

The semantics and pragmatics of perspectival expressions in English and Bulu: The case
of deictic motion verbs

Dissertation

Presented in Partial Fulfillment of the Requirements for the Degree
Doctor of Philosophy
in the Graduate School of The Ohio State University

By

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Graduate Program in Linguistics

The Ohio State University

2017

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Abstract

Researchers have long had the intuition that interpreting deictic motion verbs involves perspective-taking (see e.g. Fillmore 1965, 1966). In some sense, this perspective-taking is what differentiates deictic motion verbs from other motion verbs. It's what makes them "deictic". In this dissertation, I investigate the role perspective-taking plays in the interpretation of two deictic motion verbs in two typologically unrelated languages, the verbs *come* in English and *zu* 'come' in Bulu, a Bantu language of Cameroon. The investigation reveals that *zu* 'come' represents a previously undocumented type of deictic motion verb and that, differences in meanings notwithstanding, the interpretation of both verbs does involve perspective-taking.

Part I of the dissertation consists of detailed investigations of the meanings of *come* and *zu* 'come'. Conducting detailed investigations of their meanings makes it possible to state precisely the connection between their lexical semantics and pragmatics and perspective taking. Here it is. Interpreting either *come* or *zu* 'come' requires the retrieval of a contextually supplied perspective, a body of knowledge that represents the way a particular individual imagines things to be. For *come* or *zu* 'come' to be used acceptably, it must be true, according to the retrieved perspective, that the individual herself is located at the destination of the motion event being described. If, according to the retrieved perspective, the individual does not self-ascribe being located at the destination, then neither *come* nor *zu* 'come' can be used. This is why their use is felt to involve perspective-taking. In addition to describing a motion event, an interlocutor using a deictic motion verb also communicates something about where a particular individual imagines herself to be located.

Based on this new understanding of what it is for deictic motion verbs to be perspectival, in Part II of the dissertation I take the first steps toward developing a formal framework

for the analysis of perspectival expressions. I follow recent work (e.g. Farkas and Bruce 2010; Lauer 2013; Roberts 2014) and assume that perspectival content plays a significant role in both the structure of the discourse and the interpretation of particular expressions. I assume that just as interlocutors keep track of a Stalnakerian (1978) common ground, they also keep track of bodies of information representing the perspectives of individuals. I model this formally by embedding central elements of Roberts's (2014) theory of doxastic perspectives in AnderBois, Brasoveanu, and Henderson's (2015) dynamic semantics. The analyses of *come* and *zu* 'come' developed in this framework both account for the novel data better than previous accounts and establish, for the first time, an explicit, formal connection between the lexical semantics of deictic motion verbs and the intuition that their interpretation involves perspective-taking. More importantly, by embedding elements of Stalnaker (2008) and Roberts' theories in AnderBois et al.'s semantics, this dissertation takes the first steps toward creating a formal framework for the analysis of perspectival content in general, in the spirit of Fillmore 1975, Mitchell 1986, Sells 1987, and Speas and Tenny 2003.

Acknowledgements

Linguistics is my second career. I made the transition after a decade teaching secondary school in Signal Mountain, Tennessee. Here I want to thank the people who helped me make the transition to linguistics and those who have, in one way or another, made earning a Ph.D. in linguistics possible.

For introducing me to the joy of doing linguistics and for believing in a secondary school teacher who wanted to be a linguist, thanks to Geert Booij and Steve Levinson. At the LSA Summer Institute in 2009, Geert and Steve taught the first linguistics courses I ever took, and they were gracious enough to write letters of recommendation without which I wouldn't have been considered by any graduate school. With respect to applications, thanks to Great Uncle Herman for coming out of retirement to read and critique many cover letter drafts. Thanks also to Bob and Judith Walter, who gave me a place to live after I sold my house in Signal Mountain, and especially to Bob who has always given me rock solid advice about how to be a better educator and a better person.

I also want to thank my family, especially my parents, Mike and Virginia Barlew. They have supported me as I pursued various career and personal goals, including some unconventional ones. Their support has been both tangible—helping with moves, etc.—and intangible—believing that I could realize the goals I set for myself, and be whatever I chose to be.

In the course of completing the Ph.D. itself, the support of my mentors and colleagues at OSU has been invaluable. I owe the greatest debt to my two Doktormütter, Craig Roberts and Judith Tonhauser. They have been my co-advisors through my entire graduate career, and they have helped shape the way I think about all things linguistic, from the role of the context in interpretation to how to treat data properly to how to develop formal analyses.

Their generosity with their time and insights knows no bounds. Only I have read more of my writing than they have, and not by much. I also owe a great deal to my third unofficial advisor, Peter Culicover. I have worked with Peter throughout my entire graduate career as well, and his thinking informs both my work and my professional development. Like Craige and Judith, Peter is generous with his time and always willing to help. I am grateful to my two other committee members, Marie Catherine de Marneffe and Zhiguo Xie, both of whom had made many helpful suggestions along the way that improved this dissertation. Other faculty members have shaped my thinking as well. I'm grateful to Carl Pollard for teaching me how to build sound formal systems and to Dave Odden for introducing me to Bantu languages. Both gave their time and advice graciously. To Shari Speer, thanks for welcoming my participation in "Speerlab" for a couple of years, and for helping me develop an understanding of and appreciation for experimental methodologies. My thinking has also been shaped by interactions with several linguists outside our department. Thanks especially to Marcus Kracht and Joost Zwarts for sometimes lengthy discussions about the meanings of spatial expressions.

I also want to thank Shari Speer for her work as OSU's department chair. As far as I can tell, Shari's only agenda as chair is to help as many members of the department as possible to be as successful as possible. She does what is often a thankless job skillfully and selflessly. Other departmental staff deserve thanks as well. Julie McGory shepherds the undergraduate program with great care, and is a willing friend to graduate TAs. She's happy to talk about teaching, career trajectory, and personal struggles any time, sometimes over wine. Jim Harmon is a model for us all due to the grace, kindness, and cheerfulness with which he handles even the dumbest IT requests. Thanks also the OSU Department of Linguistics, Division of Arts and Humanities, and Graduate Student Council for providing financial support that made research with language informants and travel to conferences possible.

I owe personal and professional debts of gratitude to many OSU students. For camaraderie in the early years, thanks to Rachel Burdin, Shontael Elward, Eric Ruppe, and Alex Wein. For great co-teaching in the department's Summer Linguistics Institute for Youth Scholars program, thanks to Katie Carmichael, Jane Mitch, Alec Buchner, and Zack De. For helpful conversations about semantics and pragmatics, related both to this dissertation and to other projects, thanks to Scott Martin, Chris Worth, and Michelle Dionisio. For great collaboration and for teaching me a lot about a lot of things, thanks to Murat Yasavul and Emily Clem. Murat is the best person in the department to commiserate with about anything, and developing elicitation questions and conducting elicitation sessions with Emily was always fun, interesting, and useful. Finally, thanks to Eric Snyder for teaching me about philosophy, pushing me to understand a domain outside my wheelhouse, and being a great co-author and friend.

With respect to this dissertation, I would like to thank Carly Dickerson for helping me translate consent materials into French. For her work as a language consultant over many years I give my heartfelt thanks to Marie Needham. She has shared her language, her culture, her family, and her country with me over many years. And she has put up with an incredible number of repetitive, and sometimes quite odd, questions. Thanks to my Cameroonian consultants as well - Minko Dorothee, Mnanga Marie Therese, Ntouaba Alexis, Ebale Dieudomme Guy, Obam Guy, Eno Bedel, and Nlate Mendo Jeanne Helene, - for their patience and willingness to share their language. And a heartfelt thanks to Mama Dorothee and Mama Sita, who always said that any son of Marie Needham was a son of theirs as well. Thank you for opening your home to a stranger with warmth and compassion. For your hospitality, thanks to Yvan Obah, Gaelle, Chanel, and Mira. To the children—Bebe Minga, Pulpo, and Mnanga—thank you for opening your hearts.

On the theoretical side, I owe a special intellectual debt to Craige Roberts, Eric Snyder, and Greg Kierstead. Together, we formed the OSU Perspectives Project, a research group dedicated to studying the meanings of perspectival expressions within and across

languages. Though Greg eventually left us for greener pastures, the work with Craige and Eric continues to the present. Many of the ideas presented in this dissertation were forged and/or sharpened in discussions with this group, though I suspect neither Craige nor Eric would agree with everything presented below. Finally, I am thankful to the National Science Foundation for supporting this work financially (NSF Doctoral Dissertation Research Improvement Grant BCS-1528394 to Judith Tonhauser, PI, and Craige Roberts and Jefferson Barlew Co-PIs).

To my Columbus family, thank you for embracing me as one of your own. To Aunt Susan and Uncle Roger Hill, thank you for giving us a place to live when we came back to Columbus from Cincinnati. To my mother-in-law, Linda Greco, thank you for letting us live with you not once but twice—both when our house flooded and as I was finishing up and job hunting.

Most of all, though, thank you to my darlin', Laurie, without whose support, love, and counsel I would never have made it through. You truly made this whole thing possible.

I dedicate this dissertation to the memories of my grandparents, Bill and Bernice Barlew and A. C. and Alice Wilson, and my uncle, Jack Wilson. I wish y'all could have been here with me.

Vita

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Barlew, J. (in press). Focus on numbers. *Linguistics & Philosophy*.

Barlew, J. (2016). Anchored to what? An anaphoric approach to frames of reference. In Faytak, M., K. Neely, M. Goss, E. Donnelly, N. Baier, J. Heath, and J. Merrill, editors. *The Proceedings of the 39th Annual Meeting of the Berkeley Linguistics Society (BLS)*. (pp. 334-348). Berkeley, CA.

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Fields of Study

Major Field: Linguistics

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Context dependence in the meanings of perspectival expressions

In this dissertation, I investigate the meanings of a class of expressions that I call **perspectival expressions**, following Mitchell (1986). Perspectival expressions are quite common in everyday speech (Mitchell, 1986; Speas and Tenny, 2003; Bylinina et al., 2014). Two examples include *to the right* and *likely*. The perspectival nature of the meanings of these expressions can be seen in the following scenario. Imagine that Leslie and Ben are at a soccer match, sitting on opposite sides of the field. Upon noticing a broken goal, Leslie might say *the goal to the right is broken*, while Ben might describe the same situation by saying *the goal to the left is broken*. Now, imagine that Leslie has heard a weather report, while Ben has not. Based on what she knows, Leslie might say *rain is likely*. In contrast, Ben, looking at the currently blue sky, might say *rain is unlikely*. In this scenario, Leslie and Ben's uses of *to the right* and *likely* depend on their perspectives.

Examining examples like these more closely suggests that when interlocutors interpret an utterance with a perspectival expression, they either retrieve information about the relevant perspective from the context, or else they learn something about the relevant perspective. For example, in the scenario described above, imagine that Leslie and Ben are talking to each other on the phone. When Leslie says *the goal to the right is broken*, Ben must determine whose perspective Leslie is adopting, his or her own, in order to interpret the utterance correctly and identify the goal in question. In other words, to interpret the utterance, he must retrieve the intended perspective from the context. Then, when Leslie says *rain is likely*, Ben learns something about her perspective. He learns that according to

her knowledge, beliefs, expectations, etc., there's a high probability of rain. He also learns that Leslie's knowledge and/or beliefs differ from his own, since he had no reason to think rain was likely before talking to Leslie.

Exactly what kind of information does an interlocutor retrieve from the context when she interprets a perspectival expression? Does interpreting perspectival expressions involve the same kind of contextual information from expression to expression and language to language? Or does interpreting different perspectival expressions involve different kinds of contextual information within and across languages? This dissertation addresses these and related questions.

With respect to the first question, I argue that interpreting a perspectival expression requires retrieving from the context a **perspective**, roughly a body of information representing the way an individual sees, understands, or experiences the world. The interpretation of a perspectival expression either draws on or contributes to this body of information. Informal support for this position comes from considering a minimal variant of the soccer match scenario given above. This time, imagine that Ben has no idea where Leslie is. For all he knows, she is not even at the game. As a result, when Leslie says *the goal to the right is broken*, Ben is not able to interpret Leslie's utterance with respect to her perspective. Either he will assume that Leslie knows where he is and is adopting his perspective, or he will find the utterance uninterpretable—he will not be able to identify the goal in question. To interpret the utterance with respect to Leslie's perspective, then, Ben needs to know not just who is speaking (i.e. whose perspective is relevant) but also where she is and which way she is facing. In other words, he needs to retrieve specific information about Leslie's visuo-spatial perspective (for extended discussion and a formal proposal, see Chapter 7 and Barlew 2016b, respectively).

With respect to the second question, I argue that there are different types of perspectives, and that the type of perspective retrieved from the context depends on the perspectival expression in question. As preliminary evidence, consider again Leslie's second utterance,

rain is likely. Here, which way Leslie is facing is not necessarily relevant to interpreting the utterance, and interpreting the utterance does not reveal anything about Leslie’s spatial orientation. Instead, it reveals something about the state of her knowledge, beliefs, expectations, etc. These represent a different kind of perspective from that relevant for the interpretation of perspectival spatial expressions such as *to the right*.

The hypothesis advanced in this dissertation, then, is that interpreting a perspectival expression involves the retrieval of a contextually supplied perspective, and that different perspectival expressions depend for their interpretation on perspectives of different kinds. To investigate this hypothesis, I analyze the meanings of two perspectival expressions in two typologically unrelated languages and then compare the analyses developed to previous accounts of perspectival expressions. The expressions analyzed here are the deictic motion verbs *come* in English and *zu* ‘come_{zu}’ in Bulu, a Bantu language spoken in southern Cameroon.^{1,2}

For a rough idea of what deictic motion verbs are, and why they should be considered perspectival expressions, consider an early account of the meaning of *come* due to Fillmore (1965). According to Fillmore (1965) *come* denotes motion to the location of the speaker, the addressee, or both. (1)-(2) provide evidence suggesting that this claim applies to both *come* and *zu* ‘come_{zu}’.³

¹I subscript the English translation of *zu* ‘come_{zu}’ with ‘*zu*’ to remind readers that the meaning of *zu* ‘come_{zu}’ differs from the meaning of English *come*.

²There are also non-deictic uses, at least for *come* in English (Radden, 1996; Barlew, 2015a) and *kommen* ‘come’ in German (Rauh 1981; Di Meola 2003; Antje Roßdeutscher p.c.). These uses are ignored throughout, as are figurative or metaphorical extensions of both uses (Clark, 1974). Extending this analysis to account for figurative or metaphorical uses is a task for future work, as is determining whether or not *zu* ‘come_{zu}’ has non-deictic, figurative, or metaphorical uses.

³Abbreviations used to gloss Bulu examples can be found in Appendix A. Throughout, ‘#’ indicates that an utterance is unacceptable in a context, ‘??’ indicates that it is marginal, ‘!’ indicates that it is semantically anomalous, and ‘%’ indicates that it receives variable judgments across consultants or across different elicitation sessions with the same consultant.

- (1) [Context: **Abondo (speaker) and Bella (addressee) are in Avebe (destination)**. Guy is in Ebolowa (source). Guy leaves Ebolowa, traveling to Avebe. As he is traveling, Abondo tells Bella:]
- a. Guy is **coming** to Avebe.
- b. Guy a **zu** Avebe.
 Guy 3.SG.PRS **come_{zu}** LOC.Avebe
 ‘Guy is coming to Avebe.’
- (2) [Context: **Abondo (speaker) and Bella (addressee) are in Avebe**. Guy is in Ebolowa (source). Guy leaves Ebolowa, traveling to Kribi (destination). As he is traveling, Abondo tells Bella:]
- a.#Guy is **coming** to Kribi.
- b.#Guy a **zu** e-Kribi.
 Guy 3.SG.PRS **come_{zu}** LOC-Kribi
 Intended: ‘Guy is coming to Kribi.’

In (1), Guy travels to Avebe, the location of both the speaker and the addressee. In that case, the use of *come* or *zu* ‘*come_{zu}*’ is acceptable. In (2), he travels to a different location, and the use of *come* or *zu* ‘*come_{zu}*’ is not acceptable. These data provide initial evidence that *come* and *zu* ‘*come_{zu}*’ are both deictic motion verbs in Fillmore’s (1965) sense of the term.

Fillmore’s (1965) early attempt to analyze the meaning of *come* in terms of just the speaker and addressee was ultimately recognized as too restrictive. Fillmore (1975) shows that in some cases *come* is used to describe motion to the location of an individual that is not an interlocutor. However, a generalized form of the claim can still be used to define deictic motion verbs. A **deictic motion verb** denotes motion along a path defined in terms of the location of a contextually supplied individual or a member of a contextually supplied group of individuals (Fillmore, 1965, 1966, 1975; Wilkins and Hill, 1995; Talmy, 1975, 2000; Goddard, 1997; Oshima, 2006a,b; Nakazawa, 2007, 2009). I call the relevant

individual the **anchor** borrowing the term from Levinson (2003) and Roberts (2014). As Fillmore's (1965) original definition suggests and examples (1)-(2) show, the anchor is often an interlocutor.

In addition to providing a preliminary definition of deictic motion verbs, Fillmore (1965) also expresses an intuition that has been shared by researchers ever since. The intuition is this. When a speaker uses *come* to describe motion to her location, as in (1)-(2), she speaks from her own perspective; in contrast, when she uses *come* to describe motion to someone else's location, as in (3), she adopts that person's perspective.

(3) [Context: Jane is at home talking to Sue on the phone. Sue says:]

John is coming to your house later.

According to Fillmore, when Sue uses *come* in (3) to describe motion to Jane's location, she adopts Jane's perspective. More generally, when a speaker uses *come* to describe motion to the location of a particular anchor, she adopts the anchor's perspective.

Although they differ in many details, as discussed in Chapter 5, previous analyses of *come* share Fillmore's (1965) intuition that the anchor of *come* is someone whose perspective the speaker adopts (Fillmore, 1966, 1975; Cinque, 1972; Mitchell, 1986; Sells, 1987; Taylor, 1988; Goddard, 1997; Speas and Tenny, 2003; Oshima, 2006a,b; Bylinina et al., 2014, 2015). They also share a second idea: that the interpretation of *come* depends just on retrieving the anchor's identity or location from the context (Fillmore, 1965, 1966, 1975; Cinque, 1972; Mitchell, 1986; Sells, 1987; Taylor, 1988; Speas and Tenny, 2003; Oshima, 2006a,b; Bylinina et al., 2014, 2015). That is to say, semantically, these analyses reduce contextually supplied perspectival content (as relevant for the interpretation of deictic motion verbs) to the anchor herself or, in some cases, her location. This second assumption makes the perspectival content of *come* mysterious, though, because it is possible to know who the anchor is and where she is without knowing much of anything about her perspective—how

she understands things to be. Why, then, must the speaker “adopt” the anchor’s perspective when using *come*?

The analysis developed in this dissertation diverges from previous accounts by rejecting the idea that the perspectival content relevant for interpreting deictic motion verbs consists of the just anchor and/or her location. Instead, following the approach to perspectival expressions described above, I hypothesize that the interpreting of *come* and *zu* ‘come_{zu}’ involves retrieving a perspective, a contextually supplied body of information that represents how the anchor experiences, sees, or understands the world. I develop analyses of the meanings of *come* and *zu* ‘come_{zu}’ based on this hypothesis.

In addition, I argue that the kind of perspective involved in the interpretation of *come* and *zu* ‘come_{zu}’ is doxastic, not visuo-spatial. Unlike perspectival spatial expressions, when interpreting deictic motion verbs, the interlocutors need not consider which direction the perspective holder (i.e. the anchor) is facing. Instead, the data presented here show that the interpretation of deictic motion verbs depends instead on contextually supplied information about what the anchor knows or believes. Specifically, simplifying just a little, for the use of *come* or *zu* ‘come_{zu}’ to be acceptable, the anchor must be located at the destination of the motion event according to her own beliefs, knowledge, expectations, etc.—according to her own perspective. In other words, interpreting *come* and *zu* ‘come_{zu}’ involves the same kind of information that interpreting *likely* does, the same kind that is plausibly involved in the interpretation of epistemic modals (see e.g. Stephenson 2007, Yalcin 2007, and Roberts 2015). Technically, this means that interpreting a deictic motion verb requires the retrieval of what I will call a **doxastic perspective**, following Roberts (2014, 2015). For reasons made clear in Chapter 6, doxastic perspectives are modeled as sets of centered worlds. For now, it is sufficient to think of a doxastic perspective as the set of propositions an individual believes or else the intersection of that set, i.e. the set of worlds compatible with what an individual believes. More technically, then, my proposal is that *come* and *zu* ‘come_{zu}’ denote motion along a path that ends at the location where the anchor is located according

to her doxastic perspective, regardless of where she actually is. In other words, to interpret a deictic motion verb, the interlocutors need to know something about where the anchor imagines herself to be located. It is for this reason that the use of a deictic motion verb involves retrieving, understanding, and in some sense “adopting” the anchor’s perspective.

In a sense, then, the contribution of this dissertation is to empirically motivate Fillmore’s (1965) intuition about deictic motion verbs having perspectival meanings and then develop a formal analysis that accounts for that observation. In addition, I draw on the analyses of *come* and *zu* ‘come_{zu}’, along with the previous account of the meanings of perspectival spatial expressions in Barlew 2016b, to argue for the two claims made above: i) that in general interpreting a perspectival expression involves retrieving from the context a perspective, not just a perspective holder, and ii) that the kind of perspective depends on the perspectival expression in question. These claims lay the foundation for a general investigation of what it is for an expression to be perspectival, of which this dissertation is just a part.

Even though I intend this dissertation to have implications for the study of perspectival expressions generally, except for Chapter 7, it focuses just on *come* and *zu* ‘come_{zu}’. The focus is restricted for several reasons. First, deictic motion verbs such as *come* and *zu* ‘come_{zu}’ are assumed to be perspectival in both the literature on perspectival expressions generally and the literature on deictic motion verbs in particular (Fillmore, 1966, 1975; Mitchell, 1986; Sells, 1987; Speas and Tenny, 2003; Oshima, 2006a,b; Bylina et al., 2014; Barlew, 2015b).⁴ This means that they are perspectival expressions about which many theories make explicit claims that can be evaluated against new data. More importantly, previous accounts of perspectival expressions identify as perspectival distinct but overlapping sets of expressions. Because deictic motion verbs are considered perspectival on nearly

⁴Similarly, predicates of personal taste are claimed to be perspectival in both the literature on perspectival expressions and the literature on predicates of personal taste specifically (Mitchell, 1986; Lasersohn, 2005; Stephenson, 2007; Pearson, 2013a; Bylina et al., 2014; Barlew et al., 2016). However, few other expressions have this property. Extending this dissertation research to include predicates of personal taste is a task for future work.

every approach, investigating their meanings makes it possible to get at the core notion of perspectival content that all of the accounts seek to characterize.

Second, the meanings of deictic motion verbs, even those used as translations of each other, are known to vary cross-linguistically (Gathercole, 1978; Wilkins and Hill, 1995; Botne, 2005; Oshima, 2006a; Nakazawa, 2007, 2009).⁵ The meanings of *come* and *zu* ‘come_{zu}’ are no exception. They differ in several respects, as discussed in Chapters 2 and 4. In fact, the data in Chapter 4 show that *zu* ‘come_{zu}’ represents a previously undocumented type of deictic motion verb. Despite this variation, the perspectival components of the meanings of *come* and *zu* ‘come_{zu}’ do not differ significantly. This observation provides support for the claim that the meanings of at least some expressions that have been called perspectival do in fact have a common perspectival semantic component, other semantic variation notwithstanding. This, in turn, provides support for the general research agenda begun here, the goal of which is to identify perspectival expressions within and across languages and describe the perspectival component their meanings share.

Finally, focusing on a single empirical domain makes it possible to develop detailed empirical generalizations and a precise, cross-linguistically applicable analysis. That’s why I take a “case study” approach to investigating perspectival expressions, rather than the more common broad based, taxonomic approach (c.f. Fillmore 1975; Mitchell 1986; Speas and Tenny 2003; Bylinina et al. 2014, 2015). In taking this approach, I methodologically follow e.g. Sells (1987), who develops a theory of perspectival expressions via a detailed investigation of logophoric pronouns cross-linguistically. Like Sells, I mean my conclusions to apply to perspectival expressions generally.⁶ Therefore, after analyzing the meanings of *come* and *zu* ‘come_{zu}’, in Chapter 7 I sketch a general theory of perspectival expressions based on the principles underlying my analysis of *come* and *zu* ‘come_{zu}’ (see also Roberts 2014, 2015; Barlew 2016b; Barlew et al. 2016). This theory describes the kind of perspectival

⁵Though see Wilkins and Hill 1995 for a diagnostics distinguishing deictic and non-deictic motion verbs.

⁶Sells’ (1987: 446, 465-6) remarks about “idiot”, “beloved”, “own”, and “come” make it clear that he intends the theory to apply to expressions other than strictly logophoric pronouns.

information that is involved in the interpretation of perspectival expressions and, thereby, the kind of information that is available in the discourse context.

The rest of the dissertation is structured as follows. Part I presents the data. Chapter 2 presents data on *come*. The first half of the chapter is dedicated to showing that interpreting *come* requires information about an individual’s doxastic perspective, motivating the approach to perspectival expressions argued for in the dissertation. The second half presents several additional novel empirical generalizations about the meaning of *come* that an empirically adequate theory must account for. Next, Chapter 3 introduces aspects of Bulu grammar that are relevant for understanding the data on *zu* ‘*come_{zu}*’. These data are presented in Chapter 4, which has roughly the same layout Chapter 2. Evidence for the claim that interpreting *zu* ‘*come_{zu}*’ requires perspectival information comes first, and additional empirical generalizations follow. The chapter also highlights differences between the meanings of *come* and *zu* ‘*come_{zu}*’, and shows that *zu* ‘*come_{zu}*’ is typologically unique with respect to previously described deictic motion verbs. The chapter ends with a set of generalizations that an analysis of *zu* ‘*come_{zu}*’ must account for, and summarizes the cross-linguistic similarities and differences in the meanings of *come* and *zu* ‘*come_{zu}*’.

Part II develops the analyses of *come* and *zu* ‘*come_{zu}*’ and the broader theory of perspectival expressions. It starts with the discussion of previous analyses of *come* in Chapter 5. This chapter considers previous accounts in light of the generalizations developed in Chapters 2 and 4, and argues that previous accounts make incorrect predictions because they do not incorporate dependence on perspectival information in the semantics of *come*. Chapter 6 develops a formal framework and uses that framework to present analyses of *come* and *zu* ‘*come_{zu}*’ that do incorporate perspectival information. The framework represents the integration of Stalnaker’s (2008) theory of belief and Roberts’ (2014; 2015) theory of perspective in an adaptation of Dynamic Predicate Logic (Groenendijk and Stokhof, 1991) due to AnderBois et al. (2015). The analyses developed using this framework account for the generalizations developed in Chapters 2 and 4. Chapter 7 generalizes the approach to

analyzing perspectival expressions that is discussed in this introduction and that underlies the account of *come* and *zu* ‘*come_{zu}*’. The first section of the chapter argues that an analysis of non-speaker anchored appositives, which are perspectival expressions (Amaral et al., 2007; Harris and Potts, 2009), falls out on the current approach. Subsequent sections generalize the theory to apply to a wider range of perspectival expressions and compare it to previous accounts due to Mitchell (1986), Speas and Tenny (2003), and Bylinina et al. (2014, 2015). Chapter 8 concludes.

Part I

Data

The perspectival meaning of *come*

In (1a), repeated here for convenience, the speaker and addressee are located at the destination of Guy’s motion path, and the use of *come* is acceptable. (2a), also repeated, shows that in a minimally different context in which they are not located at the destination of the motion path, the use of *come* is not acceptable.

- (1) [Context: **Abondo (speaker) and Bella (addressee) are in Avebe (destination)**. Guy is in Ebolowa (source). Guy leaves Ebolowa, traveling to Avebe. As he is traveling, Abondo tells Bella:]
 - a. Guy is **coming** to Avebe.
- (2) [Context: **Abondo (speaker) and Bella (addressee) are in Avebe**. Guy is in Ebolowa (source). Guy leaves Ebolowa, traveling to Kribi (destination). As he is traveling, Abondo tells Bella:]
 - a. #Guy is **coming** to Kribi.

The contrast between (1a) and (2a) suggests that it is the interlocutors’ presence at the destination that makes the use of *come* acceptable. As mentioned in Chapter 1, the interlocutors are not the only individuals whose presence at the destination makes the use of *come* acceptable (Fillmore, 1975; Oshima, 2006a; Nakazawa, 2007). The full range of such individuals is discussed in Section 2.2. For now, recall that I introduced the general term “anchor” to refer to the relevant individual in a given context, whoever she is.

I now want to introduce another term: anchoring implication. A first pass version of the anchoring implication is given in (4).¹

(4) **Anchoring implication** (first pass): The anchor is located at the destination.²

The version of the anchoring implication given in (4) is essentially a generalization over representations of it in the literature. Different analyses represent and analyze the anchoring implication in different ways and use different terms to describe it, but the statement in (4) gives the core of all previous treatments of the anchoring implication: it is an implication about where the anchor is located. The inherent appeal of this treatment can be seen by considering examples (1a) and (2a). Assume that either the speaker or the addressee is the anchor in these examples. Then in (1a), where the anchoring implication is true, the use of *come* is acceptable, and in (2a), where the anchoring implication is false, the use of *come* is unacceptable. As stated in (4), the anchoring implication accounts for this difference.

In this chapter, I introduce examples that lead to the refinement of the anchoring implication in (4). I argue that instead of depending on where the anchor is located, the interpretation of *come* actually depends on the anchor's contextually supplied perspective, i.e. contextually accessible information about how she understands things to be. Three kinds of evidence support this conclusion. The first is that for the use of *come* to be acceptable, the anchoring implication as stated in (4) must be a *de se* commitment of the anchor. In other words, the anchor must knowingly self-ascribe being located at the destination. In terms due to Lewis (1979b), she must "self-locate" at the destination. This is a crucial piece of evidence supporting the claim that the anchoring implication must be true according to the anchor's perspective. It shows that the anchoring implication can only be evaluated

¹I call this an "implication" here in order to remain agnostic about whether it is presupposed, asserted, conventionally implicated, or conversationally implicated. Ultimately, I will argue that it is a conventionally encoded, projective content, like the conventional implicatures described by Potts (2005).

²In fact, we might say "is, was, or will be" rather than just "is", since the anchor can be located at the destination at either utterance time or at the time at which the motion event happens. These possibilities are discussed in detail by Fillmore (1975), Taylor (1988), and Oshima (2006a,b). I won't have anything to add to their claims, so I simplify things by using only the present tense.

with respect to the perspective of the anchor, because only the anchor can have *de se* or self-ascribed thoughts about the anchor's location. Section 2.1 introduces the notion of *de se* attitudes in more detail and provides evidence that the context must entail that the anchoring implication is *de se* commitment of the anchor in order for the use of *come* to be acceptable.

Data presented in Sections 2.2 and 2.3 also provide support for the hypothesis that the interpretation of *come* depends on the anchor's perspective. Section 2.2 describes the set of acceptable anchors of *come* and argues that they are individuals whose perspectives are salient in the discourse. In other words, anchors are individuals whose perspectives the interlocutors can retrieve. This requirement makes sense if the perspective itself is used in the interpretation of *come*, but it is mysterious otherwise. Data in Section 2.2 also show that the anchoring implication can be evaluated against a wide range of perspectives, not just beliefs but also imagination, memory, etc. This leads to a slight revision of the claim I made in the previous paragraph, where I said that the anchor must be "committed" to the anchoring implication. Section 2.3 takes the argument a step further. There I propose that in fact only the anchor's perspective, and not the anchor herself, is required for the interpretation of *come*. This point is made by examining cases where the anchor is not located at the destination but where a perspective she has cognitive access to is in some sense situated or located there. This leads to a further revision of the anchoring implication.

The second half of Chapter 2 presents three additional observations about the anchoring implication. These observations are not strictly related to the chapter's primary claim that the interpretation of *come* depends on a perspective. Nevertheless, any empirically adequate analysis of *come* needs to account for them. Section 2.4 presents evidence that the anchor of *come* and her perspective are anaphorically interpreted implicit arguments (Mitchell, 1986; Partee, 1989; Condoravdi and Gawron, 1996). Section 2.5 demonstrates that the anchoring implication is a projective content. Specifically, it shows that the anchoring implication is the same kind of projective content as the projective implications associated

with appositives, non-restrictive relative clauses, and expressives—what Tonhauser et al. (2013) call a “Class B” projective content. Finally, Section 2.6 fleshes out the exact relation that must hold between the motion path and the anchor’s location (according to her own perspective). The data show that the relation is more complex than the simple requirement that the anchor be located at the destination of the motion path. Section 2.7 reviews the data, presents a final version of the anchoring implication, and lays out desiderata for the analysis of *come* to be developed in Chapter 6.

2.1 *Come* is a *de se* expression

The data in this section show that the anchoring implication is a *de se* commitment of the anchor.³ But what is a *de se* commitment? Simply put, it is a commitment that one knowingly has about oneself (Castañeda, 1966; Perry, 1979; Lewis, 1979b; Kaplan, 1989). A couple of examples illustrate this kind of commitment and differentiate it from other kinds.

First, consider Perry’s (1979: 3) story about spilling sugar in the grocery store. Where I have been talking in terms of “commitments”, Perry talks in terms of belief. For now, treat the two as interchangeable.

I once followed a trail of sugar on a supermarket floor, pushing my cart down the aisle on one side of a tall counter and back the aisle on the other, seeking the shopper with the torn sack to tell him he was making a mess. With each trip around the counter, the trail became thicker. But I seemed unable to catch up. Finally it dawned on me. I was the shopper I was trying to catch.

I believed at the outset that the shopper with a torn sack was making a mess. And I was right. But I didn’t believe that I was making a mess. That seems to be something I came to believe. And when I came to believe that, I

³As far as I know, this observation is novel with respect to *come*. Antje Roßdeutscher p.c. notes that German *kommen* ‘come’ also involves *de se* anchoring, as discussed in Roßdeutscher 2000.

stopped following the trail around the counter, and rearranged the torn sack in my cart. My change in beliefs seems to explain my change in behavior.

In this story, Perry always had a belief that he might have expressed by saying *the shopper with the torn sack is making a mess*. Since he was the shopper with the torn sack, even when he didn't know it, this means that he always had a belief that he was making a mess. This belief was always about himself since he was the only shopper with a torn sack. He just did not know it was about himself. His belief was not *de se*. However, when he came to realize that he himself was making a mess, in Perry's (1979: 3) terms, he came to have a "new" belief. This new belief is the *de se* belief that he was making a mess.

Next, consider an example from Kaplan(1977: 534).

If I see, reflected in a window, the image of a man whose pants appear to be on fire, my behavior is sensitive to whether I think, 'His pants are on fire' or 'My pants are on fire', though the object of thought may be the same.

In Kaplan's example, as in Perry's, two distinct thoughts, one *de se* and one *de re*, are distinguished by the actions they trigger. The non-*de se* thought that Kaplan might express by saying *his pants are on fire* might trigger actions such as running for help or looking around for a fire extinguisher. If Kaplan had good primary school teachers, the *de se* thought will cause him to stop, drop, and roll.

Finally, consider Pearson's (2013b: 1-2) rendition of a true story about a policeman chasing himself.

...consider for a moment the case of the ill-fated Sussex Police officer who, having been alerted by a CCTV operator to the suspicious behavior of an individual in the neighborhood, chased himself for more than twenty minutes. The officer was monitoring an area that had been hit by a spate of burglaries when he received word of the 'suspect', whom the CCTV operator failed to recognize

as the police officer himself. It seems that in this situation, the police officer believed of a certain individual that he was acting suspiciously. We can tell that he had such a belief because he proceeded to engage in the behavior that police are supposed to engage in when there is a potential criminal around: he gave chase. The joke, of course, is that the officer was unaware that the individual about whom he had this belief was himself.

As in the previous stories, the fact that the policeman's belief is not *de se* is demonstrated by his actions.

These examples make clear the distinction between *de se* and non-*de se* attitudes. The point about *de se* attitudes that is important for this dissertation is that they can only be evaluated relative to the perspective of the individual who has them. The intuitive appeal of this claim is clear: I can't have a *de se* belief about you or Fred. And you can't have one about me or Fred. The truth of a *de se* belief depends on who believes it, whose perspective it is part of. Referring to the torn sack story, Perry (1979: 19) puts it this way:

Anyone can believe of John Perry that he is making a mess. And anyone can be in the belief state classified by the sentence "I am making a mess". But only I can have that belief by being in that state.

What I have been calling a "*de se* belief" is what Perry here calls a belief state. He reserves the term "belief" for propositions that are invariant across believers. This terminological difference aside, Perry's point is clear. Only John Perry can have the *de se* belief that John Perry is making a mess. If you or I have a belief with the same propositional content, it ceases to be *de se*. This means that to evaluate whether or not a given *de se* belief is true according to Perry, or any other attitude holder, we have to know something about what he believes. We need access to a representation of his perspective. Relating this discussion back to the anchoring of *come*, only the anchor of *come* can believe *de se* that the anchor is located at the destination. This means that in order to evaluate the truth of the anchoring

implication, it is necessary to retrieve a representation of the anchor’s perspective from the context.

The preceding argument is clear enough, but it relies on the claim that the anchoring implication is a *de se* commitment of the anchor. This remains to be shown. To show it, I develop two diagnostics which, together, can be used to identify expressions that give rise to *de se* implications. To be clear, the diagnostics do not present a new definition of what it is for an implication to be a *de se* commitment. Neither do they present a new kind of evidence for showing that an expression gives rise to a *de se* implication. Instead, they generalize over examples from previous work demonstrating that particular expressions give rise to *de se* implications (Castañeda, 1966; Morgan, 1970; Kaplan, 1989; Perry, 1979; Chierchia, 1989; Anand, 2006; Wechsler, 2010; Pearson, 2013b; Roberts, 2014). The reason to generalize over these examples is methodological, not theoretical. Given the present state of the literature, a researcher wishing to determine whether a particular expression in a particular language gives rise to *de se* content—say a fieldworker who has just uncovered a novel kind of expression—has to study the examples in the literature, develop the generalizations herself, and then figure out how to construct similar examples in the target language. Clearly this can be done, as Anand’s (2006) work on a variety of languages and Pearson’s (2013b) work on Ewe show. However, the diagnostics provide a rough and ready tool for fieldworkers and ensure standardization of the relevant features of examples across different studies.

2.1.1 Diagnosing *de se* expressions

In this section, I develop diagnostics for expressions that may give rise to *de se* contents, henceforth ***de se* expressions**.⁴ By giving these expressions this moniker, I don’t mean to convey that they encode *de se* content as part of their lexical meanings, or that their

⁴Additionally, Stephenson (2010) develops two tests designed to identify what she calls “vivid uses” of attitude predicates, which are arguably related to *de se* content. For Stephenson, a vivid use is one that requires direct perception of, or perception-like access to, the individual or event being described in the complement of the attitude predicate. The difference between a vivid use and a non-vivid use can be seen in

use requires the assertion of *de se* content. For any expression identified using the diagnostic, it could be the case that its use gives rise to *de se* content pragmatically, e.g. via a conversational implicature, or that it presupposes *de se* contents.

The diagnostics are based on examples throughout the literature. I illustrate the pattern using examples from Morgan 1970. Morgan's (1970: 380) context is presented in (5) and his examples in (6).

(5) Ernie Banks context (from Morgan 1970:380):

Suppose that the baseball player Ernie Banks gets beamed, develops amnesia, and is taken to the hospital, where I am his doctor. He doesn't know his name. I, his doctor, know who he is, but I don't tell him. I observe his behavior over a period of time while he's in the hospital with no identity. During this time, he reads in the newspapers about a baseball player named Ernie Banks. He decides he likes Ernie Banks, and would like him to leave Chicago and go to New York to play for the Mets.

(i), where (ia) is "vivid", requiring Mary to have directly perceived John feeding the cat, while (ib) is not. (ia) and (ib) are Stephenson's (2010:147) examples (i) and (ii), respectively.

- (i) a. Mary remembered John feeding the cat.
- b. Mary remembered that John fed the cat.

Stephenson does not claim that direct perception (i.e. having a view of events "from the inside") is all there is to *de se* content. However, she does make the case that the two are closely linked. This means that her diagnostics at least identify a kind of *de se*-like content.

Here are Stephenson's diagnostics. First, a vivid attitude predicate can be modified with the adverb *vividly*, while a non-vivid attitude predicate cannot. (ia), but not (ib) is acceptable with *vividly* following *Mary*. The second diagnostic works similarly and involves the modifier *in perfect detail*. *In perfect detail* can be acceptably added to (ia) but not (ib) Similar results hold, *ceteris paribus*, for examples with the attitude predicate *imagine*.

