

# Perspectives in discourse: The case of the motion verb *come*\*

Jefferson Barlew

*The Ohio State University*

\*\*\*Draft of 17 August 2015\*\*\*

Please do not cite without permission.

**Abstract** When an utterance with *come* is used to describe motion to a destination, it gives rise to an implication that some relevant individual is located at that destination (Fillmore 1966, 1975). I present novel data showing that this implication is perspectival: it must be true according to the relevant individual's own perspective, not the common ground. The implication is also not-at-issue, informative, and projective. To account for these observations, I develop a general account of how perspectival content is stored and updated in the discourse context using Roberts' (2014) notion of a doxastic perspective and the dynamic semantics of AnderBois et al. (2015). On this account, perspectival content in the meaning of *come* is not-at-issue, informative, and projective precisely because it is perspectival. This approach is argued to be useful for the analysis of perspectival expressions generally, including appositives and attitude predicates.

**Keywords:** perspectival expressions, projection, deixis, dynamic semantics, *de se*

## 1 Motion deixis and perspective-taking

Deictic motion verbs denote motion along a path that is defined in terms of the location of a specific individual, typically a discourse participant (Fillmore 1965, 1966, 1975, Nakazawa 2007, 2009). I call this phenomenon **anchoring** and the relevant individual the **anchor**, borrowing the term from Levinson (2003) and Roberts (2014). Anchoring to the interlocutors is illustrated in (1) using the deictic

---

\* Thanks to Scott AnderBois, Regine Eckardt, Micha Elsner, Peet Klecha, Marie Catherine de Marneffe, Antje Roßdeutscher, Zhiguo Xie, the OSU Pragmatics group, especially Dan Miles, and audiences at the Workshop on Perspective and Modal Semantics, Sinn und Bedeutung 2014, and Formal Semantics Meets Cognitive Semantics for helpful discussion. Special thanks to the other members of the OSU Working Group on Perspectival Expressions—Greg Kierstead, Craige Roberts and Eric Snyder—for extensive discussion of these issues and related issues in their own work. Special thanks also to Carl Pollard, Craige Roberts, and Judith Tonhauser for providing comments on an earlier draft. This work is supported financially by the OSU Department of Linguistics, the College of Arts and Sciences, and the National Science Foundation (BCS-0952571; grant to Craige Roberts and Judith Tonhauser). All errors are my own.

motion verb *come*. (1) shows that the use of *come* is acceptable if the destination of the motion path is the anchor's current location.<sup>1</sup> Additional relations between anchor and destination that make *come* acceptable are described in Section 2.1.

- (1) [Context: Ann is in Cleveland, OH, and Beth is in New York. They are talking on the phone. Ann says to Beth *Where is John these days?* Beth answers:]
- a. John is in Chicago. However, he is coming to New York tomorrow.
  - b. John is in Chicago. However, he is coming to Cleveland tomorrow.
  - c. #John is in Chicago. However, he is coming to Denver tomorrow.<sup>2</sup>

The presence of the speaker and the addressee, respectively, at the destination makes (1a) and (1b) acceptable. (1c) shows that *come* cannot be used to describe John's motion to a destination where there is no anchor.

In this paper, I develop a unified analysis of two observations about the anchoring of *come*. The first is that the anchoring of *come* involves perspective-taking. When a speaker produces an utterance with *come*, she implicitly adopts the anchor's perspective or way of understanding things. Many researchers have expressed this intuition (Fillmore 1966, 1975, Goddard 1997, Oshima 2006a,b,c, Taylor 1988). Nevertheless, extant analyses of the semantics of *come* do not take information about the anchor's perspective into account. In fact, Fillmore (1966) explicitly rejects perspective-taking as the basis for a semantic analysis of *come*. Fillmore (1966, 1975) argues that perspective-taking is a cognitive rather than semantic phenomenon. The only anchoring-related information required for the interpretation of an utterance with *come* is who the anchor is and where she is. This assumption either implicitly or explicitly underlies many subsequent analyses of deictic motion verbs (Talmy 1985, Gathercole 1978, Clark 1974, Wilkins & Hill 1995, Radden 1996, Williams 1996, Israeli 2002, Oshima 2006a,b,c, Nakazawa 2007, 2009, *inter alia*). In contrast, in Section 2, I present novel data showing that interpreting an utterance with *come* does require information about the anchor's perspective. These data show that the acceptable use of *come* requires the destination of the motion event to be the anchor's location *according to how she conceives of things*, not her location in the actual world.

The second observation about the anchoring of *come* is that anchoring-related content is not-at-issue, informative, and projective. This observation originates with Fillmore (1965, 1966), who shows that an utterance with *come* gives rise to two

1 There is also a non-deictic use, at least for *come* in English (Radden 1996, Barlew 2015b) and *kommen* 'come' in German (Rauh 1981, Di Meola 2003; Antje Roßdeutscher p.c.). This use is ignored throughout, as are metaphorical extensions of both uses (Clark 1974).

2 Throughout, I use '#' to indicate that an utterance is unacceptable in a context and '??' to indicate that it is marginal.

distinct implications. One is that the individual denoted by the subject of *come* moves to the location denoted by the complement of *come*. For convenience, I call this the **motion implication**. Simplifying just a little, the other is that the anchor is located at the destination, as she is in (1b)-(1a). I call this the **anchoring implication**. Fillmore argues that the motion implication is asserted (at least in an assertion), but calls the anchoring implication a “supposition”. For Fillmore, a supposition appears to correspond to what Karttunen & Peters (1979) call a “conventional implicature” (originally due to Grice 1975). For example, both terms are used to describe the factive implications of certain verbs and what might be called the “unlikelihood implication” triggered by the use of *even*. Similarly, Fillmore (1966: 222 fn.9) differentiates suppositions from presuppositions, just as Karttunen and Peters differentiate conventional implicatures from presuppositions.

Recasting Fillmore’s observations in modern terms, the anchoring implication i) is not-at-issue, ii) can be informative, and iii) projects past entailment canceling operators (c.f. Potts 2005, Tonhauser 2012, 2015, Tonhauser et al. 2013, Karttunen & Peters 1979, Langendoen & Savin 1971, Chierchia & McConnell-Ginet 1990). Section 3 briefly motivates these claims, but I do not belabor the point. The anchoring implication has been known to project since Cinque 1972 and its projection is discussed in detail by Oshima (2006b,c). Neither its projection nor its not-at-issue status has been questioned in the literature.

The fact that an utterance with *come* gives rise to both asserted and conventionally implicated content makes *come* a “mixed-content” expression in the sense of McCready (2010). The primary theoretical contribution of this paper is to define a special class of perspectival mixed-content expressions. The main thrust of the argument is that the anchoring implication is not-at-issue, informative, and projective precisely because it is perspectival. To support this claim, I develop a general theory of how perspectival information is introduced, accessed, and updated in discourse. The theory is based on the idea that interlocutors construct shared representations of the perspectives of certain individuals and that these representations have a special status in the discourse. Perspectival expressions such as *come* contribute information about an individual’s perspective directly as part of their conventional contents. When they do, that information takes the form of a not-at-issue, informative, projective implication.

## 2 The perspectival anchoring of *come*

This section presents evidence that the anchoring implication is required to hold according to the perspective of the anchor, not in the actual world or according to the common ground, the information (purported to be) held in common by the

interlocutors (Stalnaker 1978). First, Section 2.1 describes the range of relations between the anchor and the destination that make the use of *come* acceptable.

## 2.1 Anchoring relations

Fillmore (1975) describes four relations between the anchor and the destination of the motion event that make the use of *come* acceptable. Essentially, this amounts to four ways in which the anchoring implication can be true. The first, which is exemplified in (1), is that **the anchor is located at the destination of the motion event at utterance time**. The other three are illustrated and labeled in (2). Throughout this section, I make the simplifying assumption that the anchoring implication must be true according to the common ground/in the actual world.

- (2) [Context: Ann and Beth are in Gambier, Ohio. Ann says:]
- a. **The anchor is at the destination at (motion) event time:**  
I went to see Professor Smith in Lupton Hall earlier today. While I was there, John came to Lupton to meet with Professor Rogers.
  - b. **The destination is anchor's home base:**  
John came {to my house/to Gambier} earlier today, but I wasn't home.
  - c. **The motion is in the company of the anchor:**  
John came to North Carolina with me last month.

If none of the relations between anchor and destination illustrated in (1)-(2) hold, the use of *come* is unacceptable, as in (1c). In this paper, I focus primarily on examples in which the anchor is located at the destination at utterance time or event time. In Section 8, I show how the analysis generalizes to account for home base examples as a special case of motion to the anchor's location at event time. Throughout, I make the simplifying assumption that motion with the anchor is also of this type.<sup>3</sup>

## 2.2 A taxonomy of perspectival anchors

This section presents the main empirical contribution of this paper: evidence that the anchoring of *come* is perspectival in the sense that it must be true according to the perspective of the anchor. The evidence is organized as a taxonomy of anchors.

<sup>3</sup> In fact, things are more complicated. By traveling to North Carolina with John, the speaker can serve as the anchor for a use of *come* describing John's motion. However, a speaker in Ohio cannot report her own trip by saying *I came to North Carolina alone last month*. Ultimately, some rule must be formulated to rule out self-anchoring in such examples. However, nothing in the present account hinges on how this rule is formulated, so I ignore the complication here.

### 2.2.1 Anchoring to an interlocutor

The first type of anchor is an interlocutor, as in (1)-(2). Corpus evidence suggests that interlocutors are commonly anchors. The Corpus of Contemporary American English (COCA; Davies 2008) contains 717,518 tokens of some form of *come*. Of those, 11,896 are in tokens of the bigram [*come*] *here* (brackets around *come* indicate generalization over all of its forms). The indexical content of *here* guarantees that these examples describe motion to the location of the speaker, the addressee, or both. In contrast, only 555 instances of the bigram [*come*] *there* occur in the corpus, even though *there* is approximately 2.5 times more frequent than *here* (1,272,863 tokens vs. 474,839). The frequency of speaker-anchored uses of *come* supports the hypothesis that the meaning of *come* is perspectival, on the assumption that the speaker maintains her own perspective as a default, adopting other perspectives only when necessary. This behavior is characteristic of perspectival expressions generally (Fillmore 1975, Sells 1987, Speas & Tenny 2003, Roberts 2014).

Example (3) demonstrates that when the speaker is the anchor, the anchoring implication must hold according to her perspective, not the facts in the actual world.

- (3) [Context: Mark and his friend Jeremy are in San Diego. However, Mark mistakenly believes that he is Louis XIV, that he has just arrived in Berlin, and that Jeremy is accompanying him. He says:]
- a. Mary is coming to Berlin shortly.
  - b. #Mary is coming to San Diego shortly.

In (3a), it is acceptable for Mark to use an utterance with *come* to describe motion to the place where he conceives of himself as being. (3b) shows that he cannot use *come* to describe motion to the place where he actually is, if the two differ.

(3) differentiates anchoring to the speaker's perspective from anchoring to facts of the actual world, but not from anchoring to the common ground. In (3), as far as the speaker knows, the fact that he and Jeremy are in Berlin is part of the common ground. Only Jeremy, the addressee, knows that it is not. The same holds of anchoring to the addressee, *ceteris paribus*. In the context in (3), Jeremy could adopt Mark's perspective for the purposes of the conversation and utter (3a). He could not, however, utter (3b) without confusing Mark.

The examples in (4) differentiate anchoring to a perspective held by the speaker from anchoring to the common ground.

- (4)
- a. I hope to spend next summer in France. If you come to France then, we can sightsee together.
  - b. I'm imagining that I'm on a beach on a beautiful island. Now you are coming from our little cabana to the beach with glass of lemonade.

The examples in (4) have the flavor of modal subordination (Roberts 1989). The initial sentence introduces an attitude state, and the subsequent sentence continues it, albeit without an overt modal operator. The anchoring implication is true according to the attitude state or perspective introduced in the first sentence, but not according to the common ground or even the speaker's beliefs. Together, (3)-(4) provide evidence that the anchoring implication must hold according to a perspective held by the anchor, but not according to the common ground or in the actual world.

### 2.2.2 Anchoring to attitude holders

Example (5) illustrates **deictic perspective shift** (Oshima 2006a,b,c; see Fillmore 1975 and Hockett 1990 for early examples). Deictic perspective shift occurs when *come* is embedded under an attitude predicate/verb of communication and the agent of the embedding predicate is the anchor.

- (5) [Context: Ann is in Cleveland, Beth is in New York, and Chris is in Denver. On the phone, Ann asks Beth *Where is John these days?* Beth says:]  
Chris {thinks/says} that John is coming to Denver today.

In (5), *coming to Denver* is acceptable because Chris, the agent, is in Denver.

(6) shows that just as with anchoring to interlocutors, the anchoring implication must be true according to the attitude holder's perspective, not the common ground.<sup>4</sup>

- (6) [Context: After Mark tells Jeremy (3a), Jeremy goes to San Jose. There, he tells Amy about Mark's delusion. Then he says:]  
a. Mark believes that Mary is coming to Berlin.  
b. #Mark believes that Mary is coming to San Diego.

(6a), where Jeremy describes motion to Mark's self-conceived location is acceptable. In contrast, (6b), where he uses *come* to describe to motion to Mark's actual location or location according to the common ground, is not. The acceptable use of *come* involves adopting Mark's conception of how things are, at least regarding location.

As with speaker-anchored examples, the anchoring implication can be true according to some non-belief perspective, e.g. in the anchor's imagination, as in (7).

- (7) [Context: Ann, Beth, and Chris are in Boston. Ann enters Beth and Chris's house and sees Chris {looking excited/sitting in the corner with his eyes closed}. She asks what's up. Beth says:]  
a. Chris hopes that he will be spending the summer in France, and he hopes that I will come to France for a week or two in July.

<sup>4</sup> Thanks to Carl Pollard for suggesting this example.

- b. Chris is imagining that he spent last week in Colorado skiing, and he is imagining that John came to Colorado toward the end of the week and joined him.

In (7a), the anchoring implication is entailed only by Chris's hopes, though it is compatible with his beliefs and the common ground. In (7b), the anchoring implication is true only in Chris's imagination. Thus, with deictic perspective shift under attitudes, as with anchoring to an interlocutor, the anchoring implication must be true according to a perspective held by the anchor.

### 2.2.3 Anchoring to the holder of a salient, relevant perspective

Even in the absence of an embedding attitude predicate, a non-interlocutor whose perspective is salient and relevant can anchor *come*. (8), taken from Virginia Woolf's *To the Lighthouse* as quoted in Doron (1991: 52), provides an example. *She* refers to Woolf's character Lily Briscoe. (9), which is unacceptable despite also mentioning a non-interlocutor located at the destination, is provided for comparison.

- (8) But with Mr. Ramsay bearing down on her, she could do nothing. Every time he approached - he was walking up and down the terrace - ruin approached, chaos approached. She could not paint...  
...She rejected one brush; she chose another. When would those children come? When would they all be off? she fidgeted...
- (9) [Context: Ann and Beth are in New York. Beth says:]  
#John is in Chicago. However, he is a Denver Broncos fan and loves Peyton Manning. Therefore, he is coming to Denver tomorrow.

