range of pitch in the pre-appositive region than did their speaker-oriented counterparts. The difference in pitch range may reflect the increased use of contrastive intonation in non-speaker-oriented contexts.<sup>5</sup>

<sup>5</sup>Noah Constant (p.c.) suggests an additional potential complication concerning gender. Because our subjects were both female, we made the matrix subjects male characters in non-speaker-oriented conditions, to give them more chances to employ devices of imitation. This could, though, have affected pitch range in general.

It is clear that speakers introduced special intonational strategies to portray non-speaker-oriented attitudes in appositive relatives. Yet, intonational cues do not exhaust the range of possible signals that speakers have at their disposal. Representing a conflicting attitude brought out rich gestural components, aimed at setting speaker opinion apart from appositive content.

#### 4.3.2 The gestural dimension

As noted earlier, our corpus evidence (Potts & Harris 2009) suggests that speaker-orientation for appositives is the default. Thus, in asking our subjects to use appositives to convey others' views we were asking them to adopt risky communicative strategies, ones that go against the default. We hypothesized that, faced with this task, our subjects would call not only on intonational strategies but also on gestural ones. This is in fact what we found; participants used a variety of gestural cues in non-speaker-oriented conditions:

- (8) a. Eye roll
- b. Quotation with hands
- c. Looking away or glance upwards
- d. Smile or smirk
- e. Furrowed brow
- f. Eye wink
- g. Raised eyebrows
- h. Head shake

These cues help determine two broad communicative strategies that bear directly on the nature of speaker-orientation (more generally, *A*-orientation as in (1)). In the *distancing strategy*, speakers use gestures like eye rolls, smirks, and winks to explicitly distance the speaker from what she is saying. In the *quotational strategy*, the speaker recreates salient aspects of the speech event in a quotational manner (Clark & Gerrig 1990, Anand 2007). Whereas distancing makes it fairly clear that the speaker does not endorse the content, the quotational approach is consistent with the speaker being an agnostic reporter.

In our study, participants tended to choose the *distancing strategy*. That is, we found that our participants were more inclined to guide the audience than take on the role of the attitude holder. There are several conceivable reasons for this preference, some tracing to the nature of the materials. For example, the contexts are intended to ensure that the speaker's beliefs conflict with those of the attitude holder, which favors something stronger than the sort of indifference that would favor the quotational strategy. In addition, since the participants never witnessed the speech act they reported on, they may not have been able to reproduce it faithfully. Furthermore, they may have assumed that their audience was not familiar with the other characters in the scene. Pantomiming an act which resides outside of common ground could be interpreted as uncooperative or even risky.

Another possible explanation of the tendency away from pantomime could be that speakers are, in general, hesitant to adopt a perspective other than their own. True perspectival shift is a risky affair and the potential for miscommunication is

great; speakers may wish to avoid a situation in which their views could be aligned with those on whom they report (Lasersohn 2007).

## 5 Conclusion

In our experiments, we have explored aspects of both sides of the production–comprehension coin. In particular, we have examined what kinds of cues speakers use to convey *A*-orientation, as well as what factors reliably guide comprehenders to determine the *A*-orientation of a clause. Though speaker-orientation seems to be a clear default for appositives, non-speaker-oriented readings are systematically possible if the linguistic and discourse conditions are right. Our evidence suggests that the following are *positive* contributors to non-speaker-orientation for appositives:

- (9)
- a. The appositive is syntactically embedded in an attitude context.
  - b. The context is rich in opposing perspectives.
  - c. The context description uses language that enhances those opposing perspectives.
  - d. The matrix subject has contrastive focus.
  - e. The left edge of the appositive lacks a clear major phrase boundary.
  - f. The utterance includes gestures that convey speaker distance (winks, eye rolls, etc.) or gestures that convey mere reportage (e.g., quotational devices).

None of these factors determines non-speaker-orientation — it might be that there is no way to do that — but each contributes non-trivially to that message. Moreover, current semantic and pragmatic theories are helpful in understanding *why* these factors contribute positively. For example, though it seems that attitude predicates do not explicitly determine orientation for appositives, the fact that they facilitate such shifting seems to go hand-in-hand with existing results on how they influence indexicals cross-linguistically (Schlenker 2003, Anand & Nevins 2004, Sharvit 2008). Similarly, the contribution of predicates of personal taste might trace ultimately to their judge argument (Lasersohn 2005) as a discourse entity. In future work, we hope to get a better grip on each of these factors individually, and also to explore how they interact to shape what speakers produce and hearers perceive.