Stephenson's diagnostics do not diagnose *de se* content *per se*. Assume, as will be shown below and as is commonly assumed in the literature, that *I* is used to express *de se* content, while *he* is not necessarily used in this way. Now, note that *I am vividly in Cleveland today* is no more or less acceptable than *he is vividly in Cleveland today*. The reason is that the diagnostic is not designed to identify *de se* contents not related to direct perception or perception-like phenomenology (e.g. mental imagery) in some way or other. Thus, while it is possible that Stephenson's diagnostics pick out a subset of *de se* content, they do not pick out all *de se* content. And, of course, they are not intended to. However, the connection between perception-like phenomenology and *de se*-ness is an important topic for future research.

- (6) [Context of (5). The doctor says:]
- a. Ernie Banks wants **Ernie Banks to leave Chicago**.
 - b.#Ernie Banks wants **to leave Chicago**.
 - c. Ernie Banks would like **Ernie Banks to play for the Mets**.
 - d.#Ernie Banks would like **to play for the Mets**.
 - e. Ernie Banks hopes **for Ernie Banks to move to New York**.
 - f.#Ernie Banks hopes **to move to New York**.

Morgan makes several observations about these examples which are based on work by Castañeda (1966) and echoed and extended by Chierchia (1989). First, in the context in (5), Ernie Banks has a particular attitude toward the idea that he moves to New York and plays for the Mets. Specifically, he wants it to happen, but he does not know that he wants it to happen to himself. He has a desire for Ernie Banks, which is of course a desire for himself, but because he does not know he is Ernie Banks, he does not know that it is a desire for himself. His desire is not *de se*. For convenience, let me introduce symbolic ways to represent such desires:

- (7) For some individual x and implication m ,
- a. let $\text{WANT}_{de\ se}(x, m)$ symbolize that x desires m to obtain and, for any part of m that has to do with x herself, x knows that it has to do with x herself, and
 - b. let $\text{WANT}_{de\ re}(x, m)$ symbolize that x desires m to obtain and, for any part of m that has to do with x herself, x does not know that it has to do with x herself.

I don't mean $\text{WANT}_{de\ se}$ and $\text{WANT}_{de\ re}$ to stand for the meanings of particular linguistic expressions, or to represent a particular theoretical position about what *de se* thoughts or implications are or how they should be represented. In particular, I don't mean to take a stand (here) on whether attitudes are two place relations between an individual and a content (Lewis 1979a; Stalnaker 2008) or three place relations between an individual, a

content, and something else such as an attitude relation (Perry 1979).⁵ Rather, I intend to use these representations as shorthand for e.g. ‘ x wants something for herself, and knows that she wants it for herself’ and ‘ x wants something for herself, but doesn’t know that she wants it for herself’, respectively.

Morgan’s examples involve several different attitudes, so it is necessary to generalize the definitions in (7) to apply to a range of attitudes. This is done in (8).

- (8) For some individual x , implication m , and attitude R
- a. let $R_{de\ se}(x, m)$ symbolize that x stands in the R relation to m and, for any part of m that has to do with x herself, x knows that it has to do with x herself, and
 - b. let $R_{de\ re}(x, m)$ symbolize that x stands in the R relation to m and, for any part of m that has to do with x herself, x does not know that it has to do with x herself.

With this shorthand, we can write certain implications that arise with the utterance of the examples in (6). To start, let m be the proposition that Ernie Banks leaves Chicago. Then, an utterance of (6a) entails $\text{WANT}_{de\ re}(eb, m)$. In words, it entails that Ernie Banks wants the proposition that Ernie Banks leaves Chicago to be true. Because the context in (5) is compatible with $\text{WANT}_{de\ re}(eb, m)$, the example is acceptable. (6b), on the other hand, is not acceptable. The claim in the literature is that (6b) is not acceptable because it entails $\text{WANT}_{de\ se}(eb, m)$. In words, it entails that Ernie Banks wants himself, *de se*, to leave Chicago. $\text{WANT}_{de\ se}(eb, m)$ is incompatible with the context in (5). Similar observations apply to the other examples in (6). This leads to the generalization that the infinitival complements of control verbs are obligatorily interpreted *de se* (Chierchia, 1989).

Further support for this hypothesis comes from the observation that in a minimally different context in which Ernie regains his memory, the control construction is acceptable, as shown in (9).

⁵Ultimately, I will use a Lewis/Stalnaker style formalization. The diagnostics, however, should be as theory-neutral as possible.

- (9) [Context: Minimally different from (5) in that Ernie Banks regains his memory.]
- a. Ernie Banks wants **to leave Chicago**.
 - b. Ernie Banks would like **to play for the Mets**.
 - c. Ernie Banks hopes to move **to New York**.

The crucial difference between (5) and (9) is the context of (9) entails $R_{de\ se}(eb, m)$ for the attitude and implication appropriate for each example.

Morgan’s examples provide the building blocks for developing diagnostics for expressions that give rise to *de se* content. Following Tonhauser et al. (2013), the diagnostics do not make use of the morphological or syntactic features of any particular language, and therefore are cross-linguistically applicable. The components of the diagnostics, some of which have already been introduced, are given in Table 2.1.

Component	in (6b)	definition
ϕ	<i>to leave Chicago</i> in a control construction	a linguistic expression hypothesized to give rise to <i>de se</i> content
S	<i>Ernie Banks wants to leave Chicago</i>	a sentence containing ϕ
C	(5)	a context in which S is uttered, with properties described in (10a-i) below
x	Ernie Banks	a familiar individual in C
$R_{de\ se}$	$WANT_{de\ se}$	a <i>de se</i> attitude relation contributed by ϕ , another linguistic expression, or the context
$R_{de\ re}$	$WANT_{de\ re}$	a non- <i>de se</i> attitude relation otherwise equivalent to $R_{de\ se}$
m	Ernie Banks leaves Chicago	an implication s.t. an utterance of S in C is hypothesized to entail $R_{de\ se}(x, m)$

Table 2.1: Components of a diagnostic for *de se* contents

Using the components in Table 2.1 it is possible to describe Morgan’s examples schematically, i.e. to define diagnostics in abstract terms that can be used to construct examples for a variety of expressions across languages. The abstract statement of the diagnostics facilitate their use cross-linguistically, following Tonhauser et al. (2013).

I define two diagnostics that work together to identify expressions that give rise to *de se* content. The first diagnostic demonstrates that an utterance of a sentence S in a context C gives rise to a *de se* content.⁶ The second identifies a particular expression, ϕ , as the source of the *de se* content.

(10) **Diagnostic 1: Identifying *de se* content**

- a. Test 1a:
 - i. Construct C so that C entails that
 - (1) $R_{de\ se}(x, m)$ is false and
 - (2) $R_{de\ re}(x, m)$ is true.
 - ii. Ask for an acceptability judgment for an utterance of S in C.
- b. Test 1b:
 - i. Construct a context C' s.t. C' is minimally different from C in that C' is compatible with $R_{de\ se}(x, m)$ ⁷
 - ii. Ask for an acceptability judgment for an utterance of S in C'.
- c. Results: if S is judged to be unacceptable in C and acceptable in C', this is evidence that an utterance of S in C and C' gives rise to an implication that $R_{de\ se}(x, m)$.

Diagnostic 1 is a diagnostic for identifying *de se* content. By hypothesis, the only difference between C and C' is that $R_{de\ se}(x, m)$ is incompatible with C and compatible with C'. This is exemplified in the difference between (5) and (9), which differ only with respect to whether or not Banks knows who he is. In both contexts, he wants for Ernie Banks to

⁶In essence, this diagnostic describes how to construct examples that test for Pearson's (2013b: 2) "Awareness condition", given in (i):

- (i) *Awareness condition*
A sentence S reports an attitude *de se* only if its truth depends on the bearer of the attitude being aware that the individual whom the attitude is about is herself.

⁷If $R_{de\ se}(x, m)$ is a presupposition triggered by the use of ϕ , C' may need to entail $R_{de\ se}(x, m)$ rather than simply being compatible with it.

leave Chicago, but only in (9) does he know that he wants this for himself. Interpreting the results of Diagnostic 1 as prescribed in (10c) leads to the conclusion that (6b), (6d), and (6f)—the examples with the infinitival control construction—give rise to *de se* content.

Diagnostic 2 is designed to pinpoint the specific expression responsible for the *de se* content. It has two variants. Variant 1 is used when it is possible to replace the hypothesized *de se* expression ϕ with a different expression, yielding a minimally different surface string. Variant 2 is used when this kind of direct replacement is not possible, and it is necessary to construct an utterance that is taken to be minimally different from an utterance of S in C in terms of its entailments.

(11) **Diagnostic 2: Identifying *de se* expressions**

a. Variant 1:

i. Construct a minimal variant of S, call it S' , s.t.

(1) S and S' differ only w.r.t. ϕ and

(2) all implications n_1, \dots, n_n entailed by the utterance of S in C, are also entailed by the utterance of S' in C (except $R_{de\ se}(x, m)$).

ii. Ask for an acceptability judgment of an utterance of S' in C.

b. Variant 2:

i. If it is not possible to use Variant 1, construct a sentence S' s.t.

(1) S' does not include ϕ but is otherwise as close to S as possible and

(2) all implications n_1, \dots, n_n entailed by the utterance of S in C are also entailed by the utterance of S' in C (except $R_{de\ se}(x, m)$).

ii. Ask for an acceptability judgment of an utterance of S' in C.

c. Results: If S' is judged to be acceptable in C, then this is evidence that it is the presence of ϕ in S that gives rise to the implication $R_{de\ se}(x, m)$.

To see how Diagnostic 2 is instantiated in Morgan's examples, consider (6a) to be the minimal variant S' of (6b), which is S. Both are repeated here for convenience, along with their context in (5).

(5) Ernie Banks context (from Morgan 1970: 380):

“Suppose that the baseball player Ernie Banks gets beamed, develops amnesia, and is taken to the hospital, where I am his doctor. He doesn't know his name. I, his doctor, know who he is, but I don't tell him. I observe his behavior over a period of time while he's in the hospital with no identity. During this time, he reads in the newspapers about a baseball player named Ernie Banks. He decides he likes Ernie Banks, and would like him to leave Chicago and go to New York to play for the Mets.”

(6) [Context of (5). The doctor says:]

a. Ernie Banks wants **Ernie Banks to leave Chicago**.

b. #Ernie Banks wants **to leave Chicago**.

(6a) differs from (6b) only in the addition of *Ernie Banks*, which eliminates the control construction. It has the same *de re* entailments as S, but is acceptable in C. Thus, it demonstrates that the implication that WANT_{de se} arises due to the control construction, not some other expression in S. The same procedure can be applied to (6c)-(6f), with similar results.

Diagnostics 1 and 2 work in tandem to identify expressions that give rise to *de se* content. In Appendix C, I demonstrate how they can be applied to a range of expressions in different languages. I use expressions that have already been shown to be *de se* so that the examples constitute an adequacy measure for the diagnostics. The demonstration of adequacy is relegated to an appendix, because it essentially consists of mapping of the components of examples in the literature to the components of the diagnostics. Readers familiar with the literature should be able to see how these mappings will go. However, I expect the examples

in Appendix C to be useful to fieldworkers and others who wish to apply the diagnostics in their own work, because they help make clear how to construct novel examples.

2.1.2 Diagnosing *come* as a *de se* expression

Initial evidence that the anchoring implication of *come* is a *de se* commitment of the anchor comes from Oshima (2006b). To understand Oshima’s examples, it helps to know that when *come* is embedded under a communication or attitude predicate, the agent of communication or attitude holder can be the anchor (Fillmore, 1975; Hockett, 1990; Oshima, 2006a,b). Oshima provides the example in (12), where by “secondary perspective” he means that the anchor is the attitude holder (here Bob) and by “**ps**” he means “presupposes”.⁸ In my terms, Bob is the anchor in (12).

(12) John: “Bob believes that Chris came to San Jose.” (secondary perspective)

ps: Bob believes that he is in San Jose at the time of “believing” or was there at the event time.

What (12) purports to show is this: when the attitude holder is the anchor, the attitude holder’s belief in the anchoring implication is sufficient to make *come* acceptable. In Oshima’s (2006b: 180) words, (12) “can be understood as *de se* with respect to motion deixis”. To see that this is correct, imagine that just before uttering (12), John, in New York, says *Bob, who is actually in Oklahoma, mistakenly believes he’s in San Jose. And...* Here, Bob’s mistaken *de se* belief that he is in San Jose licenses the use of *come to San Jose* with Bob as the anchor.

In contrast, Oshima argues that when *come* is embedded but the attitude holder is not the anchor, the attitude holder does not need to be committed to the anchoring implication at all, let alone have a *de se* commitment to it. He gives (13) as evidence, where “primary

⁸Oshima analyses the anchoring implication as a presupposition. This analysis and its implications are discussed in Chapter 5.

perspective” means that the speaker (or the addressee) is the anchor. Here, the anchor is John.

(13) John: “Bob believes that Chris came to San Jose.” (primary perspective)

ps: John (or the addressee) is in San Jose at the time of utterance or was there at the event time.

Here, Oshima characterizes the presupposition differently, indicating that what matters for the acceptability of (13) is whether John actually is or was in San Jose. To see why one might think that, note that John, in San Jose, can precede (13) with *Bob has no idea we’re here in San Jose. However,...* About this example, Oshima (2006b: 179) writes that it “is non-de se with respect to motion deixis”. From the comparison of the two examples, Oshima concludes that *come* does not encode *de se* content.

Oshima’s claim is right, with respect to commitments that an embedded use of *come* requires of the attitude holder. However, he does not consider what commitments the use of *come* requires of the anchor, who, in (13), is not the attitude holder. As a result, both of his examples are compatible with the generalization that when *come* is used acceptably, the anchor has a *de se* commitment to being located at the destination. This is because in (13) the anchor—either the speaker or the addressee—does have such a commitment.⁹ Thus, these examples are compatible with the hypothesis that the anchoring implication is a *de se* commitment of the anchor. (12) is particularly suggestive in this regard, because there the anchor’s *de se* commitment to the anchoring implication is sufficient to make the use of *come* acceptable, even though the interlocutors are not committed to the anchoring implication. However, these examples do not provide conclusive evidence for the hypothesis that the anchoring implication is a *de se* implication. In particular, they do not provide negative evidence showing that in the absence of the anchor’s *de se* commitment to the

⁹Technically, the context doesn’t make it clear that John and his addressee know they’re in San Jose. They might be delusional. However, in the absence of an explicit statement to this effect, the default assumption is and other similar examples is that they know where they are.

anchoring implication, the use of *come* is unacceptable. To do that, I develop examples using the diagnostics in Section 2.1.1.

To apply the *de se* diagnostics to the anchoring implication of *come*, I first provide the elements of the diagnostics in (14). I start with an embedded example in which the attitude holder is the anchor, following Oshima's example in (12). In this example and others in this section, for convenience I simply stipulate who the anchor is. Ultimately, though, I will argue that the anchor is anaphorically retrieved. In other words, in any given context the anchor is determined by the general principles that govern anaphora resolution.

(14) Components of (15a):

- a. $\phi = come$
- b. $S = Ernie\ believes\ that\ President\ Obama\ came\ to\ Chicago$
- c. $S' = Ernie\ believes\ that\ President\ Obama\ traveled\ to\ Chicago$
- d. $C = context\ of\ (15)$
- e. $C' = context\ of\ (132)$
- f. $x = Ernie\ Banks$
- g. $R_{de\ se} = BELIEVE_{de\ se}$
- h. $R_{de\ re} = BELIEVE_{de\ re}$
- i. $m = anchoring\ implication = Ernie\ Banks\ was\ in\ Chicago\ last\ 3\ weeks\ ago.$

(15) [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. The doctor later tells her friend:]

a. #Ernie believes that President Obama **came** to Chicago.

b. Ernie believes that President Obama **traveled** to Chicago.

(16) [Context: Identical to (15), except that Ernie regains his memory.]

Ernie believes that President Obama **came** to Chicago.

In (15), the anchor, Ernie Banks, believes of Ernie Banks that he is located at the destination of the motion event. Nevertheless, (15a) is unacceptable because Ernie does not realize that he believes this about himself. His belief is not *de se*. In the minimally different context *C'* in (16) where Ernie believes *de se* that he was in Chicago, the example is acceptable. The application of Diagnostic 2 demonstrates that the *de se* content of (15a) is due to the presence of *come*. The minimal variant *S'* in which *come* is replaced with *traveled* is acceptable in (15).

(18)-(19) show that *come* gives rise to *de se* content when used in matrix clauses, not merely when embedded. The components are given in (17).

(17) Components of (18a):

a. $\phi = come$

b. $S = President Obama came to Wrigley Field four weeks ago.$

c. $S' = President Obama visited Wrigley Field four weeks ago.$

d. $C = context of (18)$

e. $C' = context of (19)$

f. $x = Ernie Banks$

g. $R_{de se} = BELIEVE_{de se}$

h. $R_{de re} = BELIEVE_{de re}$

i. $m = anchoring implication = 'Ernie Banks at Wrigley Field when President Obama visited.'$

(18) [Context: Baseball player Ernie Banks is hit on the head and knocked out. While unconscious, he is taken from Chicago, where he lives and plays baseball, to a hospital in Boston. When he awakens, he has amnesia. After 3 weeks in Boston, he still doesn't know who he is. However, he has been watching TV and reading. Ernie and his doctor, Pam, often talk about what Ernie learns on TV, including what he learns about baseball. Ernie knows that Pam is an avid baseball fan who knows a lot about players from all of the major league teams, as well as an avid follower of President Obama. One day, Ernie watches a news video from one month ago showing President Obama shaking hands with Ernie Banks at home plate at Wrigley Field, the home stadium of the Chicago Cubs. Later, Pam checks on Ernie. Pam has never been to Chicago. Ernie, says:]

a. #President Obama **came** to Wrigley Field four weeks ago. He threw out the first pitch.

b. President Obama **{traveled/went}** to Wrigley Field four weeks ago. He threw out the first pitch.

(19) [Context: Identical to (18), except that Ernie regains his memory.]

President Obama **came** to Wrigley Field four weeks ago. He threw out the first pitch.

The unacceptability of (18a) in the context of (18) and its acceptability in (19) combine to demonstrate that (18a) gives rise to *de se* content. The acceptability of (18b) in the context of (18a) demonstrates that the *de se* content is due to the presence of *come*.

(14)-(19) show that the anchoring implication is a *de se* commitment of the anchor. This means that the anchoring implication must be evaluated against the commitments of the anchor—her doxastic perspective. Only she can have a self-locating, *de se* belief about where she is. This is the first piece of evidence that *come* depends for its interpretation on contextually supplied information about the anchor’s perspective, and it leads to the revision of the anchoring implication in (20).

(20) **Anchoring implication** (to be revised): The anchor self-ascribes being located at the destination (*de se*).

The new version of the anchoring implication given in (20) includes the requirement that the anchor self-ascribes the anchoring implication, which is to say that she is committed to it *de se*.

2.2 The anchor of *come* has a salient perspective

Data in the previous section demonstrated that anchoring implication of *come* is a *de se* commitment of the anchor. As a result, I argued, it can only be evaluated with respect to the anchor’s own perspective. From that, it follows that to evaluate the anchoring implication, the interlocutors need to have access to information about the anchor’s perspective. If this is right, we might expect the anchors of *come* to be limited to individuals whose perspectives are salient enough to be retrieved from the context. In this section, I argue

that this prediction is correct. Specifically, I propose that acceptable anchors are necessarily individuals with salient perspectives, i.e. perspectives that are easily retrievable from the context.¹⁰ To support this claim, I draw on observations from previous literature, in particular from Fillmore (1975) and Oshima (2006a,b), about which individuals can be anchors for *come*.

To develop the generalization that acceptable anchors are individuals with salient perspectives, it is necessary to say a bit more about perspectives, to define salience, and to say a bit about what makes certain elements of the discourse context salient. First, recall that in Chapter 1, I suggested that a perspective could be thought of as a body of information, technically, a set of propositions or the intersection of such a set, i.e. a set of worlds. Here, for simplicity, I will use a set of worlds.¹¹ But which set? To answer this question, it is necessary to introduce the idea that there are multiple kinds of perspectives. Specifically, for a given individual perspective holder, there may be perspectives corresponding to the way she believes the world to be, a way she hopes it is, a way she wishes it was, a way she imagines it to be, etc. Each of these perspectives can be modeled as a set of worlds, namely the worlds compatible with the perspective holder's beliefs, hopes, fears, etc.¹² All of these different kinds of perspectives and more will be discussed toward the end of this section.

For now, though, for simplicity consider only the set of worlds consistent with the perspective holder's commitments, and ignore other kinds of perspectives. On this simplifying assumption, for any individual about whom the interlocutors are speaking, including each other, that individual's perspective is defined as the intersection of the propositions to which she is committed, according to the interlocutors' common ground (i.e. the information that the interlocutors share, as in Stalnaker 1978). Note that for any individual, the

¹⁰It should be uncontroversial that salience is involved in determining which elements of the context are retrievable (see Gundel et al. 1993 and Roberts 2005, among others). What's important here is to see that it's the perspective which must be salient enough to be retrieved, not merely the anchor herself.

¹¹As mentioned in Chapter 1, ultimately, I will model perspectives as sets of centered worlds, following Lewis (1979a) and Stalnaker (2008), among others. For now, though, regular worlds will do.

¹²I ignore the orthogonal problem of inconsistent beliefs, fears, hopes, etc.

interlocutors included, her perspective in this sense may differ from her actual beliefs. For a non-interlocutor, the two might differ because the interlocutors are wrong about what she believes. They think she believes something she doesn't. For an interlocutor, her perspective in the sense used here and her actual beliefs might differ because she is lying. Her own personal beliefs may differ from the commitments that she's made for the purposes of the conversation (Stalnaker, 1978). By perspective, then, I mean an individual's commitments according to the common ground. It is for this reason that I have used "commitments" rather than "beliefs" wherever possible, borrowing the terminology from Gunlogson (2001, 2002), who uses the term "discourse commitments" to refer to something similar to what I mean by an interlocutor's doxastic perspective (though as we'll see, the two differ crucially with respect to *de se* contents).

Given that an individual's doxastic perspective consists of the worlds consistent with her commitments, what does it mean to say that her perspective is salient? By **salient**, I mean being attended to by the interlocutors, as discussed in Gundel et al. 1993; Roberts 2011, 2014, and Barlew 2014, among others. For instance, although they do not use the term "salient", Gundel et al. (1993: 279) propose that for something to be the referent of a pronoun, it must be "at the current center of attention" in the discourse context. That is to say, the interlocutors must be focused on it. By saying the "center of attention", Gundel et al. seem to make being attended to a binary notion. However, for them the center of attention is just the top element on a kind of salience hierarchy (their term is "givenness hierarchy"). Just below this level is being "activated", by which they mean the "referent is represented in current short-term memory" (1993: 278). And so on.

For Roberts (2011: 14) as well, salience is "a gradient notion". She proposes that

"Salience... is a function of attention. I.e. something is salient to someone to the extent that they are attending to it. Thus, we might expect that some entities... would be more central in the attentional field than others."

Roberts (2005) proposes that for the use of a pronoun to be acceptable, its antecedent must be the maximally salient individual of the right sort to be indicated using the pronoun (e.g. female, singular, etc.).

To see how these distinctions make a difference for the use of particular linguistic expressions, consider the following examples adapted from Gundel et al. (1993: 278-9). The examples purport to show that demonstrative NPs such as *that dog* require antecedents that are familiar, demonstrative pronouns such as *that* take antecedents that are salient, and pronouns such as *it* take antecedents that are maximally salient.

- (21) a. [Context: The addressee already knows the speaker’s neighbor has a dog.]
I couldn’t sleep last night. {**That dog/#That/#It**} (next door) kept me awake.
- b. [Context: The speaker’s neighbor’s dog has just been barking.]
I couldn’t sleep last night. {**That dog/That/#It**} kept me awake.
- c. [Context: The speaker’s neighbor’s dog has just been barking.]
Do you hear that dog barking? {**That dog/That/It**} kept me awake last night.

In each context in (21), the neighbor’s dog and its barking are made more salient—more central in the attentional focus on the interlocutors. In (21a), the dog is familiar, but not particularly salient, because nothing in the context causes the interlocutors to pay attention to it. In (21b), the dog is perceptually salient. The interlocutors are more likely to be attending to it than in the context of (21a). And in (21c), the interlocutors are paying attention to the dog both because they can hear it and because they are talking about it. By saying that a perspective is “salient”, then, I mean that the interlocutors are paying attention to. As the examples in (21) show, this might be because they’re talking about it, or it might be for some other reason.¹³

¹³Of course, saying that a perspective either is or isn’t salient is fudging just a little, since salience is gradient. To make the notion precise, I might define a salience scale with a threshold and say that the perspective in question must be salient at a level above the threshold. Alternatively, I might follow Roberts

Although there are many reasons something can be salient, one reason in particular is significant enough to merit discussion in its own right. That is when something is salient because it is currently under discussion or, put another way, because it is “relevant” in the discourse (see Roberts 2011 for discussion). By **relevant**, I mean relevant to the question under discussion, in the sense of Roberts (1996/2012). Following Roberts (1996/2012) one element of a discourse structure is a set of questions under discussion (QUDs), i.e. questions that the interlocutors are committed to resolving/answering. One of these QUDs is the question currently under discussion, and “the QUD” or “the question under discussion” refers to that one.

Roberts (1996/2012: 21) defines relevance as a property of conversational moves, i.e. conversational actions that a participant might take. Note that here questions are analyzed as sets of propositions, namely possible answers, following Hamblin (1973).

- (22) A move m is *Relevant* to the question under discussion, q . . . *iff* m either introduces a partial answer to q (m is an assertion) or is part of a strategy to answer q (m is a question).

Thus, relevance is defined in terms of furthering the conversation by either contributing a partial answer to the current QUD or suggesting a subordinate question the answers to which will contribute a partial answer to the QUD.

In (23), I adapt Roberts’ definition so that it that applies to a perspective, modeled as a set of worlds compatible with what a perspective holder believes.

(2005) analysis of pronouns and say that the perspective must be maximally salient, i.e. more salient than any other perspective. I leave developing these options further to future work.

- (23) A perspective, p , is *Relevant* to the question under discussion, q , iff for any move m such that m is relevant to q (in Roberts' sense),
- a. if m is an assertion (i.e. a possibly partial answer to q), then there is some proposition p' such that, if m is accepted, then the context entails that $p \subseteq p'$, and
 - b. if m is a question then for all assertions m' that are relevant to m there is some proposition p'' such that, if m' is accepted, then the context entails that $p \subseteq p''$.

The definition in (23) defines relevant perspectives in terms of relevant moves. It starts by identifying some perspective p , QUD q , and moves m that are relevant to q . It then divides these relevant moves into two subsets, answers and questions, and gives the conditions that must hold of each subset in order for the perspective p to be relevant. First, (23a) says that all possibly partial answers to m , if accepted, must result in an entailment about p . Second (23b) says that all possible question responses, that is to say, all strategies for answering q , must be such that their answers, if accepted, yield an entailment about p . In other words, a perspective is relevant to the QUD just in case every relevant answer to the QUD, if accepted, entails something about that perspective.

On this definition of relevant perspectives, the perspectives of the speaker and the addressee are always relevant. That's because when a speaker makes an assertion and an addressee accepts it, both become committed to that assertion for the purposes of the conversation (Stalnaker, 1978). In other words, every accepted assertion yields an entailment about the interlocutors' purported commitments, i.e. their perspectives. Thus, on a Stalnakerian view of the discourse context, interlocutors' perspectives are always relevant because the common ground is defined in terms of them (Roberts, 2014). And because they are always relevant, the perspectives of the speaker and addressee are always salient to some extent, even if they are not the maximally salient perspectives in a given context. Furthermore, as noted by Roberts (2012), Gunlogson (2001, 2002), Farkas and Bruce (2010), and

Lauer (2013), among others, whenever a speaker makes an utterance, the content of the utterance provides information about her perspective. This information about the speaker's perspective becomes part of the common ground, regardless of how the utterance itself is received. For this reason, the speaker's perspective is always highly salient, though not necessarily maximally so.

The definition of relevance also requires that when someone's perspective is explicitly or implicitly under discussion, her perspective is relevant and therefore salient. (24) provides an example.

- (24) [Context: Tom and April are talking about what to do with a plot of land owned by the government. Tom asks *What does Leslie think?* April responds:]
We should build a park there.

In (24), Tom asks about Leslie's opinions. Crucially, every answer to the QUD Tom raises entails something about Leslie's perspective. So do the answers to any strategy (i.e. question) April might suggest as a way to go about answering Tom's question. Thus, Leslie's perspective is relevant in this case. It is arguably for this reason that April's answer is understood as committing Leslie to the claim that they should build a park, not April.¹⁴ Of course, Tom and April's perspectives are relevant here in the technical sense as well. Any answer that attributes a particular opinion to Leslie will, by virtue of being accepted, entail that Tom and April are committed to the attribution of that opinion to Leslie. Thus it will entail something about their perspectives.

With these definitions of salience and relevance in place, it is now possible to catalog the set of acceptable anchors described in previous literature and, in each case, to demonstrate that they are individuals with salient perspectives.

¹⁴It may be worth noting that April's response in (24) does not have to be about Leslie's perspective. Instead, April could be giving her own opinion in order to address the superordinate QUD, which is what to do with the land. If she does this, she is essentially rejecting Tom's question as irrelevant to the superordinate QUD, or at least indicating that she wishes to pursue a different strategy of inquiry than the one he suggested. The availability of this option does not change the fact that Leslie's perspective was relevant when Tom asked his question.

Fillmore (1975), Oshima (2006a), and others suggest that the most common anchors of *come* are the speaker and addressee. In most of the acceptable examples given so far, either both interlocutors self-ascribe being located at the destination, as in (1), only the speaker self-ascribes being located at the destination, as in (18), or only the addressee does, as in (3).¹⁵ (25) provides an additional example in which *come* is also acceptable if just the addressee is located at (and self-ascribes being located at) the destination, as observed by Fillmore (1965).

- (25) [Context: Ann is in Cleveland, and Beth is in New York. They are talking on the phone. Ann says *Where is John these days?* Beth answers:]
John is in Chicago. However, he is coming to Cleveland tomorrow.

In (25), the destination is the addressee, Ann's, location, and this makes the use of *come* acceptable.

Corpus evidence provides further support for the claim that interlocutors are typical anchors for *come*. The Corpus of Contemporary American English (COCA; Davies 2008) contains 11,896 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 or of both interlocutors. 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). This contrast demonstrates the prevalence of anchoring to an interlocutor.

Anchoring to an interlocutor is a case par excellence of anchoring to an individual with a salient perspective, given that the interlocutors' perspectives are always relevant and

¹⁵For simplicity, when discussing and analyzing examples with *come* and *zu* 'come_{zu}', I assume there is at most one unique anchor. However, the data are compatible with the idea that the plural individual comprising both interlocutors could also serve as an anchor. That said, if the interlocutors are in the same place, assuming that both interlocutors together are the anchor makes the same predictions as assuming that one interlocutor or the other is. Therefore, in the interest of simplicity, I avoid plural individual anchors throughout. Going forward, in examples where the interlocutors are together at the destination, I continue to assume that the speaker is the anchor.

typically highly salient. In contrast, in general, the perspectives of non-interlocutors are not generally relevant, certainly not in this way. And non-interlocutors are not generally acceptable anchors for *come*. This is demonstrated in (26), where non-interlocutor Peyton Manning is not an acceptable anchor.

(26) [Context: Ann and Beth are in New York. Beth says:]

#Sarah is in Chicago right now. However, she is a Denver Broncos fan and loves quarterback Peyton Manning who has a game there tomorrow. Therefore, she is coming to Denver tomorrow.

Note that in (26), Peyton Manning the individual is salient; he could be the antecedent for the pronoun *he* in a different final sentence. Furthermore, he presumably self-ascribes being located in Denver. However, his perspective is not salient or relevant, and therefore he cannot be the anchor of *come*.

The prevalence of interlocutor anchoring also provides evidence that *come* is a member of the larger class of perspectival expressions mentioned in Chapter 1. Such expressions anchor to the speaker by default (Fillmore, 1975; Sells, 1987; Speas and Tenny, 2003; Roberts, 2014; Bylinina et al., 2014), and also anchor to the addressee in certain contexts (Fillmore, 1975; Mitchell, 1986; Speas and Tenny, 2003; Oshima, 2006c; Smith, 2009; Bylinina et al., 2014). *Come* follows this pattern, which is part of why these authors characterize it as perspectival.

The second kind of anchoring is anchoring to an attitude holder, as in (12). As mentioned in the discussion of that example, if *come* is embedded under an attitude predicate or predicate of communication, the attitude holder is an acceptable anchor (see Fillmore 1975 and Hockett 1990 for early examples). Oshima (2006b,c) calls this kind of anchoring **deictic perspective shift**. (27) provides another example of anchoring to an attitude holder.

(27) [Context: Ann is in Cleveland, Ben is in New York, and Chris is in Denver. On the phone, Ann asks Ben *Where is John these days?* Ben says:]

Chris {thinks/says} that John is **coming** to Denver today.

(27) is acceptable because Chris, the attitude holder, is in Denver. This observation supports the claim that the anchor’s perspective must be salient for the use of *come* to be acceptable. The use of a communication or attitude predicate with Chris as the agent or attitude holder makes Chris’s perspective—his commitments—salient. This, in turn, licenses an acceptable use of *come* with Chris as the anchor. Importantly, other perspectival expressions shift under attitude predicates in exactly the same way (Mitchell, 1986; Sells, 1987; Speas and Tenny, 2003; Oshima, 2006c; Smith, 2009; Roberts, 2014), again providing support for the notion that *come* is a prototypical perspectival expression.

The final class of acceptable anchors consists of non-interlocutors who are not the attitude holders but whose perspectives are nevertheless salient and relevant in the discourse. Two naturally occurring examples are presented below. First, consider (28) from Virginia Woolf’s *To the Lighthouse*, as quoted in Doron (1991:52), where *she* refers to Lily Briscoe.

(28) 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 ...

In (28), Briscoe’s perspective is familiar because the reader is privy to Briscoe’s thoughts. Her perspective is salient because it is currently in focus, and it is relevant because Woolf is painting a picture of the world as Briscoe sees it. She is essentially giving Briscoe’s answer to the QUD, despite writing in the third person.

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

(29) 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, pp. 30-45 (COCA)]

Following Smith (2009), many expressions in (29) allude to Dick’s perspective, raising its salience. These include the reflexive *himself* (see e.g. Sells 1987), the psych verb *delighted*, the perception verb *heard*, the emotional description *shaken*, the communication verb *wrote*, the discussion of Dick’s *own desires*, and the direct quotation from his writing. Thus, expressions encoding information about Dick’s perspective pervade the passage, making him an acceptable anchor for *come*.

One final observation about these naturally occurring examples provides additional support for generalizing in terms of perspective-taking. The examples employ a narrative style called Free Indirect Discourse (FID; see Doron 1991; Eckardt 2011, 2014). In FID, the narrator/speaker adopts a character’s perspective, and many expressions that are typically anchored to the interlocutors, for example *here* and *now*, can be anchored to that character instead. Thus, the generalization across all of the examples in this section is that for an individual to be an acceptable anchor for *come*, her perspective must be salient in the discourse context. This provides suggestive evidence that the perspective itself is involved in the interpretation of *come*, because otherwise, this requirement is mysterious. Together, the kinds of anchoring described here provide preliminary evidence that the meaning of *come* is perspectival.

Thus far, I have made the simplifying assumption that commitments comprise the only kind of perspective relevant for the interpretation of *come*. (30) demonstrates that a variety of different kinds of perspectives such as fears, hopes, imaginings etc. are relevant.

- (30) [Context: The interlocutors are in Columbus.]
- a. Ron **says** he's in New York, and he **says** Tom is coming to New York.
 - b. Ron **thinks** he's in New York, and he **thinks** Tom is coming to New York.
 - c. Ron is **imagining** he's in New York, and he's **imagining** Tom is coming to New York.
 - d. Ron **wishes** he was in New York, and he **wishes** Tom was coming to New York.
 - e. Ron is **pretending** he's in New York, and he's **pretending** Tom is coming to New York.
 - f. Ron is **fears** he's in New York, and he **fears** Tom is coming to New York.
 - g. Ron is **wonders** if he's in New York, and **wonders** if Tom is coming to New York.
 - h. Ron **hopes** to be in New York, and he **hopes** Tom will come to New York.
 - i. Ron is **dreaming** he's in New York, and he's **dreaming** Tom is coming to New York.

The key feature in these examples is that the anchoring implication is entailed by the information state relative to which *come* is interpreted. For instance, in (30e), Tom's coming to New York is part of Ron's pretending. In that pretending, Ron is located in New York, at the destination. To see that this really is what matters, and not, say, the repetition of the same attitude predicate, consider (31), which is based on examples in Heim 1992.

- (31) [Context: The interlocutors and Ron are in Columbus.]
- Ron mistakenly believes he's in New York. He {is pretending / is dreaming / fears / hopes / expects / says} that Tom is coming to New York as well.

Following Heim (1992), Roberts (1996), and Anand (2011), among others, I assume that imagination states and other attitudes are hypothetical doxastic perspectives, which is to say particular kinds of manipulations of an agent’s doxastic perspective. Specifically, they are manipulations that preserve everything that is known about the doxastic perspective except for the elements relevant for the hypothetical content under consideration. Therefore content that is entailed in an individual’s doxastic perspective is preserved in other information states the agent has access to, unless explicitly contradicted. The fact that the anchoring implication is entailed according to Ron’s beliefs in (31) makes the use of *come*, anchored to Ron’s other perspectives, acceptable.

So far these results are neither surprising nor unique to perspectival expressions. In general, non-perspectival presuppositions such as the anaphoric presupposition of *too* can be satisfied according to the beliefs of an attitude holder when they’re embedded under an attitude predicate (Heim, 1992; Roberts, 1996), as shown in (32).

(32) [Context: The interlocutors and Ron are in Columbus.]

Ron mistakenly believes he’s in New York. He {is pretending / is dreaming / fears / hopes / expects / says} that Tom is in New York **too**.

In (32), the anaphoric presupposition of *too* that there is some salient individual in New York is satisfied only according to Ron’s beliefs. Thus, in (31) and (32), the presence of Ron in New York according to Ron’s own beliefs or perspective is sufficient to make the use of *come* or the use of *too* acceptable. Similar examples with *too* can be constructed paralleling the examples in (30).

Furthermore, there is nothing special about the fact that, in the examples above, *come* and *too* are embedded under attitude predicates. It is also possible to introduce a non-doxastic information state and then begin using that state as the basis for FID. In such an case, both *too* and *come* are acceptable, as shown in (33).

(33) [Context: Leslie, Ann, and Ron are in Columbus. Ann says:]

Ron is imagining that he's in New York. He's visiting Times Square, taking in the sights, sounds, and smells. The hot dogs smell delicious. Maybe he will get one. Maybe he'll see a Broadway show. Andy is {**coming** to New York later today/in New York today *too*}, though, so maybe he'll wait until they meet up and see what Andy wants to do.

In (33), Ron's imagination state, introduced in the first sentence, forms the basis for the FID context that develops in subsequent sentences. In this context, both *too* and *come* are acceptable.

Because they do not differentiate *come* from standard presupposition triggers such as *too*, the examples do not reveal anything special about the anchoring of *come* to a perspective. However, they do show that the anchoring implication is not necessarily a *de se* belief of the anchor. Rather it is a *de se* commitment of the anchor according to whatever perspective is salient and relevant for the interpretation of *come*. Incorporating this into the anchoring implication leads to the slight revision in (34).

(34) **Anchoring implication** (to be revised): According to some salient perspective of the anchor's, the anchor self-ascribes being located at the destination.

2.3 The anchoring of *come* depends on the anchor's perspective, not the anchor

Having established that the anchoring of *come* and the anaphoric presupposition of *too* are similar with respect to embedded contexts and FID contexts, I now want to draw a contrast between them by examining a different class of examples. This contrast will lead to a more radical revision of the anchoring implication. These examples in question show that *come* can be anchored to an information state or perspective that does not entail that

some individual anchor is located at the destination. Instead, in these cases, the perspective itself is in some sense situated or located at the destination. Three such examples are given in (35)-(37). In (35)-(37), there is no individual located at the destination of the motion event in any clearly available information state. As (37) shows, this kind of example is originally due to Fillmore (1975).

(35) [Context: Ann loves to watch a badger web cam from a state park in Wisconsin. The web cam shows a clearing in the park. Today, she opens the website, and then says to Chris:]

a. #Ooh, a badger is in the clearing **too**.

b. Ooh, a badger just **came** to the clearing.