In (8), Briscoe's perspective is salient and relevant because the reader is privy to her thoughts. In (9), Denver football star Peyton Manning's perspective is not relevant.

(10) provides another example in which a non-interlocutor's perspective is made salient and an unembedded instance of *come* is anchored to that individual.

- (10) Meanwhile, Dick had himself just made his perpetual vows and was at home, preparing himself for the trip to France. (He had spent the preceding summer at St. Joseph's Oratory in Montreal, where he had made a start on French. He delighted in the pastoral work involved in helping the many pilgrims who **come there** in the summer.) He heard the news of my coming home, of my confused state of mind, and he was a little shaken. It took him only a moment to adjust, however, for he wrote that night to Father George S. DePrizio that his own desires remained unchanged. "I am anxious to study theology..."

[Novak, Michael. (2008). The day my brother was murdered. *American Spectator* 41:10, pgs. 30-45 (COCA)]

Following Smith (2009), many expressions in (10) activate Dick's perspective in one way or another, including the reflexive *himself* (see e.g. Sells 1987), the psych verb *delighted*, the perception verb *heard*, the emotional description *shaken*, Dick's status as the subject of the verb of communication *wrote*, discussion of Dick's *own desires*, and the direct quotation from his writing. Thus, although the particular instance of *come* anchored to Dick in (10) is not embedded under an attitude predicate, attitude predicates and other expressions tied to Dick's perspective pervade the passage.

Fillmore describes examples such as (8) and (10) as anchoring to the "central character" in a narrative. He does not require the central character's perspective to be salient, though in many narratives it is. Stating the generalization in terms of perspective-taking, rather than centrality suggests that these are examples of deictic perspective shift as well. The fact that examples such as (8) and (10) as involve a narrative style called Free Indirect Discourse (FID; see Doron 1991, Eckardt 2011, 2014) supports this claim. In FID, a character's perspective is adopted, and many expressions that are typically anchored to the interlocutors, for example *here* and *now*, are instead anchored to that character. Taking "central character" examples to involve FID allows for a unified analysis in terms of deictic perspective shift.

As with previous types of anchoring, in FID contexts the anchoring implication must hold according to the perspective of the anchor. For example, consider a minimal variant of (8) in which Briscoe is not actually on the terrace but far away in a psychiatric hospital hallucinating that she is on the terrace. (8) is still acceptable in such a context, but *When would those children come to the hospital?* is not.

#### 2.2.4 Quantificationally bound anchors

Anchors can be quantificationally bound if the elements of the domain quantified over are interlocutors, attitude holders, or individuals with relevant perspectives. For example, in (11b), the domain of quantification is addressees. (11a) shows that in a minimally different example without an acceptable domain, *come* is unacceptable.

- (11) [Context: The speaker doesn't go to football games or bars.]
- a. [Context: She is speaking to her husband about game day at OSU.]  
#On game days, after the game, everyone comes to a local bar. (I can't imagine how crowded it must be on High Street...)
  - b. [Context: She is giving a speech about drunk driving to a convention of bar owners in Columbus Ohio.]



On game days, after the game, everyone comes to a local bar. (You guys are responsible for them being safe to drive when they leave...)

On the assumption that people leaving the game go to many different bars at many different locations, (11b) involves multiple anchors: one for each destination. Each such anchor is a bar owner and one of the addressees.

(12) shows that anchors can be bound in examples with deictic perspective shift.

(12) Every mother was glad that her wayward child came to Christmas dinner.

In (12), each mother is the anchor for a different motion event.

The anchor of *come* can also be bound in examples that involve deictic perspective shift but do not include embedding predicates, similar to the FID examples discussed in the previous section. An example is given in (13a). The contrast with (13b) shows that, in order for the use of *come* to be acceptable, the perspectives of the bound anchors must be salient and relevant in the discourse.

- (13) a. [Context: A group of women are standing around chatting. They look happy. Ann asks why. Bill responds:]  
This weekend each of these women had a birthday party, and every woman's children came to her party.
- b. [Context: A group of young people are standing around chatting. They look grumpy and put out. Ann asks why. Bill responds:]  
??This weekend each of these kids' mothers had a birthday party, and every kid came to her mother's party.  
[c.f. ...*went to her mother's party.*]

In (13a), the perspectives of the women, specifically their emotional states, are under discussion, and the women are an acceptable domain of anchors. In contrast, in (13b), the perspectives of a group of children are under discussion, and the children's mothers are not acceptable anchors.<sup>5</sup>

(14) shows that the anchor of *come* can participate in donkey anaphora (Geach 1962). Donkey anaphora is an anaphoric relationship in which an indefinite inside the scope of an operator introduces a discourse referent which is the antecedent for an expression that is within the scope of the operator but not c-commanded by the indefinite. As in previous examples, *come* is acceptable only if the anchors' perspectives are salient, as shown by the minimally different examples in (15).

<sup>5</sup> This is contra Barlew 2015c, which suggests that restrictions on acceptable anchors are relaxed in quantification examples. Restrictions on anchoring do seem to be relaxed for generics, as in the donkey anaphoric sentence *If a man has a child, he comes to her room every night to check on her*, which is acceptable in a discourse describing the habits of conscientious fathers. Currently, I have no explanation for such data. Thanks to Regine Eckardt (p.c.) and Craige Roberts (p.c.) for discussion.

- (14) [Context: A reporter is interviewing a teacher who is watching girls playing on a playground. The children live in a small village which recently suffered attacks in which tigers stole girls from their beds at night. When asked how the the girls survived the attacks, the teacher says:]
- a. Every man that had a daughter came to her room at night to guard her.
  - b. If a man had a daughter, he came to her room every night to guard her.
- (15) [Context: A reporter is interviewing a father of several children in a small village after a rash of attacks in which tigers stole girls from their beds at night. When asked how they dealt with the attacks, the man says:]
- a. ??Every man that had a daughter came to her room at night to guard her.
  - b. ??If a man had a daughter, he came to her room every night to guard her.

In the examples in (14), for each man's motion event, the anchor is his child, introduced by the indefinite *a child*, which is inside a relative clause or the antecedent of a conditional, both scope islands.

Together, the examples in this section show that the anchor of *come* may be quantificationally bound. The domain of anchors quantified over must consist of individuals with salient, relevant perspectives. As in the examples in the preceding sections, the anchoring implication must hold according to the anchor's perspective. This is illustrated in (16), which involves false belief.

- (16) [Context: The interlocutors are doctors at a mental health facility. They are discussing a group of patients, each of whom believes herself to be sole inhabitant of a small planet. When a doctor treats a patient, the patient imagines that she visits her planet. A doctor says:]
- Today, every patient was glad that I came to her planet.

In (16), the anchors are the patients. Deictic perspective shift is triggered because *come* is embedded under *be glad*. The anchoring implication associated with each anchor is true only according to the perspective of that anchor: (16) is acceptable even if patients are unaware of each other, let alone the content of others' hallucinations.

In summary, the data in Section 2.2 demonstrate that the anchor of *come* is required to be a salient, relevant perspective holder. The anchoring implication is required to hold according to the anchor's own perspective.

### 2.3 The perspectival anchoring of *come* is *de se*:

One additional piece of evidence confirms that the anchoring implication is anchored not just to an individual but to that individual's perspective: the anchoring implication

is necessarily *de se*.<sup>6</sup> For the implication to be *de se*, the anchor must believe, imagine, etc. of herself that she is located at the destination. Because *de se* attitudes are attitudes one has about oneself, that the anchoring implication is *de se* provides evidence that it holds according to the anchor's perspective, not according to the common ground (Mitchell 1986, Roberts 2014). (17) illustrates (c.f. Morgan 1970).

- (17) [Context: Last week, Chicago baseball player Ernie Banks was hit on the head. He is now a lucid amnesiac. After the accident, Ernie was transported to Boston to work with an amnesia specialist. For all he knows, he has never been to Chicago. He has been reading about the baseball player Ernie Banks, but does not realize that he is reading about himself. He reads that President Obama was in Chicago 3 weeks ago and met Ernie Banks.]
- a. [Ernie tells his doctor]:  
#President Obama came to Chicago.
  - b. [The doctor later tells her friend]:  
#Ernie believes that President Obama came to Chicago.

In (17), the anchor, Ernie Banks, believes of Ernie Banks that he is located at the destination of the motion event. Nevertheless, the examples are unacceptable because Ernie does not realize that he believes this about himself. His belief is not *de se*. In contrast, in a minimally different context where Ernie regains his memory, these examples are good. These facts indicate that the perspectival anchoring is part of the meaning of *come* itself. *De se*-ness is not due to embedding under an attitude predicate, because attitude predicates allow for both *de se* and non-*de se* readings of embedded expressions. Thus, the obligatory *de se* interpretation can only arise due to perspectival content in the meaning of *come* itself.

**Summary:** The data in Section 2 reveal what being perspectival means, at least for the meaning of *come*: the anchoring implication must be true, *de se*, according to a perspective held by the anchor. Anchors are restricted to individuals whose perspectives are salient and relevant in the discourse, because without a salient, relevant perspective, the anchoring implication cannot be computed.

### 3 The status of the anchoring implication

The second observation to be accounted for in this paper is that the anchoring implication is not-at-issue, projective and informative. The first two claims, orig-

---

<sup>6</sup> Antje Roßdeutscher p.c. confirms that the same requirement exists for the anchoring of *kommen* 'come' in German and is discussed in Roßdeutscher 2000.

inally established in Fillmore 1966 and Cinque 1972, respectively, have not been challenged in the literature. I motivate them briefly before turning to informativity.

(18) shows that the anchoring implication cannot be dissented with directly.

- (18) [Context: Anna is at a call center talking to Belinda, who is on a land line:]  
 Belinda: President Obama is coming to Chicago today.
- a. Anna: No, that's not true. He's not coming to Chicago until Friday.
  - b. Anna: #No, that's not true. I can tell by your phone number that you're {not in Chicago/in Phoenix}.

In (18a), the motion implication, which is that Obama is going to Chicago, is targeted by direct negation. In contrast, in (18b), Anna attempts to contradict Belinda's assertion about Obama's itinerary by contradicting the anchoring implication, which is that Belinda is in Chicago (technically, believes herself to be there; throughout Section 3 I resurrect the simplifying assumption employed in Section 2.1). However, unlike the proffered content related to Obama's travel plans, the anchoring implication cannot be challenged directly. This is evidence that it is not-at-issue (Potts 2005, Amaral et al. 2007, Tonhauser 2012, AnderBois et al. 2015).

The examples in (19), some adapted from Cinque's (1972: 578), show that the anchoring implication projects. An implication projects if it is introduced in the scope of an entailment canceling operator but nevertheless survives (Langendoen & Savin 1971, Tonhauser et al. 2013, Chierchia & McConnell-Ginet 1990).

- (19) [Context: Fritz and Ralph live near a bagel shop. Each goes to the bagel shop 2-3 mornings per week and sits in the back room. Often, their friend Fred is there. Today, they see each other on the golf course. They do not discuss who went to the shop yesterday, though in fact Ralph did, but Fritz did not. Fritz asks Ralph if he knows what Fred did yesterday. Ralph says:]
- a. Yes. He came to the bagel shop yesterday.
  - b. I don't know. He didn't come to the bagel shop yesterday.
  - c. It is possible that he came to the bagel shop yesterday, but if so he didn't come to the back room.
  - d. I don't know. If he came to bagel shop yesterday, he didn't come to the back room.

Cinque notes that the implication that Ralph was at the shop yesterday, i.e. the anchoring implication, is an entailment of both (19a) and (19b). It is not canceled by sentential negation in (19b). Neither is it canceled in (19c) and (19d), where *come* is embedded under a possibility operator and in the antecedent of a conditional, respectively (cf. Chierchia & McConnell-Ginet 1990). The anchoring implication is an entailment of the utterances despite being introduced under an operator.

Finally, the anchoring implication is informative. By “informative”, I mean that the anchoring implication can contribute information not previously entailed by the common ground. The examples in (19) support this claim. Prior to each example, the common ground does not entail that Ralph, the speaker, was at the bagel shop yesterday. That information is contributed by the utterances themselves.

(20) demonstrates the anchoring implication can be informative in an utterance involving deictic perspective shift.

(20) [Context: Al and Betty live in New York, and are there today. Betty says:]  
I met this guy Ron on the internet last night. He told me that President Obama is coming to Chicago today.

In (20), Ron is the anchor due to deictic perspective shift under attitude predicates. Nothing about Ron’s location is entailed by the common ground prior to the utterance, and the example is acceptable. (20) contributes to the common ground the information that Ron is in Chicago, either today or when speaking to Betty.

Examples (19) and (20) distinguish the anchoring implication from typical presuppositions. On one prominent approach, presuppositions are analyzed as projective implications that arise with the use of particular expressions. On this approach, in order for such an expression to be used acceptably, its presupposition(s) must be entailed by the common ground prior to use (Stalnaker 1973, Karttunen 1974, Lewis 1979b). (19) and (20) show that, in contrast, *come* can be used acceptably when the anchoring implication is not entailed by the common ground. This suggests that either the anchoring implication is not presupposed or it is able to be accommodated, automatically added to the common ground prior to interpretation (e.g. Lewis 1979b). Pace Oshima (2006a,b,c), I follow Fillmore and take the first option, assuming that the anchoring implication is part of a class of not-at-issue, informative, projective contents. Other contents of this sort include conventional implicatures, such as the projective implications associated with appositives (Karttunen & Peters 1979, Potts 2005, AnderBois et al. 2015). Determining exactly what types of expressions comprise this class and how it should be subdivided is beyond the scope of this paper. See Tonhauser et al. 2013 and Tonhauser 2015 for discussion.

Although the data suggest that the anchoring implication is not presupposed, the use of *come* does trigger an anaphoric presupposition that there is a retrievable anchor in the discourse context. Claiming that the existence of an anchor is an anaphoric presupposition contradicts previous analyses of the meaning of *come*, where the anchor is assumed to be contributed indexically (Taylor 1988, Oshima 2006a,b,c). However, these analyses do not consider data involving quantificational binding and donkey anaphora, both classic tests for anaphoricity following Partee (1984, 1989). The binding data show that the anchor is retrieved anaphorically.

Thus, together, the data suggest that the existence and retrievability of the anchor are presupposed, but the anchoring implication that the anchor believes herself to be located at the destination is not. It is not-at-issue, informative, projective content.

#### 4 Previous analyses

As part of a general account of deictic phenomena including the anchoring of *come*, Fillmore (1975) develops a theoretical construct called the **deictic center**. Fillmore does not define the deictic center explicitly, and there is no precise definition of it in the literature. It can be thought of either as an individual or as a body of information determined by an individual, (e.g. her location, her social status, etc.). Fillmore and other researchers assume that the context contributes the deictic center, but often do not say exactly how. However, there are essentially two possibilities.

The first possibility is that the value of the deictic center corresponds to a Kaplanian (1989) contextual parameter (Taylor 1988), a distinguished element of the context of utterance like the speaker or the addressee. On this approach, *come* is indexical. This kind of approach has problems accounting for deictic perspective shift under attitude predicates, because in general the interpretations of indexicals are not affected by embedding (Kaplan 1989). One solution might be to analyze *come* as a shifted indexical and make attitude predicates context shifters (see Schlenker 2003, Anand & Nevins 2004, Deal 2012 for shifted indexicals; see Oshima 2006a,b,c for a related analysis of *come*). More problematic, however, are the data involving quantificational binding. Even shiftable contextual parameters are not subject to binding by natural language quantifiers (Deal 2012). Thus the binding data provide evidence against analyzing the anchor as the value of a contextual parameter.