### A Appositive materials

1. I am increasingly worried about my roommate. She seems to be growing paranoid. The other day, she told me that we need to watch out for the mailman, a possible government spy. / The other day, she refused to talk with the mailman, a possible government spy.
2. My friend Sal is absurdly optimistic. He told me that the lottery ticket he bought yesterday, a sure winner, is the key to his financial independence. / All he could talk about at dinner was the lottery ticket he bought yesterday, a sure winner.

3. My aunt is extremely skeptical of doctors in general. She says that dentists, who are only in it for the money anyway, are not to be trusted at all. / Dentists, who are only in it for the money anyway, are not to be trusted at all.
4. My friend Ellen is a huge snob about music. She says that rock-n-roll, a degenerate genre, is no better than elevator music. / According to her, rock-n-roll, a degenerate genre, is no better than elevator music.
5. Poor Joan seems to have grown crazier than ever. She now claims that her apartment was bugged by the Feds, who are listening to her every word. / Her apartment was bugged by the Feds, who are listening to her every word.
6. My brother Sid hates school. He says that he puts off his homework, a complete waste of time, to the last minute. / He puts off his homework, a complete waste of time, to the last minute.
7. I talked to an outlandish theater critic at a party. He told me that modern theater, which has been on the decline for years, is near its end. / According to him, modern theater, which has been on the decline for years, is near its end.
8. My kid sister Loni is obsessed with comic books. She says that a good graphic novel, man's greatest achievement, can keep her up reading until dawn. / A good graphic novel, man's greatest achievement, can keep her up reading until dawn.

## **B Production and comprehension materials**

1. Background: *Lilly and her roommate Owen have come to believe that their mailman is spying on them. They disagree strongly about the mailman's motivations. Lilly thinks it is because he is a space alien. Owen disagrees completely; he thinks it is because the mailman is a government spy.*

SCENE 1: *In this scene, Lilly is talking with her mother.*

LILLY: Owen says that our mailman, who is a roaming alien, was looking in our basement window yesterday.

SCENE 2: *In this scene, Owen is talking with his mother.*

OWEN: Lilly says that our mailman, who is a roaming alien, was looking in our basement window yesterday.

2. Background: *Sue and her husband Bill are discussing the family lawyer Norman. Sue thinks that Norman is a crook. Bill, on the other hand, is convinced that Norman is honest.*

SCENE 1: *In this scene, Sue is talking to the family accountant.*

SUE: Bill says that Norman, who is a lousy swindler, will look over our records again.

SCENE 2: *In this scene, Bill is talking to the family accountant.*

BILL: Sue says that Norman, who is a lousy swindler, will look over our records again.

3. Background: *Kate and her brother Dan have been sorting through the things in their grandparents' attic. They have found a small, tube-shaped device. They agree that it is valuable, but they disagree on what it is: Kate thinks it is for whaling, and Dan thinks it is for cross-country skiing.*

SCENE 1: *In this scene, Kate is talking to a friend on the phone.*

KATE: Dan says that the device, which is a whaling implement, could fetch five-hundred dollars on eBay.

SCENE 2: *In this scene, Dan is talking to a friend on the phone.*

DAN: Kate says that the device, which is a whaling implement, could fetch five-hundred dollars on eBay.

4. Background: *Jackie and Eric have just returned from hiking in northern Canada. While there, a small rodent like creature found its way inside their tent. Jackie believes that it was a very hungry lemming. Eric, on the other hand, believes strongly that it was a small vole.*

SCENE 1: *In this scene, Jackie is telling a friend about their animal encounter.*

JACKIE: Eric says that the animal, which was an ailing lemming, wanted to get in our sleeping bags.

SCENE 2: *In this scene, Eric is telling a friend about their animal encounter.*

ERIC: Jackie says that the animal, which was an ailing lemming, wanted to get in our sleeping bags.

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