(36) [Context: Leslie says: *Last night while doing guided imagery I pictured a little cabin in the woods with no one around.*]

a. ??I pictured Ron being in front of the cabin too, cutting wood.

b. I pictured Ron **coming** out of the cabin and beginning to cut wood.

(37) (adapted from Fillmore 1975: 67) [Context: The speaker is not on the island. She says: *There on the uninhabited island, waves lap upon the shore. Beaches sit empty as they have for millennia.*]

a. ??Occasionally, a loon stays on the island (to roost) **too**.

b. Occasionally, a loon **comes** to the island to roost.

In (35)-(37), there is no reasonable candidate for the anchor located at the destination. No interlocutor is there, no attitude holder, and no one whose perspective is being represented by an FID context. Furthermore, there is no overtly mentioned information state such that the context entails that the speaker (or some other possible anchor) believes, imagines, etc. herself to be at the destination. The unacceptability of (35a), (36a), and (37a) with *too* make this clear. If there were some covert sense in which the contexts in (35), (36), and

(37) communicated that the speaker or some other individual was located in the clearing or on the island, then the use of *too* would be acceptable, as in the examples in Section 2.2.

As the unacceptability of *too* makes clear, in these examples, there simply is no anchor at the destination. This observation highlights the perspectival nature of anchoring and leads to a revision of the anchoring implication. Here's why. In each case, there is a contextually salient information state that approximates or represents elements of the information state someone would have were she present at the destination. For instance, in (35), via the web cam, Ann has access to a visuo-spatial perspective that's similar to one she would have were she located in the clearing. The camera makes available a body of perspectival information similar to that available to an individual located in the clearing, even though there's no human individual there. Put another way, the camera makes available a body of perspectival information that is itself centered on the clearing. Because she's watching the camera, Ann has a kind of access to that body of information. Similar observations apply, *ceteris paribus*, to (36) and (37). (37) is particularly interesting due to the way in which the information state is made available. In (37), the speaker makes the state available by making elements of it overt—specifically by describing the scene on the island. In other words, (35) and (37) are two sides of the same coin. In (35), the context makes the existence of a perspective centered on the clearing salient, but does not provide details about the perspective itself. In (37), the context just gives the details of the perspective. It doesn't say that anyone is imagining, looking at a video of, etc. the island. The addressee has to infer that from the description. Thus, these examples show that the meaning of *come* is sensitive to a perspective that is centered at the destination, not a perspective holder who is located there. It just happens that in most cases perspectives are centered only on locations where perspective holders are or else imagine, believe, etc. themselves to be.

Similar cases have been described for the information states involved in the interpretation of epistemic modals, the modal bases. Kratzer (2012) 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. For instance, in one of her examples it is the information contained in a locked filing cabinet (Kratzer 2012: 98-99 examples (35) and (36)):

- (38) [“Suppose we are confronted with a locked cabinet we know to contain the relevant factual evidence about the murder of Much-Girgl. We have no clue about what that evidence is, but for the sheer fun of it, start placing bets on who might have killed Girgl, given the evidence in the cabinet.”]
- a. Kastenjakl must have done it.
 - b. Gauzner-Michl might have done it.

Kratzer argues that in the examples in (38), the modals are interpreted relative to the information in the cabinet, which is not the epistemic or doxastic state of any individual in particular. The generalization, then, 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 salient body of information instead.

This way of thinking about (35)-(37) and similar 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 (35)-(37) 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.

These observations reveal that, in a sense, the anchor herself is not really what matters for the interpretation of *come*. The information state or perspective is. Crucially, though,

the kind of information state in question is not just a set of timelessly true or false propositions. Rather, the perspectives relevant for the interpretation of *come* approximate the kinds of information states that a given anchor would have were she located at a certain place at a certain time. In other words, they are centered on a particular place and time. This is part of the motivation for modeling perspectives as sets of centered worlds in Chapter 6 (see Lewis 1979a). Typically, these kinds of centered information states become salient in the discourse because an anchor actually is located at the relevant place or else is said to be imagining herself to be there. However, the examples presented in this section show that the anchor's presence is not strictly necessary. In sum, then, there's a sense in which it might be more perspicuous to call perspectives themselves the "anchors" of deictic motion verbs and minimize the importance of the individuals who have cognitive access to those states, whom I call "anchors" here. On this view, the anchoring implication can be restated as in (39).

- (39) **Anchoring implication** (to be revised): A salient perspective is centered at the destination of the motion event (*de se*).

Stating the anchoring implication as in (39) makes the role of the perspective itself clear. Nevertheless, in what follows I will continue using the term "anchor" to refer to individuals, because the focus of the previous literature is on the anchor itself and because in most examples, the anchor either actually is located at the destination or self-ascribes being so located. However, I will also begin to speak of "anchoring to" a given perspective, by which I mean that this perspective is the one that is relevant for the interpretation of *come*. Speaking in this way will make it easier to identify which among a single anchor's multiple perspectives (e.g. beliefs, imagination states, etc.) is relevant for the interpretation of *come*.

The existence of examples centered on perspectives but not literal anchors provides a way to think about an additional kind of example that is quite commonly discussed in the literature. These are so-called **home base** examples (Oshima, 2006b). In a home base

example such as (40), there is no anchor at the destination. Instead, the destination is the anchor's home base—typically her actual home, as in (40).

- (40) [Context: Ann and Beth live in Columbus. Today, they are in Ann Arbor. Ann says:]
John is coming {**to my house/to Columbus**} today. Too bad we we're out of town.

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. (41), adapted from Goddard 1997:157, exemplifies the home base anchoring to a place of employment.

- (41) [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.¹⁶ In other words, home bases are places such that the anchor can be assumed to have access to a perspective centered at that place. If this is right, then even more than (35)-(37), 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. Thinking of home base examples in this way is appealing because it makes possible a unified account framed in terms of perspective taking. Nothing special needs to be said about home base examples on this approach.

¹⁶Informal discussions with native speakers of English suggest that there is variability in the degree to which they accept home base examples where the home base is somewhere other than the anchor's actual home. Some speakers seem to consistently accept such examples, while others seem to consistently reject them. Understanding this variability is a task for future research.

2.4 The anchor of *come* is an anaphoric implicit argument

Having argued that the anchoring of *come* is to a doxastic perspective accessible to the anchor, in these next three sections I present three additional empirical generalizations about the meaning of *come*. The first of these has to do with how the anchor and perspective are retrieved from the context. The examples above have already shown that the anchor and anchoring perspective of *come* can be retrieved from the context of utterance, as in interlocutor examples, or supplied by the previous linguistic context, as in deictic perspective shift under attitudes and examples involving direct anchoring to a perspective (e.g. (35)-(37)). The fact that the anchor can be supplied in both ways is partial evidence that it is an anaphorically interpreted implicit argument (Partee, 1984, 1989; Condoravdi and Gawron, 1996). The data in this section provide additional support for this hypothesis. They show that the anchor can be quantificationally bound and donkey anaphoric. In addition, the data show that bound and donkey anaphoric readings are only acceptable if the domain quantified over consists of interlocutors, attitude holders, or other individuals with salient perspectives, strengthening support for the generalization developed in Section 2.2.

The examples in (42) involve quantification over motion events, and therefore quantification over destinations and, by extension, anchors. In (42a), there is no domain of acceptable anchors, and the examples in unacceptable. In the minimally different context in (42b) the domain of anchors quantified over is addressees.

- (42) [Context: The speaker doesn't go to football games or bars.]
- a. [Context: She is at home speaking to her husband about game day at OSU.]
 #On game days, after the game, every fan **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 Columbus bar owners.]
 On game days, after the game, every fan **comes** to a local bar. (You guys are responsible for them being sober enough to drive when they leave...)

On the assumption that people leaving the game go to different bars, (42b) involves multiple anchors: one for each destination. That is to say, for any given fan's journey, only one bar owner/addressee is located at the destination. This scopal relation between the universal quantifier and the anchor is illustrated in the informal logical form given in (43), which represents the intended interpretation. The anchoring implication is included in (43) for clarity, ignoring the observation to be developed in Section 2.5 that the anchoring implication is a projective content.

$$(43) \quad \forall x[x \text{ is a fan} \rightarrow \exists y[y \text{ is a local bar} \wedge x \text{ travels to } y \wedge \exists z[z \text{'s perspective is centered at } y]]]$$

As (43) makes clear, on the intended interpretation, each fan takes a different journey, and for each such journey there's a different destination with a different anchor. This anchor and her corresponding perspective vary with the fan in question. They are quantificationally bound. For simplicity, I do not include the perspective here as a separate argument but focus instead on the anchor, but it should be clear from the way that (43) is written that the two vary together. That is to say, if a different anchor is retrieved, so is a different perspective. In this section, I will continue to talk about quantificationally binding anchors for perspicuity.

The significance of the anchor's perspective can be seen in the difference in acceptability between (42a) and (42b). In (42b) each anchor z is a bar owner and also an addressee. Because she is an addressee, her perspective is salient, and the example is acceptable. In (42a), there are no addressee anchors and no other plausible anchors with salient perspectives, resulting in unacceptability.

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

(44) [Context: Leslie is describing some women, each of whom has a child who has caused a lot of heartbreak but who is now trying to be a better family member.]

Every woman was glad that her wayward child **came** to Christmas dinner.

In (44), each mother is the anchor for a different motion event.

The anchor can also be bound in examples that involve deictic perspective shift but do not include embedding predicates, similar to the FID examples discussed above, as shown in (45a). The contrast with (45b) shows that, in order for the use of *come* to be acceptable, the perspectives of the bound anchors must be salient and relevant.

(45) 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 child **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 (45a), the perspectives of the women, specifically their emotional states, are under discussion, and the women are an acceptable domain of anchors. In contrast, in (45b), the

perspectives of a group of children are under discussion, and the children’s mothers are not acceptable anchors.¹⁷

(46) shows that the anchor of *come* can participate in donkey anaphora (Geach 1962). Donkey anaphora is an anaphoric relationship in which an indefinite inside a scope island introduces a discourse referent which is the antecedent for an expression that is outside the scope island. The minimally different examples in (47) once again highlight the importance of salient, relevant perspectives.

(46) [Context: A small village recently suffered attacks in which tigers stole children from their beds at night. Now, a reporter is interviewing a teacher who is watching village children playing in the schoolyard. When asked how these children survived the attacks, the teacher says:]

- a. Every man that has a child **came** to her room at night to guard her.
- b. If a man has a child, he **came** to her room every night to guard her.

(47) [Context: A small village recently suffered attacks in which tigers stole children from their beds at night. Now, a reporter is interviewing the mayor, who is about to give a speech to all of the fathers in the town. When asked how the fathers dealt with the attacks, the mayor says:]

- a. ??Every man that has a child **came** to her room at night to guard her.
- b. ??If a man has a child, he **came** to her room every night to guard her.

In the examples in (46), for each man’s motion event, the anchor is his child, introduced by the indefinite *a child*, which is inside a scope island.

These data motivate analyzing the anchor of *come* as an anaphorically interpreted implicit argument. The anchor passes Partee (1984, 1989) and Condoravdi and Gawron’s

¹⁷This is contra Barlew 2015b, which suggests that restrictions on acceptable anchors are relaxed in quantificational examples. Restrictions on anchoring do seem to be relaxed for generics, as in *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 this observation. Thanks to Regine Eckardt (p.c.) and Craige Roberts (p.c.) for discussion.

(1996) tests for anaphoric expressions: it can take as its antecedent an element of the context of utterance, an individual introduced by a prior linguistic expression, a quantificationally bound variable, or a donkey variable. Assuming that the anchor of *come* is anaphorically interpreted is motivated by one additional data point. In some utterances, different instances of *come* have different anchors. (48), adapted from Fillmore (1975: 68) illustrates.

- (48) [Context: Leslie and April are talking on the phone. Leslie says:]
He'll come to my house after he comes to your house.

Examples such as (48) are predicted if the anchor is an anaphorically interpreted implicit argument.

2.5 The anchoring implication of *come* is a Class B projective content

It has been recognized since at least Cinque (1972) that the anchoring of *come* projects. That is to say, when *come* is embedded under an entailment canceling operator such as negation, the anchoring implication nevertheless survives as an entailment of the utterance (Langendoen and Savin, 1971; Chierchia and McConnell-Ginet, 1990). Cinque's (1972: 578) examples(3a) and (3b), given in (49) demonstrate:

- (49) a. He came to the shop yesterday.
b. He didn't come to the shop yesterday.

Though he does not include contexts, when describing (49), Cinque's (1972: 578) says "the presence of the Speaker (and/or Addressee) [at the shop] is not affected by the negation". Thus, he proposes that it projects. Oshima (2006b) also argues that the anchoring implication projects. In this section, I develop additional empirical generalizations by diagnosing the anchoring implication using the tests for projective content developed by Tonhauser et al. (2013).

Tonhauser et al. (2013) develop three diagnostics which, together, yield a taxonomy of projective contents. Each diagnostic is applied to the pair of a projective content and an expression, the use of which gives rise to this content. The expression is called the **trigger** of the projective content. The first diagnostic tests for a **strong contextual felicity constraint**, which is defined below. The second diagnostic tests for projection itself. The projection diagnostic is applied second because the way it is applied depends on whether or not the trigger in question imposes a strong contextual felicity constraint with respect to the implication in question. Tonhauser et al.'s final diagnostic classifies projective contents with respect to whether or not they have **obligatory local effect**. Since all contents under consideration are projective, together these diagnostics yield the four category taxonomy given in Tonhauser et al.'s (2013:67) Table 1, reproduced here as Table 2.2.

CLASSES	PROPERTIES OF CONTENTS		
	PROJECTION	STRONG CONTEXTUAL FELICITY	OBLIGATORY LOCAL EFFECT
A.	yes	yes	yes
B.	yes	no	no
C.	yes	no	yes
D.	yes	yes	no

Table 2.2: Four classes of projective content in English and Paraguayan Guaraní

Tonhauser et al. use this taxonomy to classify expressions in English and Paraguayan Guaraní. Their results are summarized in their Table 2 (pg. 103), reproduced here as Table 2.3.

Language	Trigger/Content	Properties of contents			Class
		Projection	Strong Contextual Felicity	Obligatory Local Effect	
E	Pronoun/existence of referent	yes	yes	yes	A
	<i>too</i> /existence of alternative	yes	yes	yes	
G	<i>ha'e</i> '3rd'/existence of referent	yes	yes	yes	
	<i>avei</i> 'too'/existence of alternative	yes	yes	yes	
E	Expressive	yes	no	no	B
	Appositive	yes	no	no	
	NRRC	yes	no	no	
	that N/property attribution	yes	no	no	
	Possessive NP/possessive relation	yes	no	no	
G	Expressive	yes	no	no	
	Appositive	yes	no	no	
	NRRC	yes	no	no	
	Possessive NP/possessive relation	yes	no	no	
	<i>ha'e</i> '3rd'/human referent	yes	no	no	
	Demonstrative NP/property attribution	yes	no	no	
E	<i>almost</i> /polar implication	yes	no	yes	C
	<i>know</i> /content of complement	yes	no	yes	
	<i>only</i> /prejacent implication	yes	no	yes	
	<i>stop</i> /pre-state holds	yes	no	yes	
G	<i>aimete</i> 'almost'/polar implication	yes	no	yes	
	<i>(oi)kuaa</i> 'know'/content of complement	yes	no	yes	
	<i>-nte</i> 'only'/prejacent implication	yes	no	yes	
	<i>n(d)(a)-...-vé-i-ma</i> 'not anymore'/pre-state holds	yes	no	yes	
E	<i>too</i> /salience of established alternative	yes	yes	no	D
	Focus/salience of alternatives	yes	yes	no	
	<i>that</i> N/speaker indicates suitable entity	yes	yes	no	
G	<i>avei</i> 'too'/salience of established alternative	yes	yes	no	
	Demonstr. NP/speaker indicates suitable entity	yes	yes	no	

Table 2.3: Properties of some projective contents in English and Paraguayan Guaraní

As the table demonstrates, projective contents of all four types are cross-linguistically attested. In this section, I describe each diagnostic in some detail and then apply it to the anchoring implication of *come*. The results show that the anchoring implication is a Class B projective content.

2.5.1 Strong contextual felicity constraint

Tonhauser et al.'s (2013: 76) definition of a strong contextual felicity constraint is given in (50). It relies on a particular relation between an implication, m , and a context, where a context is modeled as a Stalnakerian common ground, i.e. a set of propositions that the interlocutors (purport to) believe in common. For a given m , a context is said to be **m -positive** if it entails or implies m , and **m -neutral** if it entails or implies neither m nor $\neg m$.

- (50) **Strong contextual felicity constraint:** If utterance of trigger t of projective content m is acceptable only in an m -positive context, then t imposes a strong contextual felicity constraint with respect to m .

(50) says that in order for a trigger that imposes a strong contextual felicity constraint with respect to some implication m to be acceptable, the context must entail or imply m . An implication of this definition is that if t does not exercise a strong contextual felicity constraint with respect to m , then it will be acceptable in an m -neutral context. Therefore, to diagnose a strong contextual felicity constraint, the researcher constructs m -neutral contexts and asks for native speaker acceptability judgments for utterances with trigger t in those context. Tonhauser et al.'s (2013: 76) statement of the diagnostic is given in (51).

- (51) **Diagnostics for strong contextual felicity:** Let S be an atomic sentence that contains trigger t of projective content m .
- a. If uttering S is acceptable in an m -neutral context, then trigger t does not impose a strong contextual felicity constraint with respect to m .
 - b. If uttering S is unacceptable in an m -neutral context and acceptable in a minimally different m -positive context, then trigger t imposes a strong contextual felicity constraint with respect to m .

The English versions of several examples from Tonhauser et al. (2013: 78-80) are given in (52) and (53) as illustrations of this diagnostic. (52) shows that *too* exercises a strong contextual felicity constraint with respect to its alternative implication, while (53) shows that *stop* does not with respect to its prestate implication and that *know* does not with respect to its factive implication.

- (52) a. [Context: Malena is eating her lunch, **a hamburger**, on the bus going into town. A woman who she doesn't know sits down next to her and says:]
#Our bus driver is eating empanadas **too**.
- b. [Context: Same as (52a), except that **Malena is eating empanadas**.]
Our bus driver is eating empanadas **too**.
- (53) a. [Context: Laura, who doesn't live with her parents, visits them and asks them to sit down with her because she has to tell them something.]
I've **stopped** doing drugs.
- b. [Context: A girl backs out of a driveway and hits Susi's car. A woman comes running out of the house, apologizes that her daughter hit Susi's car, and says:]
She **knows** that she has to use her glasses to drive.

In the context in (52a) the use of *too* gives rise to the implication m that someone other than the bus driver is eating empanadas. The context is m -neutral, in that it entails

neither that someone else is eating empanadas nor that no one else is eating empanadas. The unacceptability of (52a), and the acceptability of the same sentence uttered in the minimally different *m*-positive context in (52b), shows that *too* exercises a strong contextual felicity constraint with respect to *m*.

In (53a), the use of *stopped doing drugs* triggers the implication that Laura has been doing drugs, commonly called the “prestate implication”. The context is neutral with respect to this implication, given that Laura’s parents may or may not know that she has been doing drugs. The acceptability of (53a) shows that *stop* does not exercise a strong contextual felicity constraint with respect to the prestate implication. In (53b), the use of *know* gives rise to the implication that the daughter has to use her glasses to drive. This implication, that the complement of *know* is true, is often called the “factive implication”. In (53b), the context is *m*-neutral, because Susi presumably knows nothing about the daughter’s eye-wear habits. The fact that (53b) is acceptable demonstrates that the use of *know* does not exercise a strong contextual felicity constraint with respect to the factive implication. Tonhauser et al. (2013) show that the Guaraní expressions *avei* ‘*too*’ *n(d)(a)-...-vé-i-ma* ‘not anymore’, and *(oi)kuaa* ‘*know*’ give rise to project contents that behave similarly to those of their English counterparts *too*, *stop*, and *know* on this diagnostic.

Applying the diagnostic for a strong contextual felicity constraint to *come* demonstrates that the use of *come* is acceptable in a context in which the anchoring implication is not entailed, i.e. an *m*-neutral context. Two examples are given in (54) and (55).

(54) [Context: In LA, Joe and Fred have just met. As they talk, Joe mentions that he moved to California in 1985, but doesn’t say from where. Fred asks “What brought you out here?”]

Joe: When I was a teenager, my uncle, who lived in California at the time, **came** to Chicago one Christmas with stories about year round sun, beaches, and girls. That was all it took.

(55) [Context: Al and Betty live in New York, and are there today. Betty says:]

I met this guy Ron on the internet. He told me President Obama is **coming** to Chicago today.

In (54), the context does not entail anything about Joe’s location prior to 1985. Nevertheless the use of *came to Chicago*, which gives rise to the anchoring implication that Joe was in Chicago, is acceptable. Similarly, in (55), the context entails nothing about Ron’s location. Nevertheless, the example is acceptable.¹⁸

¹⁸Oshima (2016) gives the following as a counter-example to the claim that *come* does not exercise a strong contextual felicity constraint:

- (i) In the 1990s I would tour all around North America as a stand-up comedian. One day, **#(when I was staying in Austin,)** my brother, who was then a graduate student, **came** to University of Texas to attend an academic conference.

I agree with Oshima’s judgment that (i) is unacceptable without the optional material indicating that the speaker was staying in Austin at the time of the brother’s visit. Accounting for the difference in acceptability between (54) and (55), on the one hand, and (i) on the other is a task for future work.

The observation that *come* performs differently on the strong contextual felicity constraint diagnostic across different examples may indicate a need for a finer grained diagnostic. The way that strong contextual felicity constraint is defined suggests that the existence of examples in which a trigger *t* is acceptable in a *m*-neutral contexts is sufficient to show that *t* does not exercise a strong contextual felicity constraint with respect to *m*. Tonhauser et al. (2013:76) write “If utterance of trigger *t* of projective content *m* is acceptable *only* [italics mine - JB] in an *m*-positive context, then *t* imposes a strong contextual felicity constraint with respect to *m*.” Examples (54) and (55) show that *come* is in contexts that are not *m*-positive, which seems to indicate that it does not impose a strong contextual felicity constraint. However, the statement of the diagnostic leaves room for a different interpretation. Diagnostic (ii) says “If uttering *S* [with *t*] is unacceptable in an *m*-neutral context and acceptable in a minimally different *m*-positive context, then trigger *t* imposes a strong contextual felicity constraint with respect to *m*.” Oshima’s example (i) has exactly these features, which suggests that *come* does impose a strong contextual felicity constraint. These examples show that a next step in investigating projective contents is to determine how to analyze a trigger with variable performance on the diagnostic for strong contextual felicity. For now, I continue to assume that examples such as (54) and (55) provide evidence that *come* does not exercise obligatory local effect.

The minimal variant of (i) in (ii) adds some support for this claim:

- (ii) In the 1990s I toured around North America as a stand-up comedian. **I spent time in Chicago, Austin, New York, and LA.** Once, my brother, who was then a graduate student at Iowa St., **came** to Austin to the University of Texas to attend an academic conference.

Like the context of (i), the context of (ii) does not entail or imply that the speaker was in Austin when his brother traveled there. He might as easily have been in Chicago, New York, or LA. However, because Austin is mentioned as a possible location for the speaker, the example is acceptable. This suggests that for *come* to be acceptable in this example, the anchoring implication has to be salient in some way or other, but does not have to be entailed or implied. Why that should be the case in (i) and (ii) but not in (54) and (55) is a question for future investigation. For some speculation on the matter as it relates to examples with *zu* ‘come_{zu}’, see Chapter 4.

2.5.2 Projectivity

Tonhauser et al.’s (2013) next diagnostic tests for projection itself. Applying this test to *come* is useful for a couple of reasons. First, although the claim that the anchoring implication is projective is widely accepted, only a few examples have been provided in the literature (Cinque, 1972; Oshima, 2006b). Furthermore those examples are generally similar to Cinque’s (1972) examples, given in (49), in that they do not include carefully controlled contexts.¹⁹ Thus, applying Tonhauser et al.’s diagnostic for projectivity helps put claims in the literature on a more solid empirical footing. Second, applying the diagnostics to *come* in English paves the way for applying them to *zu* ‘*come_{zu}*’ in Chapter 4.

The diagnostic for projectivity is applied using one of two different procedures, depending on whether or not the trigger/content pair being investigated exercises a strong contextual felicity constraint. In Section 4.5.2, I show that *zu* ‘*come_{zu}*’, like *come*, does not exercise a strong contextual felicity constraint with respect to its anchoring implication. Since this is the case, here I introduce only the procedure for diagnosing trigger/content pairs that do not exercise a strong contextual felicity constraint. Readers interested in the test for trigger/content pairs that do are directed to Tonhauser et al. (2013: 83).

The projection diagnostic relies on what is called the called family of sentences (FOS) diagnostic (Chierchia and McConnell-Ginet, 1990). FOS variants of an atomic sentence *S* are versions of *S* that embed *S* under entailment canceling operators, specifically (i) under negation, (ii) under a possibility modal, (iii) in the antecedent of a conditional, and (iv) in a question. Typically implications that are entailed by *S* are not entailments of an FOS variant of *S*. For instance, *Bob went to Boston* entails that Bob went to Boston, but versions embedding that content under negation (*Bob did not go to Boston*) or in a question (*Did Bob go to Boston?*) do not. Projective contents are special in that they survive as

¹⁹The exception is examples in which *come* is embedded under attitude predicates such as *believe*. Oshima (2006b,c) discusses many such examples. However, examples involving attitude predicates are not standardly used as tests for projectivity, following Chierchia and McConnell-Ginet (1990) and Tonhauser et al. (2013).

entailments of FOS variants (Langendoen and Savin, 1971; Chierchia and McConnell-Ginet, 1990). Here is Tonhauser et al.'s (2013:82) definition of projection:

- (56) **Projection:** A content m of expression t is projective (i.e. has the property of projection) if and only if m is typically implied by utterances of atomic sentences S containing t and may also be implied by utterances of family-of-sentences variants of S .

To apply the test for projection to contents that do not exercise a strong contextual felicity constraint, the researcher constructs a context C that is neutral with respect to the implication being tested (i.e. an m -neutral context). If, in C , an utterance of a sentence S with the trigger t that gives rise to m is understood to give rise to m not just in positive utterances, but in FOS variants as well, then m projects. But how does the researcher know that the implication arises? As discussed in Tonhauser et al. 2013 and Tonhauser and Matthewson under review, one way to get at the answer is to ask for an indirect implication judgment. To do this, the researcher develops C in such a way that some individual's actions depend on whether or not she accepts m as true. If, following an utterance of some sentence S , this individual acts as though she believes m , then the utterance of S is assumed to have given rise to m . Consider (57), adapted from Tonhauser et al.'s (2013:88) example (34). Here m is the prestate implication of *stop*, specifically the implication that Marko used to smoke. The individual who acts based on this implication is Maria. If Maria comes to accept that Marko used to smoke, she will want to give him medicine.

- (57) [Context: There is a health program that gives medicine to everybody who has ever smoked or currently smokes. Maria is administering the program in a particular town; since she doesn't know the people in the town, she is being assisted by Mario, a local townsman, who tells her (a)(c) about Marko; (d) is uttered by another local.]
- a. **Atomic:** Marko **stopped** smoking. **yes**
 - b. **Negation:** Marko didn't **stop** smoking. **yes**
 - c. **Possibility:** It's possible that Marko **stopped** smoking. **yes**
 - d. **Antecedent of a condition:** If Marko **stopped** smoking, he has lots of money.
yes
 - e. **Question:** Did Marko **stop** smoking? **yes**

These examples are all acceptable, which is expected because *stop* does not exercise a strong contextual felicity constraint with respect to its prestate implication. Furthermore, consultants answer 'yes' when asked if Maria will want to give Marko medicine, as indicated following each example. It is this answer that provides evidence that the prestate implication projects, even when the trigger is embedded in an FOS variant.

Similar results obtain for the factive implication triggered by *know*. This is demonstrated in (58). Here, the question is whether Carlos will want to ask Maria for medicine.

(58) [Context: Carlos used to smoke, but doesn't any more. Now, he is sick as a result, but he has not let anyone know. He wants to get the medicine described in the context of (57), but is afraid it will be too expensive. If it is cheap, he plans to ask Maria for some. In passing he asks Mario why Marko is not being treated by Maria. Mario says:]

- a. **Atomic:** I'm not sure. Marko **knows** that the medicine is free. **yes**
- b. **Negation:** Marko doesn't **know** that the medicine is free. **yes**
- c. **Possibility:** I'm not sure. Perhaps Marko **knows** that the medicine is free, but perhaps he doesn't. **yes**
- d. **Antecedent of a conditional:** If Marko **knows** that the medicine is free, I don't have a good answer for you. **yes**
- e. **Question:** I don't know. Does Marko **know** that the medicine is free? **yes**

In this case, the factive implication is that the medicine is free. Native speakers judge that after hearing Mario's utterance, Carlos will want to ask Maria for medicine, as indicated by the **yes** responses. This indirect implication judgment provides evidence that the factive implication projects.

The anchoring implication of *come* is shown to be projective in (59a). The indirect implication question is whether or not James Bond will send commandos to Zurich.²⁰

²⁰The idea of using James Bond characters for examples where different individuals have different beliefs about each other is due to Andy Egan.

- (59) a. [James Bond is undercover and talking to Goldfinger, who does not recognize him. Bond wants to send commandos to the city where Goldfinger's has hidden a weapon of mass destruction, but he doesn't know what city that is. He does know that Goldfinger hid the weapon during the month of June, so he is prepared to send commandos to any city where Goldfinger spent time in June. However, he fears that asking "Where were you in June?" directly will blow his cover. They are talking in London, and part of Bond's cover story is that he is a businessman who has never left England. To make casual conversation, Bond says "Do you know where Prime Minister Thatcher traveled this summer?" Goldfinger says:]
- i. **Atomic:** Prime Minister Thatcher **came** to Zurich in June. **yes**
 - ii. **Negation:** Well, Prime Minister Thatcher didn't **come** to Zurich in June, even though it was on her schedule. **yes**
 - iii. **Possibility:** Perhaps Prime Minister Thatcher **came** to Zurich in June, but I'm not sure. **yes**
- b. [Context: Identical to (59a), except that Bond adds "I think she traveled to Paris, Zurich, and Amsterdam."]
- i. **Question:** Did Prime Minister Thatcher **come** to Zurich in June? They must have kept her visit quiet. **yes**
 - ii. **Antecedent of a conditional:** If Prime Minister Thatcher **came** to Zurich in June, then perhaps there is a new banking deal in the works. **yes**

In (59), the only plausible anchors for *come* are the speaker and the addressee, Bond and Goldfinger. Since Bond purportedly has never left England, Goldfinger is the only plausible anchor for *come to Zurich*, and the only time at which he could have been an anchor is event time.²¹ Because Goldfinger in June is the anchor, atomic sentence S in (59a-i) gives

²¹This example highlights the importance of purported doxastic states or discourse commitments rather than actual doxastic states. Bond may actually have been in Zurich in June, and he may well believe that about himself. However, it is Bond's beliefs about himself as he represents them in the discourse that are relevant for analyzing the anchoring of *come*.

rise to the implication that Goldfinger was in Zurich in June. As a result, Bond believes the weapon on mass destruction was hidden in Zurich, and he wants to send commandos there. The same reasoning applies, *ceteris paribus*, to the FOS variants in (59a-ii)-(59b-ii).

(60)-(62) provide additional evidence. In (60), the indirect implication question is whether or not Rick will try to scare the deer toward Cedar Pond.

(60) [Context: Rick and his son Carl are hunters. Rick tells Carl that he is not able go hunting this week, but secretly he plans to go out into the woods and try to scare the deer to where Carl will be. He knows that Carl plans to hunt in the same spot this week as he did last week, but he doesn't know where that is. Carl says:]

- a. **Atomic:** The deer {**came/will come**} to Cedar Pond {last week/this week}.
yes
- b. **Antecedent of a conditional:** If the deer **come** to Cedar Pond this week, then they will be behaving differently than last week. **yes**
- c. **Question:** Will the deer **come** to Cedar Pond this week? I don't know. **yes**
- d. **Possibility:** Maybe the deer will **come** to Cedar Pond this week. **yes**
- e. **Negation:** The deer didn't **come** to Cedar Pond last week. But maybe they will this week. **yes**

In each example in (60), the judgment is that Rick will try to scare the deer toward Cedar Pond because that's where he believes Carl was last week and will be this week. This is evidence that the anchoring implication projects.

In (61), the indirect implication question is whether or not Mohamed will want to go to the goat pasture.

(61) [Mohamed is a Shiite Muslim living in Syria. Today ISIS is taking over the small town where he lives. Mohamed’s wife Fatima was in the mountains with their goats when ISIS entered the town, and she has hidden in a cave near the goat pasture. Mohamed doesn’t know where his wife is because she had several tasks to do today, including going to the market, visiting her elderly mother, and checking on the goats. More than anything, he wants to go to where Fatima is, regardless of the danger, so that they can be together. Mohamed texts his wife “ISIS has taken over the town. We should leave.” Fatima texts back:]

- a. **Atomic:** ISIS fighters are **coming** to the goat pasture, too. **yes**
- b. **Negation:** ISIS fighters are not **coming** to the goat pasture, at least not yet. **yes**
- c. **Antecedent of a conditional:** If ISIS fighters are **coming** to the goat pasture, it will not be a safe place either. **yes**
- d. **Question:** Are ISIS fighters **coming** to the goat pasture too? **yes**
- e. **Possibility:** Maybe ISIS fighters are **coming** to the goat pasture too. Maybe nowhere is safe. **yes**

Each of these examples gives rise to the anchoring implication that Fatima is at the goat pasture. As a result, Mohamed will want to go to the goat pasture in order to realize his goal of being with Fatima.

Finally, in (62), the domain question is whether or not Dave will go to Cup-o-Joe to give Thomas his birthday present.

- (62) [Context: Dave is at home. Right now, he is trying to locate his brother Thomas in order to give him a surprise gift. Because the gift is a surprise, he doesn't want to let Thomas know that he's looking for him. As they talk on the phone, Dave listens for clues about Thomas's whereabouts. Thomas says:]
- a. **Atomic:** Mom is **coming** to Cup-o-Joe now. yes
 - b. **Negation:** Mom is not **coming** to Cup-o-Joe now. yes
 - c. **Possibility:** Maybe Mom is **coming** to Cup-o-Joe now. yes
 - d. **Antecedent of a conditional:** If Mom is **coming** to Cup-o-Joe now, she didn't tell me about it. yes
 - e. **Question:** Is Mom **coming** to Cup-o-Joe now? yes

In each example in (56), Dave will take Thomas's utterance to implicate that Thomas is at Cup-o-Joe. He will be justified in going there to find Thomas and give him the present. This judgment constitutes evidence that the anchoring implication projects. The motion implication, in contrast, does not project. If Dave were looking for their mom, he would go to Cup-o-Joe after hearing (62a), and perhaps after (62c), but not after (62b), (62d), or (62e).

Note that in the examples above, minimally different utterances with *go* instead of *come* do not give rise to the implication that the anchor is/was/will be located at the destination. This confirms that the implication arises due to the presence of *come*, and not, say the discourse context more generally. All of these examples demonstrate that the anchoring implication projects and provide additional contexts in which *come* is acceptable even though the anchoring implication is not entailed or implied.

2.5.3 Obligatory local effect

Tonhauser et al.'s (2013) final diagnostic tests for obligatory local effect. The definition of obligatory local effect from Tonhauser et al. (2013: 93) is given in (63).

- (63) **Obligatory local effect:** A projective content m with trigger t has obligatory local effect if and only if, when t is syntactically embedded in the complement of a belief predicate B , m necessarily is part of the content that is targeted by, and within the scope of, B .

The diagnostic for obligatory local effect uses contradiction to test whether or not a projective implication m can be interpreted outside the scope of a belief predicate that embeds m 's trigger t . The diagnostic calls for the construction of an utterance which will yield a contradiction if m is interpreted inside the scope of the belief predicate. The way the diagnostic is formulated differs depending on whether or not t exercises a strong contextual felicity constraint with respect to m . If, like *come*, it does not, then there are three possible ways to implement the diagnostic. I provide one below (from Tonhauser et al. 2013: 93), and then implement it to diagnose the anchoring implication of *come*.

- (64) **Diagnostic for obligatory local effect using belief-predicates** Let S_1 be an atomic sentence with trigger t of content m .

...

Let S_2 be an atomic sentence that implies $\neg m$, and S a sentence where both S_1 and S_2 are conjoined under the same belief-predicate. If utterance of S is acceptable, then the content m with trigger t need not have its effect locally, that is, does not have obligatory local effect.

...

The diagnostic is applied to *come* in (65). The implication that contradicts the anchoring implication is bold-faced.

(65) [Context: Anna and Frank are at La Hacienda restaurant. They know that Mary is at home. Frank says:]

Mary believes that Sam is coming (here) to La Hacienda for dinner and that **we are eating at home**. She's wrong on both counts. We're here, and Sam is staying home for dinner.

In (65), S_1 is *Sam is coming (here) to La Hacienda for dinner*. The anchoring implication, m , is that the anchor, in this case the speaker and/or the addressee, are at La Hacienda. S_2 , which *we are eating at home*, directly contradicts. Nevertheless, both can be embedded under *believes* because the anchoring implication need not be interpreted within the scope of *believe*. It does not have obligatory local effect.

(66) confirms this result.

(66) [Context: Ann is in Michigan and was there last week. Ben and Leslie are in Washington, D.C. Ben tells Leslie:]

Ann believes that Andy and April came to Washington D.C. for vacation last week, and that **we've been in Pawnee all month**. She's wrong on both counts. We've been here since last Tuesday, and they went to the Bahamas.

Here, the m is the anchoring implication that Ben and/or Leslie is in D.C., or was at the time of April and Andy's purported travel. What Ann believes, that Ben and Leslie have been in Pawnee all month, contradicts m . Nevertheless, it is acceptable for Ben to utter (66), where content directly contradicting the anchoring implication is conjoined with a sentence with *come* and embedded under a belief predicate with Ann as the subject.

Together, the examples in this section demonstrate that the anchoring implication associated with *come* is a Class B projective content. It does not exercise a strong contextual felicity constraint, it does project, and it does not have obligatory local effect.

2.6 The anchoring implication and its relation to the motion path

To this point, I have characterized the anchoring implication as the implication that the anchor—more correctly, her perspective—is located at the destination of the motion path, just as it is characterized throughout the literature (e.g. Fillmore 1975, Oshima 2006b). The examples in this section show that this characterization is not correct (though it serves very well as a simplifying assumption). In fact, the location at which the anchor must be located for the use of *come* to be acceptable varies depending on the type of prepositional phrase (PP) with which *come* combines. Therefore, to characterize the anchoring implication accurately, it is necessary to understand a bit more about the meanings of different kinds of PPs.

First, some terminology. A **goal-PP** is a PP where the object of the preposition denotes the goal (or endpoint) of the path (e.g. *to the farm, into the shed*, etc.). Similarly, a **source-PP** is one where the object denotes the source (or startpoint) of the path (e.g. *from the hill, out of the house*, etc.). And a **route-PP** is one where the object of the preposition denotes something in the middle of the path (e.g. *through the tunnel, past the shed*, etc.).

Next, following Zwarts (2005), a PP denotation is either bounded, unbounded, or ambiguous between the two. When discussing boundedness, Zwarts draws an analogy to telicity in the verbal domain, where e.g. *build a house* is telic but *work on a house* is not. Note that here telicity depends on the denotation of the verb, not the actual action being referred to. For example, *build a house* and *work on a house* might be used to describe the same actions, but only the meaning of *build a house* is telic. The same principle applies to PP denotations. Some PP denotations encode a kind of telicity or boundedness because they encode arrival at a particular location. *To the house* is an example of a bounded PP. Others, such as *toward the house*, do not encode arrival and are not bounded. These differences are differences in PP denotations. Just as in the verbal domain, both types of PPs can be used

to describe one and the same path/journey. For instance, a single path might be described as *along the river* (unbounded) and *to the pier* (bounded), as in *John walked along the river to the pier*. This is one path under two different descriptions.

Like telicity in the verbal domain, boundedness in PP denotations is diagnosed using temporal modifiers. VPs with bounded PPs can be combined with temporal modifiers with *in*, such as *in ten minutes*, but not with temporal modifiers with *for* such as *for ten minutes*. Unbounded PPs behave in exactly the opposite way. The difference is exemplified in (67), adapted from Zwarts (2005: 741). (67a) illustrates boundedness, (67b), unboundedness, and (67c), ambiguity between the two.