An alternative possibility is to assume that the deictic center is not a distinguished individual in the context of utterance, but rather a distinguished discourse referent entailed to exist by the common ground. In dynamic semantic theories, following Karttunen (1976), Heim (1982), and Kamp (1981), discourse referents (henceforth, drefs) are indices linking information shared by the interlocutors to individuals, real or hypothetical. Heim's metaphor for a dref, for example, is a file where this information is stored. Sells (1987) develops an analysis according to which the anchor corresponds to a distinguished dref. As part of an analysis of a range of perspectival expressions, Sells proposes three perspectival roles for drefs. The dref bearing a given role is involved in the interpretation of certain expressions. This kind of anaphoric analysis fares better than indexical analyses because it allows for quantificational binding. Drefs, unlike parameters of the context, are exactly the type of thing assumed to be bound by quantifiers. It is also unproblematic to assume that attitude predicates can shift the value of a discourse role, thus accounting for deictic perspective shift under attitudes.

Differences aside, neither type of deictic center analysis can account for the two primary generalizations developed above. Neither predicts that the anchoring implication must hold according to the anchor's perspective. Rather, since the deictic center is defined in terms of the anchor's location in the actual world or according to the common ground, both predict that the anchoring implication should be required to hold according to the common ground. Thus, these analyses do not account for the perspectival character of anchoring. Similarly, neither can account for the not-at-issue, projective status of the anchoring implication. Whether the deictic center is indexically given or anaphorically interpreted, in neither case is there a reason to assume that the anchoring implication is not-at-issue, projective content. Giving a full account of additional problems with deictic center analyses is beyond the scope of this paper, but see [Oshima 2006a](#) for discussion.

[Oshima's \(2006a, 2006b, 2006c\)](#) analysis improves considerably on deictic center analyses. Oshima posits a Kaplanian contextual parameter called the "reference point" (RP), which corresponds to a set of individuals rather than a single deictic center. The RP consists of individuals whose perspectives are available for adoption by the interlocutors, though the perspectives themselves do not otherwise figure in the analysis. To account for deictic perspective shift under attitudes, Oshima assumes that *come* has a shifted indexical version as well as a pure indexical version, and that attitude predicates can shift the RP parameter of the context. For discussion and a critique of these assumptions, see [Barlew \(2015c\)](#). Here, I focus whether or not Oshima's analysis can account for the generalizations above.

First, Oshima's analysis can account for the perspective dependence of *come* in embedded examples. He analyzes the anchoring implication as a presupposition, and presuppositions generally can be satisfied according to an attitude holder's beliefs when embedded under an attitude predicate ([Karttunen 1974](#), [Heim 1992](#)). The analysis also accounts for the observation that the anchoring implication is not-at-issue and projective, both characteristics of presuppositions ([Langendoen & Savin 1971](#), [Stalnaker 1973](#), [Karttunen 1974](#), [Karttunen & Peters 1979](#)).

Despite its success with examples involving deictic perspective shift under attitude predicates, Oshima's analysis cannot account for the perspectival nature the anchoring implication when *come* occurs in a matrix clause. In addition, for reasons described in detail in [Barlew 2015c](#), Oshima's analysis does not predict that the anchoring implication is necessarily *de se*. Furthermore, because it assumes that the anchoring implication is presupposed, Oshima's analysis incorrectly predicts that the use of *come* should be unacceptable in a context in which the common ground does not entail the anchoring implication, modulo accommodation. The most significant problem for Oshima's analysis, however, is one shared with indexical deictic center analyses. It cannot account for examples involving quantificational binding, because the RP is a contextual parameter. One way to solve this would be to develop some

kind of alternative index of parameters that can be bound, in the spirit of [Lasersohn 2005, 2008](#), but that would require significant modifications.

## 5 Not-at-issue, informative, projective content

The next sections develop an analysis of the anchoring of *come* using the dynamic semantic framework of [AnderBois et al. 2015](#) (henceforth, ABH). ABH'S framework adapts dynamic predicate logic ([Groenendijk & Stokhof 1991](#)) to account for the meanings of appositive relative clauses, or just “appositives”. Like the anchoring implication of *come*, the content of an appositive is not-at-issue, informative, and projective. ABH's framework is thus well suited for analyzing the anchoring of *come*, but nothing here hinges on the choice of this framework.

### 5.1 Basics of the adapted ABH framework

ABH's ontology includes domains of individuals and worlds. To these, I add space points, time intervals, real numbers, and Davidsonian events. The domains and, where applicable, associated variables are listed in (21).

(21) Basic domains:

- a.  $\mathcal{D}$  = domain of individuals
- b.  $\mathcal{W}$  = domain of worlds ( $w, w', \dots$ )
- c.  $\mathcal{P}$  = domain of space points
- d.  $\mathcal{E}$  = domain of events ( $e, e', \dots$ )
- e.  $\mathcal{I}$  = domain of intervals of time ( $t, t', \dots$ )
- f.  $\mathcal{R}$  = domain of real numbers ( $m, n, \dots$ )

ABH define a complex domain of partial individual concepts, which are partial functions from the domain of worlds into the domain of individuals. To deal with spatial elements in the meaning of *come*, I add the complex domain of regions (path-connected sets of points; see e.g. [Kracht 2002](#)) and the complex domain of paths (functions from an interval of reals to regions, following [Zwarts 2005](#)):

(22) Complex domains:

- a. Partial individual concepts ( $x, y, \dots$ )
- b. Propositions (sets of worlds) ( $p, p', \dots$ )
- c. Regions (path-connected sets of points) ( $r, r', \dots$ )
- d. Paths (functions from intervals of reals to regions) ( $\mathbf{p}, \mathbf{q}, \dots$ )



ABH's ontology includes standard non-logical constants, such as JOHN, RUN, EAT, etc. An interpretation function  $\mathfrak{F}$  assigns sets of individuals as values to such non-logical constants, relative to worlds. ABH 2015:44 define  $\mathfrak{F}$  as in (23).

$$(23) \quad \forall R (n\text{-ary relation}) \forall \mathbf{w}. \mathfrak{F}_{\mathbf{w}}(R) \subseteq \mathcal{D}^n$$

I assume that  $\mathfrak{F}$  can also assign elements of domains other than  $\mathcal{D}$  as needed. For example, the values of the location relation LOC include an individual concept, a region, and a time.  $\text{LOC}(x, t, r)$  is true just in case  $r$  is the region occupied by  $x$  at  $t$  (see Wunderlich 1991, Zwarts & Winter 2000, Kracht 2002).

Following Kamp (1981) and Heim (1982), the meaning of an expression is a context change potential. A context is represented as an information state, a set of assignments of values to variables that is compatible with what the interlocutors know. For any logical form  $\phi$ , the interpretation of  $\phi$  is a binary relation on an input assignment  $g$  and an output assignment  $h$ . For any such  $\langle g, h \rangle$ , values assigned by  $g$  are compatible with the information available prior to the interpretation of  $\phi$ , and values assigned by  $h$  with the information available after  $\phi$  is interpreted. The interpretation function is written  $\llbracket \phi \rrbracket^{\mathfrak{M}, \langle g, h \rangle}$ , where  $\mathfrak{M}$  represents the model consisting of the domains listed above. I follow ABH and omit  $\mathfrak{M}$  for readability.

ABH also include a representation of the common ground as an element of each assignment. Following Stalnaker (1973, 1978), the **common ground** (CG) is a set of propositions storing the mutual commitments of the interlocutors. The CG includes both propositions that have been uttered and accepted in the discourse and propositions representing cultural and contextual knowledge that is known to be shared. The **context set** (CS) is the set of worlds compatible with the information in the CG, i.e. the intersection of the CG:

$$(24) \quad \text{Given discourse } D \text{ with } \text{CG}_D, \text{CS}_D = \cap \{p \mid p \in \text{CG}_D\}$$

To represent the CS and thereby the CG, ABH designate a propositional variable  $p^{cs}$  to store the current CS and all of its non-empty subsets. For example, if the current CS is  $\{\mathbf{w}_1, \mathbf{w}_2, \mathbf{w}_3\}$ , then the current information state includes assignments that assign to  $p^{cs}$  each of the following values:  $\{\mathbf{w}_1, \mathbf{w}_2, \mathbf{w}_3\}, \{\mathbf{w}_1, \mathbf{w}_2\}, \{\mathbf{w}_1, \mathbf{w}_3\}, \{\mathbf{w}_2, \mathbf{w}_3\}, \{\mathbf{w}_1\}, \{\mathbf{w}_2\}, \{\mathbf{w}_3\}$ . As the discourse progresses, information is added to the CG, and worlds not compatible with that information are eliminated from the CS. This is modeled in ABH's framework by the elimination of particular assignments to  $p^{cs}$ . For example, if  $p$  is added to the CG above, and  $p$  is true only in  $\mathbf{w}_2$  and  $\mathbf{w}_3$ , then assignments that include  $\mathbf{w}_1$  in the value of  $p^{cs}$  are eliminated from the context/information state. The assignments that remain assign  $\{\mathbf{w}_2, \mathbf{w}_3\}, \{\mathbf{w}_2\}$ , or  $\{\mathbf{w}_3\}$  to  $p^{cs}$ .

ABH argue that proffered contents and not-at-issue, informative, projective contents differ because they update the CG in different ways. The two kinds of updates are **proposals** and **direct updates**.

## 5.2 Proposals

For ABH, every assertion includes a proposal to update the CG. The content of the proposed update itself is represented using a propositional dref  $p^{issue}$ , where “*issue*” stands for “at-issue content”. Typically,  $p^{issue}$  is reduced to  $p$  for readability. Ultimately,  $p$  will represent the speaker’s intended contribution to the discourse—the content she proposes to add to the CG. However, as with any dref, when  $p$  is first introduced, its value is not restricted. Assignments to  $p$  range over the domain of propositions,  $\mathcal{P}(\mathcal{W})$ . ABH assume that in any assertion, immediately after  $p$  is introduced, it is required to be consistent with the current CG. This requirement is represented by restricting assignments to  $p$  to subsets of  $p^{cs}$ . The requirement is a simplifying assumption enforcing monotonic update of the CG. The representation of the initial update to the context associated with an assertion is given in (25).  $\llbracket \ ]$  indicates dref introduction, and  $\wedge$  is dynamic conjunction. Interpretation brackets are included in this example, but are henceforth omitted for readability.

$$(25) \quad \text{New proposal: } \llbracket [p] \wedge p \subseteq p^{cs} \rrbracket^{(g,h)}$$

Interpreting (25) requires interpreting dynamic conjunction, which is defined in (26):

$$(26) \quad \text{Dynamic conjunction (adapted from ABH:46):}$$

Given formulas  $\phi$  and  $\psi$  and assignments  $g$  and  $h$ ,  $\llbracket \phi \wedge \psi \rrbracket^{(g,h)} = \top$  iff there exists a  $k$  such that  $\llbracket \phi \rrbracket^{(g,k)} = \top$  and  $\llbracket \psi \rrbracket^{(k,h)} = \top$

The dynamic conjunction of two formulas  $\phi$  and  $\psi$  is true with respect to a pair of assignments,  $\langle g, h \rangle$ , just in case there is some assignment  $k$  that can be an output context for the interpretation of  $\phi$  and an input context for the interpretation of  $\psi$ , just as in standard DPL.

The interpretation of the first conjunct of (25) involves the context change associated with the introduction of the new propositional dref  $p$ . In this case,  $g$  and  $h$  differ only with respect to the value they assign to  $p$ , as in (27).

$$(27) \quad \text{Dref introduction (to be revised below; adapted from ABH:32):}$$

Given assignments  $g$  and  $h$ ,  $\llbracket [p] \rrbracket^{(g,h)} = \top$  iff for any variable  $v$  (of any type) s.t.  $v \neq p$ , we have that  $g(v) = h(v)$ .

The second conjunct of (25) restricts  $p$  to a subset of  $p^{cs}$ . Dynamic versions of logical connectives such as  $=$  and  $\subseteq$  are defined as conditions on the values assigned

to their arguments by the output assignment. Their interpretation results in the elimination of assignments according to which the required condition does not hold. Here,  $p \subseteq p^{cs}$  just in case the set of worlds  $h$  assigns to  $p$ , written  $h(p)$ , is a subset of  $h(p^{cs})$  (see ABH:45 for details).

Once  $p$  is introduced as in (25), assignments to  $p$  continue to be eliminated as the assertion is interpreted. In essence, the interpretation of the logical form of the assertion, call it  $\phi$ , yields a set of conditions on assignments to  $p$ . For example, assume *he sneezed* is uttered in a context in which the dref  $x$  is the value of *he*. Then the logical form of the utterance is  $\text{SNEEZE}_p(x)$ . Interpreting  $\text{SNEEZE}_p(x)$  updates the context to require that in all worlds that  $h$  assigns to  $p$ ,  $x$  sneezed. Assignments that assign worlds to  $p$  in which  $x$  did not sneeze are eliminated. The general rule for interpreting such formulas is given in (28). It includes the presupposition in (28a), which is discussed below.

(28) **Interpretation of atomic formula with predication** (adapted from ABH Appendix A: (6e) and (7)):

$\llbracket \text{SNEEZE}_p(x) \rrbracket^{(g,h)}$

- a. presupposes  $h(p) \subseteq \text{dom}(h(x))$  and
- b.  $= \top$  iff  $g = h$  and for all worlds  $\mathbf{w} \in h(p)$ ,  $h(x)(\mathbf{w}) \in \mathfrak{F}_{\mathbf{w}}(\text{SNEEZE})$

(28b) says that  $\text{SNEEZE}_p(x)$  is true just in case, in all worlds  $\mathbf{w}$  that  $h$  assigns to  $p$ ,  $x$  evaluated at  $\mathbf{w}$  is in the extension of SNEEZE at  $\mathbf{w}$ .

The presupposition in (28a) exemplifies one result of modeling drefs as individual concepts that are defined over only some worlds. (28a) says that for SNEEZE to be predicated of  $x$  in  $p$  worlds,  $x$  must be defined in  $p$  worlds. Therefore, in addition to introducing  $x$ , the rule for dref introduction must also specify  $x$ 's domain, as in (29).

(29) **Dref introduction** (final; adapted from ABH:32):

Given assignments  $g$  and  $h$  and propositional dref  $p$ ,  $\llbracket [x_p] \rrbracket^{(g,h)} = \top$  iff

- a. for any variable  $v$  (of any type) s.t.  $v \neq x$ , we have that  $g(v) = h(v)$ ,
- b.  $\text{dom}(h(x)) = h(p)$ , and
- c.  $\text{dom}(h(x)) = h(p^{cs})$  if  $[x_p]$  and  $p$  is the at-issue proposal.