- (67) a. **Bounded:** Alex walked {**onto the platform/out of the hotel**} {in/*for} ten minutes.
- b. **Unbounded:** Alex walked {**toward the mountains/along the river**} {*in/for} ten minutes.
- c. **Ambiguous:** Alex walked {**around the pond/through the grass**} {in/for} ten minutes.

In addition to illustrating boundedness, the examples in (67) make another crucial point: boundedness is not correlated with PP type. For example, (67a) shows that both the goal-PP *onto the platform* and the source-PP *out of the hotel* are bounded, and (67b) shows that both goal and route-PPs can be unbounded. Finally, following Zwarts (2005), as in the verbal domain, it is not paths themselves that are bounded or unbounded. It is PP meanings (i.e. descriptions or properties of paths). Once again, note that in a single event, Alex might walk *out of the hotel* (bounded) *through the grass* (ambiguous) *toward the mountain* (unbounded). In this case, he has one path. However, each description of the path has a different boundedness.

Here's how boundedness relates to anchoring. First, when *come* combines with a bounded goal-PP, the anchor must be at the destination. The examples in (68) illustrate.

- (68) [Context: This afternoon, Chris was working on the roof of April’s house, and Ben was working in the office. Jerry was working outside in the same neighborhood as April’s house and the office. At dinner, each man tells his wife:]
- a. Chris: Tom came **onto the roof of April’s house** this afternoon.
 - b. Ben: Ann came **into the office** this afternoon.
 - c. Jerry: # Sebastian came {**onto the roof/into the office**} this afternoon.

In the examples in (68), if the anchor is located at the destination, i.e. on the roof or in the office, the use of *come* is acceptable. If the anchor is located elsewhere, as in (68c), it is not. This generalization makes it clear why characterizing the anchoring implication as I did above has not proven problematic. All of the examples with *come* above also include a bounded goal-PP, specifically a *to*-PP. Therefore, the generalization that the anchor must be located at the destination holds for those examples.

The examples in (68) illustrate another point as well, one due to Fillmore (1965). In Fillmore’s (1965: 80) terms, the PP complement is “a directional phrase” and the place where the anchor must be located is characterized by the “corresponding location phrase”. As examples, Fillmore (1965: 79) says that in the interpretation of the anchoring implication, “‘to the airport’ and ‘into the room’ will be changed to [the corresponding location phrases] ‘at the airport’ and ‘in the room’, respectively”. Thus, what “at the destination” means in each case is determined by the meaning of the PP complement. For example, as Fillmore predicts, in order for (68a) to be acceptable, all that is required is that Chris be on the roof when Tom ascends. It is not necessary for Tom’s motion path to take him all the way to Chris’s physical location, i.e. for the two of them to make physical contact. Rather, they are considered to be at the same location when they are both at locations characterized by the location phrase corresponding to the PP complement.

Characterizing what it means to be at the destination in this way has important implications when the PP with which *come* combines is a source-PP rather than a goal-PP.

The examples in (69)-(70) illustrate. They show that when *come* combines with a bounded source-PP, the anchor must be located at the destination as defined with respect to the PP complement, just as when it combines with bounded goal-PPs.

- (69) [Context: This afternoon, Chris was working in his house across the street from April's house, and Ben was working in the hallway just outside the office. Jerry was working on the roof of April's house at 10:00 and in the office at 3:00.]
- a. Chris: A cat came **off the roof of April's house** and landed in the bushes at 10:00.
 - b. Ben: Andy came **out of the office** at 3:00.
 - c. Jerry: # Sebastian came {**off the roof of April's house at 10:00/out of the office at 3:00**} today.
- (70) [Context: Minimally different from (69) in that Jerry was working outside in the same neighborhood as April's house and the office all day.]
- Jerry: Sebastian came {**off the roof of April's house at 10:00/out of the office at 3:00**} today.

When *come* combines with a source-PP such as *off the roof of April's house*, the anchor can be located essentially anywhere on ground level within a reasonable distance of the house. In other words, the anchor must be located somewhere that can be described as *off the house*, just as Fillmore's generalization predicts. It is for this reason that (70) is acceptable even though Sebastian never makes it to Jerry's location, characterized in a more specific way.

Finally, in some cases *come* combines with a route-PP. In such examples, the anchor's location can be either the destination of the entire path or the location of the reference object, e.g. in the tunnel for the route-PP *through the tunnel*. Both are illustrated in (71).

- (71) a. [Context: Leslie and Ron are in Denver. Leslie says:]
 Tammy came **through Denver** on her way from Ohio to California.
- b. [Context: Leslie and Ron are in California. Leslie says:]
 Tammy came **through Denver** on her way from Ohio to California.

As in the case of the goal and source-PPs, what it means to be ‘at the destination’ or ‘at the reference location’ is determined by the meaning of the route-PP itself.

At first the generalization that, when *come* combines with a route-PP the anchor can be located at the reference location or at the destination seems quite different from the generalizations for source and goal-PPs. However, there’s a way to unify all three claims. It’s based on the observation that any path that can be described as *through the tunnel*, has a subpath that can be described as *into the tunnel* and another subpath that can be described as *out of the tunnel*.²² Thus, in some sense, each bounded route-PP, is “made up of” a bounded goal-PP and a bounded source-PP that have the same reference object (e.g. the tunnel). The combination of *come* with a route-PP is acceptable just in case the anchor’s location can be described using the location phrase corresponding to one of these “sub-PPs”.^{23,24} To generalize over all of the examples, then, all that is needed is to assume that one of the bounded sub-PPs of a given bounded PP is the original PP itself. In other

²²This assertion holds only for the bounded version of *through the tunnel*. In the unbounded version, all of the motion occurs within the tunnel, and combination with *come* is odd (though combination with e.g. *walk* is good).

²³“made up of” and “sub-PPs” are in scare quotes here because we wouldn’t want to attempt to decompose the meaning of the natural language expression *through* into two other natural language expressions, *into* and *out of*, at least not on the kinds of semantic theories standard today. Furthermore, there may be contexts where one wouldn’t want to describe the motion path in question using one or the other of these phrases. However, in principle both are available due to the structure of the paths involved. Ultimately, though, it won’t matter whether or not *into the tunnel* or *out of the tunnel* is available as an appropriate description of the path. When this observation is cashed out formally, the anchor’s location will be defined entirely in terms of the meaning of the route-PP complement. The English expressions used here just serve to approximate the meaning informally.

²⁴*Come* also combines with PPs that are ambiguous between bounded and unbounded meanings, such as *around the house*, and unambiguously unbounded PPs, such as *toward the house*. For the former, composition with *come* forces a bounded reading. With respect to the latter, the semantics of e.g. *toward*-PPs has yet to be worked out (see Zwarts 2005 for a couple of possibilities). On at least one option, the denotation of a *toward*-PP is similar to that of a *through*-PP. If that is right, then the analysis extends unproblematically. For now, I leave the topic to future research.

words, one of the bounded sub-PPs of the bounded PP *into the house* is *into the house*. On this assumption, the generalization is that the anchor’s location must be a location that can be described by the location phrase corresponding to a bounded sub-PP of the path-PP complement of *come*. This idea is illustrated in Table 2.4 using a goal-PP, a source-PP, and a route-PP. The generalization is incorporated into the anchoring implication in (72).

original path-PP	bounded sub-PP	corresponding location phrase (which describes the anchor’s location)
into the house	into the house	inside the house
out of the house	out of the house	outside the house
through the tunnel	into the tunnel	inside the tunnel
through the tunnel	out of the tunnel	outside (the other side of) the tunnel

Table 2.4: Bounded sub-PPs and their locational variants for three path-PPs

- (72) **Anchoring implication** (to be revised): A salient perspective is centered in a region that can be described using a location phrase corresponding to a bounded sub-PP of the path-PP complement of *come*.

The formal analysis developed in Chapter 6 analyzes the anchoring implication in a way that is congruent with (72). There, I use Zwarts’ (2005) formal definition of boundedness to precisely characterize bounded sub-PPs. For now, in the interest of simplicity, I continue to talk about the anchoring implication as the implication that the anchor’s perspective is located at the destination. In addition to being simpler, this characterization is accurate when *come* combines with a *to*-PP, as in nearly all of the examples discussed throughout this dissertation and the rest of the literature.

2.7 Summary: Desiderata for an analysis of *come*

- (73) summarizes the empirical generalizations from the previous sections.

(73) **Empirical generalizations**

a. **Perspectival generalizations:**

- i. *De se* ANCHORING: The anchoring implication of *come* is a *de se* implication.
- ii. SALIENT-PERSPECTIVE ANCHORING: The use of *come* is acceptable iff the anchor's perspective is salient in the discourse context.
- iii. PERSPECTIVE-ONLY ANCHORING: The use of *come* is acceptable if the anchor's perspective is centered at the destination, even if the anchor herself is not located there.

b. **Additional generalizations:**

- i. ANAPHORIC ANCHORING: The anchor and her perspective are anaphorically interpreted implicit arguments of *come*.
- ii. PROJECTIVE ANCHORING: The anchoring implication of *come* is a Class B projective content.
- iii. COMPLEMENT-DEFINED ANCHORING: The location on which the anchor's perspective is centered is defined in terms of the path-PP complement of *come*; it is not necessarily the actual endpoint of the motion event.

The perspectival generalizations in (73a)—*de se* ANCHORING, SALIENT-PERSPECTIVE ANCHORING, and PERSPECTIVE-ONLY ANCHORING—provide support for one of the central claims of this dissertation: that the interpretation of *come* depends on a contextually supplied perspective. The additional generalizations in (73b) describe how that perspective is supplied and how it contributes to the interpretation of an utterance with *come*.

Given these generalizations, it is now possible to state a more precise version of the anchoring implication in (74). Here I abstract away from some of the details related to the PP complement for perspicuity.

- (74) **Anchoring implication** (final): An anaphorically retrievable, salient perspective is centered at a location defined in terms of the path-PP complement of *come*.

Stating the anchoring implication in this way motivates Fillmore's (1965) intuition that using and interpreting *come* involves adopting a perspective. To use or interpret *come*, an interlocutor must identify a contextually salient perspective and know enough about that perspective to know where it is centered. She must entertain or "adopt" the perspective at least enough to conceptualize being located at its center. Accounting for this perspective dependence, and for the generalizations in (73), represent desiderata for any empirically adequate analysis of the meaning of *come*. In Chapter 6, I develop such an analysis. First, though, I consider the meaning of Bulu *zu* 'come_{zu}' and show that i) its meaning differs significantly from the meaning of *come* but ii) it is nevertheless similarly perspectival.

A brief introduction to Bulu and fieldwork methodology

In this chapter, I introduce the Bulu language and fieldwork methodology in preparation for Chapter 4, where *zu* ‘come_{zu}’ is documented.

3.1 Previous documentation of Bulu

Bulu (Boulou, bum) is a Northwest Bantu language (A.74 in the classification system due to Guthrie (1948)) with an estimated 858,000 speakers as of 2007 (Lewis et al., 2013). It is spoken primarily in southern Cameroon, from the area around Kribi east to Sangm and its surroundings. In addition, speakers have migrated to Yaoundé and other large cities.

Bulu is better documented than many languages, with several dictionaries/grammars in English (Bates, 1926), French (Alexandre, 1955; Janes and Essame, 1981; Abomo-Maurin, 2006), and German (von Hagen, 1914). However, for the most part these grammars cover the same ground, focusing on phonology and morphosyntax. There are a few articles and other works on topics such as particular morphemes and tone—e.g. Alexandre 1970; Clem 2014b; Yukawa 1992—but very little is known about Bulu semantics.

My experience with Bulu began in a field methods class in Columbus, Ohio in the spring of 2013. The work reported here was conducted with native speakers living in Columbus and Cameroon, specifically Yaoundé, Avebe Esse, and Eminemvom, the last two being small villages on the road between Sangmélima and Ebolowa. The work in Columbus has been continuous since January, 2013. The investigation of deictic motion verbs began in 2014. I worked in Cameroon in 2015 from late October to early December. Throughout

the dissertation, Bulu examples that are not otherwise attributed were gathered during this fieldwork in Columbus and Cameroon.

The speakers with whom I work are all bilingual Bulu and French speakers. In addition, two speak English, one fluently. With native speakers who speak English, elicitation was conducted in English and Bulu. With those who do not, elicitation was conducted entirely in Bulu. Eight speakers participated in this study, four males and four females ranging in age from 40-77. Most grew up and currently live in the region around Sangmélima, Avebe, and Eminemvom, but one is originally from Efumulan.

3.2 Bulu phonology and morphosyntax

This section discusses aspects of Bulu phonology and morphosyntax that are useful for understanding examples in the chapters that follow.

3.2.1 Phonology

The sounds of Bulu are well documented (Bates, 1926; Alexandre, 1955; Janes and Essame, 1981; Abomo-Maurin, 2006). A phoneme inventory with matching graphemes is provided in Appendix B. Here I note couple of points that will help with reading the examples that follow. First, Bulu has both /o/ and /ɔ/ as phonemes. In the practical orthography, the former is represented as <ô> and the latter as <o>. Similarly, /e/ is represented as <é>, and /ə/ as <e>. <d> represents /d/, which is sometimes pronounced as [d] and other times palatalized: [dʲ]. <kpw> is used to represent a labiovelar implosive, at least as far as I can tell. <ty> is used to write /tʃ/.

Bulu has both lexical and grammatical tone. The tonal system has been given several different kinds of analyses. In the most fine-grained analysis, for example, Bates (1926) differentiates five different tone heights, which he marks numerically as 1-5. The next most fine-grained system is represented by Janes and Essame (1981) and Abomo-Maurin (2006).

In their descriptive grammars, they propose that Bulu has three lexical tones—high, mid, and low—as well as rising and falling contour tones. In support of this claim, Janes and Essame (1981) provide the following minimal triple, which they say lexically distinguishing all three tones. Following their convention, I do not mark tone on the words but note it immediately following.

- (75) a. *zam* (low; Bates tone 1) ‘raffia’ (material from a type of palm tree)
b. *zam* (mid; Bates tone 2) ‘leprosy’
c. *zam* (high; Bates tone 4) ‘good taste’

In contrast, in his descriptive grammar Alexandre (1955) claims that Bulu has two lexically specified tones—high and low—plus contour tones. He provides the same three entries for *zam*, but does not mark tone, making it impossible to determine whether or not he takes two of the forms to be fully homophonous. In their studies of the Bulu tone system, Yukawa (1992) and Clem (2014a,b) argue that Bulu has two lexical tones—high and low—plus contour tones. In addition, Clem (2014a) suggests that in some cases high tones undergo down-step, which perhaps accounts for claims that Bulu has mid tones or several fine-grained tones. However, down-step would not account for the three-way lexical distinction shown in (75), assuming Janes and Essame’s data are correct.

Bulu has grammatical tone as well, but it typically does not receive much attention in descriptive grammars. Alexandre (1970) and Clem and Barlew (2015) describe a grammatical high tone associated with the combination of a noun and certain other constituents, such as demonstratives and relative clauses. Also, Yukawa (1992) and Clem (2014a,b) describe tonal processes whereby the combination of certain tense-aspect-mood (TAM) markers, verbs, and direct objects can result in alternations to tonal changes to the tonal contours of the direct objects. However, in general, grammatical tone in Bulu is neither well-documented nor well-understood.

In this dissertation, I do not mark tone. In part, this is because it is beyond the scope of this dissertation to adjudicate among tonal systems: 2 tones, 3 tones, or 5 tones. In part, it is due to the decision to follow the practical orthography used by my consultants—the one used by Bates and his colleagues. In this orthography, the diacritics ´ and ^, which are typically used to indicate high and fall tones in Bantu linguistics, are used to indicate vowel quality. For example, <e> represents /ə/ while <é> represents /e/. Thus, including tone markers would necessitate adopting a different orthographic convention or writing Bulu examples in IPA, as I have done in previous work (Barlew, 2014; Barlew and Clem, 2014; Clem and Barlew, 2015). This can be cumbersome. As best as I can tell, the only place where grammatical tone plays a role in the content of the dissertation is when the locative marker, a high toned schwa, combines with a vowel-initial noun. In that case, as in many phonological contexts in Bulu, the schwa disappears, leaving the high tone to link to the first syllable of the word. Thus, for instance, with the addition of a locative morpheme, *Avebe* (Low-High-Low) becomes *Avebe* (High-Down-Step-Low). Throughout, I ignore this tonal change, write the locative marked versions identically to their non-locative counterparts, and gloss them with e.g. LOC.Avebe.

3.2.2 Morphosyntax

Consider (76), a typical example with *zu* ‘come_{zu}’. I begin with this example with a locative complement, rather than a more typical transitive verb, because it’s the kind of example readers will see throughout Chapter 4.

(76) [Context: The interlocutors are in Kribi. Last week, Andeng visited Kribi from Yaoundé.]

Andeng a nga **zu** e-Kribi e-∅-sondô a nga man.
 Andeng 3.SG REM **come**_{zu} LOC-Kribi AUG-CL₁-week SUB₁ REM finish

‘Andeng came to Kribi last week (lit. the week that ended)’

(76) illustrates Bulu’s basic subject-verb-object word order. It includes a main clause with *zu* ‘come_{zu}’, inflected for subject agreement and tense, and a temporal modifier comprising a noun (*sondô* ‘week’) plus a relative clause.¹ By “inflected” here, I mean that subject agreement and tense are indicated in the form of the sentence. They are not, in this case, indicated by verbal affixes. This practice is described in more detail below in the subsection on Bulu verbs. Some examples of inflectional affixes are given there as well. (76) shows that, in general, to understand Bulu examples with deictic motion verbs it is necessary to know a little bit about the morphosyntax of Bulu nouns, verbs, and locatives and locative expressions. The first two are the topics of the next two subsections. Locatives are the subject of Section 3.2.3.

Nominal morphosyntax: Like many Bantu languages, Bulu has a system of noun classes, in which each noun has a particular class.² As is common across Bantu languages, a noun’s class is marked morphologically via (i) a class morpheme attached to the noun stem and (ii) class agreement morphemes marking modifiers, determiners, and verbs (Maho 1999). Some morphological differences among noun classes are illustrated in the examples in (77).

- (77) a. **m-ô**t **nyi**-na **a** nga di **ô**-fumbi **ô**-vok
 CL₁-person AGR₁-PROX SUB₁ REM eat CL₁₁-orange AGR₁₁-other

¹One element that will not be discussed in detail here is the morpheme *e-* in *e-∅-sondô* ‘week’. Following Alexandre (1970), this morpheme is glossed ‘AUG’ for “augment”, indicating that it is analyzed as a realization of the augment morpheme common in Bantu languages (de Blois, 1970). However, recent evidence suggests that in Bulu there are actually two morphemes that occur in this position and that have similar surface forms due to morphophonological processes (Barlew and Clem, 2014; Clem and Barlew, 2015). Only one of these realizes the Proto-Bantu augment, and without additional contextual information it is impossible to tell which is actually present in (76). For the purpose of this dissertation, all that matters is knowing that *e-* ‘AUG’ facilitates the combination of *sondô* ‘week’ with its relative clause modifier.

²Noun classes in Bulu are relatively well understood. Although Bates (1926), Alexandre (1955), Janes and Essame (1981), and Abomo-Maurin (2006) use different names for the classes, they all present essentially the same class morphology and agreement paradigms, at least to a certain level of phonetic detail. It is beyond the scope of this dissertation to iron out differences among these accounts, and in any event the differences may be due to dialectal or diachronic variation. Rather than following the class numbering conventions in any one of the cited sources, I use the class numbers from the Bleek-Meinhof classification system. Adopting this widely used system, which was developed by Wilhelm Bleek and expanded by Carl Meinhof (Maho, 1999), facilitates comparison across Bantu languages.

‘This person ate the other orange.’

- b. **b-ô**t **ba-na** **be** nga di **bi-tetam bi-se**
CL₂-person AGR₂-PROX SUB₂ REM eat CL₈-okra AGR₈-all
‘These people ate all the okra.’

In (77a), the root *-ôt* ‘person’ combines with the class 1 prefix *m-* to yield the class 1 noun *môt* ‘person’. The class 1 morpheme is realized as *m-* here because the root begins with a vowel. The morpheme has other nasal allomorphs for consonant-initial roots, as in *n-jô* ‘speaker’, and a \emptyset - allomorph, as in \emptyset -*sondô* ‘week’ in (76). In many cases, this \emptyset - allomorph is used with loan words, like *sondô* (from English *Sunday*), which are class 1 in Bulu. (77b) shows that class is encoded in the class morpheme, not the root itself. In (77b), the same root *-ôt* combines with the class 2 prefix *b-* to yield the plural noun *bôt* ‘people’.³

(77a) and (77b) show that both *môt* ‘person’ and *bôt* ‘people’, as well as the class 11 noun *ôfumbi* ‘orange’ and class 8 noun *bitetam* ‘okra’ trigger class agreement marking on determiners. In addition, as subjects, *môt* ‘person’ and *bôt* ‘people’ trigger agreement on a subject pronoun that precedes the conjugated verb, the details of which are discussed in the next section. The agreement is illustrated here by the difference between *a* ‘SUB₁’ in (77a) and *be* ‘SUB₂’ in (77b). The class 1 agreement marker *a-* ‘SUB₁’ can likewise be seen in the subject relative clause in (76), following the class 1 noun *sondô* ‘week’. Finally, (76) also shows that proper name subjects trigger class 1 agreement. In other words, *a* indicates both a class 1 subject (SUB₁) and a third person singular pronominal subject (3.SG). This is common across Bantu languages, where class 1 includes singular nouns referring to humans, such as *môt* ‘person’ in (77a), and proper names are typically analyzed as class 1 nouns.

³Given just these examples, it might seem as though class markers are merely number morphemes. This is not the case. Across Bantu languages, a given class can include both singular and plural nouns. In Bulu, for example, class 5 includes singular nouns with plurals in class 6 as well as plurals of singular nouns in class 11. Thus, number is a function of the combination of a class morpheme and a particular root, not just of the class morpheme itself.

Verbal morphosyntax: The order of verbal inflectional marking in Bulu, is given schematically in (78). It roughly follows general patterns for Bantu languages described in Maho 2007 and Botne 2005.

(78) Ordering of verbal inflectional marking in Bulu:

subject TAM negation object V TAM object

In a given utterance, if two elements in the schema in (78) are realized, then they will be ordered relative to each other as shown in the schema. The examples in (76) and (77) illustrate this for subject marking, tense marking, and the verb stem, which always occur in that order. The TAM slot following the verb stem can be occupied by a variety of inflectional suffixes such as the perfect marker *-ya* ‘PRF’ and the imperative marker *-k* ‘IMP’.⁴

Following the conventions of most of the literature on Bulu and the practice of my informants, I write the subject marker, TAM morphemes, negation, and object marker as separate words rather than affixes (Bates, 1926; Janes and Essame, 1981; Abomo-Maurin, 2006). For the contrasting practice of writing the entire verbal complex as a single word, see Alexandre 1970; Yukawa 1992; Clem 2014a. For some authors, the orthographic convention used is intended to reflect a particular analysis of agreement markers and inflectional morphemes. For example, Bates (1926) analyzes subject and object markers as pronouns and TAM markers as auxiliaries, and writes them separately to represent their status as independent words. In contrast, Yukawa (1992) claims that subject and TAM markers are prefixes.⁵ It is beyond the scope of this dissertation to resolve this disagreement. Since nothing in the dissertation hinges on the way it is resolved, I adopt the conventions of my

⁴Suffixing a verb stem with *-k* ‘IMP’ also results in changes to the verb’s vowels and, sometimes, in the addition of another syllable. For example, *ke* ‘go’ + *-k* yields *kelek* ‘go.IMP’ and *zu* ‘come_{zu}’ + *-k* yields *za’ak* ‘COME_{zu}.IMP’. Thus, there is a sense in which the so called “k-form” (Bates, 1926) involves suppletion rather than suffixation. However, all of the forms include the addition of a /k/ in either its [k] allophone or its [ʔ] allophone (written < ’ >). In some cases, *-k* is all that is added. So I continue to analyze the base form of the suffix as *-k*, and assume there are multiple allomorphs depending on the phonological characteristics of the verb root, following Bates (1926), among others.

⁵The tension with respect to whether or not the subject and object morphemes are agreement markers or (possibly incorporated) pronouns exists not just for Bulu but for other Bantu languages with similar morphemes, following the work of Bresnan and Mchombo (1987) on Chicheŵa.

consultants. I write the subject and object markers as separate words, without intending to commit to any particular view of their grammatical status. Segmental components of tense morphemes used in examples here, including *nga* ‘REM’ from (76) above, are given in Table 3.1. Some tenses have floating tones along with their segmental components, but I do not represent those here.⁶ If a form has multiple allomorphs, they are given in set notation.

morpheme	gloss	meaning
<i>nga</i>	REM	remote past
{ <i>te/ke</i> }	REC	recent past
<i>ndeme</i>	IMM	immediate past
<i>a</i>	PRS	present
{ <i>é/yi</i> }	FUT	future

Table 3.1: Bulu tense morphemes

Immediate past is used for events that just occurred. I translate it into English as “just V-ed” where “V-ed” represents the English past tense. Recent past is used primarily for events that occur on the same day or the night before. For instance, when speaking of a dream that occurred the previous night, speakers use the recent past. Remote past is used otherwise.

Present and future tense are included in Table 3.1, but they are not actually written as separate morphemes by the Bulu speakers I work with. At least for future tense, this is because the future tense morpheme is incorporated into the subject marker phonologically, and this incorporation is reflected in the written form. For instance, in a sentence with future tense inflection and a class 1 subject, the class 1 subject marker is written *é* ‘SUB₁.FUT’. This is arguably the phonological reduction of the standard class 1 subject marker *a-* ‘SUB₁’, combined with the future morpheme given as *yi* ‘FUT’ in Bates 1926 (Abomo-Maurin (2006) gives *ye* ‘FUT’). However, most of my consultants do not recognize *a yi* ‘3.SG FUT’ or *a ye* ‘3.SG FUT’ as valid forms. Instead, they reject examples with *a yi* ‘3.SG FUT’ and produce

⁶For discussion, see Yukawa 1992 and Clem 2014a.

é ‘SUB₁.FUT’.⁷ I write future tenses however they were produced, typically as in (79).

- (79) m-ôt nyi-na é di m-fiañ Ø-kos.
CL₁-person AGR₁-PROX SUB₁.FUT eat CL₃-soup CL₉-fish
‘This person will eat fish soup.’

With present tense, the relation between tense marker and subject marker is more complicated. Instead of simple phonological incorporation/reduction, there is a difference in opinion in the literature about whether present tense is realized overtly (Bates, 1926; Ondoua Engon, 2013) or whether it is simply the default interpretation that arises when the subject marker and verb root are combined directly (Yukawa, 1992; Abomo-Maurin, 2006). On the first kind of analysis, there is a present tense morpheme *a* ‘PRES’, but it is not obligatory for all present tense examples (Bates, 1926). In particular, both my data and examples in published sources suggest that stative verbs are less likely to combine with *a* ‘PRES’.

On the second kind of account, subject markers have two distinct forms: a longer form and a reduced form. For example, the first person singular has the long form *ma* ‘1.SG’ and the short form *me*. The first person plural has the long form *bia* ‘1.PL’ and the short form *bi* ‘1.PL’. The generalization over these forms is that the reduced form has either a [ə] as its vowel or obligatorily does not have an [a] following its standard vowel. In contrast, the long form has [a] as its vowel, or has an additional [a] added in certain situations (see e.g. Yukawa’s (1992) claims about the recent past). On this kind of approach, the difference in forms is thus a difference between two distinct subject markers. Resolving this dispute is a task for future work. Here I simply write e.g. either *ma* ‘1.SG.PRES’ or *me* ‘1.SG.PRES’ or *ma* ‘1.SG’ or *me* ‘1.SG’, as appropriate for each example.

⁷A couple of consultants accepted *a yi* ‘3.SG FUT’ if asked, but did not themselves produce it. Whether this difference is dialectal or represents wholesale language change has yet to be determined.

3.2.3 Locatives

The final bit of background needed is an understanding of how locations and paths are represented in Bulu. First, Bulu has only a single general locative marker, unlike many Bantu languages, which have three locative classes and three productive locative class morphemes (Ružička 1959, 1960, among many others). Vestiges of the locative class morphemes can be seen in place indexicals, which consist of a class 16 (Proto-Bantu *pa-*) or class 18 (Proto-Bantu *mu-*) locative class marker combined with a demonstrative root, as shown in (80). To this point, I have found no evidence of class 17 (Proto-Bantu *ku-*).

(80) Remnants of Proto-Bantu locative class markers

- a. *va-na*
CL₁₆-PROX
'here' (relatively small, specific place, such as a house or exact spot)
- b. *mu-na*
CL₁₈-PROX
'here' (relatively large place, such as a village)
- c. *va-lé*
CL₁₆-DIST
'there'

The general purpose locative marker has the form of a high toned schwa, written <e>. If a locative marked word begins with a vowel, the locative morpheme is realized as merely a high tone. In both cases, I will gloss the locative marker as LOC, as in (81):

- (81) Abondo a te ke {**e-Sangmélíma** / **Avebe**}.
Abondo 3.SG REC go **loc-Sangmélíma** **loc.Avebe**
'Abondo went to {Sangmélíma/Avebe}'

In addition to *e-* 'LOC', there are a variety of expressions denoting more specific static spatial relations, such as *été* 'inside' and *mbo nnôm* 'to the right' (lit. 'hand of the husband/male').

Importantly for the investigation of deictic motion verbs, Bulu does not distinguish between expressions denoting simple location and those denoting a source (starting point)

or goal/destination (ending point) of a motion event. The examples in (82)-(84) show that *e-* ‘LOC’ is used for locations where individuals are located, as in (82), locations from which they depart, as in (83), and locations to which they go, as in (84). In these examples, (82a), (83a), and (84a) are adapted from Nikitina (2009:1121-1122).

(82) **Static-location:**

- a. *ba ke bômbô e-∅-kisin*
 3.PL REC sleep LOC-CL₁-**kitchen**
 ‘They slept in the kitchen.’
- b. *ba ke di e-∅-kisin*
 3.PL REC eat LOC-CL₁-**kitchen**
 ‘They ate in the kitchen.’

(83) **Source location:**

- a. *Be kôlô-ya e-∅-kisin*
 3.PL leave-PRF LOC-CL₁-**kitchen**
 ‘They have left the kitchen.’
- b. *Ba ke so e-∅-kisin*
 3.PL REC come_{so} LOC-CL₁-**kitchen**
 ‘They came from the kitchen.’

(84) **Destination location:**

- a. *Ba ke ke e-∅-kisin*
 3.PL REC go LOC-CL₁-**kitchen**
 ‘They went to the kitchen.’
- b. *Ba ke ke m-bil e-∅-kisin*
 3.PL REC go CL₃-running LOC-CL₁-**kitchen**
 ‘They ran to the kitchen.’

The examples in (82) demonstrate that locative marking on the nominal does not differentiate between location, source, and goal. Instead, a single locative marker is used to mark all three.

According to Creissels (2006) and Nikitina (2009) locative systems of this type are vanishingly rare among European languages but common in indigenous American languages and African languages, including Bantu languages. Creissels (2006) demonstrates the pattern with examples from the Bantu language Tswana. In Creissels' typology of locative marking, this type of language is known as a "Pattern 3" language, while in Nikitina's (2009), it is "Type D". Bulu meets the criteria for these categories.

Because locative marking in Bulu does not differentiate between source and goal, consultants reject examples with motion verbs and multiple locative complements. They report that there is no simple way to translate the equivalent of e.g. *Abondo came from Sangmelima to Mbalmayo* using a single verb and multiple locative or path expressions. Instead, they suggest utterances such as that in (85), with multiple clauses. This state of affairs commonly holds for Pattern 3/Type D languages (Creissels, 2006; Nikitina, 2009).

- (85) [Context: Bella and Andeng are in Mbalmayo discussing what Abondo's travels last week. Currently Abondo is in Ebolowa, but last week he traveled from town to town in Cameroon.]

Abondo a nga kôlô e-Sangmélîma. Nde a nga zu e-Mbalmayo.
 Abondo 3.SG REM leave LOC-Sangmélîma then 3.SG REM come_{zu} LOC-Mbalmayo
 'Abondo left Sangmlima. Then he came to Mbalmayo.'

In order to indicate motion from one place to another, it is necessary to use two verbs: one encoding departure from the source and one encoding something about arrival or presence at the destination. In general, then, paths are encoded in the meanings of verbs or determined contextually. For example, there is no word meaning 'into', but there are the verbs *fubu* meaning 'to put oneself into' and *fiti* meaning 'to put into' (English Bulu dictionary 79). This makes Bulu a "verb-framed" language, according to the typology developed by Talmy (1985, 1991). This is typical of Pattern 3/Type D languages (Creissels, 2006; Wälchli and Zúñiga, 2006; Nikitina, 2009).

In addition to observing that Bulu is a Pattern 3/Type D language, I have also attempted to uncover path-denoting expressions similar to English path prepositions such as *to* and *from*, without success. The closest thing to a path preposition that I have been able to elicit is a use of the k-form of the verb *taté* ‘begin’, illustrated in (86) and (87):

(86) a *taté’é* *Eminemvom* a *ke kwi* *Avebe* a *ne*
 SUB₁ begin-CONT LOC.Eminemvom SUB₁ go arrive LOC.Avebe SUB₁ COP.PRS
kilometre *ji-a*.
 CL₉-kilometre AGR₉-one
 ‘From Eminemvom to Avebe is one kilometre.’

(87) *me nga wulu* a *taté’é* *Avebe* a *ke kwi* *Essaman*.
 1.SG REM walk SUB₁ begin-CONT LOC.Avebe SUB₁ go arrive LOC.Essaman
 ‘I walked from Avebe to Essaman’

In (86) and (87) *taté* ‘begin’ is used in conjunction with *kwi* ‘arrive’ to indicate extent. Thus, (86) is more literally translated “Beginning at Eminemvom and going to arrive at Avebe is one kilometer”. *Taté* ‘begin’ has a similar use for expressions with temporal meanings, as recorded in Bates (1926) and Janes and Essame (1981), who list *ataté* as meaning ‘from’. However, phrases such as *a taté’é Eminemvom* ‘beginning at Eminemvom’ are not added as complements or adjuncts to examples with *zu* ‘come_{zu}’. Examples of that sort are judged to be unacceptable.

The examples in this dissertation include one other expression which has been claimed to have the meaning of a path PP. The English-Bulu dictionary based on the work of Bates (1926) lists *nné* as meaning ‘boundary’ or ‘limit’ but also ‘to’. In contrast, Janes and Essame (1981) translate *nné* into French as ‘ici [here]’. My data confirm Janes and Essame’s translation:

- (88) [Volunteered and translated from Bulu to English by a consultant during a discussion of when *nné* is acceptable.]

za'ak **nné!**
come_{zu}-IMP.2.SG **here**

‘Come here!’

- (89) [Context: Alexis and Jeanne Helene are in Avebe. Dorothee, on the other hand, is in Yaoundé. Dorothee wants to catch a bus tomorrow in order to go to Avebe. Today, she calls Jeanne Helene on the phone. She tells Jeanne Helene “Tomorrow I will come to Avebe”. When she finishes talking to Dorothee, Jeanne Helene says to Alexis:]

Dorothee é so **nné** akiti.
Dorothee 3.SG.FUT arrive **here** tomorrow

‘Dorothee will arrive here tomorrow.’

In these examples *nné* ‘here’ occurs without an additional object, and denotes the utterance location. It is the complement of *zu* ‘come_{zu}’ and *so* ‘come_{so}’. Examples with phrases using *nné* ‘here’ and an object are rejected.

3.3 Methodologies for investigating deictic motion verbs cross-linguistically

To determine whether *zu* ‘come_{zu}’ is a deictic motion verb, I use Wilkins and Hill’s (1993) diagnostics for deictic motion verbs. Wilkins and Hill (1993, 1995) assume that deictic motion verbs are motion verbs that can be used to describe a motion event just in case a particular relation holds between the path of that motion event and the what they call the “deictic center”. In the terms used here, this relation must hold between the path and the anchor’s location, according to her perspective. For example, the path might be required

to have the anchor's location as its startpoint, or it might be required to pass through the anchor's location, etc.

To diagnose deictic motion verbs, Wilkins and Hill follow the common assumption that the interlocutors are prototypical anchors (in their terms, that the utterance location is a prototypical deictic center). As a result, the diagnostics are framed in terms of motion relative to the interlocutors' location. By framing the diagnostics in this way, and by avoiding contexts with attitudes and *de se*/non-*de se* distinctions, Wilkins and Hill effectively sidestep the issue of perspectival anchoring. Instead, they diagnose deictic motion verb status in terms of how the motion relates to the location of the interlocutors. This works, since the speaker is always an acceptable anchor (Oshima, 2006a).

Wilkins and Hill schematize a series of scenes, each involving a motion event with a specified path. How the path is specified (e.g. whether or not it has a defined endpoint) and its relation to the utterance location, are systematically varied through the scenes. An adapted representation of their Scene 1 is given in Figure 3.1. In their system, a circle indicates the deictic center. Since they require this to be the interlocutors' location, and they require both interlocutors to be located in the same place, I let the circle represent the interlocutors' location and do not complicate matters by introducing the additional theoretical construct of the deictic center. Wilkins and Hill use dots to represent identified sources, destinations, and other locations, and I follow this convention. Which place is the source and which is the destination is determined by the direction of motion, indicated using an arrow.

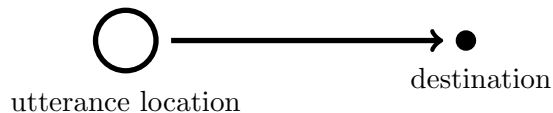


Figure 3.1: Wilkins and Hill's (1993) Scene 1

The crucial facts about Scene 1 are that (i) the motion originates at the utterance location and (ii) the motion continues to a specified destination or goal, indicated with a dot. Scene

2, depicted in Figure 3.2, differs minimally from Scene 1 in that the endpoint of the path is unspecified, as indicated by the absence of the dot representing the destination. The difference between these two scenes illustrates the kinds of manipulations to the motion paths common across Wilkins and Hill’s stimuli.

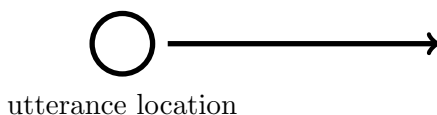


Figure 3.2: Wilkins and Hill’s (1993) Scene 2

When using these scenes, the fieldworker’s job is to construct culturally and geographically appropriate scenarios for each scene and to ask consultants how they would describe the scene. In the interest of gathering negative evidence, in this study I also asked consultants whether an utterance with a particular verb was acceptable as a description of a specific scene. Once these data are gathered, aspects of a verb’s meaning, including whether or not it is a deictic motion verb, can be stated in terms of generalizations about the kinds of motion paths the verbs can be used to describe.

Wilkins and Hill (1993) provide 20 scenes designed to diagnose all of the motion verbs in a language. Following Botne (2005), I do not report the results of applying all of Wilkins and Hill’s tests to *zu* ‘come_{zu}’, but focus on those that show that *zu* ‘come_{zu}’ requires motion to/toward the anchor’s location and is incompatible with other sorts of motion, e.g. motion away from or orthogonal to the anchor’s location. This is sufficient to show that *zu* ‘come_{zu}’ is a deictic motion verb. Examining the English translations in the examples used for this purpose demonstrate that it behaves very much like *come* in this limited data set. Dispensing with some of Wilkins and Hill’s diagnostics makes it possible to move more quickly to the main focus, which is variation in anchoring. Throughout, for each example, I give the corresponding scene from Wilkins and Hill 1993 in order to facilitate cross-linguistic comparison.

I used several methodologies when constructing examples of Wilkins and Hill’s scenes

for Bulu consultants. In every case, when verbally describing the scenes/contexts, I avoided using the lexical item under study (e.g. *zu* ‘come_{zu}’), and, as much as possible, avoided using any plausibly deictic expressions, in order to keep from biasing the participants toward or away from particular lexical items.

Most often, I constructed contexts involving travel among towns in Southern Cameroon. This is an area with which all of the consultants are personally familiar and the area where much of the data reported here were collected. For such examples, I typically showed consultants a map of Southern Cameroon that included the places named in the examples. As I described the contexts for the examples, I moved pawns representing the interlocutors and participants in the motion event, as shown in Figure 3.3.⁸



Figure 3.3: Representing motion events on a map of southern Cameroon with Eno Bedel

⁸Special thanks to Jim Harmon, Department of Linguistics IT manager and board game designer extraordinaire, for helping me construct a durable, packable map and for donating the pawns.

Having the map and pawns made it easier for consultants to remember the locations of the interlocutors and the path of the motion event. For example, sometimes they moved the pawn to retrace the example and make sure they understood correctly. In addition, consultants sometimes used the pawns and map to construct examples of their own.

In some of the diagrams presented here, I annotate copies of the map of Cameroon used in the study to depict the visual-spatial information communicated to consultants. I continue to use Wilkins and Hill's conventions for indicating utterance location and specified, or determinate source and destination locations. For example, Figure 3.4 shows Scene 1 represented in the specific example of a journey from Avebe, the interlocutors' location, to Ebolowa, a specified destination. The minimally different Scene 2, where the destination is not specified, is represented in Figure 3.5.

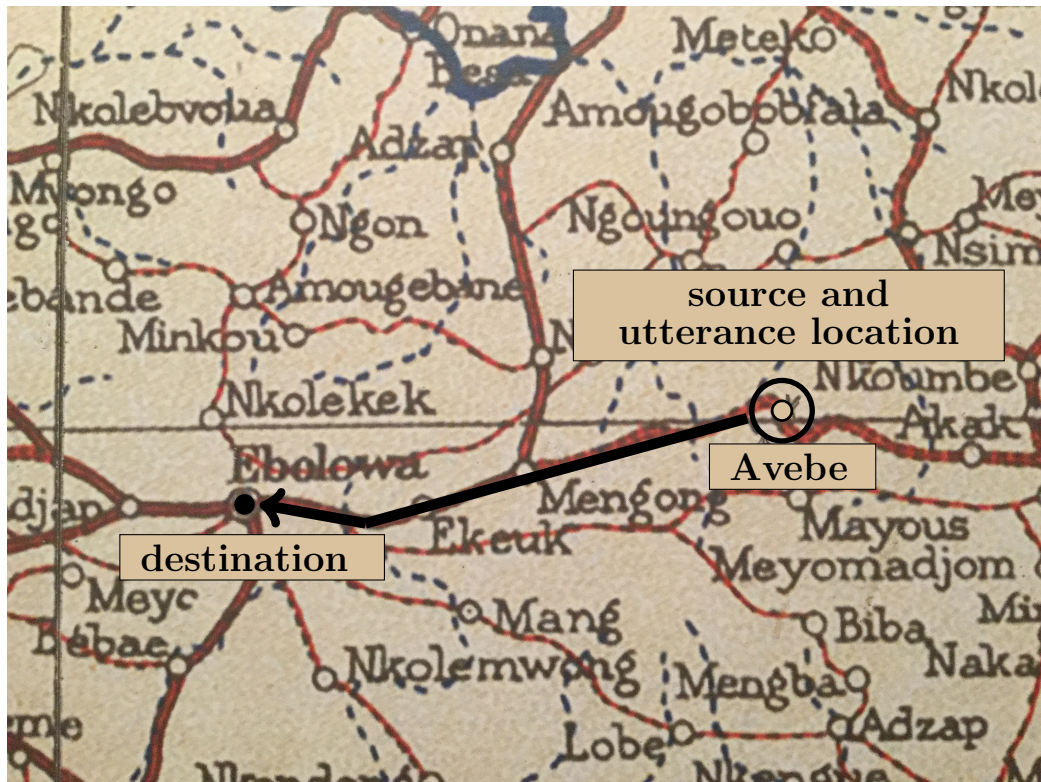


Figure 3.4: Wilkins and Hill's Scene 1 as represented on a map of Southern Cameroon

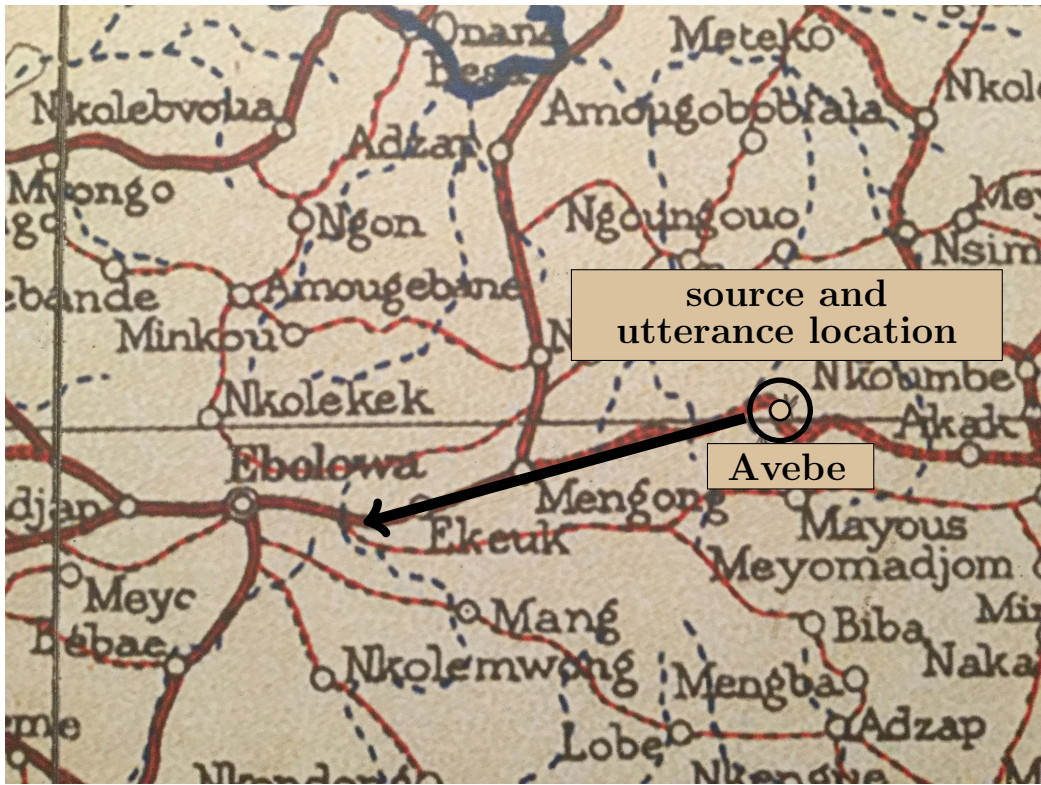


Figure 3.5: Wilkins and Hill's Scene 2 as represented on a map of Southern Cameroon

In addition to the map and pawn methodology, I also represented examples to consultants using three dimensional models made of LegosTM. Most such scenes included a small house and, at some distance from the house, a field. In each case, two minifigures were designated to be the consultant and the researcher, who were said to be talking together. These two minifigures were placed at a certain location in the scene, and the consultant was asked to imagine him/herself at that location. Additional minifigures were designated to be other characters as needed. The motion event was then acted out using the minifigures and described verbally, and the consultant was asked how he or she would describe the scene, given his or her location as a character in it. In addition, consultants were asked for acceptability judgments on examples constructed by the researcher, again assuming that they themselves would be producing the utterances from their perspective as a character in

the scene. The props used are pictured in Figure 3.6.

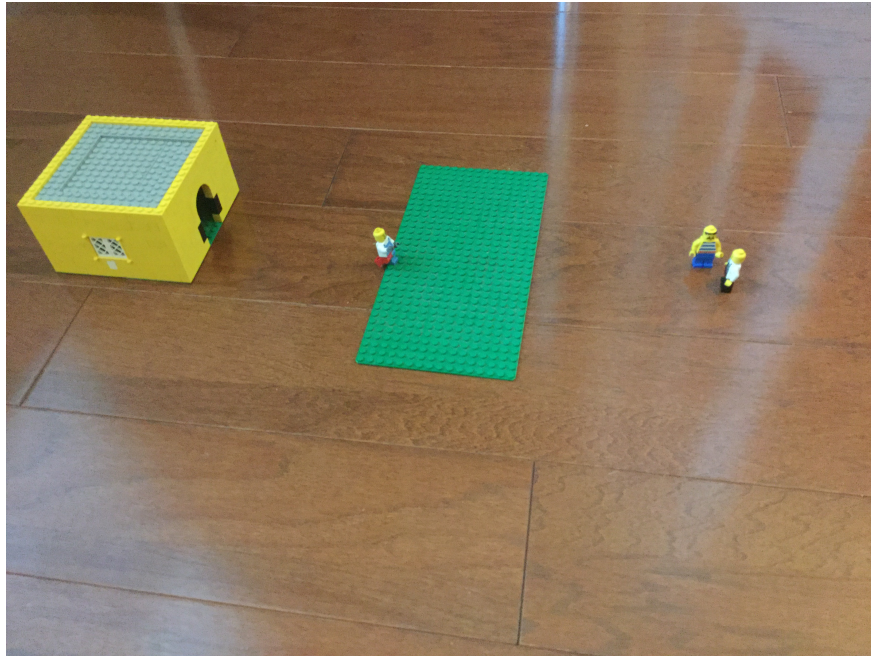


Figure 3.6: LegoTM props used to depict small scale motion events

A final methodology for representing examples consisted of verbally describing a fictitious motion event involving locations currently in the consultant's field of vision. This methodology was used, for example, when asking consultants to how they would describe motion from one place to another within the village of Avebe or another small scale area.

What all of these methodologies have in common is the use of visual aids to help consultants imagine a motion event and keep track of all of the participants in the example. Another factor that often aids memory is the use of actual people in the examples. Thus, many of my examples involve actual family members or friends of the consultant. Using actual people with whom the consultant is familiar makes it easier for her to remember who is where. In examples involving imaginary people who are indistinguishable except for their names, remembering who is where can be a challenge, especially in the relatively complicated contexts needed for diagnosing *de se* or embedding deictic motion verbs under

attitude predicates.

The deictic motion verb *zu* ‘come_{zu}’

In this chapter, I describe the meaning of the deictic motion verb *zu* ‘come_{zu}’. The first task is to show that *zu* ‘come_{zu}’ is a deictic motion verb. To do that, in Section 4.1, I employ Wilkins and Hill’s (1993) diagnostics. Then, in Section 4.2, I argue that *zu* ‘come_{zu}’ differs from deictic motion verbs described in the previous literature with respect to its perspectival anchoring. Previously described deictic motion verbs allow for (i) anchoring to the speaker, the addressee, and some other individuals (as described in Chapter 2) or (ii) anchoring only to the speaker (see Nakazawa 2007 and Section 4.2 below). In contrast, *zu* ‘come_{zu}’ allows for anchoring to the speaker and the addressee, but no one else. In addition, the data presented throughout Sections 4.1 and 4.2 *zu* ‘come_{zu}’ differs from *come* in another way. Whereas *come* takes a path-PP complement, *zu* ‘come_{zu}’ takes a locative complement.

Following an interim summary in Section 4.3, the second half of the chapter is dedicated to establishing that cross-linguistic differences in anchor possibilities and complement notwithstanding, *zu* ‘come_{zu}’ is a perspectival expression in the same sense that *come* is, the sense introduced in Chapter 1. In other words, in the second half of the chapter, I argue that *zu* ‘come_{zu}’ depends for its interpretation on contextually supplied perspectival information, just like *come*. The primary evidence is given in Section 4.4. Data in that section show that the anchoring implication of *zu* ‘come_{zu}’ is a *de se* commitment of the anchor, just like the anchoring implication of *come*. Finally, Section 4.5 shows that the anchoring implication of *zu* ‘come_{zu}’ is projective.

4.1 *Zu* ‘come_{zu}’ is a deictic motion verb

As shown in (88) and (76), repeated here for convenience, the complement of *zu* ‘come_{zu}’ is either an expression with a locative meaning, such as *nné* ‘here’, *evana* ‘here’, or a locative marked NP.

- (88) [Volunteered and translated from Bulu to English by a consultant during a discussion of when *nné* is acceptable.]

za’ak nné!
come_{zu}.IMP.2.SG here

‘Come here!’

- (76) [Context: The interlocutors are in Kribi. Andeng visited Kribi last week, but the addressee does not know that.]

Andeng a nga zu **e-Kribi** e-∅-sondô a nga man.
Andeng 3.SG REM come_{zu} LOC-**Kribi** AUG-CL₁-week SUB₁ REM finish

‘Andeng came to Kribi last week (lit. the week that ended)’

In addition to this use as a standard motion verb, *zu* ‘come_{zu}’ has a use as an auxiliary verb with a future meaning, as documented by Bates (1926). As shown in (90), when it has this kind of use, it can also have motion-verb properties.¹

- (90) [Context: In this semi-natural example, I got up from the table to go fetch something to show the Bulu speaker present. I said #*Ma ke liti wo* ‘I am going to show you’, translating from the ‘go’ future of English. I was corrected to:]

Ma **zu** liti wo.
1.SG.PRES **come_{zu}** show 2.SG

‘I am coming to show you.’

¹So far, every example I have that uses *zu* ‘come_{zu}’ as a future auxiliary is compatible with the idea of motion toward an appropriate anchor. Testing additional examples of this type and exploring the extent to which the deictic motion meaning of *zu* ‘come_{zu}’ is bleached, if it is, is a task for future work. For work on grammaticalized deictic motion verbs in Bantu languages see Emanatian (1992); Botne (2006).

The problem with my original utterance, I was told, is that I would be returning to the utterance location with the object I was going to get. Had I been asking the Bulu speaker to accompany me to see the object in the other room, the original utterance would have been acceptable. Emanatian (1992) documents a similar pattern with motion verbs in the process of becoming grammaticalized tense markers in Chagga (Bantu, Tanzania). There, as in Bulu, the direction of motion involved in realizing the event can still play a role in determining the acceptability of the utterance, even when a future meaning is intended. In what follows, I focus on examples with locative complements, just as with *come* I focused on examples with spatial path-related complements. The use of *zu* ‘come_{zu}’ as an auxiliary encoding future tense is a topic for future investigation.

As I implement Wilkins and Hill’s (1993) diagnostics for deictic motion verbs, I follow their methodology and include only examples in which the interlocutors are located in the same place. As a result, throughout this section, I talk about the properties of motion paths described using *zu* ‘come_{zu}’ in terms of the location of the interlocutors. This is just a convenience to avoid having to repeat throughout that in these examples both interlocutors are plausible anchors of *zu* ‘come_{zu}’. Section 4.2 demonstrates that when the interlocutors are separated, if the destination is the location of either interlocutor, the use of *zu* ‘come_{zu}’ is acceptable. Thus, like English *come*, *zu* ‘come_{zu}’ requires merely a single anchor.

4.1.1 Motion to the location of the interlocutors

The examples in this section show that the use of *zu* ‘come_{zu}’ is acceptable to describe motion to the location of the interlocutors. The first set of examples involves motion from a specified location to the utterance location. In the first example, (91), motion is under way at the time of utterance, but the utterance location is known to be the destination. In (92) the motion is completed at utterance time, and in (93) the motion has yet to occur but the intended destination is once again known. All of these examples correspond to Wilkins and Hill’s (1993) Scene 4, depicted in Figure 4.1.

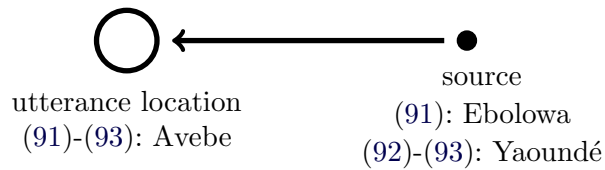


Figure 4.1: Wilkins and Hill’s (1993) Scene 4

- (91) Scene 4: [Context: Abondo and Bella are in Avebe. Guy is in Ebolowa. Guy leaves Ebolowa, traveling to Avebe. As he is traveling, Abondo says:]

Guy a **zu** Avebe.
 Guy 3.SG.PRS **come_{zu}** LOC.Avebe

‘Guy is coming to Avebe.’

- (92) Scene 4: [Context: Alexis and Jeanne Helene are in Avebe. Dorothee, on the other hand, is in Yaoundé. Dorothee catches a bus to go to Avebe. When she arrives in Avebe, she sees Jeanne Helene. She does not see Alexis, because Alexis is at the farm. When Alexis returns to the house, Dorothee has left. Jeanne Helene says to Alexis:]

Dorothee a te **zu** Avebe va-na.
 Dorothee 3.SG REC **come_{zu}** LOC.Avebe CL₁₆-PROX

‘Dorothee came here to Avebe.’

- (93) Scene 4: [Context: Alexis and Jeanne Helene are in Avebe. Dorothee, on the other hand, is in Yaoundé. Dorothee is planning to catch a bus tomorrow in order to go to Avebe. Today, she calls Jeanne Helene on the phone. She tells Jeanne Helene ‘Tomorrow I will come to Avebe’. When Jeanne Helene finishes speaking with Dorothee, she tells Alexis:]

Dorothee e **zu** e-va-na akiti.
 Dorothee SUB₁.FUT **come_{zu}** LOC-CL₁₆-PROX tomorrow

‘Dorothee will come here tomorrow.’

These examples show that when the destination of the motion event is the interlocutors' location, it is acceptable to describe the motion event using *zu* 'come_{zu}'. In each of these examples, the locative complement of *zu* 'come_{zu}' denotes the destination/utterance location. The examples in (94)-(96) show that in each case, a minimally different example with a locative complement denoting the source is unacceptable.

- (94) Scene 4: [Context: Abondo and Bella are in Avebe. Guy is in Ebolowa. Guy leaves Ebolowa, traveling to Avebe. As he is traveling, Abondo says:]

#Guy a zu **Ebolowa**.
 Guy 3.SG.PRS come_{zu} LOC.**Ebolowa**

Intended: 'Guy is coming from Ebolowa.'

- (95) Scene 4: [Context: Alexis and Jeanne Helene are in Avebe. Dorothee, on the other hand, is in Yaoundé. Dorothee catches a bus to go to Avebe. When she arrives in Avebe, she sees Jeanne Helene. She does not see Alexis, because Alexis is at the farm. When Alexis returns to the house, Dorothee has left. Jeanne Helene says to Alexis:]

#Dorothee a te zu **e-Yewondo**.
 Dorothee 3.SG REC come_{zu} LOC-**Yaoundé**

Intended: 'Dorothee came from Yaoundé.'

- (96) Scene 4: [Context: Alexis and Jeanne Helene are in Avebe. Dorothee, on the other hand, is in Yaoundé. Dorothee is planning to catch a bus tomorrow in order to go to Avebe. Today, she calls Jeanne Helene on the phone. She tells Jeanne Helene 'Tomorrow I will come to Avebe'. When Jeanne Helene finishes speaking with Dorothee, she tells Alexis:]

#Dorothee e zu **e-Yewondo** akiti.
 Dorothee 3.SG.FUT come_{zu} LOC-**Yaoundé** tomorrow

Intended: 'Dorothee will come from Yaoundé tomorrow.'

The contrast between (91)-(93) and (94)-(96) provides evidence that *zu* ‘come_{zu}’ selects for a complement that denotes the destination.

Example (97) shows that it is not necessary for the source of the motion path to be specified in order for *zu* ‘come_{zu}’ to be acceptable for describing motion to the interlocutors’ location. This manipulation corresponds to Wilkins and Hill’s Scene 5, as shown in Figure 4.2.

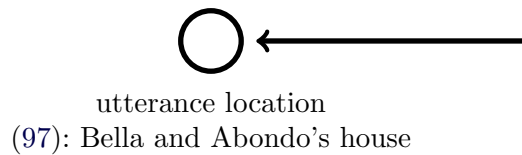


Figure 4.2: Wilkins and Hill’s (1993) Scene 4

(97) Scene 5: [Context: Bella is in the front yard. She sees storm clouds moving toward her from the southwest. She watches as the clouds move toward her. She calls to Abondo:]

ô-kôs wo **zu** nné.
 CL₁₁-storm SUB₁₁.PRS **come_{zu}** here

‘A storm is coming here’

Examples (91)-(97) show that utterances with *zu* ‘come_{zu}’ are acceptable for describing motion to the location of the interlocutors, whether there is a specified source location (scene 4) or not (scene 5).²

4.1.2 Motion toward the location of the interlocutors

Wilkins and Hill (1993) describe two ways in which an individual can travel toward but not necessarily to the interlocutors. The first case involves motion to an identified destination

²Marie-Catherine de Marneffe suggests that this point could be made more clearly using an example involving something that does not come from an identifiable direction, such as a plague or disease. Eliciting such an example is a task for future work.

between the source and the interlocutors' location. In other words, this is motion along a path that, had it continued in a straight line, would have reached the interlocutors' location. This kind of motion toward the interlocutors is schematized in Wilkins and Hill's Scene 6, in Figure (4.3).

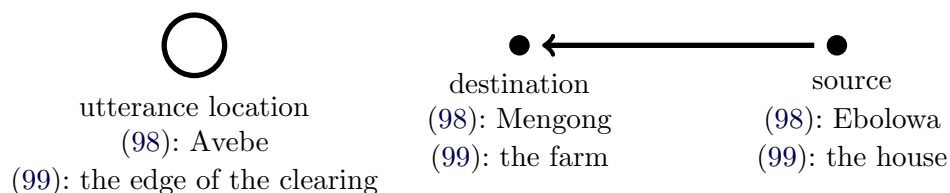


Figure 4.3: Wilkins and Hill's (1993) Scene 6

The contrasting kind of motion in the direction of the interlocutors is in the direction of the interlocutors with an indeterminate destination. This is motion that might be intended to end at the interlocutors' location, or might not. This kind of motion is schematized using Wilkins and Hill's Scene 3, as shown in Figure (4.4). The arrow does not reach any dot or circle, indicating that the destination is indeterminate.

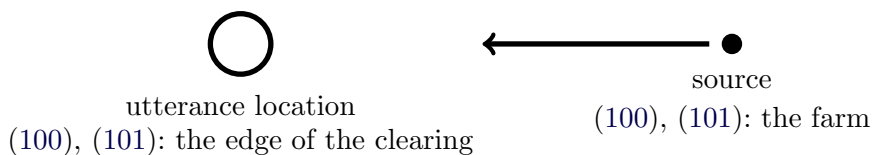


Figure 4.4: Wilkins and Hill's (1993) Scene 3

The examples in this section show that an utterance with *zu* 'come_{zu}' can be used to describe motion toward the interlocutors of the second sort (Scene 3) but not of the first (Scene 6).

First, consider motion of the second type, exemplified by Scene 6 (Figure 4.3). (98) and (99) demonstrate that an utterance with *zu* 'come_{zu}' cannot be used to describe motion of this type. Instead, another verb must be used. In Figure 4.5, I include a map for (98) so that the reader may verify that Mengong is in fact in the direction of Avebe from Ebolowa.

(98) Scene 6: [Context: Jeanne Helene and I are at Avebe. Guy is at Ebolowa. Guy leaves Ebolowa, traveling to Mengong. After he arrives in Mengong, Jeanne Helene tells me:]

a. #Guy a ke **zu** e-Mengong
 Guy 3.SG REC **come_{zu}** LOC-Mengong
 Intended: ‘Guy came to Mengong.’

b. Guy a ke **ke** e-Mengong
 Guy 3.SG REC **go** LOC-Mengong
 ‘Guy went to Mengong.’

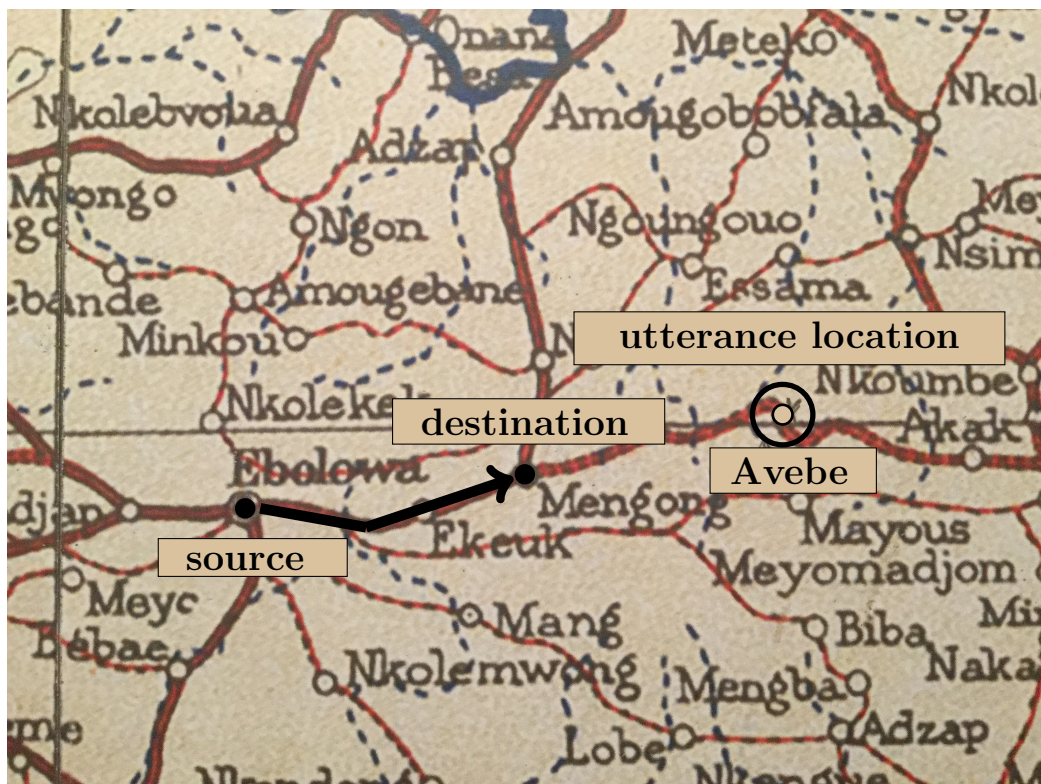


Figure 4.5: Map for (98)

In (98a), motion is in the direction of the interlocutors’ location, but it has a determinate endpoint that is not their location: Mengong. Here, *zu* ‘come_{zu}’ is not acceptable.

Similar results obtain for examples involving motion on a smaller scale, such as (99). A graphic representation of the scene for which (99) was elicited is given in Figure 4.6.



Figure 4.6: Map for (99)

(99) Scene 6: [Context: We are walking in the forest and come out into an open area. We see a farm and a house in this area. Abondo comes out of the door of the house and walks to the farm.]

- a. #Abondo a ke **zu** a-fup
 Abondo 3.SG REC **come_{zu}** LOC.CL₅-farm
 Intended: ‘Abondo came to the farm.’
- b. Abondo a ke **ke** a-fup
 Abondo 3.SG REC **go** LOC.CL₅-farm
 ‘Abondo went to the farm.’

In (99a), it is not acceptable to use *zu* ‘come_{zu}’ to describe motion from the house to the farm, even though this is in the direction of the interlocutors. Instead, *ke* ‘go’ is used.

Example (100) shows that an utterance with *zu* ‘come_{zu}’ can be used to describe motion in the direction of, but not necessarily to the interlocutors’ location, provided that it is possible that the motion is to the interlocutors’ location. This is motion of the type represented in Scene 3. (100) was elicited using the LegoTM methodology described above. A graphic representation is given in Figure 4.7.

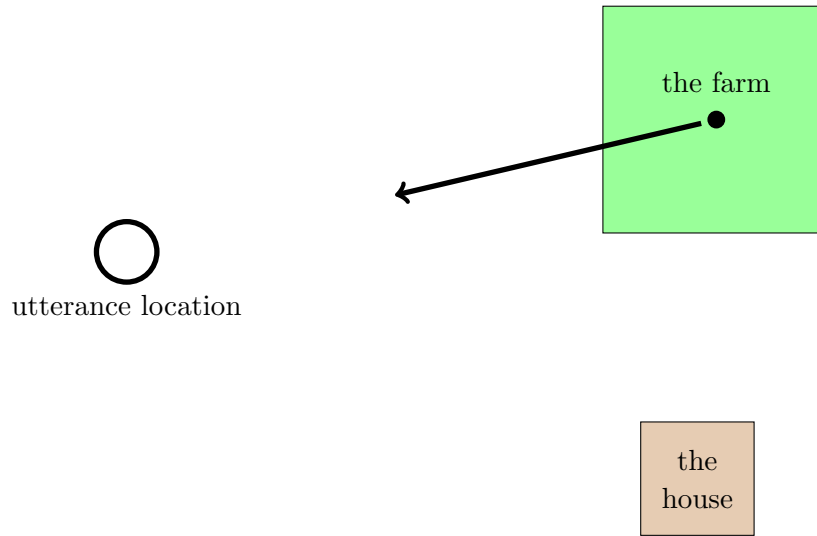


Figure 4.7: Map for (100)

- (100) Scene 3: [Context: We are walking in the forest and come out into an open area. We see a farm and a house in this area. Abondo is at the farm. He sees us and starts walking toward us.]

%Abondo a **zu**
 Abondo 3.SG.PRS **come_{zu}**
 ‘Abondo is coming.’

In (100), the motion path leads toward the interlocutors’ location, but it has an indeterminate endpoint. Abondo might intend to move all the way to the interlocutors’ location, or he might have a different intention. The use of *zu* ‘come_{zu}’ is variably acceptable in (100), across several different attempts with a single consultant. Attempting this kind of example with additional consultants is a task for future work.³

The minimally different example in (101), in which the speaker encodes her belief that Abondo’s destination is the interlocutors’ location, is consistently acceptable.

³It might be thought that the absence of a complement is what makes (100) unacceptable. However, the complement of *zu* ‘come_{zu}’ can be elided without making examples unacceptable.

(101) Scene 3: [Context: We are walking in the forest and come out into an open area. We see a farm and a house in this area. Abondo is at the farm. He sees us and starts walking toward us.]

Abondo a **zu** **e-va-na**
 Abondo 3.SG.PRS **come_{zu}** LOC-CL₁₆-PROX

‘Abondo is coming here.’

To account for the difference in acceptability between (100) and (101), I assume that in the acceptable versions of (100), the speaker/consultant believes Abondo’s ultimate destination is the interlocutors’ location. Including *evana* ‘here’ in (101) makes that belief explicit. The variability in the acceptability of (100) is then assumed to depend on how obvious that is that Abondo really does intend to arrive at the interlocutors’ location on each presentation of the example. These assumptions are compatible with the idea that the destination of a motion event described using *zu* ‘come_{zu}’ is necessarily the interlocutors’ location. Developing examples that more tightly control the context, e.g. by giving additional information about Abondo’s intent, is a task for future work. However, on the assumptions given above, (100) and (101) are consistent with the claim made on the basis of (98) and (99): motion that is merely in the direction of the interlocutors’ location cannot be described using *zu* ‘come_{zu}’. Only motion to their location can be.

4.1.3 Motion orthogonal to the location of the interlocutors

Zu ‘come_{zu}’ cannot be used to describe motion that is orthogonal to the interlocutors’ location. In Wilkins and Hill’s (1993) system, such motion corresponds to Scene 7, which is schematized in Figure 4.8

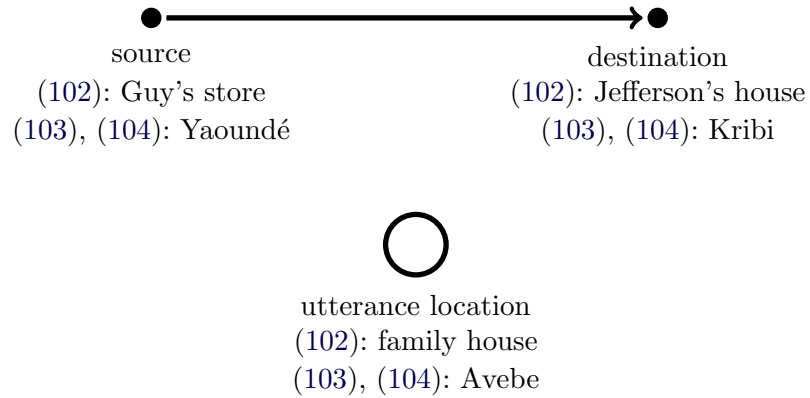


Figure 4.8: Wilkins and Hill's (1993) Scene 7

The unacceptability of *zu* ‘come_{zu}’ in examples involving orthogonal motion is illustrated first in (102). In (102), the consultant was asked to imagine a motion event between locations currently in his/her field of vision. A rough map of the area involved is given in Figure 4.9. The elicitation session itself occurred at Jefferson’s house.

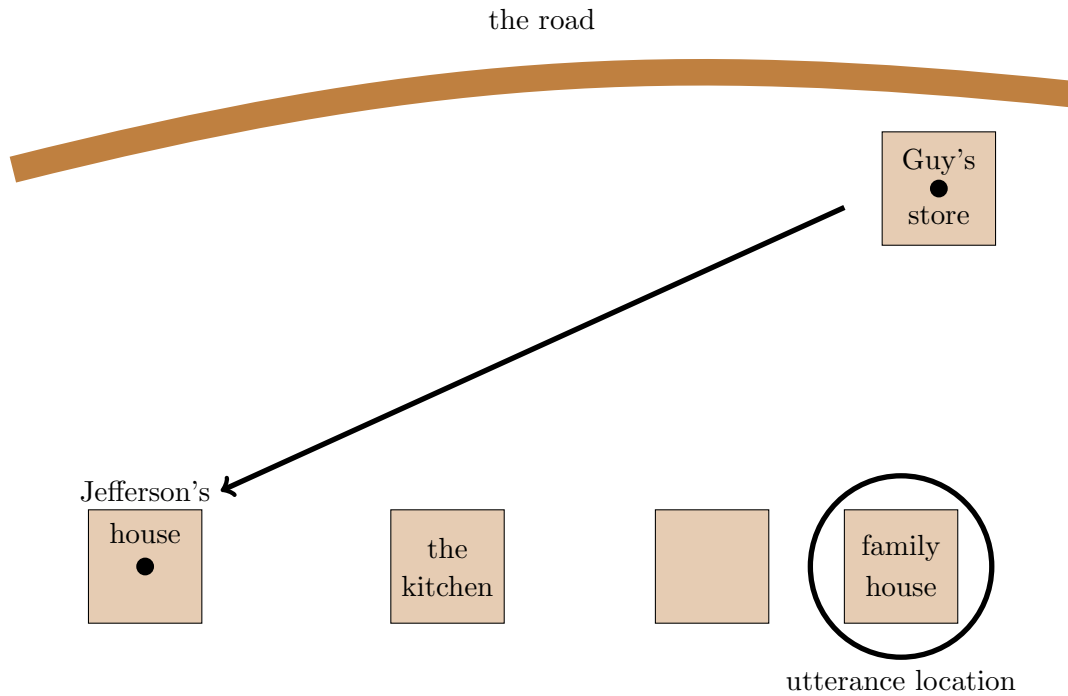


Figure 4.9: Map for (102): Obah family plot in Avebe

(102) Scene 7: [Context: Guy and Mama Sita are at the family house. At that time, Alexis leaves Guy's store and crosses the front yard in order to go to Jefferson's house. When Alexis is crossing, Guy says to Mama Sita:]

a. #Alexis a **zu** e- \emptyset -nda Jefferson.
 Alexis 3.SG.PRS **come**_{zu} LOC-CL₉-house Jefferson
 Intended: 'Alexis is going to Jefferson's house.'⁴

b. Alexis a **ke** e- \emptyset -nda Jefferson.
 Alexis 3.SG.PRS **go** LOC-CL₉-house Jefferson
 'Alexis is going to Jefferson's house.'

In example (102), the motion path is neither to nor away from the interlocutors' location. Both the source and the destination are simply elsewhere. *Zu* 'come_{zu}' cannot be used in such a case.

⁴I use 'going' rather than 'coming' for the English translation here because 'going' is the English verb most naturally used in this context to express the intended meaning.

Similar results obtain for large scale journeys, as illustrated in (103) and (104). Once again, a map depicting the motion in the examples is included (Figure 4.10) so that the reader may verify that the motion described truly is orthogonal to the interlocutors' location.

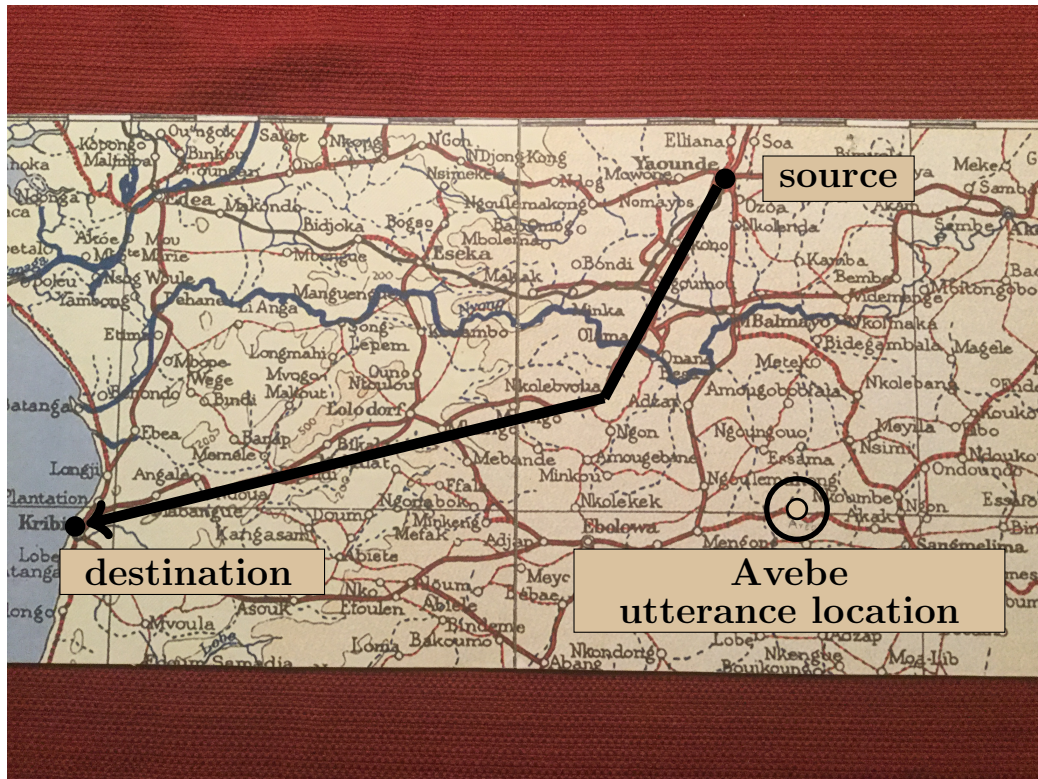


Figure 4.10: Map for (103) and (104)

(103) Scene 7: [Context: Mama Sita and Alexis are in Avebe. Yvan is in Yaoundé. Maguy, on the other hand, is in Kribi. Then, Yvan catches a bus in order to go to Kribi. Maguy knows that Yvan is on the road. Maguy calls Mama Sita on the telephone and tells her that Yvan is coming to Kribi. When Mama Sita finishes talking with Maguy, she says to Alexis:]

a. #Yvan a **zu** e-Kribi.
 Yvan 3.SG.PRS **come_{zu}** LOC-Kribi
 Intended: ‘Yvan is going to Kribi’

b. Yvan a **ke** e-Kribi.
 Yvan 3.SG.PRS **go** LOC-Kribi
 ‘Yvan is going to Kribi’

(104) Scene 7: [Context: Mama Sita and Alexis are in Avebe. Yvan is in Yaoundé. Then, Yvan catches a bus in order to go to Kribi. When he arrives in Kribi, he calls Mama Sita on the telephone. Then, Mama Sita goes to bed. When she wakes up, Mama Sita tells Alexis:]

a. #Yvan a nga **zu** e-Kribi angô’é
 Yvan 3.SG REM **come_{zu}** LOC-Kribi yesterday
 Intended: ‘Yvan went to Kribi yesterday.’

b. Yvan a nga **ke** e-Kribi angô’é
 Yvan 3.SG REM **go** LOC-Kribi yesterday
 ‘Yvan went to Kribi yesterday.’

In (102)-(104) the (a) examples with *zu* ‘come_{zu}’ are unacceptable, while minimal variants with *ke* ‘go’, are acceptable. The acceptability of these minimal variants shows that it is the deictic content of *zu* ‘come_{zu}’ that makes the (a) examples unacceptable.

Similar results obtain when the motion is orthogonal to the interlocutors’ location but the source and destination are indeterminate. These examples instantiate Wilkins and Hill’s Scene 15, which is depicted in Figure 4.11:

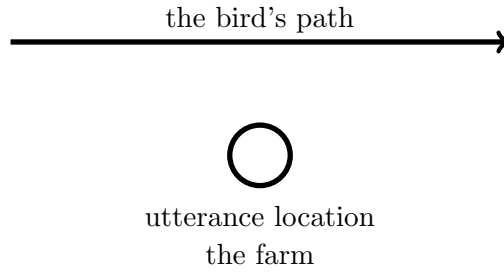


Figure 4.11: Wilkins and Hill's (1993) Scene 15, as realized in (105)

(105) Scene 15: [Context: Abondo and Bella are at the farm. A bird flies by overhead, going east, but only Abondo sees it. Bella asks why Abondo is staring into the distance. He says:]

a. #ô-non o ndeme **zu** e-va-na
 CL₁₁-bird SUB₁₁ IMM **come**_{zu} LOC-CL₁₆-PROX

Intended: 'A bird just came by here.'

b. ô-non o ndeme **lot** e-va-na
 CL₁₁-bird SUB₁₁ IMM **pass** LOC-CL₁₆-PROX

'A bird just passed by here.'