The crucial addition in (29) is that when an individual concept dref is introduced, it is subscripted with a propositional variable  $p$ . In the general case, this propositional variable represents the domain over which  $x$  is defined, as in (29b). For linguistically introduced drefs, this is determined by the position of the introducing expression in the logical form of the utterance. For example, if the indefinite *a donkey* introduces a dref  $x$  as part of an update to proposal  $p$ , then  $x$  is defined over the worlds in  $p$ . (29c) adds a special case: if  $p$  is the at-issue proposal, the domain of  $x$  is all of the worlds in  $p^{cs}$ . For justification of this special case, see ABH 2015:32-34. Briefly,

the condition is necessary to allow anaphoric expressions in appositives to have antecedents introduced by e.g. indefinite NPs in main clauses. As described in detail below, on ABH's story appositives are interpreted as updates to  $p^{cs}$ . Therefore, predicates in appositives presuppose that their arguments are defined over worlds in  $p^{cs}$ . If drefs introduced in main clauses were defined only over  $p$  worlds, then they could not be antecedents to anaphoric expressions in appositives. ABH argue that this condition is not stipulative, but is motivated by general facts about discourse structure and anaphora.

For a complete example of the interpretation of a simple utterance, consider the translation of (30) in (31). Assume that (31) is the logical form of (30), given some suitable syntax-semantics interface.

(30) Jerry sneezed.

- (31) a. **New proposal:**  $[p] \wedge p \subseteq p^{cs} \wedge$   
 b. **Proffered:**  $[x_p] \wedge x = \text{JERRY} \wedge \text{SNEEZE}_p(x)$   
 c. **Acceptance:**  $[p^{cs}] \wedge p^{cs} = p$

(31a) is just standard proposal introduction from (25). The first conjunct in (31b) introduces a dref  $x$ , which is defined over all  $p$  worlds and, because  $p$  is the at-issue proposal, all  $p^{cs}$  worlds. The second conjunct sets  $x$  equal to the constant JERRY. Together, these conjuncts represent ABH's treatment of proper names. The last conjunct says that in all  $p$  worlds,  $x$  sneezed. Upon the interpretation of (31b), assignments that assign to  $p$  worlds in which Jerry did not sneeze are eliminated.

(31c) models the update to the context that occurs once an assertion is interpreted and  $p$  is fully determined. At that point, the addressee can accept or reject the assertion. If she accepts, then  $p^{cs}$  is updated, as in (31c). A new  $p^{cs}$  variable is introduced and set equal to  $p$ , thus reducing the possible assignments to  $p^{cs}$ . It is important to emphasize this step. The step is necessary because interpreting a proposal changes the context/information state but not the CG, which is represented using  $p^{cs}$ . Only acceptance of a proposal updates  $p^{cs}$ .<sup>7</sup>

<sup>7</sup> This is not strictly correct. Given the way that the CG is defined, once the speaker makes an assertion the interpretation of which is  $p$ , the proposition that she asserted  $p$  is a proposition to which the interlocutors are committed and thus is part of the CG (see Roberts 1996/2012, Farkas & Bruce 2010). ABH do not explicitly address this kind of update. Neither do they address updates related to observable changes to the context of utterance, such as when a donkey walks in. To deal with these cases, it would be necessary to incorporate a mechanism that automatically updates  $p^{cs}$  to keep it current with observable phenomena. Since this problem is orthogonal to the analysis of *come*, I set it aside. Thanks to Peet Klecha and Craige Roberts for helpful discussion of this issue.

### 5.3 Direct updates

ABH's key innovation is to assume that  $p^{cs}$  can be directly updated in the same way as  $p^{issue}$ . Recall that in (31b), the interpretation of  $SNEEZE_p(x)$  restricts assignments to  $p$  to worlds in which Jerry sneezed. This restriction occurs as interpretation progresses, without requiring acceptance by the addressee. However, the addressee retains the prerogative to reject  $p$  as a proposed update to the CG and thereby leave  $p^{cs}$  unchanged. In contrast, ABH argue that interpreting an appositive results in the direct update of  $p^{cs}$ , and thus "imposes" the content of the appositive on the CG. For example, in the translation of *Jerry, who sneezed, excused himself*, the appositive *who sneezed* is represented as  $SNEEZE_{p^{cs}}(x)$ . Interpreting the appositive thus eliminates assignments that assign to  $p^{cs}$  worlds in which Jerry did not sneeze. In this way, the interpretation of an appositive results in a change to the CG without the addressee's input. Following a similar move by Nouwen (2007), ABH assume that the conventional content of the comma intonation associated with appositives shifts the propositional variable being updated from  $p$  to  $p^{cs}$ .

Differentiating direct updates to  $p^{cs}$  from updates via proposals has nice results. First, on the assumption that that  $p$ , the proposal, contains all at-issue content, appositives are not-at-issue because they do not contribute to  $p$ .<sup>8</sup> Second, combined with a suitable analysis of entailment canceling operators, analyzing appositives as direct updates to  $p^{cs}$  predicts that they project. To see why, consider ABH's analysis of entailment canceling operators as exemplified by sentential negation in (32).

(32) Sentential negation (adapted from ABH:46):

$$\begin{aligned} & \llbracket \text{NOT}_p^{p'}(\phi) \rrbracket^{(g,h)} = \top \text{ iff} \\ & \text{a. } \llbracket \mathbf{max}^{p'}(\phi) \rrbracket^{(g,h)} = \top \text{ and} \\ & \text{b. } h(p) \cap h(p') = \emptyset \end{aligned}$$

In (32),  $p$  is the update proposal that negation is part of, and  $p'$  is a new propositional dref introduced by negation.<sup>9</sup>  $p'$  stores the content of the material embedded under negation,  $\phi$ , just as  $p$  stores the content of the assertion. Negation places two requirements on the output context,  $h$ , relative to  $p'$ . The first, given in (32a) using the **max** relation, is that  $h$  assigns to  $p'$  the maximal set of worlds compatible with the interpretation of  $\phi$ . **max** is defined in (33).

$$\begin{aligned} (33) \quad \text{ABH's (2005:46) max: } & \llbracket \mathbf{max}^{p'}(\phi) \rrbracket^{(g,h)} = \top \text{ iff} \\ & \text{a. } \llbracket [p'] \wedge \phi \rrbracket^{(g,h)} = \top \text{ and} \\ & \text{b. } \text{there is no } h' \text{ s.t. } \llbracket [p'] \wedge \phi \rrbracket^{(g,h')} = \top \text{ and } h(p') \subsetneq h'(p') \end{aligned}$$

<sup>8</sup> The at-issueness data are actually more complicated. See Koev 2013 and ABH for discussion.

<sup>9</sup> If negation were embedded,  $p$  would be the propositional dref introduced by the embedding operator.

The second condition imposed by negation is represented in (32b). (32b) requires that in the output assignment there is no overlap between  $p'$  worlds and  $p$  worlds. Since  $p'$  stores the embedded content, this means that the proposed update  $p$  consists entirely of worlds where that content is false. If the utterance is accepted, updating  $p^{cs}$  with  $p$  eliminates worlds in the CS where the negated content is true.

The translation of (34) in (35) shows how the analysis accounts for projection.

(34) Jerry, who is an employee, did not sneeze.

- (35) a. **New proposal:**  $[p] \wedge p \subseteq p^{cs} \wedge$   
 b. **Proffered:**  $[x_p] \wedge x = \text{JERRY} \wedge \text{NOT}_{p'}^p ($   
 c. **Appositive:**  $\text{EMPLOYEE}_{p^{cs}}(x) \wedge$   
 d. **Proffered ctd.:**  $\text{SNEEZE}_{p'}(x))$   
 e. **Acceptance:**  $[p^{cs}] \wedge p^{cs} = p$

In (35b), the final conjunct introduces the new propositional variable  $p'$ . Then, in (35d),  $\text{SNEEZE}_{p'}(x)$  is an update to  $p'$ , making all worlds in  $p'$  worlds where Jerry sneezed. Due to the condition on the interpretation of NOT in (32b), limiting  $p'$  in this way forces  $p$  to contain only worlds where Jerry did not sneeze. Even though the appositive is embedded under sentential negation, the appositive content remains  $\text{EMPLOYEE}_{p^{cs}}(x)$  in (35c) due to the conventional content of the comma intonation. Embedding does not change the appositive's contribution to the CG. The entailment that Jerry is an employee projects.

## 6 Perspectives in discourse

The data in Section 3 show that the anchoring implication of *come* is like an appositive in that it is not-at-issue, informative, projective content. Therefore, I employ ABH's technology to model the meaning of *come*. However, Section 2 shows that the anchoring implication holds according to the perspective of the anchor, not the CG. As a result, the anchoring implication cannot be analyzed a direct update to  $p^{cs}$ . Instead, it must be analyzed as updating the interlocutor's shared representation of the anchor's perspective. Therefore, I introduce into the system a mechanism for representing the information the interlocutors share about the perspectives of individuals. This requires a representation of the perspective holder and a representation of the perspective itself. For the most part, I focus on doxastic perspectives, not hopes, imaginings, etc. With this simplifying assumption, a perspective holder is just an individual capable of having a doxastic state, and a perspective is just a doxastic state (Roberts 2014). However, I assume that the approach can be generalized to account for all kinds of perspectives, and indicate how from time to time.

## 6.1 Perspective holders in discourse

For a theory of what it means to be a perspective holder, I borrow from Roberts 2014. Roberts appeals to Stalnaker’s (2008) Hintikka-style analysis of belief. Following Lewis (1979a), Stalnaker represents belief as an accessibility relation between centered worlds. For Stalnaker, the center of a centered world consists of a subject (a doxastic agent capable of belief) and a time, which Stalnaker represents as  $\langle A, t \rangle$ . A centered world is the pair of a center and a world:  $\langle \langle A, t \rangle, w \rangle$ . Stalnaker’s doxastic accessibility relation on centered worlds,  $R$ , is given in (36):

- (36) **Doxastic accessibility** (adapted from Stalnaker 2008: 70):  
 Given a doxastic agent  $A$ , individual  $A'$ , times  $t$  and  $t'$ , and worlds  $w$  and  $w'$ ,  $\langle \langle A, t \rangle, w \rangle R \langle \langle A', t' \rangle, w' \rangle$  iff it is compatible with what  $A$  believes at  $t$  in  $w$  that she is  $A'$  at  $t'$  in  $w'$ .<sup>10</sup>

Given Stalnaker’s  $R$ , the doxastic state of an agent can be defined as a set of centered worlds, as in (37), adapted from Roberts (2014: 29-32).

- (37) **Doxastic state:** Given a base centered world  $\langle \langle A, t \rangle, w \rangle$ ,  
 $\text{DOX}(\langle \langle A, t \rangle, w \rangle) = \{ \langle \langle A', t' \rangle, w' \rangle \mid \langle \langle A, t \rangle, w \rangle R \langle \langle A', t' \rangle, w' \rangle \}$

Stalnaker defines  $R$  in such a way as to make the removal of the centers in (37) possible. He adds to the definition of  $R$  the \* condition, which requires that ignorance of where in the world one is is a type of ignorance about which world one is in. It says that for any worlds  $w$  and  $w'$  and individuals  $A$ ,  $B$ , and  $C$ , if  $\langle \langle A, t \rangle, w \rangle R \langle \langle B, t' \rangle, w' \rangle$  and  $\langle \langle A, t \rangle, w \rangle R \langle \langle C, t' \rangle, w' \rangle$ , then  $B = C$ . In other words, a difference in centers is a difference in worlds. Removing the centers leaves just a set of worlds. This makes it possible to model the complements of attitude predicates as (uncentered) propositions and thus to compare beliefs across subjects, who may “share” belief worlds but not centers.

Roberts proposes using Lewis/Stalnaker-style centers to represent aspects of the structure of the discourse. She argues that interlocutors keep track of a limited set of drefs corresponding to such centers. Specifically, they keep track of drefs corresponding to centers whose doxastic states are immediately relevant in the discourse. This set always includes centers for the interlocutors at utterance time, since their views are always relevant for the construction of the CG. It also includes a center for any doxastic agent whose perspective is overtly at-issue, such as the agent of an attitude predicate or the agent whose point of view is adopted in an FID context. Roberts calls drefs for centers with relevant perspectives “discourse centers”. Roberts theory is intended to be broadly applied to the analysis of perspectival expressions.

<sup>10</sup> Stalnaker requires  $R$  to be transitive, Euclidean, and serial.

The principal empirical domain considered in Roberts 2014 is the semantics of indexical expressions, and Roberts 2015 uses it to analyze epistemic modals. All of these expressions, she argues, involve presuppositionally anchoring the proffered content of an expression to a *dref* that is co-referential with one of the discourse centers.

To include discourse centers and centered worlds in the current framework, I add the additional complex domains in (38)-(39).

(38) **The domain of centers:**

Let  $\mathcal{C}$  be the domain of centers, such that for all  $c \in \mathcal{C}$ ,  $c = \langle x, t \rangle$ , where  $x \in \mathcal{D}$  and  $t \in \mathcal{T}$ .

(39) **The domain of centered worlds:**

Let  $\mathcal{U}$  be the domain of centered worlds, such that for all  $u \in \mathcal{U}$ ,  $u = \langle \langle x, t \rangle, w \rangle$ , where  $\langle x, t \rangle \in \mathcal{C}$  and  $w \in \mathcal{W}$ .

With the domain of centers added to the model, it is possible to define the set of discourse centers as in (40).  $\odot$  is used as a variable over discourse centers.  $\odot_D$  is the set of all such centers for discourse  $D$ .

(40) **Discourse centers** (adapted from Roberts 2014: 35):

The set of discourse centers  $\odot_D$  in discourse  $D$ :

$\odot_D \subseteq \{ \langle x, t \rangle \mid \langle x, t \rangle \in \mathcal{C} \text{ and } x\text{'s beliefs at } t \text{ are relevant in } D \}$ .<sup>11</sup>

- a.  $\odot_D$  always includes distinguished centers corresponding to the speaker at utterance time,  $\odot^*$ , and the addressee at utterance time,  $\odot^@$ .
- b. Additional centers are introduced lexically. For example, the meaning of an attitude predicate introduces a center corresponding to the attitude holder at the event time of holding the attitude.
- c. Additional centers are introduced pragmatically, as in FID.

(40) reveals a connection between Roberts' independently motivated discourse centers and the anchoring of *come*: the set of possible discourse centers is exactly the set of possible anchors. This is part of the motivation for using discourse centers here. Additional motivation comes from the obligatorily *de se*-ness of the anchoring implication. Discourse centers can be used in the analysis of *de se* phenomena, as illustrated in (42) (see also Lewis 1979a, Stalnaker 2008). (42) contains Roberts's (2014: 30) informal logical forms for the *de se* and non-*de se* interpretations of (41), where *he* is co-referential with *Ernie Banks*.

(41) Ernie Banks believes he is a great shortstop.

<sup>11</sup> This is relevance to the question under discussion, as defined in Roberts (1996/2012).



On the *de se* interpretation, Ernie knows that he believes himself to be a great shortstop. On the non-*de se* interpretation, he has amnesia, and believes that Ernie Banks is a great shortstop without believing that he himself is Ernie Banks (see Morgan 1970). The world of evaluation is assumed to be  $\mathbf{w}$ .

- (42) a. ***de se***:  $\text{believe}(\langle eb, \mathbf{w} \rangle) \subseteq \{ \langle \odot, \mathbf{w}' \rangle \mid \odot \text{ is a great shortstop in } \mathbf{w}' \}$   
 b. ***non-de se***:  $\text{believe}(\langle eb, \mathbf{w} \rangle) \subseteq \{ \langle \odot, \mathbf{w}' \rangle \mid eb \text{ is a great shortstop in } \mathbf{w}' \}$

In the *de se* interpretation in (42a), the antecedent for the pronoun *he* is the dref for the center at each of the centered worlds in Ernie's doxastic state. Since the center is who Ernie believes himself to be, i.e. his *de se* counterpart, (42a) is an interpretation on which he believes of himself that he is a great shortstop. In contrast, in (42b), there is no such identification between the centers and the antecedent of *he*.

## 6.2 Perspectives in discourse

If a perspective holder is represented as a discourse center, how is the information that the interlocutors share about that center's perspective represented? What kind of information is it? For a doxastic perspective, the information is just the sum of what the interlocutors know about the center's beliefs. To define this information, it is necessary to type lift the DOX function defined in (37). In (37), DOX maps an individual, a time, and world to a set of centered worlds. What is needed now is a mapping from an individual, a time, and a set of worlds to a set of centered worlds:

- (43) **Doxastic perspective:** Given discourse center  $\odot$  and set of worlds  $q$ ,  
 $\text{DOX}'(\odot, q) := \{ \langle \langle x', t' \rangle, w' \rangle \mid \exists w \in q [ \langle \odot, w \rangle \mathbf{R} \langle \langle x', t' \rangle w' \rangle ] \}$ .

Applying  $\text{DOX}'$  to a discourse center and set of worlds is equivalent to combining the center with each world in the set, applying DOX to each resulting centered world, and finding the union of those results.

Given a particular pair of assignments  $\langle g, h \rangle$ , if  $q = h(p^{cs})$ ,  $\text{DOX}'(\odot, q)$  returns the set of centered worlds that represents what the interlocutors know about the doxastic perspective of  $\odot$  according to that pair of assignments. This special case is represented by the variable  $u^\odot$ , which is defined in (44).

- (44) Given CS variable  $p^{cs}$  and discourse center  $\odot$ ,  $u^\odot := \text{DOX}'(\odot, h(p^{cs}))$

For any discourse center  $\odot$ ,  $u^\odot$  is entailed to exist by the CG. This is the case even if not much is known about  $\odot$ 's beliefs, because interlocutors make certain default assumptions about doxastic agents in general. For example, they assume that doxastic agents believe themselves to exist, that the sky is blue, etc., unless these beliefs are directly contradicted. Therefore, for any  $\odot$ , a dref  $u^\odot$  representing that

center's doxastic state relative to each assignment  $h$ , is weakly familiar, where being weakly familiar means being entailed to exist by the CG (Roberts 2002, 2003).

For any given discourse center, additional perspectives held by that center may also be familiar, depending on the context. For example, a center's imaginings, hopes, or fears might be under discussion and therefore familiar. Following Heim (1992), Roberts (1996), and Anand (2011), I assume that these perspectives are hypothetical doxastic states, which is to say particular kinds of manipulations of an agent's doxastic state. They are therefore of the same type as a doxastic state: a set of centered worlds. For any discourse center  $\odot$ , then, I assume there to be a set of familiar perspectives,  $\{v^\odot \mid v^\odot \text{ is a perspective entailed by the CG to be held by } \odot\}$ . This set may be a singleton whose only member is  $u^\odot$ ,  $\odot$ 's doxastic state, but it may also include additional perspectives.

It is also possible to represent a perspective as simply a set of uncentered worlds, due to Stalnaker's \* condition. For any perspective  $v^\odot$ , such an uncentered perspective is entailed to exist, as shown in (45).

- (45) Given discourse center  $\odot$  and perspective  $v^\odot$ , there exists some uncentered perspective  $q^\odot$ , such that  $q^\odot = \{w' \mid \langle \langle x', t' \rangle w' \rangle \in v^\odot\}$

For each discourse center, I designate a propositional variable to store that center's uncentered doxastic perspective, as defined in (46).

- (46) Given discourse center  $\odot$  and CS variable  $p^{cs}$ ,  
 $p^\odot := \{w' \mid \langle \langle x', t' \rangle w' \rangle \in \text{DOX}'(\odot, h(p^{cs}))\}$ .

According to (46), for any discourse center  $\odot$ ,  $p^\odot$  stores the interlocutors' understanding of  $\odot$ 's doxastic perspective. Given the way that discourse centers are defined, the existence of a discourse center  $\odot$  guarantees the existence of  $p^\odot$ .

So much for representing perspectives themselves. To represent *de se* phenomena, it is also necessary to represent perspective holders' *de se* self-conceptions. A self-conception is represented using an individual concept  $dref$  defined over all of a perspective holder's perspectively accessible worlds. The  $dref$  maps each such world to the individual who the perspective holder takes herself to be at that world. This  $dref$  is defined by generalizing over the centers of the centered worlds comprising the perspective. For example, following Stalnaker's definition of  $R$ , for a doxastic perspective, in an  $R$ -related centered world  $\langle \langle x', t' \rangle w' \rangle$ ,  $x'$  is the individual concept that maps  $w'$  to whoever the perspective holder believes herself to be in at  $t'$  in  $w'$ . The  $SELF$  function, defined in (47), generalizes over these individual concepts and creates a single individual concept  $x^\odot$  such that, for any set of centered worlds,  $x^\odot$  is defined over all worlds in the set and maps each world to the same individual concept that its center maps it to.

(47) Given a discourse center  $\odot$  and a perspective  $v^\odot$  held by  $\odot$ ,  
 $\text{SELF}(v^\odot) := x^\odot. \forall \langle \langle x', t' \rangle, w' \rangle [ \langle \langle x', t' \rangle, w' \rangle \in v^\odot \rightarrow h(x^\odot)(w') = h(x')(w') ]$

(47) defines  $x^\odot$  as an individual concept that always returns who  $\odot$  takes herself to be according to the relevant perspective. When  $v^\odot = \text{DOX}'(\odot, h(p^{cs}))$ ,  $x^\odot$  is the individual concept that represents who  $\odot$  believes herself to be, according to the interlocutors' shared understanding of her doxastic perspective.

With these tools to model perspectives, it is possible to represent not-at-issue, projective perspectival content as a direct update to an individual's perspective. Because  $p^\odot$  is the same kind of discourse object as  $p^{cs}$ , it is available for ABH-style direct update. Meanings that directly update the information that the interlocutors share about someone's perspective, as I have argued the meaning of *come* does, can be analyzed as eliminating assignments that assign particular values to  $p^\odot$ . They can “impose” their content on the interlocutors' shared conceptualization of some individual's perspective. Of course, this also results in an imposition on the common ground, but the information imposed is perspectival: it has to do with how the relevant individual understands the world, not how the world actually is.

This proposal—that the interlocutors keep track of individuals' perspectives and that the meanings of particular expressions encode information about individuals' perspectives—is not new. Gunlogson (2001, 2002) argues that the interlocutors keep track of, in particular, what they know about each other's perspectives. Gunlogson's proposal has proven useful for analyses of a wide range of phenomena, such as declaratives with rising intonation, specific indefinites, and appositives (Farkas 2002, Farkas & Bruce 2010, Lauer 2013, Koev 2013, 2015). The current proposal simply extends this idea, on the assumption that the interlocutors also track information about the perspectives of other individuals, in particular those whose perspectives are immediately relevant (Roberts 2014).

Before developing the analysis of *come*, it is useful to point out that including individual perspectival variables in ABH's system suggests an analysis of appositives with potentially greater empirical coverage than ABH's analysis. ABH's analysis accounts for speaker-oriented appositives, appositives where the content of the appositive is taken to be a commitment of the speaker. However, Amaral et al. (2007), Harris & Potts (2009), and Koev (2015) have shown that appositives can be oriented to other individuals with salient, relevant perspectives. For so-called non-speaker-oriented appositives, the appositive content is taken to be a commitment of the individual toward whom the appositive is oriented, not the speaker.

Crucially, these two kinds of appositives appear to yield two different kinds of update to the common ground. A speaker-oriented appositive with content  $q$  is usually claimed to update the common ground with  $q$  (ABH; Potts 2005). In

contrast, an appositive oriented to some individual  $x$ , updates the common ground with something like ‘ $x$  believes  $q$ ’, as in (48).

- (48) Mary is crazy. She believes that everyone in our neighborhood is an alien disguised as a human. Often, she engages us in conversation and tries to trick us into revealing where we stand in the alien hierarchy. She even keeps a chart like you see in police movies in her bedroom, with each neighbor’s picture and presumed role in the hierarchy. Mr. Rogers, who is the alien overlord, hates these conversations so much that he told me he’s thinking of moving. I’m not supposed to breathe a word of it to Mary, because he’s afraid it might make her talk to him even more.

In (48), the content of *who is the alien overlord* is attributed to Mary, not the speaker. The CG is updated with the content that Mary believes Mr. Rogers is the alien overlord.

For ABH, following Harris & Potts (2009) non-speaker-oriented appositives involve pragmatic context shift. This shift occurs when a pragmatically supplied agent takes the place of the speaker as the agent of the context. Koev (2015) makes a similar proposal for non-speaker-oriented appositives under attitude predicates, arguing that attitude predicates shift the agent parameter of the context to the attitude holder. However, neither kind of context shifting can account for (48). In (48) there is neither an embedding attitude predicate nor a general agent shift. Mary cannot be the speaker-like agent for the penultimate sentence because the final sentence shows that Mary is not committed to its proffered content. She is committed to merely the content of the appositive.

The system developed here allows for a unified account of both speaker- and non-speaker-oriented appositives as perspectival content. Starting with non-speaker-oriented examples, assume that in (48) there is a pragmatically introduced discourse center corresponding to Mary due to the immediate relevance of her perspective in the discourse. Call this discourse center  $\odot^M$ , and let her doxastic perspective be represented as  $p^M$ . Now, assume that the conventional content of comma intonation presupposes an anaphorically retrievable perspective  $dref$ , and shifts the propositional variable being updated to that perspective. This idea is just a perspectival adaptation of ABH and Nouwen’s (2007) proposal that comma intonation “toggles” the propositional variable being updated to  $p^{cs}$ . In (48),  $p^M$  is retrieved from the context, and the content of the appositive is a direct update to  $p^M$ . The translation of the appositive is  $ALIEN-OVERLORD_{p^M}(x)$ , where  $x$  is a  $dref$  set equal to Mr. Rogers. Directly updating  $p^M$  in this way eliminates from the context all assignments that assign worlds to  $p^M$  in which Mr. Rogers is not the alien overlord. By definition, these are assignments that assign to  $p^{cs}$  worlds where Mary does not believe that Mr.

Rogers is the alien overlord. Thus, the direct update in the appositive in (48) updates the CG by eliminating some assignments to  $p^{CS}$ . However, it does not update the CG with  $\text{ALIEN-OVERLORD}(x)$ , the content of the appositive itself, but rather with the equivalent of ‘Mary believes  $\text{ALIEN-OVERLORD}(x)$ ’.

This analysis generalizes to speaker-oriented appositives. Since the speaker’s perspective is always relevant in the discourse, a dref for that perspective,  $p^{\odot*}$ , is always weakly familiar. Following Koev 2015, speaker-oriented appositives can be analyzed as updating the speaker’s perspective,  $p^{\odot*}$ . As a result, the analyses of speaker-oriented and non-speaker-oriented appositives is unified. The apparent update of the CG with the appositive content, call it  $q$ , which Potts (2005) and ABH seek to account for, is pragmatic rather than semantic, following general discourse principles described in Lauer (2013). Lauer notes that if the addressee believes the speaker to be both honest and informed, any content that is added to the speaker’s commitments is reflexively accepted by the addressee unless she has specific reasons to disagree. As a result, that content becomes a mutual belief of the interlocutors, i.e. part of the CG. Thus, updating  $p^{\odot*}$  with  $q$  ultimately does result in  $q$  being added to the CG. However, this is due to pragmatic principles rather than the conventional content of appositives. Conventionally, appositives are updates to a particular perspective.

## 7 The meaning of *come*

In this section, I analyze the meaning of *come*, focusing on the anchoring implication. To deal with events, I assume a Davidsonian event semantics. To deal with spatial semantics, I assume the simplified version of Kracht’s (2002, 2008) framework provided in Barlew 2015a: 45-47. The denotations of spatial expressions such as *at the park* are sets of regions. For example,  $\text{AT}$  represents a simplification of Kracht’s (2002:189)  $\text{at}'$  with no time argument. For any individual,  $x$ ,  $\lambda r.\text{AT}(x, r)$  denotes the set of regions  $r$  touching the region occupied by  $x$ , roughly the meaning of English *at*.<sup>12</sup> Following Zwarts (2005), a path is modeled as a directed set of locations. A path  $\mathbf{p}$  is a function from an interval of reals,  $[n, \dots, m]$  to locations in space, where  $\mathbf{p}(n)$  is the start-point and  $\mathbf{p}(m)$  is the end point. For every motion event,  $e$ ,  $\text{TRACE}(e)$  returns the motion path of the theme of  $e$ . Following Talmy (1985),  $\text{MOVE}$  is a basic motion predicate.

In the examples above, *come* composes with prepositional phrases (PPs). Following Zwarts (2005), the meanings of path-PPs such as *to Denver* are represented as sets of paths. For example, *to Denver* denotes the set of paths that begin outside

<sup>12</sup> Since drefs in ABH’s system are interpreted as individual concepts rather than simple individuals, I assume that relations such as  $\text{AT}$  are relativized to worlds in the same way that relations on individuals (e.g.  $\text{SNEEZE}$ ) are.

Denver, make exactly one transition to being at Denver, and end at Denver (see Zwarts 2005 for details). In a static semantics, this is just  $\lambda \mathbf{p}.\text{TO}(\text{DENVER}, \mathbf{p})$ , where the translation of *to* is assumed to be  $\lambda x \lambda \mathbf{p}.\text{TO}(x, \mathbf{p})$ .

Importantly, there is a class of exceptions to this characterization of the meanings of path-PPs. Following Kracht (2002), when a predicate selects for a particular type of path-PP as its complement, prepositions denoting this type of path serve as case markers (see Kracht 2002 for details). In these examples, the PP denotes not a set of paths but a set of regions, just like a static locative PP. For example, *to Denver* is translated as  $\lambda r.\text{AT}(\text{DENVER}, r)$ , the set of regions in or at Denver.<sup>13</sup>

Both kinds of PP meanings are needed for the analysis of *come*. First, following Kracht and analyzing *to*-PPs such as *to Denver* as location-denoting accounts for an otherwise puzzling fact about the selectional properties of *come*. Although *come* often combines with path-PPs, as in the examples above, it can also combine with merely static locative PPs or location denoting adverbs, as in (49).

- (49) a. Ron came in the room.  
b. Leslie came here two hours ago.

In these examples, the argument of *come* denotes a location rather than a path. Furthermore, that location is required to be the location of the anchor. This generalization holds for examples in which the argument of *come* is a *to*-PP as well. The location denoted by the *to*-PP is required to be the location of the anchor. If these two kinds of cases are to receive a unified analysis, the implication that there is a motion path to the PP-denoted location must be part of the meaning of *come* rather than the meaning of the PP itself, since static PPs do not denote paths.