The examples in this section demonstrate that motion orthogonal to the interlocutors' location cannot be described using *zu* 'come_{zu}', regardless of whether or not the source and/or destination are specified.

4.1.4 Motion away from the location of the interlocutors

The examples in this section show that *zu* 'come_{zu}' cannot be used to describe motion away from or in the opposite direction from the interlocutors' location. This kind of motion corresponds to Wilkins and Hill's (1993) Scenes 1, 2, 14, and 13, depending on whether the motion originates at the interlocutors' location or not, and whether the destination is determinate or not. The four possibilities are depicted schematically in Figures 4.12, 4.13, 4.14, and 4.16, respectively. Each Figure precedes the example it illustrates.

First, *zu* ‘come_{zu}’ cannot be used to describe movement that originates at the interlocutors’ location and ends at a different, determinate location. This is demonstrated in (106). (106) was elicited using the LegoTM methodology.



Figure 4.12: Wilkins and Hill’s (1993) Scene 1 as instantiated in (106)

(106) Scene 1: [Context: The interlocutors are standing with Abondo at the edge of the forest. There is a farm and a house nearby. Then, Abondo walks to the farm. A little later, Andong walks up to the interlocutors. She says that she thought she saw Abondo here earlier, and asks where he is. The consultant says:]

- a. #Abondo a ke **zu** a-fup.
 Abondo 3.SG REC **come_{zu}** LOC.CL₅-farm
 Intended: ‘Abondo went to the farm.’
- b. Abondo a ke **ke** a-fup.
 Abondo 3.SG REC **go** LOC.CL₅-farm
 ‘Abondo went to the farm.’

This example demonstrates that motion from the interlocutors’ location to another location cannot be described using *zu* ‘come_{zu}’.

(107) demonstrates that the determinacy of the destination is irrelevant here. (107) involves motion away from the interlocutors’ location without a determinate destination, a Scene 2 scenario. This example was elicited using a verbal description of the utterance situation.

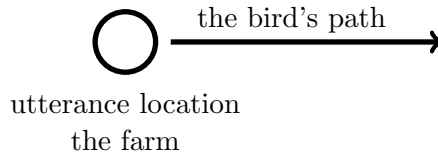


Figure 4.13: Wilkins and Hill's (1993) Scene 2 as instantiated in (107)

(107) Scene 2: [Context: Andong and Bella are at the farm. When they arrived at the farm, there was a bird sitting in a palm tree. Andong sees the bird fly away out of sight. Bella asks where the bird is. Andong says:]

- a. #ô-non o **zu-ya.**
 CL₁₁ SUB₁₁ **come**_{zu}-PRF
 Intended: 'The bird has gone'
- b. ô-non o **{kôlô/ke}-ya.**
 CL₁₁ SUB₁₁ **leave/go**-PRF
 'The bird has {left/gone}.'

(108a), which is depicted in Figure 4.15 below, shows that motion that is in the direction away from the utterance location cannot be described using *zu* 'come_{zu}', even if that motion originates somewhere other than the utterance location itself. This kind of motion corresponds to Scene 14, depicted in Figure 4.14. In addition to this figure, Figure 4.15 is included so that the reader may verify that the journey from Mengong to Ebolowa involves travel in the opposite direction from Avebe.

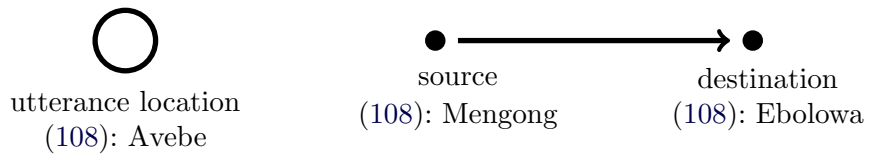


Figure 4.14: Wilkins and Hill's (1993) Scene 14

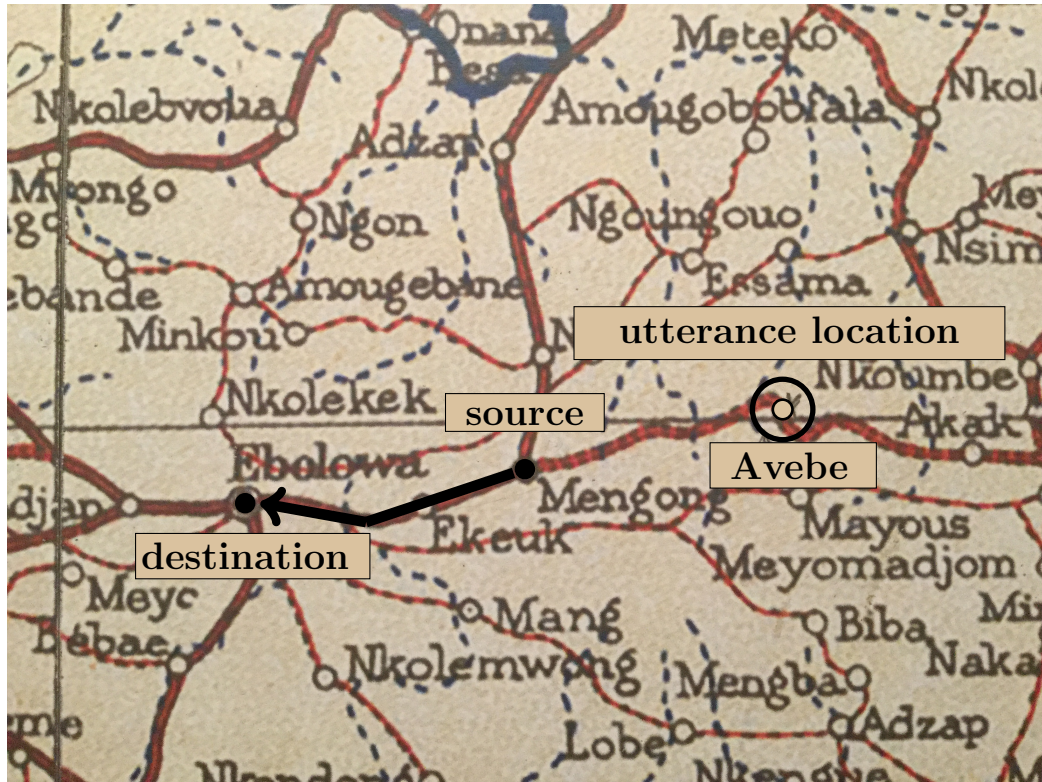


Figure 4.15: Map for (108)

(108) Scene 14: [Context: Guy is at Mengong. Then, Guy takes a taxi in order to go to Ebolowa. When he arrives at Ebolowa, he class Mama Sita on the telephone. Guy tells Mama Sita what he is doing. When she finishes talking with Guy, Mama Sita tells Alexis:]

- a. #Guy a te **zu** Ebolowa.
 Guy 3.SG REC **come_{zu}** LOC.Ebolowa
 Intended: ‘Guy went to Ebolowa.’
- b. Guy a te **ke** Ebolowa.
 Guy 3.SG REC **go** LOC.Ebolowa
 ‘Guy went to Ebolowa.’

Similarly, (109), depicted in Figures 4.16 and 4.17, involves motion from the utterance location toward several known landmarks. However, none of these is known to be the destination of the motion event. In neither case is *zu* ‘come_{zu}’ acceptable.

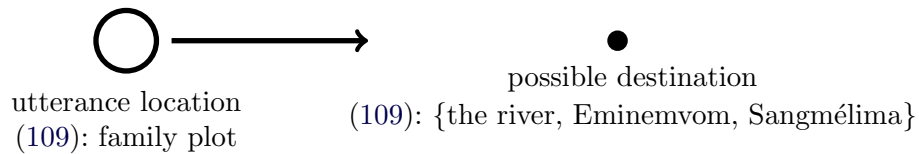


Figure 4.16: Wilkins and Hill’s (1993) Scene 13

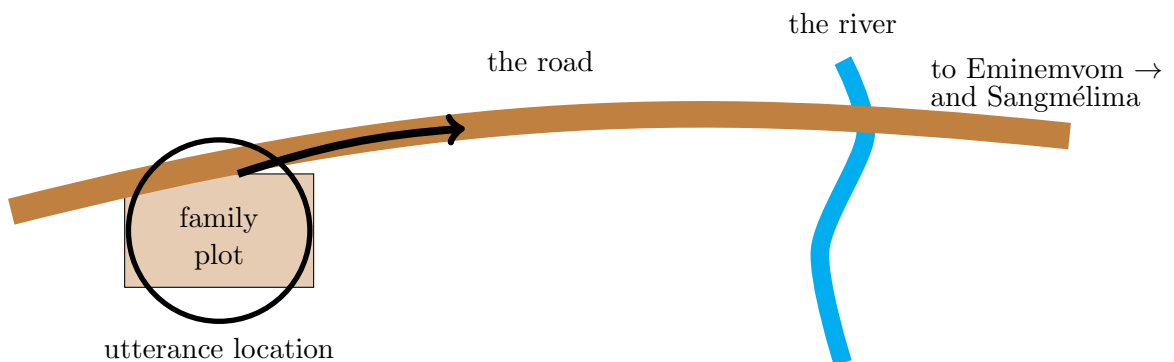


Figure 4.17: Map for (109)

- (109) Scene 13: [Context: Johnny is sitting on the porch of the family house. Some government workers are digging a well in the front yard. The workers get in their car, and drive off east, in the direction of the river, Eminemvom, and Sangmélíma. Medjo comes out of the house. Johnny does not know where they are going. Johnny says:]

a. #e-b-ốt ba bo é-sai ba ke **zu** va-om
 AUG-CL₂-person SUB₂.PRS do CL₇-work SUB₂ REC **come_{zu}** CL₁₆-thing
 ∅-ézing
 AGR₁₆-certain

Intended: ‘The men who are doing the work went somewhere.’

b. e-b-ốt ba bo é-sai ba ke **ke** va-om ∅-ézing
 AUG-CL₂-person SUB₂.PRS do CL₇-work SUB₂ REC **go** CL₁₆-thing AGR₁₆-certain
 ‘The men who are doing the work went somewhere.’

The examples in this section demonstrate that, regardless of which other elements of the path are specified or unspecified, it is not possible to use *zu* ‘come_{zu}’ to describe motion away from in or the opposite direction from the interlocutors’ location.

4.1.5 Summary of Section 4.1

The data in this section have shown that motion paths described using *zu* ‘come_{zu}’ are acceptable only if they are paths to the interlocutors’ location. In the next section I will present data demonstrating that either interlocutor’s presence at the destination is sufficient to license the use of *zu* ‘come_{zu}’. As a result, in Table 4.1, I present the generalizations over types of motion demonstrated in this section in terms of motion to the anchor, rather than motion to the interlocutors.

Type of motion	Wilkins and Hill (1993)	Examples	<i>zu</i> ‘come _{zu} ’ acceptable
to the anchor	scene 4	(91), (92), (93)	✓
	scene 5	(97)	✓
toward and possibly to the anchor	scene 3	(100)	%
toward and not to the anchor	scene 6	(98), (99)	#
orthogonal to the anchor	scene 7	(102), (103), (104)	#
	scene 15	(105)	#
away from the anchor	scene 1	(106)	#
	scene 14	(108)	#
	scene 2	(107)	#
	scene 13	(109)	#

Table 4.1: Motion path compatibility with *zu* ‘come_{zu}’

The data in this section demonstrate that *zu* ‘come_{zu}’ is a deictic motion verb, because the motion paths that can be described using *zu* ‘come_{zu}’ are restricted to those that bear a particular relation to the anchor’s location. Specifically, like English *come*, *zu* ‘come_{zu}’ is used to describe motion to the anchor’s location.

The data in this section, when combined with the data to be presented in Section 4.2 also serve as a cautionary tale for researchers working on deictic motion verbs cross-linguistically. On every test presented in this section, *come* and *zu* ‘come_{zu}’ behave identically. Based on these data, one might be tempted to conclude that *come* and *zu* ‘come_{zu}’ are translation equivalents, and to investigate no further. However, the data presented in Section 4.2 will show that in fact *zu* ‘come_{zu}’ is a typologically unique with respect to deictic motion verbs previously described in the literature. This highlights the complexity of cross-linguistic semantic variation, and the importance of detailed investigations of as many elements of lexical meaning as possible.

4.2 *Zu* ‘come_{zu}’ is a previously undocumented type of deictic motion verb

As described by Gathercole (1978), Oshima (2006a), and Nakazawa (2007), across languages deictic motion verbs differ in terms of which individuals can or cannot serve as their anchors. This section provides evidence that the pattern of acceptable anchors that license the use of *zu* ‘come_{zu}’ differs from previously attested patterns of anchoring in a theoretically significant way. Specifically, previously described deictic motion verbs are acceptable either (i) with only the speaker as the anchor or (ii) with the speaker, the addressee, and additional individuals such as attitude holders in examples involving deictic perspective shift. In contrast, *zu* ‘come_{zu}’ allows for either the speaker or the addressee to be the anchor, but is not acceptable with other anchors (e.g. in deictic perspective shift). Section 4.2.1 describes previously attested anchoring patterns, and thus sets the stage for presenting the data on *zu* ‘come_{zu}’, which is given in Sections 4.2.2 and 4.2.3.

4.2.1 Nakazawa’s (2007) cross-linguistic typology of anchors

Typologies of anchoring such as those of Gathercole (1978) and Nakazawa (2007) are based on the assumption that all of the deictic motion verbs in a given language allow for the same range of anchors. I do not make that assumption here without further evidence, though it may ultimately turn out to be correct. This is because both the typological studies themselves, and, in many cases, the sources they cite, give only a few examples of one or two plausibly deictic motion verbs from a given language. These generally provide insufficient evidence to support the claim that all deictic motion verbs behave identically. Furthermore, there is no a priori reason to believe they should do so. The work of Wilkins and Hill (1995) and Botne (2005) shows that in a given language there may be multiple deictic motion verbs with very different behaviors, and there may also be verbs that have been claimed to be deictic but in fact are not. Therefore, I assume that the classifications

given to languages by these authors are better thought of as classifications of the particular deictic motion verbs in these languages that are translated into English using *come*. This assumption is justified to some degree, since in every case the examples given to justify the classification include a verb translated as *come*.

Currently available typologies divide anchors of deictic motion verbs along two main dimensions: the anchor's identity, and the time at which the anchor is located at the destination. For the first dimension, the values considered are speaker only, speaker and addressee only, and speaker, addressee, and others. For the second, the possible values are utterance time only and utterance and event times. This results in six categories of deictic motion verbs, which are included as white cells in Table 4.2. As the data in Table 4.2 show, deictic motion verbs have been documented in three of the six classifications. For the most part, the classifications are due to Nakazawa (2007), except for the classification of Chindale (Bantu; Malawi) *iisa* 'come', which is classified based on data in Botne (2005). In addition, the table includes a number of languages for which Nakazawa reports only partial data. For example, for some of these languages only utterance time data are reported, leaving it unclear whether or not these languages allow for anchoring to an individual at event time. For others, data for the speaker and addressee are given, but non-interlocutors are not discussed. These languages are listed in gray cells in the table, with Chagga (Bantu; Tanzania) *cha* 'come' added to Nakazawa's sample based on the data in Emanatian (1992). The Chindali and Chagga verbs are included in order to provide Bantu comparisons for *zu* 'come_{zu}'.

Anchoring	at utterance time only	at utterance and event times	at utterance and possibly event time (no data for event time)
to speaker only	Shibe	Mandarin, Chindali	Botin, Spanish Thai
to speaker and addressee only			
to speaker, addressee and others (e.g. attitude holders)		English, Korean, Texmelucan Zapotec, Japanese	
to speaker, addressee and possibly others (no data for non-interlocutors)	Abaza	Chagga	Catalan, French, German, Italian, Nepali, Palauan, Tamil, Tangut, Turkish, Jacaltec

Table 4.2: Typology of deictic motion verbs based on Nakazawa’s (2007) typology, reorganized and augmented with Bantu data

Table 4.2 displays cross-linguistic variation with respect to the kinds of anchors deictic motion verbs accept. The Shibe deictic motion verb *ji* ‘come’, is the most restrictive, allowing anchoring only to the speaker at utterance time. Mandarin Chinese *lai* ‘come’ and Chindali *-iisa* ‘come’ also allow anchoring only to the speaker, but at utterance time or event time.⁵ In contrast to these restrictive deictic motion verbs, *come*-like deictic motion verbs in English, Zapotec, Japanese, Korean, and Chagga are promiscuous in that they allow anchoring to speaker or addressee at utterance time or event time, though Nakazawa proposes that in Abaza, Japanese, and Korean, the contexts in which they allow addressee anchoring may be more restricted than English and Zapotec.

⁵Oshima (2006a) disputes Nakazawa’s classification of Mandarin Chinese, and puts it in the category of English, Zapotec, Japanese, Korean, and Chagga.

Table 4.2 also reveals that for deictic motion verbs in many languages, additional data are needed. Deictic motion verbs in these languages may turn out to occupy currently empty categories in the typology. For example, once non-interlocutor data are gathered for Abaza, it will occupy one of the two unoccupied cells above its current cell in the table. Similarly, either Chagga will turn out to be like English and its peers, or else it will be restricted to only speaker and addressee, filling the currently unoccupied cell below Mandarin and Chindali. The many languages in the bottom right cell could turn out to occupy any of the four lower cells in the white portion of the table.

There is an important assumption implicit in the organization of the Table 4.2, one that is made throughout the literature, as far as I can tell. The assumption is that if a deictic motion verb takes non-interlocutors as anchors, it will also take interlocutors and, similarly, if a deictic motion verb takes the addressee, it will also take the speaker. This assumption can be represented graphically as in Figure 4.18. There, each colored box represents deictic motion verbs that allow for certain types of anchors. The languages themselves are listed in the same color just outside the box, and the types of anchors that are acceptable are all of those included inside the box in black.

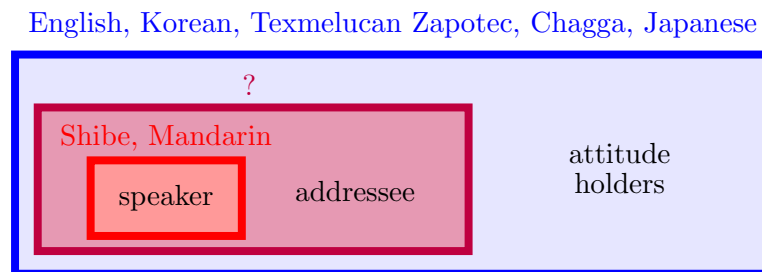


Figure 4.18: Languages classified by acceptable anchors

Currently available data, including that from languages for which additional data are needed, are compatible with the hypothesis that there are no deictic motion verbs of other types. In other words, there is no evidence that deictic motion verbs exist which allow anchoring to the speaker and non-interlocutors but not the addressee, to the addressee

only, to the addressee and non-interlocutors but not the speaker, or to non-interlocutors only.⁶

As Figure 4.18 makes clear, when considering deictic motion verbs for which sufficient data are available, deictic motion verbs seem to be bifurcated into two distinct categories: those that anchor only to a specific individual, namely the speaker, and those that are promiscuous, following by and large the pattern of English *come* and allowing a wide range of anchors.⁷ This result might lead one to conclude that there are simply two distinct types of deictic motion verbs: those with indexical anchors such as Shibe *ji* ‘come’, and those with anaphorically resolved, perspectival anchors such as English *come*. The sections that follow show that this conclusion is premature. The data presented there demonstrate that *zu* ‘come_{zu}’ occupies the middle ground between highly promiscuous deictic motion verbs such as English *come* and highly restricted ones such as Shibe *ji* ‘come’ left. Specifically, they show that *zu* ‘come_{zu}’ allows for anchoring to either interlocutor but not to the agents of attitudes. That is to say, it occupies the spot marked with “?” in Figure 4.18. It is neither as restricted as Shibe *ji* ‘come’ nor as restricted as English *come* and other verbs of its ilk.

⁶Nakazawa (2007) classifies Jacaltepec as anchoring to the speaker but not the addressee, and then claims that Jacaltepec allows for shifting to a participant other than an interlocutor. If this were correct, Jacaltepec would contradict the picture in Figure 4.18. However, a closer look at Nakazawa’s source for this claim, Craig 1979, reveals that this conclusion is not warranted. The examples Nakazawa cites involve anchoring to the addressee, if anything, since they do not include attitude predicates and do include motion of the speaker toward the location of the addressee. Accordingly, I do not include Jacaltepec among languages allowing for anchoring to a non-interlocutor.

⁷The degree to which there is more specific cross-linguistic variation among deictic motion verbs is an interesting topic for future research. For instance, Nakazawa claims that Japanese allows shifting under more, and more varied, embedding predicates than English. That said, I question Nakazawa’s conclusion because my judgments on the negative examples designed to show that English is more restricted than Japanese differ from hers. In particular, I find the purportedly negative English examples acceptable, just like the minimally different Japanese examples. Speck and Pickett (1976) demonstrate that in Texmelucan Zapotec, the translation equivalent of *come* shifts under verbs of perception. However, they do not provide examples with other embedding predicates, such as verbs of communication or attitude predicates. If deictic motion verbs in Zapotec do shift only under verbs of perception, that would be a very interesting result.

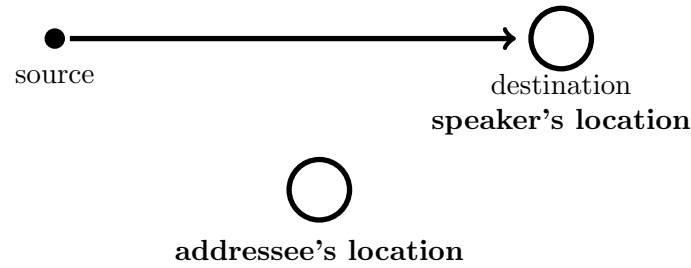


Figure 4.20: Anchoring to the speaker only; minimal variant of Scene 7

case as clearly as possible, examples that differ minimally from actual examples in Section 4.1 are used when available.

Anchoring to just the speaker

The context for (110) corresponds to the scene schematized in Figure 4.20. In addition, as shown by the map in Figure 4.21, the scenario is a minimal variant of that used to elicit (103). I include the map in this case to make the parallel with (103) clear, but I do not include maps in subsequent examples, since the descriptions themselves provide the relevant information about each interlocutor's location. (110) shows that an example with *zu* 'come_{zu}' is acceptable if the speaker but not the addressee is located at the destination of the motion event. In this case, the time at which the speaker is located at the destination is utterance time.

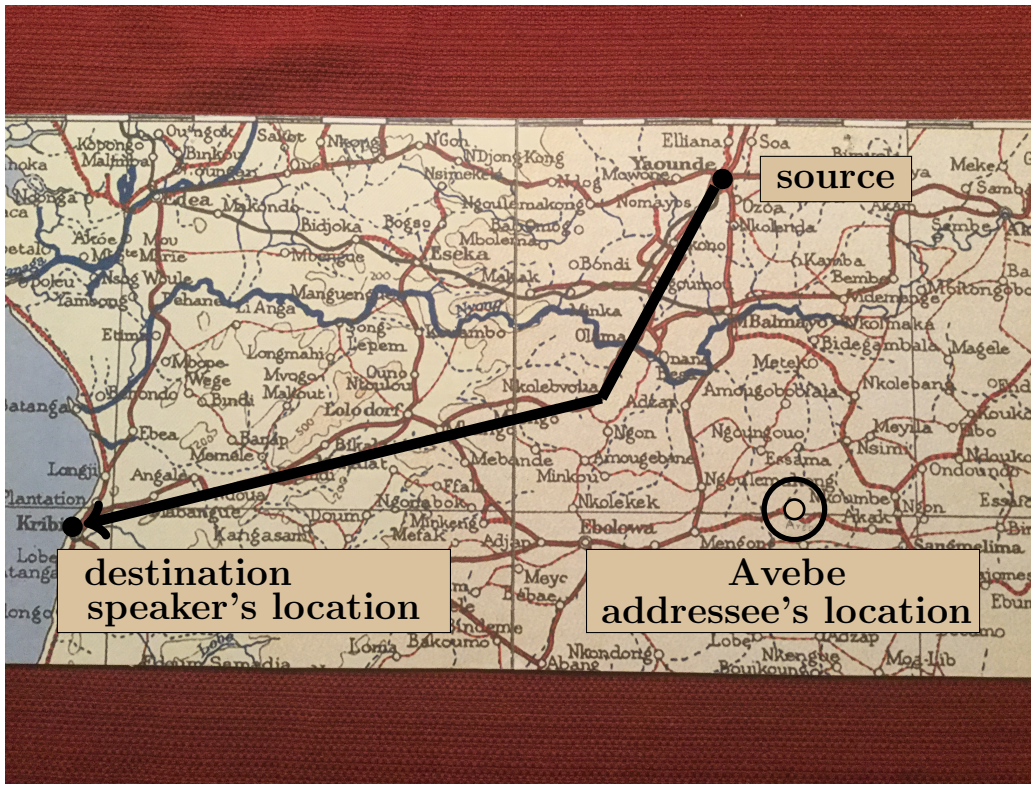


Figure 4.21: Map for (110)

(110) **Anchoring *zu* ‘come_{zu}’ to the speaker’s location at utterance time:**

[Context: Mama Sita and Alexis are in Avebe. Yvan is in Yaounde. Maguy (Spkr), on the other hand, is in Kribi (D). Then Yvan catches a bus in order to go to Kribi. Maguy knows Yvan is on the road. Then, Maguy calls Mama Sita (Add) on the telephone. She tells Mama Sita:]

Yvan a **zu** e-Kribi.
 Yvan 3.SG.PRS **come_{zu}** LOC-Kribi

‘Yvan is coming to Kribi.’

The speaker’s presence in Kribi at utterance time makes (110) acceptable, as shown by the minimally different example in (103a). There, an identical sentence is unacceptable when uttered by a speaker who, with the addressee, is located in Avebe.

The examples in (111) and (112) demonstrate that the speaker's location at event time is also an acceptable destination for a motion event described using *zu* 'come_{zu}'.

(111) **Anchoring *zu* 'come_{zu}' to the speaker's location at motion event time:**

[Context: Today, Guy (Spkr) and Alexis (Add) are in Avebe. Then, Guy tells Alexis:]

é-yoñ me mbe e-Sangmélíma angô'é, President Biya a nga **zu**
 time 1.SG COP.PST LOC-Sangmélíma yesterday, President Biya 3.SG REM **come_{zu}**
 {e-Sangmélíma / e-va-lé}. Nde nye a nga batan ma.
 LOC-Sangmélíma LOC-CL₁₆-DIST then 3.SG 3.SG REM greet 1.SG

'When I was in Sangmlima yesterday, President Biya came to {Sangmlima/there}.
 Then he greeted me.'

(112) **Anchoring *zu* 'come_{zu}' to the speaker's location at motion event time:**

[Context: Alexis (Add) and Mama Sita (Spkr) are in the front yard. Then, Mama Sita says to Alexis:]

Ma te kun a-fup n-dip Ø-tyé na ma ke bo éσαι.
 1.SG REC go/do.early CL₅-farm CL₃-dawn CL₉-morning COMP 1.SG go do work.
 É-yoñ Ø-te Michelle fe a ke **zu** a-fup.
 CL₇-time AGR₇-DEF Michelle also 3.SG REC **come_{zu}** CL₅-farm

'I went to the farm just before dawn in order to go do work. At that time, Michelle
 also came to the farm.'

Examples (110)-(112) demonstrate that the presence of the speaker alone at the destination, at either utterance time or event time, is sufficient to make the use of *zu* 'come_{zu}' acceptable. In other words, the speaker is an acceptable anchor for *zu* 'come_{zu}'.

Anchoring to just the addressee

The addressee's location at utterance time is also an acceptable destination for a motion event described using *zu* 'come_{zu}'. This is illustrated in (113).

(113) **Anchoring *zu* ‘come_{zu}’ to the addressee’s location at utterance time:**

[Context: Mama Sita (Spkr) and Guy are in Avebe. Grandfather (Add) is in Ebolowa (D). Guy begins going to Ebolowa in a car. Mama Sita calls Grandfather on the phone to tell him what Guy is doing. She says:]

Guy a **zu** e-Ebolowa (e-wé).
Guy 3.SG.PRS **come_{zu}** LOC-Ebolowa LOC-2.SG.POSS

‘Guy is coming there to Ebolowa.’

Grandfather’s presence in Ebolowa makes (113) acceptable. In contrast, as shown in Section 4.1.4, motion away from the utterance location generally cannot be described using *come*.

Examples (114) and (115) show that the addressee’s location at event time is likewise an acceptable destination for a motion event described using *come*.

(114) **Anchoring *zu* ‘come_{zu}’ to the addressee’s location at motion event time:**

[Context: Bedel (Spkr) and I (Add) are talking in Eminenvom. I tell him that I was in France (D) in 2013. He says:]

Me nga **zu** e-France é-yon Ø-te.
1.SG REM **come_{zu}** LOC-France CL₇-time AGR₇-DEF

‘I came to France then.’

(115) **Anchoring *zu* ‘come_{zu}’ to the addressee’s location at event time:**

[Context: Abondo (Add) and Bella (Spkr) are in Eminenvom. Abondo says, ‘I am going to Yaounde (D) today.’ Bella says:]

Ma fe ma zu e-Yewondo e-Ø-sondô a zu.
1.SG also 1.SG.PRS **come_{zu}** LOC-Yaounde AUG-CL₁-week SUB₁.PRS **come_{zu}**

‘I too am coming to Yaounde next week.’

These examples demonstrate that the addressee at utterance time or event time is an acceptable anchor for *zu* ‘come_{zu}’. Thus, the data in this Section show that, with respect to

anchoring to the speaker and addressee, *zu* ‘come_{zu}’ behaves similarly to English *come*, and to deictic motion verbs in Japanese, Korean, Zapotec, and Chagga. The data in the next section demonstrate that it behaves differently when embedded under attitude predicates.

4.2.3 *Zu* does not allow deictic perspective shift under attitude predicates

In the examples below, *zu* ‘come_{zu}’ is embedded under verbs of communication and propositional attitude predicates. These verbs have been demonstrated to make the perspectives of their subjects salient (Mitchell, 1986; Oshima, 2006b,c; Smith, 2009; Roberts, 2014) or to create so-called logophoric contexts (Sells, 1987; Culy, 1994, 1997), where the subject of the embedding predicate can be the antecedent for a logophoric pronoun in the embedded clause. The data here show that embedding *zu* ‘come_{zu}’ under such a predicate is not sufficient to make the agent of the embedding predicate the anchor of *zu* ‘come_{zu}’. These scenarios also represent minimal variants of scenarios tested in Section 4.1. Here, however, instead of locating one of the interlocutors in a different place, the manipulation consists of adding an individual whose words or attitudes the interlocutors are discussing. In this section, “AH” (for “Attitude Holder”) is used to designate this individual and mark her location. Figure 4.22 demonstrates the approach by altering Scene 7 (c.f. Figures 4.19 and 4.20 above).

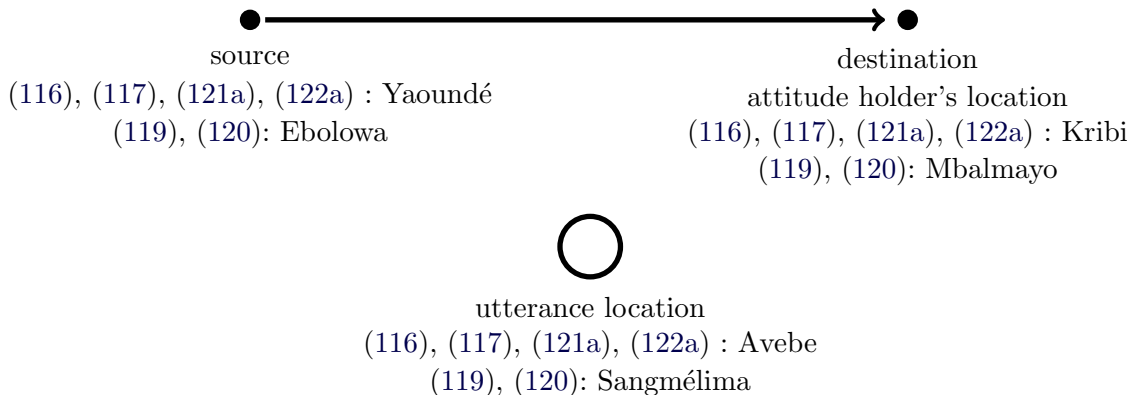


Figure 4.22: Attempted anchoring to an attitude holder

In the examples in (116) and (117), *zu* ‘come_{zu}’ is embedded under verbs of communication, namely *jo* ‘say’ and *kat* ‘tell’. In neither case is the agent of the communication predicate an acceptable anchor for *come*. Both examples involve the same path, which is given in Figure 4.23. As above, the map is included in this example to facilitate comparison with examples (103) and (110). Subsequently, maps are omitted.

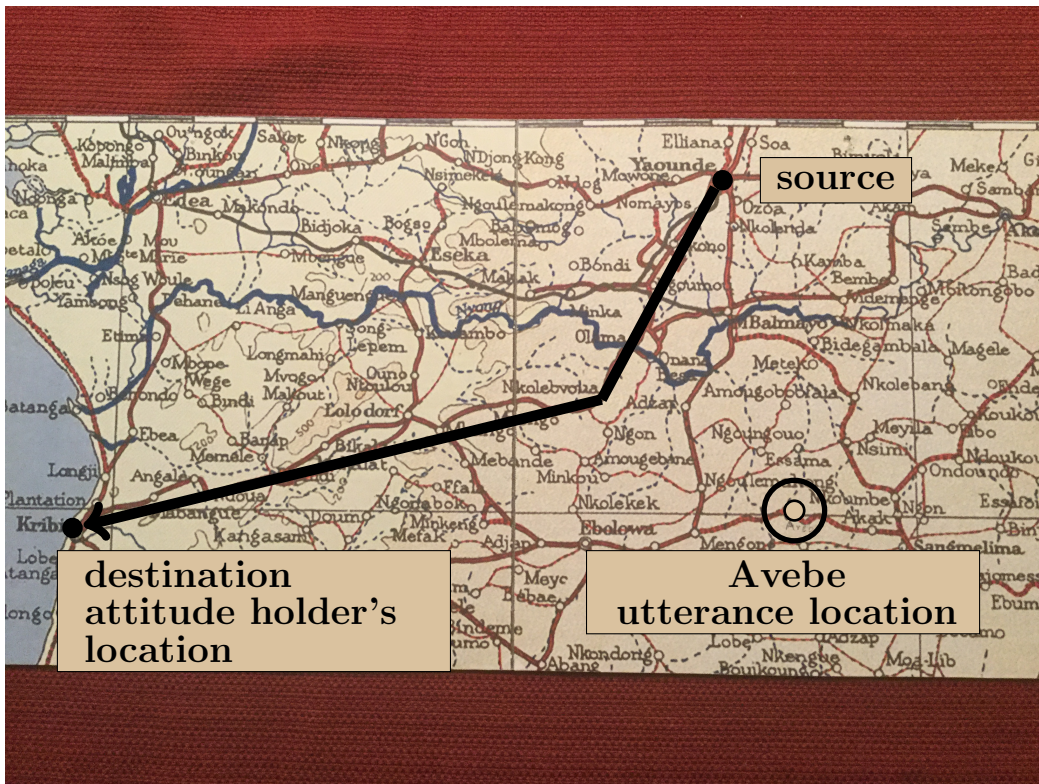


Figure 4.23: Map for (116) and (117)

(116) [Context: Mama Sita (Spkr) and Alexis (Add) are in Avebe. Yvan is in Yaounde. Maguy (AH), on the other hand, is in Kribi (D). Then Yvan catches a bus in order to go to Kribi. Maguy knows Yvan is on the road. Then, Maguy calls Mama Sita on the telephone. She tells Mama Sita, ‘Yvan is coming to Kribi.’ When Mama Sita finishes talking to Maguy, she says to Alexis:]

a. #Maguy a **jô** na Yvan a **zu** e-Kribi.
 Maguy 3.SG.PRS **say** COMP Yvan 3.SG.PRS **come_{zu}** LOC-Kribi
 Intended: ‘Maguy says that Yvan is coming to Kribi.’

b. Maguy a **jô** na Yvan a **ke** e-Kribi.
 Maguy 3.SG.PRS **say** COMP Yvan 3.SG.PRS **go** LOC-Kribi
 ‘Maguy says that Yvan is going to Kribi.’

(117) [Context: Mama Sita (Spkr) and Alexis (Add) are in Avebe. Yvan is in Yaounde. Maguy (AH), on the other hand, is in Kribi (D). Then Yvan catches a bus in order to go to Kribi. Maguy knows Yvan is on the road. Then, Maguy calls Mama Sita on the telephone. She tells Mama Sita, ‘Yvan is coming to Kribi.’ When Mama Sita finishes talking to Maguy, she says to Alexis:]

a. #Maguy a **kat** ma na Yvan a **zu** e-Kribi.
 Maguy 3.SG.PRS **tell** 1.SG COMP Yvan 3.SG.PRS **come_{zu}** LOC-Kribi
 Intended: ‘Maguy tells me that Yvan is coming to Kribi.’

b. Maguy a **kat** ma na Yvan a **ke** e-Kribi.
 Maguy 3.SG.PRS **tell** 1.SG COMP Yvan 3.SG.PRS **go** LOC-Kribi
 ‘Maguy tells me that Yvan is going to Kribi.’

In (116a) and (117a), *zu* ‘come_{zu}’ cannot be anchored to the agent of the communication predicate under which it is embedded. The (b) examples show that instead *ke* ‘go’ is used. In contrast, note that in both examples, all of the English translations are acceptable.

(118) shows that when *zu* ‘come_{zu}’ is embedded under *kat* ‘tell’, the interlocutors are acceptable anchors, just as when *zu* ‘come_{zu}’ occurs in a matrix clause. The scene is depicted graphically in Figure 4.24.

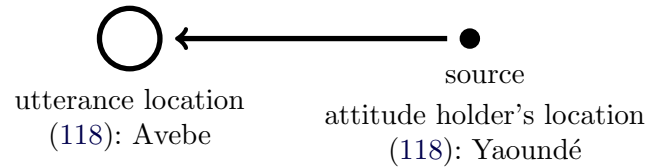


Figure 4.24: Anchoring to the interlocutors under attitude predicates

- (118) [Context: Alexis (Add) and Jeanne Helene (Spkr) are in Avebe (D). Dorothee and Yvan (AH), on the other hand, are in Yaounde. Dorothee catches a bus in Yaoundé in order to go to Avebe. While she is on the road, Yvan calls Jeanne Helene on the phone. He tells her that Dorothee is on the road. When Jeanne Helene finishes speaking with Yvan, she says to Alexis:]

Yvan a te **kat** ma na Dorothee a **zu**.
 Yvan 3.SG REC **tell** 1.SG COMP Dorothee 3.SG.PRS **come_{zu}**

‘Yvan told me that Dorothee is coming.’

This example demonstrates that anchoring is still part of the meaning of *zu* ‘come_{zu}’ when it is embedded. The anchor must be the speaker or the addressee.

Examples (119)-(122) show that when *zu* ‘come_{zu}’ is embedded under a propositional attitude predicate, the attitude holder is not an acceptable anchor, just as under a communication predicate.

(119) [Context: Abondo, Medo (Spkr), and Bella (AH) are friends. Abondo is a resident of Ebolowa, Medo is a resident of Sangmélíma, and Bella is a resident of Mbalmayo (D). Yesterday, Abondo called Bella on the telephone. He told Bella that he was coming to Mbalmayo. When Abondo was driving in his car, the car broke down. So Abondo never resumed going to Mbalmayo. Abondo called Medo and told him what happened, but he didn't call Bella. Today, Bella calls Medo on the phone and tells him "Yesterday, Abondo came to Mbalmayo, but I didn't see him." Then Medo says to his wife (Add):]

a. #Bella a **buni** na Abondo a nga **zu** e-Mbalmayo
 Bella 3.SG.PRS **believe** COMP Abondo 3.SG REM **come**_{zu} LOC-Mbalmayo
 angô'é.
 yesterday

Intended: 'Bella believes that Abondo came to Mbalmayo yesterday.'

b. Bella a **buni** na Abondo a nga **ke** e-Mbalmayo
 Bella 3.SG.PRS **believe** COMP Abondo 3.SG REM **go** LOC-Mbalmayo
 angô'é.
 yesterday

'Bella believes that Abondo went to Mbalmayo yesterday.'