This approach is supported by the observation that when *come* composes with other path-denoting PPs, the anchor's location is not required to be the location named in the PP or the final destination of the motion path. (50)-(51) illustrate.

- (50) [Context: The interlocutors are in Salt Lake City.]  
Tom came through Denver on his way here.

In (50), the anchor, assumed to be the speaker, is not in Denver. Nevertheless, *Tom came through Denver* is acceptable. The location involved in the denotation of the PP is not required to be the anchor's location, in contrast with *to*-PPs and static locative PPs. (50) shows that in general the meaning of *come* composes with other path-PPs differently than it composes with *to*-PPs or static locative PPs.

<sup>13</sup> Kracht handles the translation between path and static meanings with a specific proposal about the syntactic structure of path-PPs and the syntax-semantics interface. It could also be handled by assuming lexical ambiguity in the meanings of prepositions. Nothing here hinges on this choice.

(51) shows that the anchor's location is not required to be the final destination of the motion path in order for *come* to be acceptable.

- (51) [Context: The interlocutors are in Denver.]  
Tom came through Denver today, so we had lunch while he was here.

In (51), the anchor is in Denver. Tom's motion path includes arrival at Denver. Thus, his motion path has a subpath that is a path 'to' Denver. However, Tom's entire motion path is not a path 'to' Denver. He does not remain there, but instead continues on. The larger path structure is encoded in the meaning of the utterance due to the composition of *through Denver* with *come*. Similar observations apply to utterances in which *come* composes with PPs with *around*, *by*, *past*, etc.

The generalization is that all of these examples involve two paths: the motion path described by the entire utterance and a subpath of that path. The subpath is required to end at the anchor's location, which is also necessarily the location denoted by a static locative or *to*-PP complement; the subpath is a path 'to' that location. In many examples, the subpath is also a final subpath of the larger motion path, making the anchor's location the destination of the entire motion event as well, but this is not required. Together, these examples provide evidence that the meaning of *come* i) subcategorizes for a location argument rather than a path argument, ii) requires that location to be the location of the anchor, and iii) encodes that a subpath of the motion event ends at the anchor's location. The fact that the complement of *come* can be elided when the anchor's location, the destination of the subpath, is easily recoverable from the context provides additional support for this analysis.

With this background, the proffered contents of the utterance with *come* in (52) can be given the translation in (53). The anchoring implication will be added in the next section.

- (52) John came to Denver.
- (53) a. **New proposal:**  $[p] \wedge p \subseteq p^{cs} \wedge$   
b. **Proffered:**  $[x_p] \wedge x = \text{JOHN} \wedge [e_p] \wedge \text{MOVE}_p(x, e) \wedge [\mathbf{p}_p] \wedge \mathbf{p} \leq \text{TRACE}_p(e)$   
 $\wedge [r_p] \wedge r = r' \wedge \text{TO}_p(r, \mathbf{p}) \wedge [y_p] \wedge y = \text{DENVER} \wedge \text{AT}_p(r, y) \wedge$   
c. **Acceptance:**  $[p^{cs}] \wedge p^{cs} = p$

The first conjuncts in (53b) introduce a dref  $x$  for the subject *John*. Then, the interpretation of *come* introduces a dref for an event,  $e$ , and requires this event to be an event of John moving. The interpretation of *come* also introduces a dref for a path,  $\mathbf{p}$ , which is required to be a subpath of John's complete motion path,  $\text{TRACE}_p(e)$ . The next two conjuncts introduce a dref for a location,  $r$ , and set  $r$  equal to  $r'$ . As is made clear in the next section,  $r'$  is a dref that corresponds to the self-conceived location of the anchor, so setting  $r = r'$  requires  $r$  also to designate the anchor's self-conceived

location. Then,  $\text{TO}_p(r, \mathbf{p})$  requires  $r$  to be the destination of subpath  $\mathbf{p}$ . Together, these conjuncts say that  $\mathbf{p}$  takes John to the anchor's self-conceived location. The interpretation of *Denver* introduces the dref  $y$  and sets it equal to DENVER. The interpretation of *to Denver* contributes the set of regions at Denver. The composition of this set of regions with the meaning of *come* yields the final conjunct, which says that  $r$ , the anchor's location, is at Denver. This represents the connection between the anchor's location and the location-denoting complement of *come* described in the preceding paragraphs. If some other path-denoting PP were included in the utterance, e.g. *through Denver* in (51), its denotation would be predicated of  $\text{TRACE}_p(e)$ , not  $\mathbf{p}$ , according to the general principles of PP modification in Zwarts (2005). This accounts for the differences observed between *to*-PPs and other path-PPs.

### 7.1 Anchoring *come* in matrix clauses

Like appositive content in the analysis sketched in Section 6.2, the anchoring implication is analyzed as a direct update to a discourse center's perspective. Since the discourse center is anaphorically retrieved, the first step in analyzing anchoring is to define the anaphoric presuppositions of *come* in (54).

(54) **Presuppositions of *come*:**

- a. There is a familiar discourse center  $\textcircled{c}$ , with
- b. a familiar dref for a perspective held by  $\textcircled{c}$ :  $v^{\textcircled{c}}$ ,
- c. a familiar dref  $q^{\textcircled{c}}$  representing the uncentered version of  $v^{\textcircled{c}}$ , and
- d. a familiar dref  $x^{\textcircled{c}}$  representing  $\textcircled{c}$ 's self-conception according to  $v^{\textcircled{c}}$ , or  $\text{SELF}(v^{\textcircled{c}})$ .

Analyzing the meaning of *come* as presupposing a familiar discourse center accounts for both the range of possible anchors and the fact that anchors can be quantificationally bound, because discourse centers are a special kind of dref. Also, in actuality, only the presuppositions in (54a) and (54b) are required. As soon as they are satisfied, those in (54c) and (54d) are guaranteed to be satisfied due to the way they are defined (see Section 6.2). Furthermore, if the relevant perspective is doxastic, (54b)-(54d) are satisfied as soon as the appropriate center is retrieved, due to the entailment that  $\textcircled{c}$ 's doxastic state is necessarily weakly familiar. However, stating the presuppositions separately makes it clear which elements are involved in the anchoring implication below and shows how the account generalizes to include other information states such as hopes and imaginings.

Once the presuppositions in (54) are satisfied, the anchoring implication can be stated as in (55). It includes the location relation, LOC, discussed above.



- (55) **Anchoring implication:**  $[r'_{q^\circ}] \wedge \text{LOC}_{q^\circ}(x^\circ, t'', r')$   
 where  $t''$  ranges over utterance time and event time.

The first thing that the anchoring implication does is introduce *dref* for a location  $r'$  that is defined over worlds in the anchor's perspective. The second conjunct says that according to the anchor's perspective, the location of her *de se* counterpart,  $x^\circ$ , is  $r'$  at either utterance time or event time. In other words, the anchor believes herself to be located at  $r'$ .

(57) presents the translation of (56), in which the speaker is the anchor.

- (56) [Context: The speaker is the only possible anchor.]  
 John came to Denver.
- (57) a. **New proposal:**  $[p] \wedge p \subseteq p^{cs} \wedge$   
 b. **Proffered:**  $[x_p] \wedge x = \text{JOHN} \wedge [e_p] \wedge \text{MOVE}_p(x, e) \wedge [\mathbf{p}_p] \wedge \mathbf{p} \leq \text{TRACE}_p(e)$   
 $\wedge$   
 c. **Anchoring** (to speaker):  $[r'_{p^\circ}] \wedge \text{LOC}_{p^\circ}(x^\circ, t'', r') \wedge$   
 d. **Proffered ctd.:**  $[r_p] \wedge r = r' \wedge \text{TO}_p(r, \mathbf{p}) \wedge [y_p] \wedge y = \text{DENVER} \wedge \text{AT}_p(r, y) \wedge$   
 e. **Acceptance:**  $[p^{cs}] \wedge p^{cs} = p$

(57) reveals the connection between the perspectival nature of anchoring and its status as not-at-issue, informative, projective content. The anchoring implication is perspectival because it is an update to  $p^\circ$ , the anchor's perspective. Because it does not comprise part of the proposal  $p$ , it is not-at-issue. For the same reason, if there were an entailment canceling operator in the utterance, the anchoring implication would project. The anchoring implication can be informative because it adds information about the anchor's commitments to the context. It eliminates possible assignments to  $p^\circ$ , and thereby possible assignments to  $p^{cs}$ . Modeling the anchoring implication as an update to the anchor's perspective accounts for its perspectival nature and its not-at-issue, informative, projective status. (57) also shows how the current analysis accounts for the *de se* nature of anchoring. The anchor is represented as  $x^\circ$ , the speaker's *de se* counterpart, or conceptualization of herself.

In addition to accounting for the empirical generalizations above, this analysis of the anchoring implication correctly predicts two of Fillmore's anchoring relations: the anchor's presence at the destination at utterance time and event time. When the anchoring implication is interpreted, in any given context exactly two times are salient. The first is the time associated with the discourse center, i.e.  $t$  in  $\langle x, t \rangle$ . In cases where the center is either  $\circ^*$  or  $\circ^\circ$  (the speaker or the addressee), or where some other center's current commitments are relevant,  $t$  is utterance time. The second salient time is the time of the motion event. This time is always salient and

relevant, given that the motion event is under discussion. As a result, the stipulation of the time component of anchoring in (55) is unnecessary if  $t''$  is assumed to be anaphorically interpreted.

Assuming that  $t''$  is interpreted anaphorically makes a further correct prediction about embedded examples. Assuming that an attitude predicate activates a discourse center consisting of a dref for the attitude holder and a dref for the time of the attitude event, the analysis predicts that attitude time is a possible anchoring time for examples involving attitude predicates. (58) shows that this prediction is correct.

- (58) [Context: The interlocutors have been in Ohio all week, and Joan, in Rome.]  
Yesterday, Joan mistakenly believed that she was in Florence. She also believed then that you had come to {Florence/??Rome} a few days before.

In (58), even though the anchor, Joan, is in Rome at utterance time, the example describing motion to Rome is marginal. This is because Joan's beliefs at utterance time are not relevant in the discourse. There is no discourse center corresponding to Joan at utterance time. There is, however, a discourse center corresponding to Joan at belief time, since it is Joan's beliefs yesterday that are under discussion.

## 7.2 Deictic perspective shift and attitude predicates

The data in Section 2 illustrate two kinds of deictic perspective shift: in FID contexts and under attitude predicates. In FID contexts, deictic perspective shift is just a matter of discourse anaphora resolution. The center for the FID central character is more a salient/relevant/plausible antecedent for the anchor argument of *come* than any other center. Therefore, translations of such examples look exactly like the translation of the speaker anchored example in (57), but with a different center.

Deictic perspective shift under attitude predicates is different, because the centers introduced by attitude predicates are available only in the scope of the attitude, unlike interlocutor and FID centers. Following Smith (2009), attitude predicates create local contexts in which particular perspectives are salient and relevant. To account for this local availability, in Section 7.2.1 I develop an analysis of attitude predicates in ABH's framework that i) is compatible with the treatment of belief above and ii) accounts for the introduction of local discourse centers and thus local perspectives. Section 7.2.2 analyzes examples in which *come* is embedded.

### 7.2.1 Attitude predicates

The proffered content of *believe* is given in (59).  $p$  represents the proposal to update the common ground that stores the content of the assertion of which *believe* is a part. The BEL operator in the meaning of *believe* introduces a propositional variable

$p'$ . As with the NEG operator,  $p'$  stores the content of  $\phi$ , the logical form of the embedded clause.  $x$  is a dref for an individual concept, which corresponds to the subject of *believe*.  $t$  is the event time for the believing event. The conditions that make *believe* true are discussed below.

- (59) *believe*:  $\llbracket \text{BEL}_p^{p'}(x, t, \phi) \rrbracket^{(g, h)} = \top$  iff
- $\llbracket \mathbf{max}_{p^{(x, t)}}^{p'}(\phi) \rrbracket^{(g, h)} = \top$  and
  - $\{\mathbf{w}' \mid \langle \langle x', t' \rangle, \mathbf{w}' \rangle \in \text{DOX}'(h(p), \langle h(x), h(t) \rangle)\} \subseteq h(p')$

The first conjunct of (59a) involves an adaptation of the **max** function defined in (33) above. Like **max** above, the adaptation in (59a) introduces a novel propositional dref,  $p'$ . However, unlike **max** above, the adaptation is relativized to  $p^{(x, t)}$ , the perspective of the agent of believe at belief time. It is the anaphoric retrieval of  $p^{(x, t)}$  that creates a new, local discourse center. Both the center and the perspective itself are related to a presupposition triggered by *believe* and given in (60).

- (60) **Presupposition of believe**: For any context  $g$ , individual concept  $x$ , time  $t$ , and formula  $\phi$ ,  $\llbracket \text{BEL}_p^{p'}(x, t, \phi) \rrbracket^{(g, h)}$  is defined iff there is some familiar dref  $p^{(x, t)}$  such that, for all  $\mathbf{w}$  in  $g(p)$ ,
- $$g(p^{(x, t)}) = \{\mathbf{w}' \mid \langle \langle x', t' \rangle, \mathbf{w}' \rangle \in \text{DOX}'(g(p^{cs}), \langle g(x), g(t) \rangle)\}$$

According to (60), *believe* presupposes that there is a familiar information state,  $p^\circ$ , that stores  $x$ 's beliefs at  $t$  in every world in the update proposal,  $p$ . Because  $p$  itself is necessarily a subset of  $p^{cs}$ , (60) requires  $p^{(x, t)}$  to be the beliefs of  $x$  at  $t$  according to the CG. The kind of familiarity required for  $p^{(x, t)}$  is weak familiarity. In essence, this means that (60) requires the context to entail something about  $x$ 's beliefs. This presupposition is trivially satisfied for any suitable agent of belief by default assumptions about all doxastic agents, as discussed in Section 6.2. It is important to note, however, that although all doxastic agents are assumed to have beliefs, no discourse center  $\langle x, t \rangle$  exists prior to the use of the attitude predicate. This is because the attitude event time is needed to define the  $t$  component of the discourse center—to specify the time at which  $x$  has the relevant beliefs.

Once  $p^{(x, t)}$  is anaphorically supplied, the adaptation of **max** in (59a) uses it to constrain the value of  $p'$ , which stores the content of the embedded clause. The adaptation of **max** is just ABH's **max** with one additional underlined conjunct:

- (61) **max** (revised):  $\llbracket \mathbf{max}_{p^{(x, t)}}^{p'}(\phi) \rrbracket^{(g, h)} = \top$  iff
- $\llbracket [p'] \wedge \underline{p'} \subseteq p^{(x, t)} \wedge \phi \rrbracket^{(g, h)} = \top$  and
  - there is no  $h'$  s.t.  $\llbracket [p'] \wedge \underline{p'} \subseteq p^{(x, t)} \wedge \phi \rrbracket^{(g, h')} = \top$  and  $h(p') \subsetneq h'(p')$

(61a) introduces  $p'$ , the dref storing the embedded content. Then, it requires  $p'$  to be a subset of  $p^{(x,t)}$ ,  $x$ 's beliefs at  $t$ . Otherwise, **max** has the same function as ABH's **max**. It requires  $p'$  to store the maximal set of worlds compatible with what is already known about  $x$ 's beliefs and in which  $\phi$ , the embedded content, holds.

The requirement that  $p' \subseteq p^{(x,t)}$  means that existence presuppositions encoded in  $\phi$  must be satisfied in worlds in  $p^{(x,t)}$ . This requirement is motivated by examples involving the anaphoric presuppositions of pronouns embedded under *believe*. Heim (1992), following observations by Karttunen, shows that these can be satisfied according to the beliefs of the attitude holder. An adaptation of one of Heim's classic examples is given in (62).

(62) Stanley mistakenly believes he has a cello. He believes it is a Stradivarius.

In the current system, the embedded content of the second utterance of (62) is just  $\text{STRADIVARIUS}_{p'}(z)$ , where  $z$  is the translation of *it*, and  $p'$  is the propositional variable storing the content of the embedded clause. For  $\text{STRADIVARIUS}_{p'}(z)$  to be felicitous,  $z$  must be defined over  $p'$  worlds. The anaphoric presupposition of *believe* ensures that it is.  $p'$  is required to be a subset of Stanley's anaphorically retrieved doxastic state,  $p^{(x,t)}$ . The first utterance of (62) guarantees that there is a dref for a cello that is defined over all of those worlds, and thus over all worlds in  $p'$ .<sup>14</sup>

The presupposition in (60), and the adaptation of **max** in (61) account for the introduction of a new discourse center as part of interpreting an utterance with *believe*. The individual concept and time drefs are supplied by  $x$  and  $t$ , the subject of *believe* and belief time, respectively. The discourse center's perspective is relevant in the embedded context because  $p'$ , the dref storing the content of  $\phi$ , is required to be a subset of  $p^{(x,t)}$ , which stores her perspective. The current analysis also predicts that the centers introduced by attitude predicates are relevant only in the scope of the attitude.  $p^{(x,t)}$ , storing the beliefs of the local center, is necessary for the interpretation of particular expressions in  $\phi$ . However, when the interpretation of  $\phi$  finishes,  $p^{(x,t)}$  ceases to be relevant for the interpretation of particular expressions, even if  $x$ 's beliefs remain relevant in the discourse more generally. In contrast, the interlocutor's commitments are always relevant because they are always involved in computing the common ground and the at-issue proposal.

An additional effect of requiring  $p' \subseteq p^{(x,t)}$  is to enforce monotonic update on beliefs. This requirement is a corollary to the simplifying assumption requiring monotonic update to  $p^{cs}$  and the CG. If  $p^{(x,t)}$  were updated non-monotonically—if

<sup>14</sup> If other attitude predicates such as *hope* and *wish* are assumed have presuppositions similar to (60), then the current system gets results similar to Heim's (1992). Presuppositions of content embedded under those predicates can be satisfied only according to the commitments of the attitude holder.

worlds are added to it—then this could result in non-monotonic update to  $p^{cs}$  as well.

The second condition in the meaning of *believe*, repeated as (63), is essentially Stalnaker’s definition of belief, expressed using the DOX’ function.

$$(63) \quad \{\mathbf{w}' | \langle \langle x', t' \rangle, \mathbf{w}' \rangle \in \text{DOX}'(h(p), \langle h(x), h(t) \rangle)\} \subseteq h(p')$$

(63) requires that for every world that  $h$  assigns to  $p$ , the update proposal, the worlds that are doxastically accessible to  $x$  are worlds in which  $p'$  holds. In other words, the proposed update is that  $x$ ’s beliefs entail  $p'$ . If the utterance is accepted, then the CS is reduced to  $p$ , so the common ground entails that  $x$ ’s beliefs entail  $p'$ .

### 7.2.2 Come under attitudes

This section analyzes two cases. The first, exemplified in (64), consists of examples in which *come* is embedded under *believe* but is nevertheless speaker anchored.

- (64) [Context: Bob is in New York. He believes that Mary is also in New York. However, unbeknownst to Bob, Mary flew to L.A. last week. They are talking on the phone, and Bob tells Mary that John flew to L.A. two days ago. After she hangs up, Mary says:]  
Bob believes that John came to L.A. two days ago.

In (64), the anchoring implication that the speaker, Mary, is in L.A. holds according to Mary’s beliefs. However, this implication is not part of the Bob’s beliefs. The analysis of (64), ignoring the contribution of *two days ago*, is presented in (65).

- (65) Translation of (64):
- a. **New proposal:**  $[p] \wedge p \subseteq p^{cs} \wedge$
  - b. **Proffered:**  $[z_p] \wedge z = \text{BOB} \wedge \text{BEL}_p^{p'}(z, t,$
  - c. **Embedded:**  $\wedge [x_{p'}] \wedge x = \text{JOHN} \wedge [e_{p'}] \wedge \text{MOVE}_{p'}(x, e) \wedge [\mathbf{p}_{p'}] \wedge \mathbf{p} \leq \text{TRACE}_{p'}(e) \wedge$
  - d. **Anchoring** (to speaker):  $[r'_{p^{\odot*}}] \wedge \text{LOC}_{p^{\odot*}}(x^{\odot*}, t'', r') \wedge$
  - e. **Embedded ctd.:**  $[r_{p'}] \wedge r = r' \wedge \text{TO}_{p'}(r, \mathbf{p}) \wedge [y_{p'}] \wedge y = \text{LA} \wedge \text{AT}_{p'}(r, y) \wedge$
  - f. **Acceptance:**  $[p^{cs}] \wedge p^{cs} = p$

(65) begins with the introduction of a new proposal in  $p$  and the introduction of a dref  $z$  corresponding to Bob. In the final conjunct in (65b), the interpretation of *believe* introduces the dref  $p'$  to store the content of the embedded clause. The embedded content is just the proffered contents of *John came to L.A.*, as represented in (65c) and (65e). Given the way the BEL function is defined above,  $p'$  stores the

maximal set of worlds compatible with the interlocutors' conceptualization of Bob's beliefs in which there is a motion event involving John's motion to L.A.. (59b) says that the BEL relation holds at belief time between Bob and the embedded proposition if and only if  $p'$  holds in all of the worlds in Bob's presumed doxastic state. Thus,  $p$  is a proposal to restrict the CS to worlds where John came to L.A. in all of Bob's doxastic alternatives at those worlds.

Unlike the proffered contents of *come*, the anchoring implication in (65d) is not part of  $p'$  or  $p$ . The first conjunct in (65d) introduces a *dref* for a location  $r'$ . The second conjunct requires that the anchor's *de se* counterpart,  $x^{\odot*}$ , be located at  $r'$  in her belief worlds. The final conjunct sets the value of  $r'$  equal to the value of  $r$ , the destination of subpath  $\mathbf{p}$ , which is in L.A.. Thus, together the anchoring implication and the proffered contents require John's motion path to include a subpath to Mary's self-conceived location: L.A.. The location is self-conceived, rather than actual, because the anchoring implication is a direct update to  $p^{\odot*}$ . It is required to be true only according to the speaker's perspective. As a result, it projects.

The second type of example involves deictic perspective shift under attitudes, as in (6a), repeated as (66) and translated in (67).

(66) [Context: Mark (in San Diego) believes that he is in Berlin. Jeremy, in San Jose, tells Amy about Mark's delusion (that he is in Berlin). Then he says:]  
Mark believes that Mary is coming to Berlin.

(67) Translation of (6a):

- a. **New proposal:**  $[p] \wedge p \subseteq p^{cs} \wedge$
- b. **Proffered:**  $[z_p] \wedge z = \text{MARK} \wedge \text{BEL}_p^{p'}(z_{\langle s, e \rangle}, t,$
- c. **Embedded:**  $\wedge [x_{p'}] \wedge x = \text{MARY} \wedge [e_{p'}] \wedge \text{MOVE}_{p'}(x, e) \wedge [\mathbf{p}_{p'}] \wedge \mathbf{p} \leq$   
 $\text{TRACE}_{p'}(e) \wedge$
- d. **Anchoring** (to speaker):  $[r'_{p_{\langle z, t \rangle}}] \wedge \text{LOC}_{p_{\langle z, t \rangle}}(z^{\langle z, t \rangle}, t'', r') \wedge$
- e. **Embedded ctd.:**  $[r_{p'}] r = r' \wedge \wedge \text{TO}_{p'}(r, \mathbf{p}) \wedge [y_{p'}] \wedge y = \text{BERLIN} \wedge \text{AT}_{p'}(r, y) \wedge$
- f. **Acceptance:**  $[p^{cs}] \wedge p^{cs} = p$

(67) is essentially identical to (64), except for the anchoring implication. In (67), the anchoring implication is relativized to  $p^{\langle z, t \rangle}$ , the perspective of Mark at belief time. This commitment set was made salient as part of the interpretation of *believe*, specifically in the application of **max**, which says that  $p' \subseteq p^{\langle z, t \rangle}$  and thus requires the anaphoric retrieval of  $p^{\langle z, t \rangle}$ . In this case,  $z^{\langle z, t \rangle}$  is Mark's *de se* counterpart rather than the speaker's. Because  $z^{\langle z, t \rangle}$  is assigned Mark's self-conception in each of his doxastically accessible worlds, the anchoring implication says that the motion path is to where Mark believes himself to be, not where he actually is. Importantly, the anchoring implication projects in this case as well. Projection is observed in

a minimal variant of (6a) with sentential negation: *Mark doesn't believe Mary is coming to Berlin*. There, the anchoring implication that Mark is in Berlin according to his own perspective survives, but the proffered content does not.

In these examples, both the anchoring implication and the proffered content update the interlocutors' conceptualization of Mark's commitments. They just do so differently. The proffered content does so by proposing to eliminate assignments that assign worlds to the  $p^{cs}$  in which Mark does not believe that Mary is coming. In contrast, the anchoring implication directly eliminates assignments that assign worlds to  $p^{(z,t)}$  in which Mark believes himself to be somewhere other than Berlin.

As mentioned in Section 7.1, the analysis of anchoring presented here generalizes to other attitudes if those attitudes are assumed to include an anaphoric presupposition similar to that in the meaning of *believe*. For other attitudes, it is necessary to assume that the antecedent for their anaphorically retrieved perspective might consist of something other than beliefs. This is necessary not just for *come* but for presupposition satisfaction generally, as shown in (68) (see Heim 1992).

(68) Stanley wishes he had a cello. He wishes he could sell it for a high price.

In (68), the antecedent of *it* is defined over worlds compatible with Stanley's wishes. The antecedent information state for the second *wish* is necessarily the one made salient during the interpretation of the first utterance. Developing analyses of other attitude predicates in the current framework is a task for future work.

## 8 Information states without (obvious) anchors

There is a set of acceptable examples that is difficult for any theory of the meaning of *come*. In these examples, the anchor is not located at the destination of the motion event and is not said to believe, imagine, etc. herself to be. (69) and (70) illustrate.

(69) [Context: Ann is a spy. She says:]  
Yesterday, I put a hidden video camera in a tree overlooking a meadow in a Moscow park. The next day Vladimir Putin came to the meadow to meet with an associate. I was watching from our base miles away.

(70) (from Fillmore 1975: 67) [Context: The speaker is not on the island.]  
There on the uninhabited island, waves lap upon the shore. Pine trees stand tall against the wind. Occasionally a loon comes to the island to roost.

In (69) the only plausible anchor is the speaker. However, the speaker is not located at the end of the motion path at event time or utterance time, nor does she believe herself to be. In (70), there seems to be no plausible anchor at all. The current analysis appears unable to account for such examples. There is no agent with whose

commitments the anchoring implication is compatible. The same problem arises, *ceteris paribus*, for examples in which motion is to the anchor's home base. Home base examples are acceptable even when the anchor is not at home.

To account for these cases, I appeal to a kind of anchoring for epistemic modals described by Kratzer (2012). Kratzer argues that, like *come*, epistemic modals require a contextually supplied body of information (technically a function from a context to such information) as a modal base. Usually, the modal base is a body of information known to be accessible to some agent(s). However, Kratzer provides examples in which the modal base is determined by a contextually salient body of information that is not the doxastic or epistemic state of any agent. In one of her examples, for instance, it is the information available in a locked filing cabinet (Kratzer 2012: 98-99). The generalization over these examples is that if the context makes a body of information salient enough, lexical items with meanings that generally involve information connected to particular agents can be interpreted with respect to the contextually salient body of information instead.

I propose that in (69) and (70), the content of the discourse raises the salience and relevance of particular bodies of information, which, if taken to represent the perspective of some agent, are compatible with the anchoring implication. In (69), the camera provides a view of the destination location. Thus, the speaker has the visual perceptual access she would if she were at the destination. In (70), by giving a physical description of the island, the speaker indicates that she has perception-like access to the destination. This perception-like access is similar to an imagination state in which the anchor imagines herself at the destination. In general, then, if the anchor indicates that she perceives or imagines how things are at the destination location, she indicates that she can also imagine herself being there.

This characterization of anchoring in these examples is supported by the connection between direct perception and imagination discussed by e.g. Recanati (2007) and Stephenson (2010). They argue that direct perception and *de se* imagining are phenomenologically similar and are encoded similarly in the meanings of linguistic expressions. If this is right, examples such as (69) and (70) both involve deictic perspective shift to an imagination state in which the anchor imagines herself to be at the destination. The shift is signaled by the overt representation of the relevant imagination state itself rather than the use of an attitude predicate. Smith (2009) discusses similar examples of perspectival shift without attitude predicates as part of a general account of perspective-taking.

This approach also provides a way to think about home examples. Following Goddard (1997), possible home bases include not just the anchor's home, but also any location where the anchor is stereotypically assumed to spend a lot of time, such as her work or school. (71), adapted from Goddard (1997:157), exemplifies the home base anchoring to a place of employment.



- (71) [Context: The interlocutors work at the shop, but are not there now.]  
It's a pity John's coming to the shop tomorrow, when neither of us will be there.

The range of possible home bases suggests that a home base is a place that the anchor knows well enough to picture. If this is right, then even more than (69) and (70), home base examples are like Kratzer's filing cabinet example. In a home base example, the actual content of the imagination state is not provided. Rather, its existence is assumed in virtue of the stereotypical relation between anchors and their home bases. Stereotypicality is important here; even if the anchor is known to spend very little time at her home, *John came to her home* is still acceptable. On the present analysis, then, home base examples also involve imaginative deictic perspective shift, but it is deictic perspective shift to a perspective the anchor is stereotypically assumed to have access to, rather than one made salient in the context.

If this analysis turns out to be correct, it is an additional reason to prefer the present approach over previous analyses, which include the anchor's home base as part of disjunctive list of possible anchoring locations. However, nothing in the present account hinges on this approach to home base examples. If it turns out to be unjustified, the anchoring implication can simply be augmented with a function HOME from an individual to her home base(s) and a disjunct allowing these to be possible locations of  $r'$ , following Oshima (2006a,b,c).