(120) [Context: Identical to (119):]

a. #Bella a **simsan** na Abondo a nga **zu** e-Mbalmayo
 Bella 3.SG.PRS **think** COMP Abondo 3.SG REM **come**_{zu} LOC-Mbalmayo
 angô'é.
 yesterday

Intended: 'Bella thinks that Abondo came to Mbalmayo yesterday.'

b. Bella a **simsan** na Abondo 3.SG nga **ke** e-Mbalmayo angô'é.
 Bella 3.SG.PRS **think** COMP Abondo 3.SG REM **go** LOC-Mbalmayo yesterday
 'Bella thinks that Abondo went to Mbalmayo yesterday.'

(121) [Context: Mama Sita (Spkr) and Alexis (Add) are in Avebe. Yvan is in Yaoundé. Maguy (AH), on the other hand, is in Kribi (D). Maguy calls Mama Sita on the telephone. Maguy tells Mama Sita “I want Yvan to come to Kribi.” When Mama Sita has finished talking to Maguy, she says to Alexis:]

a. #Maguy a ne e-Kribi. a **yi** na Yvan a
 Maguy 3.SG COP.PRS LOC-Kribi 3.SG.PRS **want** COMP Yvan 3.SG.PRS
zu e-Kribi.
come_{zu} LOC-Kribi

Intended: ‘Maguy is in Kribi. She wants Yvan to come to Kribi.’

b. Maguy a ne e-Kribi. a **yi** na Yvan a **ke**
 Maguy 3.SG COP.PRS LOC-Kribi 3.SG.PRS **want** COMP Yvan 3.SG.PRS **go**
 e-Kribi.
 LOC-Kribi

‘Maguy is in Kribi. She wants Yvan to go to Kribi.’

(122) [Context: Mama Sita (Spkr) and Alexis (Add) are in Avebe. Yvan is in Yaoundé. Maguy (AH), on the other hand, is in Kribi (D). Maguy calls Mama Sita on the telephone. Maguy tells Mama Sita “I hope that Yvan comes to Kribi.” When Mama Sita has finished talking to Maguy, she says to Alexis:]

a. #Maguy a ne e-Kribi. a **ye’elan** na Yvan a
 Maguy 3.SG COP.PRS LOC-Kribi 3.SG.PRS **pray** COMP Yvan 3.SG.PRS
zu e-Kribi.
come_{zu} LOC-Kribi

Intended: ‘Maguy is in Kribi. She hopes that Yvan comes to Kribi.’

b. Maguy a ne e-Kribi. a **ye’elan** na Yvan a **ke**
 Maguy 3.SG COP.PRS LOC-Kribi 3.SG.PRS **pray** COMP Yvan 3.SG.PRS **go**
 e-Kribi.
 LOC-Kribi

‘Maguy is in Kribi. She hopes that Yvan goes to Kribi.’

These examples demonstrate that when *zu* ‘come_{zu}’ is embedded under an attitude predicate, its anchor cannot be the agent of the attitude.

4.3 Interim Summary

The data in this chapter have shown that Bulu *zu* ‘come_{zu}’ is a deictic motion verb, in the sense that it necessarily encodes motion on a path that ends at the location of an anchor. The data have also shown that, like English *come* and similar deictic motion verbs in Japanese, Korean, and Zapotec, *zu* ‘come_{zu}’ allows the anchor to be either the speaker or the addressee at either utterance time or event time. However, unlike these other deictic motion verbs, *zu* ‘come_{zu}’ does not allow the anchor to shift to the agent of an embedded attitude or communication predicate when *zu* ‘come_{zu}’ is embedded. Adding this result to the typology outlined in Table 4.2 above yields the typology in Table 4.3. Here, the languages from which additional data are needed are removed from the table for perspicuity.

Anchoring	at utterance time only	at utterance and event times
to speaker only	Shibe	Mandarin, Chindali
to speaker and addressee only		Bulu
to speaker, addressee and others (e.g. attitude holders)		English, Korean, Texmelucan Zapotec, Japanese

Table 4.3: Typology of deictic motion verbs based on Nakazawa’s (2007) typology, with Bulu

Bulu *zu* ‘come_{zu}’ fills the gap between deictic motion verbs in Mandarin Chinese on the one hand and in English, Zapotec, Japanese, and Korean on the other. This result is theoretically significant. The anchoring pattern of Bulu *zu* ‘come_{zu}’ shows that, in addition anchoring exclusively to the speaker, as in Shibe, and anchoring to various relevant perspective holders, as in English, deictic motion verbs can also anchor to any member of the set of interlocutors. Focusing exclusively on the individual component of anchoring and

ignoring the time, we can give the following typology, a revision of Figure 4.18:

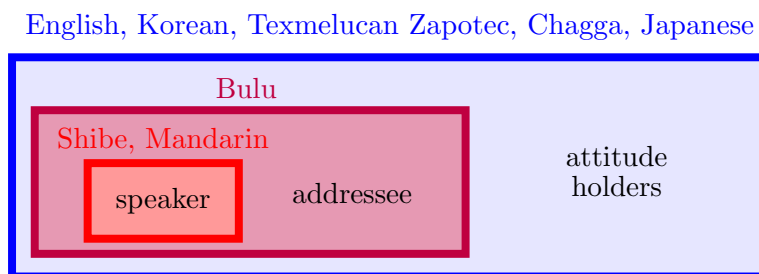


Figure 4.25: Languages classified by acceptable anchors

The data above show that *zu* ‘come_{zu}’ is a deictic motion verb, but of a different type than those previously described in the literature. It gives rise at least to an anchoring implication that an anchor is located at the destination of the motion event. However, *zu* ‘come_{zu}’ differs from *come* in that *zu* ‘come_{zu}’ can take only the speaker and addressee as anchors. In Chapter 6, I develop a formal framework for the analysis of English *come* and Bulu *zu* ‘come_{zu}’ and propose an analyses of both that model for difference. First, however, I show that, despite the difference in acceptable anchors, the anchoring implication of *zu* ‘come_{zu}’ has some of the same properties as the anchoring implication of *come*. Specifically, it is a *de se* commitment of the anchor, and it is a projective implication. Section 4.4 discusses the *de se* nature of the anchoring implication. As with *come* in Chapter 2, the *de se* data motivate analyzing *zu* ‘come_{zu}’ as a perspectival expression. Projection is demonstrated in Section 4.5.

4.4 The anchoring implication of *zu* ‘come_{zu}’ is a *de se* content

This section argues that the anchoring implication of *zu* ‘come_{zu}’ is a *de se* commitment of the anchor. Given the cross-linguistic variation in the meanings of *zu* ‘come_{zu}’ and *come* described in Section 4.2, there is no a priori reason to expect that the use of *zu* ‘come_{zu}’

should give rise a *de se* implication. It is easy to imagine a deictic motion verb with an anchoring implication that is not a *de se* commitment of the anchor. Such a verb might resemble *join* or *visit*, in that it would lexically encode movement to an individual's location without giving rise to an implication that the individual has a *de se* commitment to being located there, as *visit* does in (123):

- (123) [Context of (15), where Ernie Banks remains an amnesiac. Ernie's doctor says:]
Ernie believes that President Obama visited him in Chicago. (but he still doesn't remember anything about it)

(123) is acceptable even though Ernie does not have a *de se* commitment to his having been in Chicago at the time of Obama's visit. For *visit*, the fact that the common ground and/or the most local context entails Ernie's having been in Chicago is sufficient. There is no reason why a *come* or *zu* 'come_{zu}' could not work the same way but allow the anchor argument to be implicit rather than given by the object of the verb. The puzzle then, is accounting for the observation that, in typologically unrelated languages, deictic motion verbs with different sets of acceptable anchors, both require the anchoring implication to be a *de se* commitment of the anchor.

First, though, I have to show that the anchoring implication of *zu* 'come_{zu}' is a *de se* commitment. Before doing that, I show how to apply the *de se* diagnostics developed in Chapter 2 to the study of Bulu. Since there is no data on Bulu expressions with *de se* meanings, I start with the most likely candidates: first person indexicals. Following Perry (1979), Wechsler (2010), and Roberts (2014), first person indexicals are assumed to give rise to *de se* content cross-linguistically, so they are good candidates for applying the diagnostics in Bulu. The examples in this section, with the exception of those in Section 4.4.4, have been tested with only one consultant. Testing them with additional consultants is a task for future work.

4.4.1 Diagnosing *de se* expressions in Bulu

(125) diagnoses *de se*-ness in the Bulu first person pronoun *me* ‘1.SG’ using a culturally relevant context similar to Morgan’s (1970) Ernie Banks context in (5). (125a) and (126) together apply *de se* Diagnostic 1, and (125b) applies *de se* Diagnostic 2. The example is represented schematically in (124).

(124) Components of (125):

- a. $\phi = me$ ‘1.SG’
- b. $S = me\ ne\ mbia\ n\acute{e}\ \acute{e}bume$ ‘I am a great soccer player.’
- c. $C =$ context of (125)
- d. $x =$ Achille Emana
- e. $R_{de\ se} = BELIEVE_{de\ se}$
- f. $R_{de\ re} = BELIEVE_{de\ re}$
- g. $m =$ ‘Achille Emana is a great soccer player.’

(125) [Context: The soccer player Achille Emana gets kicked in the head. He develops amnesia, and is taken to the hospital. He doesn’t know his name. His doctor knows who he is, but does not tell him. While he is in the hospital, Emana learns all about a soccer player named Achille Emana. He decides he likes Achille Emana, and thinks he is one of the best soccer players in the world.]

- a. #*Me ne mbia n-lé é-bume.*
 1.SG COP.PRS very NOM-play CL₇-ball
 Intended: ‘I am a great soccer player.’
- b. Achille Emana a ne mbia n-lé é-bume.
 Achille Emana 3.SG COP.PRS very NOM-play CL₇-ball
 ‘Achille Emana is a great soccer player.’

(126) [Context: Identical to (125), except that Emana regains his memory.]

Me ne mbia n-lé é-bume.
 1.SG COP.PRS very NOM-play CL7-ball

‘I am a great soccer player.’

The context C of (125) is appropriate for applying Diagnostic 1, because it entails BELIEVE_{de re}(*ae, m*) but not BELIEVE_{de se}(*ae, m*). The utterance of (125a) is unacceptable in C and acceptable in a minimally different C', as shown in (126). Thus, together, the examples demonstrate that an utterance of S gives rise to *de se* content. The application of Diagnostic 2 in (125b) shows that the *de se* content arises due to the use of *me* 1.SG. The minimal variant S' in (125b) differs from S only in replacement of *Achille Emana* for *me* ‘1.SG’ and the related change to verb inflection. It has the same *de re* entailments as S, but is acceptable in C.

Applying the diagnostics to the first person possessive pronoun *-am* ‘1.SG.POSS’ yields the same result. The structure of the examples is the same as above, with the content of the example serving as an homage to Kaplan’s (1989) famous pants-on-fire example.

(127) Components of (128):

- a. $\phi = wo-am$ ‘AGR₁-1.SG.poss’
- b. S = *soto wom a dik*. ‘My pants are burning.’
- c. C = context of (128)
- d. $x = Abondo$ [Kaplan]
- e. $R_{de se} = BELIEVE_{de se}$
- f. $R_{de re} = BELIEVE_{de re}$
- g. $m =$ ‘Abondo’s pants are on fire.’

(128) [Context: (David Kaplan’s long lost cousin) Abondo lives in a small village and does not have a mirror. He is not used to seeing his own reflection. One day, he goes to Yaoundé. He is at a clothing store. There is a full-length mirror there. He sees his reflection, but he does not recognize himself. He thinks it is another man on the other side of the store. He notices that this man’s pants are on fire. He says:]

a. #∅-sotô wo-am a dik.
 CL₁-pants AGR₁-1.SG.poss SUB₁.PRS burn
 Intended: ‘My pants are burning.’

b. e-∅-sotô e-m-ôt nyi-li a dik.
 AUG-CL₁-pants AUG-CL₁-person AGR₁-DIST SUB₁.PRS burn
 ‘That guy’s pants are burning.’

(129) [Context: Identical to (128), except that Abondo recognizes himself.]

∅-sotô wo-am a dik.
 CL₁-pants AGR₁-1.SG.poss SUB₁.PRS burn
 ‘My pants are burning.’

Applying Diagnostic 1 in (128) and (129) shows that (128) gives rise to at least one *de se* implication. The *de se* implication that I have chosen to focus on here is the implication that Abondo’s pants are on fire. I might as easily have focused on the implication that the pants in question belong to Abondo. Believing this second proposition *de se* will, in the context of an utterance of (128), entail the content analyzed here. Diagnostic 2 identifies the possessive pronoun as the source of the *de se* implication. The minimal variant S’ in (128b) differs from S only in the replacement of *w-om* ‘AGR₁-1.SG.poss’ with *emôt nyili* ‘that guy’s’ (literally, ‘of that guy’). It has the same *de re* entailments as S, but is acceptable in C. With this illustration of how to apply the diagnostics in Bulu, I turn to the anchoring implication of *zu* ‘come_{zu}’.

4.4.2 Diagnosing *zu* ‘come_{zu}’ as a *de se* expression

(131) develops a context in which the anchor believes the anchoring implication *de re* but not *de se*. Here, the anchoring implication is that Bella’s mom, who has dementia and is only sometimes lucid, is in Sangmélima. As usual, Diagnostic 1 is applied in (131a) and (132), Diagnostic 2 is applied in (131b), and the components of the examples are listed in (130).

(130) Components of (131):

- a. $\phi = zu$ ‘come_{zu}’
- b. $S = \textit{Andeng a zu eSangmélima éyoñ ji}$ ‘Andong is coming to Sangmélima now.’
- c. $S' = \textit{Andong a ke eSangmélima éyoñ ji}$ ‘Andong is going to Sangmélima now.’
- d. $C =$ context of (131)
- e. $C' =$ context of (132)
- f. $x =$ Bella’s mom
- g. $R_{de\ se} = \text{BELIEVE}_{de\ se}$
- h. $R_{de\ re} = \text{BELIEVE}_{de\ re}$
- i. $m =$ Bella’s mom is in Sangmélima.

(131) [Context: Bella lives in Ebolowa. Bella’s mom lives in Sangmélíma. Bella’s sister lives in Eminemvom. Bella’s mom has dementia, and she often believes she is someone else in the family. Today, she believes that she is Bella’s sister. She also believes that Bella’s cousin Andong is traveling from Eminemvom to Sangmélíma today. She tries to call herself in Sangmélíma to tell herself about Andong’s visit. When that doesn’t work, she calls Bella in Ebolowa. She still believes that she is Bella’s sister in Eminemvom. She says:]

a. #Andong a **zu** e-Sangmélíma é-yoñ ji. (Ye
 Andong 3.SG.PRS **come**_{zu} LOC-Sangmélíma CL₇-time AGR₇.PROX (Q
 wé kat Mama?)
 2.SG.FUT tell Mama)

Intended: ‘Andong is coming to Sangmélíma now. (Will you tell Mama?)’

b. Andong a **ke** e-Sangmélíma é-yoñ ji. (Ye wé kat
 Andong 3.SG.PRS **go** LOC-Sangmélíma CL₇-time AGR₇.PROX (Q 2.SG.FUT tell
 Mama?)
 Mama)

‘Andong is going to Sangmélíma now. (Will you tell Mama?)’

(132) [Context: Identical to (131), except that Bella’s mom realizes who she is when she calls Bella.]

Andong a **zu** e-Sangmélíma é-yoñ ji.
 Andong 3.SG.PRS **come**_{zu} LOC-Sangmélíma CL₇-time AGR₇.PROX

‘Andong is coming to Sangmélíma now.’

The context in (131) is appropriate for the diagnostic, because in this context Bella’s mom believes of herself that she is in Sangmélíma. She does not believe it *de se*, however, because *de se* she believes that she is her own daughter in Eminemvom. That’s why she tries to call herself in Sangmélíma to let herself know that Andong is coming: in her mind, she is the daughter calling the mother. That’s also why she calls Bella and asks her to get in touch with their mom. In such a context, Bella’s mom cannot use *zu* ‘come_{zu}’ to describe motion to Sangmélíma, as shown in (131a). In contrast, if she realizes who she is, and thus comes

to believe *de se* that she is in Sangmélima, as in (132), the use of *zu* ‘come_{zu}’ is acceptable. The acceptability of the minimally different version with *ke* ‘go’ in (131b) demonstrates that it is the presence of *zu* ‘come_{zu}’ that makes (131b) unacceptable.⁸

(134) also shows that the anchoring implication of *zu* ‘come_{zu}’ is a *de se* commitment of the anchor.

(133) Components of (134):

- a. $\phi = zu$ ‘come_{zu}’
- b. $S = esondô a nga man, metua a mbe za'ak eYewondo$. ‘Last week, a bus was coming to Yaoundé.’
- c. $S' = esondô a nga man, metua a mbe za'ak eYewondo$. ‘Last week, a bus was going to Yaoundé.’
- d. $C =$ context of (134)
- e. $C' =$ context of (135)
- f. $x =$ Abondo
- g. $R_{de\ se} = BELIEVE_{de\ se}$
- h. $R_{de\ re} = BELIEVE_{de\ re}$
- i. $m =$ Abondo was in Yaoundé when the bus was traveling there and crashed.

⁸It is useful to make a methodological point here. When this was first elicited, I did not include the optional continuation *Ye wé kat Mama?* ‘Will you tell Mama?’. Without the continuation, the consultant produced the opposite judgments. However, once the continuations were added, the consultant remarked that she understood the context differently, and gave the judgments reported here. The methodological point is this. The kinds of mistaken identity contexts used to diagnose *de se* contents are complex, and consultants often have difficulty keeping track of them. Any clues as to the perspectives of the individuals involved in the examples that can be added, without creating confounds with respect to the implications being tested, should be. Here, for instance, the continuation reminded the consultant that Bella’s mom did not believe that she was herself. That was entailed by the description of the context, but was also easily forgotten due to the need to keep track of the actual locations of several different individuals. Here too, the map and pawns came in handy, as we were able to point to and discuss the locations of Bella, Bella’s mom, etc.

- (134) [Context: Last week, there was a horrible accident on the road from Sangmélina to Yaoundé. Abondo was waiting for his family at the bus station in Yaoundé when it happened. When he learned about the accident, he was so shocked that he developed amnesia. He was taken to a hospital in Douala for treatment. The doctors have not told him who he is. As far as Abondo knows, he has always lived in Douala. The doctors hope that if Abondo reads about his own life, he will remember on his own. Today, he reads about the accident. He says:]

a. #e- \emptyset -sondô a nga man, \emptyset -metua a mbe **za'ak**
 AUG-CL₁-Sunday SUB₁ REM finish CL₁-car SUB₁ COP.PST **come**_{zu}.CONT
 e-Yewondo. Nde, \emptyset -metua \emptyset -te a nga ku \emptyset -zen.
 LOC-Yaoundé. Then, CL₁-car AGR₁-DEF SUB₁ REM fall CL₉-path
 Intended: 'Last week, a bus was coming to Yaoundé. Then, it wrecked on the road.'

b. e- \emptyset -sondô a nga man, \emptyset -metua a mbe **kelek**
 AUG-CL₁-Sunday SUB₁ REM finish CL₁-car SUB₁ COP.PST **go**.CONT
 e-Yewondo. Ende, \emptyset -metua \emptyset -te a nga ku \emptyset -zen.
 LOC-Yaoundé. Then, CL₁-car AGR₁-DEF SUB₁ REM fall CL₉-path
 'Last week, a bus was going to Yaoundé. Then, it wrecked on the road.'

- (135) [Context: Identical to (134), except that when Abondo reads about the accident, he regains his memory.]

ma simsan na me ne Abondo. e- \emptyset -sondô a nga
 1.SG.PRES remember COMP 1.SG COP.PRS Abondo. AUG-CL₁-Sunday SUB₁ REM
 man, \emptyset -metua a mbe **za'ak** e-Yewondo. Nde, \emptyset -metua
 finish CL₁-car SUB₁ COP.PST **come**_{zu}.CONT LOC-Yaoundé. Then, CL₁-car
 \emptyset -te a nga ku \emptyset -zen. Nde, me nga kuan j-ôm é-se.
 AGR₁-DEF SUB₁ REM fall CL₉-path. then 1.SG REM forget CL₇-thing AGR₇-every

'I remember that I am Abondo. Last week, a bus was coming to Yaoundé. Then, the bus wrecked on the road. Then, I forgot everything.'

The diagnostic applies here just as in the previous example. The anchoring implication that Abondo was in Yaoundé at the time that the bus was traveling there is believed *de re* in

the context of (134), where Abondo has been reading about his life, but it is not believed *de se*. Therefore, *ke* ‘go’ is used in place of *zu* ‘come_{zu}’. In contrast, in (135), when Abondo regains his memory, the use of *zu* ‘come_{zu}’ is acceptable.

(137) provides an additional example.

(136) Components of (137):

- a. $\phi = zu$ ‘come_{zu}’
- b. $S = Hilary\ Clinton\ fe\ a\ nga\ zu\ evalé$ ‘Hilary Clinton also came there.’
- c. $S' = Hilary\ Clinton\ fe\ a\ nga\ so$ ‘Hilary Clinton also came.’
- d. $C =$ context of (137)
- e. $C' =$ context of (138)
- f. $x =$ Donald Trump
- g. $R_{de\ se} = BELIEVE_{de\ se}$
- h. $R_{de\ re} = BELIEVE_{de\ re}$
- i. $m =$ Donald Trump was in Boston on Monday.

(137) [Context: Two days ago on Monday, Donald Trump and Hilary Clinton held campaign rallies in Boston. Today, Trump is in New York. He gets drunk and forgets where he has been over the last few days. He is watching the news, and he sees footage of his own rally in Boston two days ago as well as footage of Hilary Clinton’s rally. Trump doesn’t recognize himself, but he does recognize Clinton. He points at himself on TV and says:]

a. #e-m-ôt nyi-li a mbe e-Boston e-m-ôs ∅-mondé.
 AUG-CL₁-person AGR₁-DEM 3.SG COP LOC-Boston AUG-CL₃-day CL₁-Monday
 Hilary Clinton fe a nga **zu** e-va-lé
 Hilary Clinton also 3.SG REM **come_{zu}** LOC-CL₁₆-DEM
 Intended: ‘That guy was in Boston on Monday. Hilary Clinton also came there.’

b. é-yoñ m-ôt nyi-li a mbe e-Boston e-m-ôs
 CL₇-time CL₁-person AGR₁-DIST 3.SG COP LOC-Boston AUG-CL₃-day
 ∅-mondé, Hilary Clinton fe a nga **so**
 CL₁-Monday Hilary Clinton also 3.SG REM **come_{so}**
 ‘When that guy was in Boston on Monday, Hilary Clinton also came.’

(138) [Context: Trump recognizes himself and remembers his rally in Boston.]

a. me mbe e-Boston e-m-ôs ∅-mondé. Hilary Clinton fe
 1.SG COP.REM LOC-Boston AUG-CL₃-day CL₁-Monday Hilary Clinton also
 a nga **zu** e-va-lé
 3.SG REM **come_{zu}** LOC-CL₁₆-DIST
 ‘I was in Boston on Monday. Hilary Clinton also came there.’

b. é-yoñ me mbe e-Boston e-m-ôs ∅-mondé, Hilary Clinton
 CL₇-time 1.SG COP.REM LOC-Boston AUG-CL₃-day CL₁-Monday Hilary Clinton
 fe a nga **zu** e-va-lé
 also 3.SG REM **come_{zu}** LOC-CL₁₆-DIST
 ‘When I was in Boston on Monday, Hilary Clinton also came there.’

In the context in (137), Donald Trump does not recall being in Boston on the day of the rally. He does, however, believe of himself *de re* that he was in Boston, since he is watching footage of the rally. In such a context, he cannot use *zu* ‘come_{zu}’ to describe Hilary coming to Boston. The near minimal variant in (137b) shows that the use of *so* ‘come_{so}’, in contrast,

is acceptable in such a context. The contrasting examples in (138) show that when Donald does believe *de se* that he was in Boston, the use of *zu* ‘come_{zu}’ is acceptable.

One final example makes the same point:

(139) Components of (140a):

- a. $\phi = zu$ ‘come_{zu}’
- b. $S = Paul\ Biya\ a\ ke\ zu\ yen\ boks\ te$ ‘Paul Biya came to watch the boxing.’
- c. $S' = Paul\ Biya\ a\ ke\ ke\ yen\ boks\ te$ ‘Paul Biya went to watch the boxing.’
- d. $C =$ context of (140)
- e. $C' =$ context of (141)
- f. $x =$ Medo
- g. $R_{de\ se} = BELIEVE_{de\ se}$
- h. $R_{de\ re} = BELIEVE_{de\ re}$
- i. $m =$ Medo was at the boxing in Douala.

(140) [Context: Medo is a boxer. Tonight, he had a boxing match in Douala. He was knocked out. When he wakes up, he can’t remember where he is. He thinks that he is at home in Yaoundé. on the news, he sees a picture of himself boxing in Douala, but he doesn’t recognize himself. He also sees that President Paul Biya was at the match. He says:]

a. # \emptyset -boks a be e-Douala den. Paul Biya a ke **zu** yen
 CL₁-boxing SUB₁ COP.REC LOC-Douala today Paul Biya 3.SG REC **come_{zu}** see
 \emptyset -boks \emptyset -te.
 CL₁-boxing AGR₁-DEF

Intended: ‘There was boxing in Douala today. Paul Biya came to see the boxing.’

b. \emptyset -boks a be e-Douala den. Paul Biya a ke **ke** yen
 CL₁-boxing SUB₁ COP.REC LOC-Douala today Paul Biya 3.SG REC **go** see
 \emptyset -boks \emptyset -te.
 CL₁-boxing AGR₁-DEF

‘There was boxing in Douala today. Paul Biya went to see the boxing.’

(141) [Context: Identical to (140), except that Medo remembers who and where he is when he wakes up.]

∅-boks a be e-Douala den. Paul Biya a ke **zu** yen
 CL₁-boxing SUB₁ COP.REC LOC-Douala today Paul Biya 3.SG REC **come_{zu}** see
 ∅-boks ∅-te.
 CL₁-boxing AGR₁-DEF

‘There was boxing in Douala today. Paul Biya came to see the boxing.’

Just like the previous examples, this example shows that the anchoring implication of *zu* ‘come_{zu}’ is a *de se* commitment of the anchor.

4.4.3 Possible counter-examples and additional cross-linguistic variation

Now, I turn to a set of interesting examples that highlight a difference in the use of deictic motion verbs between Bulu and English. In both of these examples, the speaker is in doubt about his location. He has no *de se* belief that he is located at the destination, or really anywhere in particular. In both cases, in English, the speaker would use *go* rather than *come* as a result. In contrast, in Bulu, either *ke* ‘go’ or *zu* ‘come_{zu}’ is equally acceptable. At first, this seems to cast doubt on the claim that *zu* ‘come_{zu}’ gives rise to a *de se* anchoring implication. However, as the discussion makes clear, the real point has to do with a contrast between *ke* ‘go’ and *go*. The latter, but not the former, is relatively bleached with respect to deictic meaning. This means that *go* but not *ke* ‘go’ is a good alternative in a context in which deictic information is unknown. Consultant comments support this interpretation of the data.

The first example is given in (142). It is similar to (137a) above. In this case, the anchoring implication is that Donald Trump is in Dallas, and Clinton’s motion is said to be in progress.

(142) [Context: Donald Trump has been campaigning all over the United States. Tonight he is in Dallas. He gets drunk and forgets where he is. He is watching TV. he sees a video of himself at a rally in Dallas earlier today on TV, but he is so drunk he doesn't recognize himself. He does notice that the guy on TV is campaigning for president, and reads on the bottom of the screen that this guy is in Dallas. As he continues watching the news, he sees that Hilary Clinton is on her way to Dallas as well. He says:]

- a. Hilary a **zu** e-Dallas é-yoñ ji.
 Hilary 3.SG.PRS **come**_{zu} LOC-Dallas CL₇-time AGR₇.DEM
 'Hilary is coming to Dallas now.'
- b. Hilary a **ke** e-Dallas é-yoñ ji.
 Hilary 3.SG.PRS **go** LOC-Dallas CL₇-time AGR₇.DEM
 'Hilary is going to Dallas now.'

(143) [Context: Identical to (142), except that Trump knows he's in Dallas.]

- a. Hilary a **zu** e-Dallas é-yoñ ji.
 Hilary 3.SG.PRS **come**_{zu} LOC-Dallas CL₇-time AGR₇.DEM
 'Hilary is coming to Dallas now.'
- b. #Hilary a **ke** e-Dallas é-yoñ ji.
 Hilary 3.SG.PRS **go** LOC-Dallas CL₇-time AGR₇.DEM
 'Hilary is going to Dallas now.'

The context in (142) is appropriate for the diagnostic because Trump believes *de re* about the guy he sees on TV, who happens to be him, that that guy is in Dallas. However, he does not recognize himself, and he has forgotten his own location. Therefore, his belief about Trump being in Dallas is not *de se*. In this context, we would expect (142a) to be unacceptable, because the context conflicts with the *de se* anchoring implication of *zu* 'come_{zu}'. However, it is judged to be acceptable. Interestingly, so is the minimal variant with *ke* 'go' in (142b), in contrast with its unacceptability when in (143) where Trump recognizes himself.

The comments of the consultant who judged (142a) help explain what makes this example different from the preceding examples. At first, she was hesitant to accept or reject (142a) or (142b). However, eventually she accepted both, saying that since Trump didn't know where he was he could say anything. Specifically, he could use either *zu* 'come_{zu}' or *ke* 'go'. The tense plays a crucial role in this example. Because the motion is under way at utterance time, only the utterance time location of the anchor is relevant. In this example, at that time, the anchor has no idea about his own location. This contrasts with the preceding examples, in which Bella's mom falsely believed herself to be in Eminemvom at utterance time, Abondo knew himself to be at Douala at utterance time, Trump knew himself to be in New York at utterance time, and Medo falsely believed himself to be in Yaoundé at utterance time. In these cases, even though the anchor did not have accurate *de se* beliefs about their locations at event time, they did have *de se* beliefs about their locations at utterance time. Since utterance time is a possible anchoring time in Bulu, this meant that they had a way to anchor deictic motion verbs, just not the way that would make the examples acceptable. In contrast, in (142a), Trump has no *de se* belief about his own location at utterance time or event time, beyond something like "I'm right here with this bottle of alcohol, wherever 'here' is". In such a context, there is simply no way to anchor a deictic motion verb, and the consultant accepts both *zu* 'come_{zu}' or *ke* 'go' unanchored.

This hypothesis is supported by the evidence in (144). (144) demonstrates that there is a difference between contexts in which the anchor has no beliefs about where she is and those where she has false beliefs about where she is.

- (144) a. [Context: John is a Secret Service agent. He goes places before President Obama in order to make sure that everything is ready for the president’s arrival. This week, President Obama is traveling to Cameroon, so John goes there to get things ready. Unfortunately, he falls and hits his head. When he wakes up, he doesn’t remember where he is. He sees on the news that President Obama is on his way to Cameroon. And he sees pictures of Secret Service agents in Yaoundé, including himself, getting things ready. But he doesn’t recognize himself. He says:]

President Obama a **zu** e-Karmerun é-yoñ ji.
 President Obama 3.SG.PRS **come_{zu}** LOC-Cameroon CL₇-time AGR₇.DEM
 ‘President Obama is coming to Cameroon now.’

- b. [Context: Identical to (144a), except that when John wakes up he thinks he’s in a hospital near his home in the United States. He says:]

#President Obama a **zu** e-Karmerun é-yoñ ji.
 President Obama 3.SG.PRS **come_{zu}** LOC-Cameroon CL₇-time AGR₇.DEM
 Intended: ‘President Obama is going to Cameroon now.’

Describing (144a), the consultant once again said that John can say anything, because he doesn’t know where he is.

These two final examples are interestingly different than their English counterparts. In English, in both cases, a speaker in doubt about his own location would use *go* and would not use *come*. Arguably, this is because English *go* either does not have deictic/perspectival content (see Sudo 2016 for a recent argument to this effect) or because it has reduced deictic/perspectival content relative to *come* (Oshima, 2006a,b). Either way, in English *go* serves as a kind of default. These examples suggest that this is not the case in Bulu. Instead, both *zu* ‘come_{zu}’ and *ke* ‘go’ seem to have deictic/perspectival content. In other words, just as *zu* ‘come_{zu}’ encodes motion to the anchor’s location, so *ke* ‘go’ encodes motion to a location at which the anchor does not self-ascribe being located. As a result, when faced

with a situation in which the perspectival content of neither can be satisfied, the consultant reacts by ignoring that content, and judging all deictic motion verbs to be acceptable. It is for this reason that she says e.g. “He can say anything.”

4.4.4 The anchor of *zu* ‘come_{zu}’ is a discourse referent

To the extent that the meaning of *zu* ‘come_{zu}’ resembles the meaning of English *come*, it is expected that the anchor of *zu* ‘come_{zu}’ will be an anaphorically interpreted implicit argument. More investigation is needed in this area, but currently available evidence from binding does not support the claim that the anchor of *zu* ‘come_{zu}’ can be quantificationally bound. For instance, the example from Chapter 2 showing that *come* is acceptable with quantification over a domain of addressees does not work with *zu* ‘come_{zu}’, as shown in (145).

- (145) [Context: Annie lives in Columbus, but doesn’t go to football games or bars. She is giving a speech about drunk driving to a convention of bar owners in Columbus Ohio.]

#É-yoñ OSU a lé é-bume, é-yoñ é-bume ya man-ya,
 CL₇-time OSU SUB₁.PRS play CL₇-ball, CL₇-time CL₇-ball SUB₇ finish-PRF,
 b-ô-t be-se ba **zu** e-∅-bar na ba **zu**
 CL₂-person AGR₂-every 3.PL.PRS **come_{zu}** LOC-CL₁-bar COMP 3.PL.PRS **come_{zu}**
 nyu. (mia yian ba’ele be-nyu-me-yok be-te)
 drink. 2.PL should protect CL₂-drink-CL₆-alcohol AGR₂-DEF

Intended: ‘When OSU plays football, when the game has finished, everyone comes to a bar in order to come drink. You should protect those drunks.’⁹

If *zu* ‘come_{zu}’ worked just like English *come*, (145) would be acceptable. The presence of an addressee at each bar would license the use of *zu* ‘come_{zu}’. Instead, the example is only acceptable if both instances of *zu* ‘come_{zu}’ are replaced with *ke* ‘go’, as in (146).

⁹The English translation here sounds odd due to the locution “come drink”. However, as shown in example (90), using *zu* ‘come_{zu}’ as an auxiliary verb in this way is acceptable in Bulu.

- (146) [Context: Annie lives in Columbus, but doesn't go to football games or bars. She is giving a speech about drunk driving to a convention of bar owners in Columbus Ohio.]

É-yoñ OSU a lé é-bume, é-yoñ é-bume ya man-ya,
 CL₇-time OSU SUB₁.PRES play CL₇-ball, CL₇-time CL₇-ball SUB₇ finish-PRF,
 b-ôt be-se ba ke e-∅-bar na ba ke nyu. (mia
 CL₂-person AGR₂-every 3.PL.PRS go LOC-CL₁-bar COMP 3.PL.PRS go drink. 2.PL
 yian ba'ele be-nyu-me-yok be-te)
 should protect CL₂-drink-CL₆-alcohol AGR₂-DEF

'When OSU plays football, when the game has finished, everyone goes to a bar in order to go drink. You should protect those drunks.'

These examples demonstrate that binding the anchor of *zu* 'come_{zu}' is not possible in the same way that binding the anchor of *come* is. Accounting for this difference is a task for future work.

Before leaving this topic, however, I want to present evidence that the anchor of *zu* 'come_{zu}' is not simply an individual, but instead is a discourse referent. Given the unacceptability of the binding examples elicited so far, it might be tempting to assume that the anchor of *zu* 'come_{zu}' is an instance of direct reference in the Kaplanian sense. In other words, one might think that the anchor of *zu* 'come_{zu}' is just a contextual parameter, or individual. However, there is evidence suggesting that even if the anchor argument cannot be bound, it is nevertheless not amenable to treatment in terms of a Kaplanian theory of indexicality. On that kind of theory, the semantic values of indexicals are individuals, not discourse referents. The relevant example for arguing against this approach is presented in (148). Because it is based on similar examples from Roberts (2014), it is useful to consider one of Roberts' examples first. This will make the point of the Bulu example clearer.

To make the case that the English indexical *I* denotes a discourse referent associated with a discourse center rather than an individual, Roberts (2014:14) presents examples such as the following, which is taken from Stalnaker (2014).

(147) [Context: I [Stalnaker] am talking with John Perry at an APA meeting, but he is not wearing his nametag, and I am not sure who he is. I know Perry's work, but (let's suppose) I had never before met him. I am pretty sure the guy I am talking with is either John Perry or Fred Dretske, but I am not sure which. He is telling me what a fantastic book *Knowledge and the Flow of Information* is, and I am wondering whether he is bragging or praising the work of a colleague. I believe that the person with whom I am talking thinks that *Knowledge and the Flow of Information* is an excellent book, and I also of course believe that he believes that he is telling this to me (though he may not know who I am, since I am not wearing my nametag either)... Suppose John comes to realize that I am not sure whether he is Perry or Dretske. Perry says to a bystander:]

This guy thinks I might be Fred Dretske.

Roberts goes on to say that, if Perry becomes more convinced of Stalnaker's confusion, he can also say *Stalnaker thinks I am Dretske*. The relevant observation is that in neither case is Perry attributing to Stalnaker inconsistent beliefs, or the belief that Perry and Dretske are the same person. Rather he is saying that Stalnaker is mistaken about who his interlocutor is. But on a direct reference theory of indexicals and proper names, the only available reading of (147) is one that attributes inconsistent beliefs to Stalnaker. In contrast, if indexicals and proper names denote discourse referents, specifically individual concepts, these examples have a reading that does not attribute inconsistent beliefs to Stalnaker. Roberts uses such examples to argue against a direct reference theory of the meanings of indexicals, proper names, and demonstratives.

A similar sort of example with *zu* 'come_{zu}' is given in (148). For this example, it is useful to know that Dorothee, Celine, and Susanne are sisters all of whom are known personally by the three consultants who gave judgments on this example. Using real people as characters in this way helps consultants understand the context and prevents confusion, just as using actual philosophers does for Stalnaker and Roberts.

(148) [Context: Jefferson has never seen Celine or Susanne. When Jefferson was in Yaoundé last week, Dorothee took him to Celine’s house. They went to join her, but Celine wasn’t there. Today, Jefferson is greeting Susanne. When Susanne tells Jefferson her name, Jefferson doesn’t hear her. When Susanne and Jefferson talk, Jefferson begins to think she is Celine. Susanne thinks that Jefferson thinks that she is Celine. She whispers to Dorothee:]

Jefferson a buni na ma me ne Celine. A buni fe na
 Jefferson 3.SG.PRS think COMP 1.SG 1.SG COP.PRS Celine. 3.SG think also COMP
 a nga **zu** n-da j-am e-∅-sondô a nga man.
 3.SG REM **come_{zu}** CL₉-house AGR₉-1.SG.POSS AUG-CL₁-Sunday SUB₁ REM finish

‘Jefferson thinks that I am Celine. He also thinks that he came to my house last week.’

In (148), Jefferson believes that he went to Celine’s house, not Susanne’s. He knows that Celine and Susanne are different people, i.e. that Dorothee has two different sisters, and that they live in different places. Susanne’s utterance does not attribute to Jefferson the belief that they are the same person since that would result in the attribution of contradictory beliefs. But on a direct reference theory of the anchoring of *zu*, that is the only kind of reading available. In contrast, if the antecedent of *me* ‘1.SG’, *-am* ‘1.SG.POSS’, and the anchor argument of *zu* ‘come_{zu}’ is a discourse referent designating, roughly, the individual concept that maps each world to the individual that Jefferson is talking to in that world, the example is unproblematic. In light of this kind of evidence, I proceed with an analysis of *zu* ‘come_{zu}’ that treats the anchor as an anaphorically retrieved discourse referent. This treatment predicts that, given the right set of anchors as a domain, binding should be possible. It is a task for future work to develop such examples.

It is worth noting that the English translation shows that, with respect to this sort of example, *come* behaves just as *zu* ‘come_{zu}’ does. If the anchor of *come* were an individual, then the English example would attribute contradictory beliefs to Jefferson. The fact that the example does not do this provides additional motivation for avoiding a direct reference

theory of the anchoring of *come* and treating the anchor as a discourse referent rather than, say, a parameter of a Kaplanian context, which by definition is just an individual.