## 9 Conclusion

In this paper, I make two generalizations about the anchoring implication of *come*. The anchoring implication is perspectival, and the anchoring implication is not-at-issue, informative, and projective. I propose a unified analysis of these generalizations. The argument rests on the ideas that interlocutors keep track of individual perspective holders and their perspectives, and that the interpretation of particular expressions involves anaphorically retrieving and directly updating these perspectives. Combined, these two innovations predict that perspectival content is not-at-issue, informative, and projective, precisely because it is perspectival. This approach is empirically superior to previous analyses of deictic motion verbs. It also suggests a way to analyze other perspectival expressions, such as appositives and attitude predicates, that accounts for their perspectival character.

## References

- Amaral, Patricia, Craige Roberts & E. Allyn Smith. 2007. Review of the *The Logic of Conventional Implicatures* by Chris Potts. *Linguistics and Philosophy* 30.

- 707–749.
- Anand, Pranav. 2011. Suppositional projects and subjectivity. Ms. University of California Santa Cruz.
- Anand, Pranav & Andrew Nevins. 2004. Shifty operators in changing contexts. In R. Young (ed.), *Semantics and Linguistic Theory (SALT) XIV*, 20–37.
- AnderBois, Scott, Adrian Brasoveanu & Robert Henderson. 2015. At-issue proposals and appositive impositions in discourse. *Journal of Semantics* 32. 93–138. Doi: 10.1093/jos/fft014.
- Barlew, Jefferson. 2015a. Point of view and the semantics of spatial expressions in Mushunguli and English. *Journal of Semantics* Doi: 10.1093/jos/ffu018.
- Barlew, Jefferson. 2015b. Polysemy in the meaning of come: Two senses with a common conceptual core. Presentation at Formal Semantics Meets Cognitive Semantics, Radboud University, Nijmegen, The Netherlands.
- Barlew, Jefferson. 2015c. *Coming* to a doxastic agent. In *The Proceedings of Sinn und Bedeutung 19*, Göttingen, Germany: Georg August University.
- Chierchia, Gennaro & Sally McConnell-Ginet. 1990. *Meaning and grammar*. Cambridge, MA: MIT Press.
- Cinque, Guglielmo. 1972. Fillmore’s semantics of “come” revisited. *Lingua e Stile* 7. 575–599.
- Clark, Eve V. 1974. Normal states and evaluative viewpoints. *Language* 50(2). 316–332.
- Davies, Mark. 2008. The corpus of contemporary american english: 450 million words, 1990-present. <http://corpus.byu.edu/coca/>.
- Deal, Amy Rose. 2012. Nez Perce embedded indexicals. In Hannah Greene (ed.), *Semantics of Under-Represented Languages in the Americas (SULA) 7:*, 23–40. Amherst, MA: University of Massachusetts.
- Di Meola, Claudio. 2003. Non-deictic uses of the deictic motion verbs *kommen* and *gehen* in German. In Friedrich Lenz (ed.), *Pragmatics and Beyond New Series*, vol. 112, 41–68. John Benjamins.
- Doron, Edit. 1991. Point of view as a factor of content. In Steven Moore & Adam Zachary Wyner (eds.), *Semantics and Linguistic Theory (SALT) I*, Cornell University Working Papers in Linguistics.
- Eckardt, Regine. 2011. Particles as speaker indexicals in free indirect discourse. *Sprache und Datenverarbeitung* 35(2-1). 99–119.
- Eckardt, Regine. 2014. *The semantics of free indirect discourse*. Leiden, The Netherlands: Brill.
- Farkas, Donka. 2002. Specificity distinctions. *Journal of Semantics* 19. 213–243.
- Farkas, Donka F. & Kim Bruce. 2010. On reacting to assertions and polar questions. *Journal of Semantics* 27. 81–118.

- Fillmore, Charles J. 1965. Entailment rules in a semantic theory. Project on Linguistic Analysis Report No. 10, The Ohio State University.
- Fillmore, Charles J. 1966. Deictic categories in the semantics of 'come'. *Foundations of Language* 2(3). 219–227.
- Fillmore, Charles J. 1975. *Santa Cruz lectures on Deixis*. Bloomington, Indiana: Indiana University Linguistics Club.
- Gathercole, Virginia C. 1978. Towards a universal for deictic verbs of motion. In Anthony Staiano & Feryal Yavas (eds.), *Kansas Working Papers in Linguistics*, vol. 3, 72–88. University of Kansas Department of Linguistics.
- Geach, Peter. 1962. *Reference and Generality: An Examination of Some Medieval and Modern Theories*. Ithaca, NY: Cornell UP.
- Goddard, Cliff. 1997. The semantics of coming and going. *Pragmatics* 7(2). 147–162.
- Grice, H. P. 1975. Logic and conversation. In Peter Cole & Jerry Morgan (eds.), *Syntax and semantics 3: speech acts*, New York: Academic Press.
- Groenendijk, Jeroen & Martin Stokhof. 1991. Dynamic predicate logic. *Linguistics and Philosophy* 14. 39–100.
- Gunlogson, Christine. 2001. *True to Form: Rising and Falling Declaratives as Questions in English*: University of California Santa Cruz dissertation.
- Gunlogson, Christine. 2002. Declarative questions. In B. Jackson (ed.), *Semantics and Linguistic Theory (SALT) XII*, 124–143. Ithaca, NY: Cornell University.
- Harris, Jesse A. & Christopher Potts. 2009. Perspective shifting with appositives and expressives. *Linguistics and Philosophy* 32(6). 523–552.
- Heim, Irene. 1982. *The Semantics of Definite and Indefinite Noun Phrases*: University of Massachusetts, Amherst dissertation.
- Heim, Irene. 1992. Presupposition projection and the semantics of attitude verbs. *Journal of Semantics* 9. 183–221.
- Hockett, C. F. 1990. Bring, take, come, and go. *Journal of English Linguistics* 23. 239–244.
- Israeli, Alina. 2002. Russian verbs of motion: Focus, deixis, and viewpoint. *Cahiers Chronos* 10. 97–118.
- Kamp, Hans. 1981. A theory of truth and semantic representation. In J. Groenendijk, T. Janssen & M. Stokhof (eds.), *Formal Methods in the Study of Language*, 277–322. Amsterdam: Mathematische Centrum.
- Kaplan, David. 1989. Demonstratives. In J. Almog, J. Perry & H. Wettstein (eds.), *Themes from Kaplan*, 481–563. New York: Oxford University Press.
- Karttunen, Lauri. 1974. Presupposition and linguistic context. *Theoretical Linguistics* 1(1-3). 181–194.
- Karttunen, Lauri. 1976. Discourse referents. *Syntax and Semantics: Notes from the Linguistic Underground* 7. 363–385.

- Karttunen, Lauri & Stanley Peters. 1979. Conventional implicature. In Choon-Kyu Oh & David A. Dinneen (eds.), *Syntax and semantics*, vol. 11, 1–56. Blackwell.
- Koev, Todor K. 2013. *Apposition and the Structure of Discourse*: Rutgers dissertation.
- Koev, Todor K. 2015. Apposition projection and its exceptions. Ms. Heinrich Heine University.
- Kracht, Marcus. 2002. On the semantics of locatives. *Linguistics and Philosophy* 25. 157–232.
- Kracht, Marcus. 2008. The fine structure of spatial expressions. In Anna Asbury, Jakub Dotlacil, Berit Gehrke & Rick Nouwen (eds.), *Syntax and Semantics of Spatial P*, 35–62. Amsterdam/Philadelphia: Benjamins.
- Kratzer, Angelika. 2012. *Modals and Conditionals*. Oxford: Oxford UP.
- Langendoen, D. Terence & Harris B. Savin. 1971. The projection problem for presuppositions. In Charles J. Fillmore & D. Terence Langendoen (eds.), *Studies in Linguistic Semantics*, New York: Holt, Rinehart, and Winston.
- Lasersohn, Peter. 2005. Context dependence, disagreement, and predicates of personal taste. *Linguistics and Philosophy* 28(6). 643–686.
- Lasersohn, Peter. 2008. Quantification and perspective in relativist semantics. *Philosophical Perspectives* 22. 305–337.
- Lauer, Sven. 2013. *Towards a Dynamic Pragmatics*: Stanford University dissertation.
- Levinson, Stephen C. 2003. *Space in Language and Cognition: Explorations in Cognitive Diversity*. Cambridge: Cambridge University Press.
- Lewis, David. 1979a. Attitudes *de dicto* and *de se*. *The Philosophical Review* 88(4). 513–543.
- Lewis, David. 1979b. Scorekeeping in a language game. *Journal of Philosophical Logic* 8. 339–359.
- McCready, Eric S. 2010. Varieties of conventional implicature. *Semantics and Pragmatics* 3(8). 1–57.
- Mitchell, Jonathan Edward. 1986. *The Formal Semantics of Point of View*: University of Massachusetts dissertation.
- Morgan, Jerry. 1970. On the criterion of identity for noun phrase deletion. In *Chicago linguistics society (cls)* 6, 380–389.
- Nakazawa, Tsuneko. 2007. A typology of the ground of deictic motion verbs as path-conflating verbs: The speaker, addressee, and beyond. *Poznań Studies in Contemporary Linguistics* 43(2). 59–82.
- Nakazawa, Tsuneko. 2009. A typology of the path of deictic motion verbs as path-conflating verbs: The entailment of arrival and the deictic center. *Poznań Studies in Contemporary Linguistics* 45(3). 385–403.
- Nouwen, Rick. 2007. On appositives and dynamic binding. *Journal of Language and Computation* 5(1). 87–102.

- Oshima, David Y. 2006a. GO and COME revisited: What serves as a reference point? In *Berkeley Linguistics Society (BSL)* 32, Berkeley, CA.
- Oshima, David Y. 2006b. Motion deixis, indexicality, and presupposition. In M. Gibson & J. Howell (eds.), *Proceedings of Semantics and Linguistic Theory (SALT) XVI*, 172–189. Ithaca, NY: Cornell UP.
- Oshima, David Y. 2006c. *Perspectives in Reported Discourse*: Stanford University dissertation.
- Partee, Barbara H. 1984. Nominal and temporal anaphora. *Linguistics and Philosophy* 7. 243–286.
- Partee, Barbara H. 1989. Binding implicit variables in quantified contexts. In C. Wiltshire, R. Graczyk & B. Music (eds.), *Chicago Linguistic Society (CLS)* 25, 342–365.
- Potts, Christopher. 2005. *The Logic of Conventional Implicatures*. Oxford: Oxford University Press.
- Radden, Günter. 1996. Motion metaphorized: The case of coming and going. In Eugene H. Casad (ed.), *Cognitive Linguistics in the Redwoods: The Expansion of a New Paradigm in Linguistics*, 423–458. Berlin, New York: Mouton de Gruyter.
- Rauh, Gisa. 1981. On coming and going in English and German. *Papers and Studies in Contrastive Linguistics* 13. 53–68.
- Recanati, Francois. 2007. Imagining *de se*. Presentation at Mimesis, Metaphysics, and Make-believe: A Conference in honor of Kendall Walton.
- Roberts, Craige. 1989. Modal subordination and pronominal anaphora in discourse. *Linguistics and Philosophy* 12. 683–721.
- Roberts, Craige. 1996. Anaphora in intensional contexts. In Shalom Lappin (ed.), *The Handbook of Contemporary Semantic Theory*, 215–246. Wiley.
- Roberts, Craige. 1996/2012. Information structure in discourse: Towards an integrated formal theory of pragmatics. *Semantics and Pragmatics* 5(6). 1–69. <http://dx.doi.org/10.3765/sp.5.6>. First published in Jae Hak Yoon and Andreas Kathol (eds.) *Ohio State University Working Papers in Linguistics* Volume 49.
- Roberts, Craige. 2002. Demonstratives as definites. In *Information Sharing: Reference and Presupposition in Language Generation and Interpretation*, Stanford: CSLI.
- Roberts, Craige. 2003. Uniqueness in definite noun phrases. *Linguistics and Philosophy* 26. 287–350.
- Roberts, Craige. 2014. Indexicals: *De se* semantics and pragmatics. Ms., The Ohio State University.
- Roberts, Craige. 2015. The character of epistemic modality: Evidentiality, indexicality, and what's at issue. Manuscript. The Ohio State University.
- Roßdeutscher, Antje. 2000. Lexikalisch gestützte formale Textinterpretation. Habilitationsschrift, Universität Stuttgart.

- Schlenker, Phillippe. 2003. A plea for monsters. *Linguistics and Philosophy* 26. 29–120.
- Sells, Peter. 1987. Aspects of logophoricity. *Linguistic Inquiry* 18(3). 445–79.
- Smith, Carlota S. 2009. Accounting for subjectivity (point of view). In Richard P. Meier, Helen Aristar-Dry & Emilie Destruel (eds.), *Text, time, and context*, 371–393. The Netherlands: Springer.
- Speas, Peggy & Carol Tenny. 2003. Configurational properties of point of view roles. In Anna Maria Di Sciullo (ed.), *Asymmetry in grammar*, vol. 1, Amsterdam: John Benjamins.
- Stalnaker, Robert. 1973. Presuppositions. *Journal of Philosophical Logic* 2(4). 447–457.
- Stalnaker, Robert. 1978. Assertion. *Syntax and Semantics* 9. 315–332.
- Stalnaker, Robert C. 2008. *Our Knowledge of the Internal World*. Oxford: Oxford University Press.
- Stephenson, Tamina. 2010. Vivid attitudes: Centered situations in the semantics of *remember* and *imagine*. In *Semantics and Linguistic Theory (SALT) 20*, 147–160.
- Talmy, Leonard. 1985. Lexicalization patterns: Semantic structure in lexical forms. In Timothy Shopen (ed.), *Language Typology and Syntactic Description*, vol. 3, Cambridge: Cambridge University Press.
- Taylor, Kenneth A. 1988. We've got you coming and going. *Linguistics and Philosophy* 11(4). 493–513.
- Tonhauser, Judith. 2012. Diagnosing (not-)at-issue content. In *Semantics of Under-represented Languages of the Americas (SULA) 6*, 239–254. Amherst: UMass.
- Tonhauser, Judith. 2015. Are 'informative presuppositions' presuppositions? *Language and Linguistics Compass* 9(2). 77–101.
- Tonhauser, Judith, David Beaver, Craige Roberts & Mandy Simons. 2013. Towards a taxonomy of projective content. *Language* 89(1). 66–109.
- Wilkins, David P. & Deborah Hill. 1995. When “go” means “come”: Questioning the basicness of basic motion verbs. *Cognitive Linguistics* 6. 209–259.
- Williams, John L. 1996. Tezoatlán Mixtec motion and arrival verbs. *International Journal of American Linguistics* 62(3). 289–305.
- Wunderlich, Dieter. 1991. How do prepositional phrases fit into compositional syntax and semantics? *Linguistics* 29. 591–622.
- Zwarts, Joost. 2005. Prepositional aspect and the algebra of paths. *Linguistics and Philosophy* 28. 739–779.
- Zwarts, Joost & Yoad Winter. 2000. Vector space semantics: A model-theoretic analysis of locative prepositions. *Journal of Logic, Language and Information* 9. 161–211.

Perspectives in discourse

Jefferson Barlew  
Department of Linguistics  
222 Oxley Hall  
1712 Neil Ave  
Columbus, OH 43210  
[barlew.1@osu.edu](mailto:barlew.1@osu.edu)

Main text word count (excluding references and abstract): 17,804