4.5 The anchoring implication of *zu* ‘come_{zu}’ is a projective content

In this section, I use the diagnostics developed by Tonhauser et al. (2013) to demonstrate that the anchoring implication of *zu* ‘come_{zu}’ is projective. First, Section 4.5.1 shows how the diagnostics are applied in Bulu to yield results similar to those found by Tonhauser et al. (2013). Specifically, data in that section show that the prestate implication of *jôé* ‘stop’ and the factive implication of *yem* ‘know’ project in Bulu. In this respect, the prestate implication of *jôé* ‘stop’ resembles those of English *stop* and Paraguayan Guaraní *n(d)(a)...vé-i-ma* (NEG-...-more-NEG-PRF) ‘not anymore’, and the factive implication of *yem* ‘know’ resembles those of English *know* and Paraguayan Guaraní *(oi)kuaa* ‘know’. Confirming Tonhauser et al.’s results for these two types of projection triggers in a third typologically unrelated language is useful in its own right. More importantly for our purposes here, though, the examples in Section 4.5.1 set up the discussion of the projective behavior of the anchoring implication of *zu* ‘come_{zu}’ in Section 4.5.2.

4.5.1 Diagnosing projective content in Bulu

Data in Chapter 2 demonstrated that the anchoring implication of *come* is a Class B projective content: it has the potential to project, it does not impose a strong contextual felicity constraint, and it does not have obligatory local effect. Here, I demonstrate that the anchoring implication of Bulu *zu* ‘come_{zu}’ (i) does not exercise a strong contextual felicity constraint and (ii) is projective. I do not apply the test for obligatory local effect to *zu* ‘come_{zu}’, since the point here is to show that the anchoring implication of *zu* ‘come_{zu}’ is projective, not to classify it according to Tonhauser et al.’s taxonomy. That is a task for

future work. As a result, in this section, I demonstrate only the application of the tests for a strong contextual felicity constraint and projection to the projection triggers *jô'é* ‘stop’ and *yem* ‘know’. I start with the testing *jô'é* ‘stop’ for a strong contextual felicity constraint with respect to the prestate implication.

The prestate implication of *jô'é* ‘stop’ is the implication that whatever is “stopped” was previously under way. In English, for instance, the prestate implication of *John stopped smoking* is that John used to smoke. Recall from the discussion in Chapter 2 that a given trigger/implication pair (*t/m*) imposes a strong contextual felicity constraint just in case the use of *t* is unacceptable in a context that neither entails nor implies *m*, i.e. an *m*-neutral context. (149) and (150) provide examples of *jô'é* ‘stop’ in a context that is neutral with respect to the prestate implication. Because these examples are acceptable, they provide evidence that *jô'é* ‘stop’ does not exercise a strong contextual felicity constraint with respect to the prestate implication.

- (149) [Context: Yvan and Alexis are at Guy’s store. Then a man Yvan doesn’t know comes to join them at the store. The man starts acting strangely. Yvan asks Alexis why the man is acting that way. Alexis answers Yvan:]

m-ôt Ø-te a **jô'é-ya** n-nyu-an Ø-sika
 CL₁-person AGR₁-DEF 3.SG **stop**-PRF PTCP-drink-PTCP CL₁-cigarette

‘The man has stopped smoking.’

- (150) [Context: Yvan, Jefferson, and a friend of Yvan’s are talking. When Yvan and Jefferson speak English, the friend doesn’t talk. Jefferson asks Yvan ‘When you and I speak English, he doesn’t speak. Why not?’ Yvan tells Jefferson:]

a **jô'é** n-y'é'é-an Ø-inglis
 3.SG.PRS **stop** PTCP-learn-PTCP CL₁-English

‘He stopped learning English.’

In (149), the prestate implication *m* is that the man being discussed used to smoke. Since Yvan does not know the man, it is reasonable to think that he does not know that the man

used to smoke. Thus, the context is *m*-neutral. In (150), the prestate implication is that Yvan’s friend used to learn English. Jefferson does not know the friend, and therefore does not know that he once studied English. This means that the context of (150) is *m*-neutral as well. The acceptability of *jô’é* ‘stop’ in both cases demonstrates that *jô’é* ‘stop’ does not exercise a strong contextual felicity constraint with respect to the prestate implication.

Similar results obtain for examples with *yem* ‘know’, as shown in

- (151) [Context: Alexis, Marie, and Guy are in the front yard. Then Marie goes instead to the back yard. Then Guy asks Alexis ‘Why did Marie go to the back yard?’ Alexis answers:]

Marie a **yem** na Jeanne Helene a ne e-∅-falak
 Marie 3.SG.PRS **know** COMP Jeanne Helene 3.SG.PRS COP LOC-CL₁-back.yard

‘Marie knows that Jeanne Helene is in the back yard.’

- (152) [Context: Alexis is in the front yard. Then, Jeanne Helene leaves the inside of the house and goes to the front yard. Jeanne Helene sees a cat going to the back yard. Then, Jeanne Helene asks Alexis ‘Why is this cat going to the back yard?’ Alexis answers:]

É-singi ji-na ya **yem** na be-kup be man-ya ke
 CL₇-cat AGR₇-PROX SUB₇.PRS **know** COMP CL₂-chicken SUB₂ finish-PRF go
 e-∅-falak ∅-nda.
 LOC-CL₉-back.yard CL₉-house

‘This cat knows that the chickens just went to the back.yard of the house.’

In both of these examples, the context is *m*-neutral with respect to the factive implication associated with *yem* ‘know’. (151) does not entail that Jeanne Helene is in the backyard, and (152) does not entail that chickens just went to the back yard. In (152) in particular, the fact that Jeanne Helene just exited the house makes it unlikely that she knows about the chickens’ recent departure. In both cases, the use of *yem* ‘know’ is acceptable, demonstrating

that *yem* ‘know’ does not exercise a strong contextual felicity constraint with respect to the factive implication.

With this background, it is possible to diagnose projection with respect to the prestate implication of *jô’é* ‘stop’ and the factive implication of *yem* ‘know’. I begin with *jô’é* ‘stop’. In this case, I focus on just the negation and antecedent of a conditional environments. Recall from Chapter 2 that in examples of this sort, consultants are asked implication questions about the behavior of individuals in the context. Questions are structured so that if the consultant answers “yes”, it shows that s/he takes the implication being tested to be an entailment of the utterance. In this case, the question put to consultants is whether or not the doctor will want to give Abondo medicine.

(153) [Context: The Avebe clinic has medicine that helps people who smoke and people who used to smoke. The doctor asks Alexis ‘Does Abondo smoke?’ Alexis answers:]

a. **Positive:**

Abondo a **jô’é-ya** n-nyu-an Ø-sika.
 Abondo 3.SG.PRS **stop**-PRF PTCP-drink-PTCP CL₁-cigarette

‘Abondo has stopped smoking.’

Answer to implication question: **Yes**

b. **Negation:**

Abondo a nga’an te ké’é **jô’é** n-nyu-an
 Abondo 3.SG.PRS continue NEG.TAM NEG **stop** PTCP-drink-PTCP

Ø-sika.

CL₁-cigarette

‘Abondo still hasn’t stopped smoking.’

Answer to implication question: **Yes**

c. **Antecedent of a conditional:**

Nge Abondo a **jô’é-ya** n-nyu-an Ø-sika, a nji
 if Abondo 3.SG **stop**-PRF PTCP-drink-PTCP CL₁-cigarette 3.SG NEG.PST

ki ma kat.

NEG 1.SG tell

‘If Abondo has stopped smoking, he didn’t tell me.’

Answer to implication question: **Yes**

In the context in (153), the doctor’s question makes clear that he doesn’t know whether or not Abondo smokes. This shows that the context is *m*-neutral. In both the positive answer in (153a) and the FOS varieties in (153b) and (153c), consultants answer that the doctor will give Abondo the medicine, indicating that the prestate implication that Abondo used to smoke projects.¹⁰

¹⁰Here it is useful to make a methodological point. Three out of the four consultants who were asked about the examples in (153) answered as noted in the examples. A fourth said that the doctor would not give Abondo the medicine. However, his/her further comments demonstrate that his/her answer has nothing to do with whether or not the prestate implication projects. Rather, it has to do with his/her views on medicine and patient rights. Specifically, the consultant responded first that the doctor would not give

Similar results obtain for the factive implication associated with *yem* ‘know’, as shown in (154) and (155). In (154), the question asked is whether or not Mama Sita will want to go to the backyard to look for Jeanne Helene.

(154) **Negation:** [Context: Mama Sita is looking for Jeanne Helene. When she is in the front yard, she hears Alexis tell Jefferson:]

Marie a nji ki ke me-ndim e-∅-falak, amu a **yem**
 Marie 3.S NEG.PST NEG go CL₆-water LOC-CL₉-backyard because 3.SG.PRS **know**
 ki na Jeanne Helene a ne e-∅-falak
 NEG COMP Jeanne Helene 3.SG.PRS COP.PRS LOC-CL₉-back.yard

‘Marie didn’t bring the water to the back yard because she doesn’t know that Jeanne Helene is in the backyard.’

Answer to implication question: **Yes**

Responding to (154), consultants answer that Mama Sita will want to go to the backyard to look for Jeanne Helene. This shows that the implication that Jeanne Helene is in the backyard, i.e. the factive implication, projects from under negation.

The examples in (155) show that the factive implication projects when *yem* ‘know’ is embedded in a question or the antecedent of a conditional. Here, the question is whether Alexis will go to the kitchen to get bushmeat soup.

Abondo medicine because Abondo was not sick. When I reiterated the context, making sure s/he understood that the medicine was for both current and former smokers, the consultant said that it didn’t matter what the doctor wanted. It was Abondo’s body, s/he said, and only Abondo can decide whether or not he takes medicine. This response illustrates both the importance of paying attention to consultants’ comments and the need to use multiple examples with different lexical content and multiple consultants when diagnosing semantic phenomena. For this consultant, the problem had to do with patient rights, not the semantics of *jô’é* ‘stop’.

(155) [Context: Alexis wants to eat bushmeat soup.]

- a. **Question:** [Context: While he is passing through the front yard, he hears Michelle ask Pulpo:]

Ye Mnanga a **yem** na Mama Sita a yam m-fiañ
Q Mnanga 3.SG.PRS **know** COMP Mama Sita 3.SG.PRS cook CL₉-soup
∅-tit?

CL₉-animal

‘Does Mnanga know that Mama Sita is cooking bushmeat soup?’

Answer to implication question: **Yes**

- b. **Antecedent of a conditional:** [Context: While he is passing through the front yard, he hears Jeanne Helene tell Jefferson:]

Nge b-ongô ba **yem** na Mama Sita a ke yam
If CL₂-children 3.PL.PRS **know** COMP Mama Sita 3.SG.PRS go COOK
m-fiañ ∅-tit, bé ke e-∅-kisin m-am ngué.
CL₉-soup CL₉-animal 3.PL.FUT go LOC-CL₁-kitchen CL₆-thing evening

‘If the children know that Mama Sita is going to cook bushmeat soup, they will go to the kitchen this evening.’

Answer to implication question: **Yes**

When presented with the examples in (155), consultants indicate that Alexis will go to the kitchen to get bushmeat soup. This demonstrates that the factive implication of *yem* ‘know’ projects when *yem* ‘know’ is embedded in a question or the antecedent of a conditional. The results from Bulu described in this section are congruent with the findings of Tonhauser et al. (2013) for similar projection triggers in English and Paraguayan Guaraní. This congruence suggest that, at least for these items, projection has more to do with the kind of meanings expressed than with some sort of lexical or grammatical specification, as Simons et al. (2010, accepted) and Tonhauser et al. (2013) propose. In other words, if projection were a matter of lexical specification—due, say, to some lexical feature specification—then there would be no reason to expect expressions with similar meanings to project in the same way cross-linguistically. In contrast, if projection has a deeper root in the way certain kinds of

meanings interact with each other and the discourse structure, then similarity in projective behaviors across languages might be expected.

4.5.2 Diagnosing the anchoring implication of *zu* ‘come_{zu}’ as a projective content

With the illustrations of the diagnostics in Bulu given in the previous section, we are now prepared to demonstrate that the anchoring implication of *zu* ‘come_{zu}’ projects. The data in this section demonstrate that the anchoring implication of Bulu *zu* ‘come_{zu}’ is projective, like the anchoring implication of *come*. To show that the anchoring implication of *zu* ‘come_{zu}’ projects, I first apply the diagnostic for a strong felicity constraint. The results show that *zu* ‘come_{zu}’ does not exercise a strong contextual felicity constraint with respect to the anchoring implication. Then, I apply the projection test for contents that do not exercise a strong contextual felicity constraint.

Testing *zu* ‘come_{zu}’ for a strong contextual felicity constraint: (156)-(158) are examples in which the use of *zu* ‘come_{zu}’ is acceptable in a context that is neutral with respect to the anchoring implication.

(156) [Context: Medo and Abondo go to OSU. On Saturday afternoon, Medo calls Abondo and says:]

Ye o ne **zu** gimnaz é-yoñ ji?
Q 2.SG PSB **come_{zu}** gymnasium CL7-time AGR7.PROX

‘Can you come to the gym now?’

(157) [Context: Andong and Bella recently met online. They really hit it off because they have many of the same interests. They talk about their interests, but not their personal lives, like how old they are, whether they're married or have kids, or where they live. Finally, Bella says:]

O to'o vé? Ma yi na wé **zu** e-Portland o
 2.SG sit.CONT where 1.SG.PRS want COMP 2.SG.FUT **come_{zu}** LOC-Portland 2.SG
 zu jom ma.
 come_{zu} visit 1.SG

'Where do you live? I want you to come to Portland to visit me.'

(158) [Context: Abondo is being taken away by the authorities. Bella does not know where he is being taken. As they stuff him in the car, Abondo manages to shout:]

za'ak e-Chicago. (Ba ke ma wé.)
come_{zu}.imp LOC-Chicago. 3.PL.PRS go 1.SG there

'Come to Chicago. (They're taking me there.)'

In (156), the anchoring implication *m* is that Medo is at the gym. This is not entailed by the context, which makes it *m*-neutral. The use of *zu* 'come_{zu}' is nevertheless acceptable in the context of (156), demonstrating that *zu* 'come_{zu}' does not exercise a strong contextual felicity constraint with respect to the anchoring implication. Similar observations can be made about (157)-(158), *ceteris paribus*.

(156)-(158) demonstrate that *zu* 'come_{zu}' does not exercise a strong felicity constraint with respect to the anchoring implication. There is also another observation worth making about such examples. This observation is that constructing these kinds of examples for *come* and *zu* 'come_{zu}' is not as easy as it is as for some other triggers of projective contents such as *stop* or *know*. This observation echoes Oshima's (2016) observation that in some examples, English *come* behaves as though it exercises a strong contextual felicity constraint, even though in the examples presented in Chapter 2 it does not. With *come* and *zu* 'come_{zu}', then, it seems as though the context must entail not only that the anchor's location is

not known, but also either (i) that the location is a plausible/normal location for that anchor or (ii) that the non-anchor interlocutor has no views about what a plausible/normal location for the anchor is. (156) exemplifies the first kind of context. In (156), the gym is a reasonable place for a college student to be, and it is easy for consultants to imagine that, even though Abondo does not know where Medo is at the time the call is made, the gym will be among the places he might suspect Medo to be. The same condition suffices to license English examples as well, as the acceptability of the translation equivalent demonstrates. However, if this condition is violated, the examples are degraded. Consider, for example, an utterance of *Can you come to Cleveland now?*, or even worse, *John is coming to Cleveland now. Can you accompany him?* (c.f. *John is coming to the gym now. Can you accompany him?*). Given that OSU is in Columbus, Cleveland is several hours away, and nothing in the context suggests that Abondo suspects Medo is away from school, these utterances sound odd.

(157) and (158) illustrate the second kind of acceptable context, one in which the context entails that the addressee has no knowledge of the speaker's usual whereabouts. In (157), that is because the speaker has not told the addressee where she lives. In (158) it is because the addressee has no knowledge of the authorities' plans for Abondo. But note that the (English equivalents of) the examples degrade if these conditions are not met. Imagine, for example, that Andong and Bella met in person at a bar in Columbus, and have already established that they live there. Then it is unacceptable for Bella to utter *I want you to come to Portland to visit me* even if she knows that she has plans to be in Portland next month.

It's not clear to what extent this observation is different from the observation that saying *I have to go feed my dog* in a context in which it is not known that the speaker has a dog is more acceptable than saying *I have to go feed my zebra* is in a context in which it is not known that the speaker has a zebra. Judith Tonhauser (p.c.) suggests that perhaps the anchoring implication imposes a condition that the time at which anchoring occurs is

familiar. This seems to me like a promising avenue for further research into this issue.

Testing the anchoring implication of *zu* ‘come_{zu}’ for projection: The examples in this section demonstrate that the anchoring implication of *zu* ‘come_{zu}’ projects in FOS environments.

(159) [Context: Bella is a historian doing research on the life of Paul Biya (the president of Cameroon). She wants to visit every site he visited in March 1984, the month leading up to the attempted coup on April 6. She reads an entry from Paul Biya’s diary dated March 23, 1984. It says:]

a. **Positive:**

be-siñ b-am ba zu Hotel Kribi é-yoñ ji.
CL₂-hate CL₂-1.SG.POSS 3.PL.PRS come_{zu} LOC.Hotel Kribi CL₇-time CL₇.PROX
‘My enemies are coming to Hotel Kribi now.’

Answer to implication question: **Yes**

b. **Negation:**

be-siñ b-am ba zu ki Hotel Kribi é-yoñ
CL₂-hate CL₂-1.SG.POSS 3.PL.PRS come_{zu} NEG LOC.Hotel Kribi CL₇-time
ji.
CL₇.PROX

‘My enemies are not coming to Hotel Kribi now.’

Answer to implication question: **Yes**

c. **Antecedent of a conditional:**

Nge be-siñ b-am ba zu Hotel Kribi é-yoñ
if CL₂-hate CL₂-1.SG.POSS 3.PL.PRS come_{zu} LOC.Hotel Kribi CL₇-time
ji, e-m-ôt a lebe ma a nga’an te
CL₇.PROX, AUG-CL₁-person 3.SG.PRS advise 1.SG 3.SG.PRS continue TAM.NEG
ke ma kat
NEG 1.SG tell

‘If my enemies are coming to Hotel Kribi now, my adviser still hasn’t told me.’

Answer to implication question: **Yes**

d. **Question:**

Ye be-siñ b-am ba **zu** Hotel Kribi é-yoñ
Q CL₂-hate CL₂-1.SG.POSS 3.PL.PRS **come_{zu}** LOC.Hotel Kribi CL₇-time
ji?
CL₇.PROX

‘Are my enemies coming to Hotel Kribi now?’

Answer to implication question: **Yes**

e. **Possibility modal:**

Ékozing be-siñ b-am ba **zu** Hotel Kribi é-yoñ
perhaps CL₂-hate CL₂-1.SG.POSS 3.PL.PRS **come_{zu}** LOC.Hotel Kribi CL₇-time
ji. kozing bé tabe e-Yewondo.
CL₇.PROX perhaps 3.PL stay LOC-Yaoundé

‘Perhaps my enemies are coming to Hotel Kribi now. Perhaps they are staying in Yaoundé.’

Answer to implication question: **Yes**

In the examples in (159), the anchoring implication is that, at the time of writing, Paul Biya was at the Hotel Kribi. The question asked was whether or not Bella would want to visit the Hotel Kribi. The fact that in every case the answer is ‘yes’ demonstrates that the anchoring implication projects. The fact that the anchoring implication arises due to the use of *zu* ‘come_{zu}’ is demonstrated in (160), which involves minimal variants of the examples in (159) with *ke* ‘go’ instead of *zu* ‘come_{zu}’.

(160) [Context: Bella is a historian doing research on the life of Paul Biya (the president of Cameroon). She wants to visit every site he visited in March 1984, the month leading up to the attempted coup on April 6. She reads an entry from Paul Biya's diary dated March 23, 1984. It says:]

a. **Positive:**

be-siñ b-am ba ke Hotel Kribi é-yoñ ji.
 CL₂-hate CL₂-1.SG.POSS 3.PL.PRS go LOC.Hotel Kribi CL₇-time CL₇.DEM
 'My enemies are going to Hotel Kribi now.'

Answer to implication question: **No**

b. **Negation:**

be-siñ b-am ba ke ki Hotel Kribi é-yoñ ji.
 CL₂-hate CL₂-1.SG.POSS 3.PL.PRS go NEG LOC.Hotel Kribi CL₇-time CL₇.DEM
 'My enemies are going to Hotel Kribi now.'

Answer to implication question: **No**

c. **Antecedent of a conditional:**

Nge be-siñ b-am ba ke Hotel Kribi é-yoñ ji,
 if CL₂-hate CL₂-1.SG.POSS 3.PL.PRS go LOC.Hotel Kribi CL₇-time CL₇.DEM,
 e-m-ôt a lebe ma a nga'an te ké ma
 AUG-CL₁-person 3.SG.PRS advise 1.SG 3.SG.PRS continue TAM.NEG NEG 1.SG
 kat
 tell

'If my enemies are going to Hotel Kribi now, my advisor still hasn't told me.'

Answer to implication question: **No**

d. **Question:**

Ye be-siñ b-am ba ke Hotel Kribi é-yoñ ji?
 Q CL₂-hate CL₂-1.SG.POSS 3.PL.PRS go LOC.Hotel Kribi CL₇-time CL₇.PROX
 'Are my enemies going to Hotel Kribi now?'

Answer to implication question: **No**

e. **Possibility modal:**

Ékozing be-siñ b-am ba ke Hotel Kribi é-yoñ
perhaps CL₂-hate CL₂-1.SG.POSS 3.PL.PRS go LOC.Hotel Kribi CL₇-time
ji. kozing bé tabe e-Yewondo.
CL₇.DEM perhaps 3.PL stay LOC-Yaoundé

‘Perhaps my enemies are going to Hotel Kribi now. Perhaps they are staying in Yaoundé.’

Answer to implication question: **No**

In every example in (160), the consultant answered that Bella will not want to visit the Hotel Kribi. Thus, the change from *zu* ‘come_{zu}’ to *ke* ‘go’ eliminates the anchoring implication.

The examples in (161) provide additional evidence that the anchoring implication of *zu* ‘come_{zu}’ projects. For (161), it is helpful to know that Muzni is a village in northern Nigeria.

(161) [Context: Abondo is a spy for the Nigerian and Cameroonian armies He has made contact with the leader of a Boko Haram terrorist group in northern Nigeria. If he can learn where the leader is hiding, he will order a raid on that location to capture the leader. He is talking to the Boko Haram leader on the phone, and he hears noise in the background. He asks what it is. The leader says: “It is a cell phone video of my soldiers passing on the road.”]

a. **Positive:**

Ba **zu** Muzni é-yoñ ji
 3.PL.PRS **come**_{zu} Muzni CL₇-time AGR₇.PROX

‘They are coming to Muzni now.’

Answer to implication question: **Yes**

b. **Negation:**

Ba **zu** ki Muzni é-yoñ ji
 3.PL.PRS **come**_{zu} NEG Muzni CL₇-time AGR₇.PROX

‘They are not coming to Muzni now.’

Answer to implication question: **Yes**

c. **Possibility modal:**

Ékozing ba **zu** Muzni é-yoñ ji
 perhaps 3.PL.PRS **come**_{zu} Muzni CL₇-time AGR₇.PROX

‘Perhaps they are coming to Muzni now.’

Answer to implication question: **Yes**

d. **Antecedent of a conditional:**

Nge ba **zu** Muzni é-yoñ ji, be nji ki ma
 if 3.PL.PRS **come**_{zu} Muzni CL₇-time AGR₇.PROX, 3.PL NEG.PST NEG 1.SG
 kat na-lé
 tell COMP-DIST

‘If they are coming to Muzni now, they didn’t tell me so.’

Answer to implication question: **Yes**

Here, the anchoring implication is that the Boko Haram leader is located in Muzni. The question asked of the consultant was whether or not, after hearing the leader's response, Abondo would want to order a raid on Muzni. In every case, the answer is 'yes'. Thus, these examples show that the anchoring implication of *zu* 'come_{zu}' is projective.

4.6 Summary of Chapter 4

The data in this Chapter support several empirical generalizations about the meaning of *zu* 'come_{zu}'. Data developed using Wilkins and Hill's (1993) diagnostics demonstrate that *zu* 'come_{zu}' is a deictic motion verb. They also demonstrate that it is a novel sort of deictic motion verb, one that allows for its anchor to be either the speaker or the addressee but not the attitude holder of an embedding attitude predicate. In this respect *zu* 'come_{zu}' differs from other fully described deictic motions, which place either more or less restriction on possible anchors.

The data presented here also demonstrate that the meaning of *zu* 'come_{zu}' is similar to the meaning of English *come* in several crucial ways. Like the use of *come*, the use of *zu* 'come_{zu}' gives rise to an anchoring implication, namely the implication that the anchor is located at the destination. This anchoring implication is necessarily a *de se* commitment of the anchor. Furthermore, just like the anchors of *come*, the anchors of *zu* 'come_{zu}' are individuals with salient perspectives, albeit a subset of all such individuals, as mentioned in the previous paragraph. Together, these two observations provide support for analyzing *zu* 'come_{zu}' as dependent on a perspective, just like *come*. What are lacking, however, are examples in which interpreting *zu* 'come_{zu}' anchoring to a non-belief perspective in which the perspective is centered at the destination but no interlocutor is located there. It is a task for future work to attempt to elicit such examples.

With respect to the additional generalizations made about *come*, two of these hold of *zu* 'come_{zu}' as well. Specifically, the anchor of *zu* 'come_{zu}' is best analyzed as a discourse

referent, and the anchoring implication of *zu* is a projective content. However, the spatial component of the anchoring implication of *zu* ‘come_{zu}’ differs from that of *come*. The location relevant for anchoring *come* is defined as a function on the meaning of its path-PP complement. In contrast, the complement of *zu* ‘come_{zu}’ is a locative denoting a property of regions rather than a property of paths. As a result, its anchoring implication is just that the anchor is located in the region denoted by the complement.

In Table 4.4, the generalizations about the meaning of *zu* ‘come_{zu}’ developed here are summarized in terms of the generalizations developed about *come* developed in Chapter 2. For each generalization, if that generalization holds of a given deictic motion verb, I write “yes”. In addition, where the two verbs differ, I include a brief indication of the difference. The Table makes clear both that the two verbs differ in significant ways and that they share certain crucial features, including, most significantly, that their anchoring implications are *de se* commitments of their anchors according to the anchors’ own perspectives.

Generalization	<i>come</i>	<i>zu</i> ‘come _{zu} ’
<i>De se</i> ANCHORING	yes	yes
SALIENT-PERSPECTIVE ANCHORING	yes, to all salient perspectives	yes, to a subset of salient perspectives: speaker and addressee
PERSPECTIVE-ONLY ANCHORING	yes	?
ANAPHORIC ANCHORING	yes	yes, modulo binding examples
PROJECTIVE ANCHORING	yes, Class B	yes, class TBD
COMPLEMENT-DEFINED ANCHORING	yes, path-PP complement	yes, locative complement

Table 4.4: Generalizations about the meanings of *come* and *zu* ‘come_{zu}’

Part II

Analysis

Previous accounts of the meaning of *come*

This chapter considers how successfully previous analyses of the meaning of *come* account for the generalizations developed in Chapter 2. These generalizations are repeated here for convenience. In this case, I repeat the generalizations only as they apply to the meaning of *come*, since previous accounts are not designed to account for the meaning of *zu* ‘*come_{zu}*’.

(73) Empirical generalizations

a. **Perspectival generalizations:**

- i. *De se* ANCHORING: The anchoring implication of *come* is a *de se* implication.
- ii. SALIENT-PERSPECTIVE ANCHORING: The use of *come* is acceptable iff the anchor’s perspective is salient in the discourse context.
- iii. PERSPECTIVE-ONLY ANCHORING: The use of *come* is acceptable if the anchor’s perspective is centered at the destination, even if the anchor herself is not located there.

b. **Additional generalizations:**

- i. ANAPHORIC ANCHORING: The anchor and her perspective are anaphorically interpreted implicit arguments of *come*.
- ii. PROJECTIVE ANCHORING: The anchoring implication of *come* is a Class B projective content.
- iii. COMPLEMENT-DEFINED ANCHORING: The location on which the anchor’s perspective is centered is defined in terms of the path-PP complement of *come*; it is not necessarily the actual endpoint of the motion event.

For each previous analysis considered, I begin with ANAPHORIC ANCHORING and PROJECTIVE ANCHORING. Then, I consider the perspectival generalizations: *De se* ANCHORING, SALIENT-PERSPECTIVE ANCHORING, and PERSPECTIVE-ONLY ANCHORING. I ignore COMPLEMENT-DEFINED ANCHORING throughout. To my knowledge, that generalization has not been noticed before, so no extant analyses account for it. In this section, I focus primarily on the analyses of Fillmore (1975), Taylor (1988), Oshima (2006a,c,b), Goddard (1997), and Barlew (2015b). I pay special attention to Oshima’s (2006a,b,c) account, because it is the most completely fleshed out. First, though, I consider some early analyses of *come* that opened the way for later work.

5.1 Early accounts

Fillmore (1965, 1966) first observed that the use of *come* gives rise to an anchoring implication. Both his early accounts of the anchoring implication and Cinque’s (1972) alternative proposal are based on the assumption that the only acceptable anchors are the speaker and the addressee, which was consistent with the data recognized at the time. I discuss their research in brief before turning to more detailed discussions of subsequent accounts designed to cover a broader range of data.

Fillmore (1965) proposes that the use of *come* entails that an interlocutor is or was located at the destination. Fillmore makes this observation as part of a broader argument that semantic theory must have a way to account for entailments that are triggered by the use of a particular utterance but do not seem to be the main content of that utterance. In making this argument, he does not provide a formal account. Fillmore (1966) formalizes the basic observation of Fillmore 1965 in terms of what he calls “supposition rules”. In Fillmore’s (1966: 222-3) words,

“By means of a supposition rule, semantic features associated with certain morphemes in sentences of certain structure are interpreted by constructing new

sentences from the original sentences; the claim is made that our understanding of the original sentences includes the semantic interpretation of the newly created sentences among their ‘suppositions’.”

Thus, for example, Fillmore (1966: 223) proposes that an utterance of *even if he were here, she would be having a good time* gives rise to at least the suppositions that “(i) It is expected that his being here would result in her not having a good time, (ii) He is not here, and (iii) She is having a good time”.

Fillmore’s suppositional rules are formulated “in quasi-transformational ways” (1966: 223). That is to say, they take a sentence with a particular structure and particular lexical items and build an additional sentence using some of those parts. An example is given in

(162) Fillmore’s (1966: 224) Rule 2 for *come*:

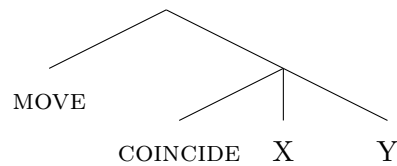
Original	S	Aux	VP	V	
	[NP - X -	[Time]	[	[Motion/Proximal] - Y	Location]]
Supposition	S	NP	Aux	VP	Cop
	[	[+Participant]	[Present]	[	[be] Location]]

Restriction When NP and Time of *Orig* are α -*Speaker*, β -*Hearer* and *Present*, then +Participant of *Supp* must be specified as $-\alpha$ -*Speaker*, $-\beta$ -*Hearer*.

(162) is one of two rules Fillmore posits for the interpretation of utterances with *come*. It says that when a speaker utters or a hearer encounters an utterance with the form and content of the “Original”, she also generates a sentence with the form and content of the “Supposition”. This rule deals with motion to the location of an interlocutor at utterance time (note the “Present” feature of the supposition). Fillmore’s Rule 3 deals with motion to a location where an interlocutor was at the time of motion. Note that on this approach rules such as (162) are elements of the grammar, not elements of the lexical content of *come*. Since transformational rules of this sort are rejected in principle today, I won’t go through the details of (162). For a detailed critique of the approach, see Cinque 1972.

Cinque (1972), in addition to critiquing Fillmore’s approach, offers an alternative. He proposes that the meaning of *come* consists of semantic primitives which are fed into the syntactic structure of the sentence in particular ways. The two semantic primitives involved are MOVE and COINCIDE.¹ The syntactic structure is illustrated in

(163) Cinque’s (1972: 589) decompositional analysis of *come*:



According to Cinque (1972: 589), an sentence with this form means “An Object [X] coincides with a place Y and this coincidence is brought about by means of a movement”.

Cinque (1972: 589-590) analyzes the anchoring implication as a presupposition:

(164) Presupposition (attached to the argument Y):

In the time identified by the tense of the sentence:

If X: α Speaker, β Addressee then Y $-\alpha$ Speaker, $-\beta$ Addressee

if X $-\text{Speaker}$ $-\text{Addressee}$ (= $-\text{Participant}$)

then in Y either $+\text{Speaker}$ or

$+\text{Addressee}$ or

both [i.e. $+\text{Participant}$]

and if the TIME of sentence is different form the TIME of Speaker and Addressee

in Y either $+\text{Speaker}$ or

$+\text{Addressee}$ or

both

The presupposition is (164) framed as a requirement on the destination, Y, that the speaker or addressee be located there either at the time of utterance or the time of motion.

¹Cinque (1972) actually decomposes MOVE into primitives as well, but that level of detail need not concern us here.

Fillmore (1966) and Cinque's (1972) analyses cannot account for the range of data developed above because they recognize only interlocutor anchors. They offer no obvious principled way to add other anchors. However, they make an important contribution to analyses of the meaning of *come*. They separate the anchoring implication from its other semantic content. Later accounts, including the account I will give below, maintain this separation. It is also worth noting that they begin a trend which continues through subsequent approaches but which I do not adopt: they analyze the anchoring implication as content that must be true according to the common ground or in the actual world. In other words, even though Fillmore introduces the intuition that using *come* involves perspective taking, his analysis of the meaning of *come* does not incorporate perspectives or perspective taking in the meaning of *come*. Neither does Cinque's. Nevertheless, in these early studies Fillmore and Cinque lay the conceptual groundwork on which subsequent work builds.

5.2 Fillmore 1975

Fillmore's (1975) treatment of the meaning of *come* represents a considerable improvement over his and Cinque's earlier work in that it recognizes a wider range of acceptable anchors. It also drops the transformational supposition rules, but unfortunately it does not replace them with an alternative formal analysis. Instead, Fillmore provides the following hypothesis characterizing anchoring of *come*, after having tested and rejected a number of previous versions.

(165) The anchoring of *come* according to Fillmore:

- a. Hypothesis V (Fillmore 1975: 61): “come” and “bring” indicate motion toward the location of either the speaker or the addressee at either coding time or reference time, or toward the location of the home base of either the speaker or the hearer at reference time.
- b. First Addendum (Fillmore 1975: 66): “come” and “bring” also indicate motion at reference time which is in the company of [emphasis original] either the speaker or the addressee.
- c. Second Addendum (Fillmore 1975: 67): “come” and “bring” also indicate, in discourse in which neither the speaker nor the addressee figures as a character, motion toward a place taken as the subject of the narrative, toward the location of the central character at reference time, or toward the place which is the central character’s home base at reference time.

In Postscript I, Fillmore (1975: 69), adds that in Addendum 1, ‘the relevant conversation participants are not necessarily the speaker and addressee at the performative level’ (emphasis original). He gives (166), where the anchor is the agent of communication, as an example.

(166) Fred asked Mary to come with him to Tahiti, so she came with him.

Thus, Fillmore recognizes all of the major types of anchoring: interlocutors, agents of communication verbs, main characters (FID characters, in my terms), places that are subjects of narration (doxastic perspectives centered on a particular location, in my terms), and home bases.

How does Fillmore’s hypothesis, read as an analysis, fare with respect to the generalizations developed in Chapter 2? First, the account is silent with respect to how the anchor is contributed to the semantics. It lists the possible acceptable anchors, but doesn’t say whether they are assumed to be indexically or anaphorically interpreted. Thus, it does not

make predictions with respect ANAPHORIC ANCHORING. Similarly, the account does not say what kind of implication the anchoring implication is. That said, there is no reason to think Fillmore changed his mind about distinguishing the anchoring implication from the other semantic content of *come*. Therefore it is reasonable to think that he would still consider the anchoring implication to be suppositional, or perhaps would follow Cinque (1972) in analyzing it as a presupposition. On a charitable reading, then, Fillmore's account predicts or at least is compatible with the observation that the anchoring implication is projective, though it stops short of predicting that it is a Class B projective content, the full content of the PROJECTIVE ANCHORING generalization.

With respect to the perspectival generalizations, Fillmore's account fares less well. First, it does not predict that the anchoring implication is a *de se* commitment of the anchor. Instead, anchoring is analyzed as a condition on the anchor's actual location. Second, Fillmore's account does correctly predict the observed range of anchors, accounting for SALIENT-PERSPECTIVE ANCHORING with high descriptive adequacy. However, it does so without explanatory adequacy because it lists acceptable anchors as part of the account. Similarly, with respect to PERSPECTIVE-ONLY ANCHORING, although Fillmore introduces the first example of this sort, he accounts for it by allowing anchoring to "a place taken as the subject of the narrative". This way of characterizing anchoring to just a perspective can be construed as covering a lot of the relevant examples, but it does so at the cost of developing unified account of the meaning of *come* in terms of perspectival content. Specifically, it suggests that while most anchoring is person-dependent, there is another type that is place-dependent. In contrast, in the account developed below, all anchoring is perspective-dependent.

Because he misses the generalization that anchors are individuals with salient, relevant perspectives, Fillmore's characterization of non-interlocutor anchors rules out some acceptable examples, including (29), repeated below for convenience. In this example, the speaker figures as a character (contra Addendum 2) but a non-interlocutor is nevertheless

an acceptable anchor.

- (29) 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, pp. 30-45 (COCA)]

It also rules out examples of deictic perspective shift under attitude predicates described by Oshima (2006a). In these examples, an embedded instance of *come* is acceptable with an attitude holder as the anchor even if an interlocutor is involved in the motion event itself (e.g. *Fred wants me to come to Denver tomorrow*). Because Fillmore's approach to deictic perspective shift depends on speaker and addressee roles in a subordinate discourse, examples without a subordinate discourse and thus without those roles are predicted to be unacceptable.

5.3 Taylor 1988

Taylor analyzes the anchoring of *come* in terms of what he calls "vantage point restrictions". Thus, in terms of the way he describes anchoring, he recognizes its perspectival nature. Taylor proposes an analysis of *come* couched in a Kaplanian framework with a contextual parameter for a "vantage point". He claims that the context fixes a vantage point once and for all, as with all Kaplanian contextual parameters, and then the content of an utterance

with *come* includes that parameter as an element. Although Taylor suggests that this idea should be possible in principle, he ultimately gives the following judgment (1988: 496):

The vantage point restrictions on ‘come’ and ‘go’ are such a heterogeneous mix, that it is difficult to see how even to begin to work them up into a formal characterization of a Kaplanesque character. So it looks pretty difficult, it seems to me, to extend what is arguably our best model of the semantic workings of context-sensitive expressions to ‘come’ and ‘go’.

After giving this judgment, Taylor leaves the question of anchoring and focuses instead on aspectual properties of *come*, making important contributions on that topic.

The worry articulated in the quotation above is about how to spell out the character of *come*. Taylor doesn’t see a way to articulate a straightforward identifier for the anchor of *come* similar to identifiers of other contextual parameters, such as “the speaker” for the referent of *I* and “the utterance location” for the referent of *here*. This worry is related to SALIENT-PERSPECTIVE ANCHORING. Specifically, Taylor is concerned that there is no way to define a contextual parameter that identifies all and only acceptable anchors. That’s exactly what’s required to account for SALIENT-PERSPECTIVE ANCHORING, though.

But imagine for a moment Taylor just stipulated i) that there’s a contextual parameter, call it the “vantage point”, and ii) that its value is a location contributed by context, and then said nothing about how its value is determined. Would the resulting analysis succeed in other ways? The short answer is no. First, due to the nature of contextual parameters, the vantage point would not be bendable, so ANAPHORIC ANCHORING would not be accounted for. Second, without further stipulation, the analysis would not make concrete predictions about projectivity. Most importantly, the analysis would fail to account for perspective dependence. There would be no perspective holder to have a *de se* commitment to the anchoring implication, and no perspective with respect to which it could be interpreted. So it would fail to account for DE SE ANCHORING as well.

5.4 Oshima 2006a,b,c

In a sense, Oshima (2006a,b,c) develops a sophisticated, compositional, fully formalized version of the indexical hypothesis that Taylor suggests but does not flesh out. Oshima's (2006a; 2006b; 2006c) analysis represents an improvement over Fillmore 1975 and other prior accounts in terms of empirical coverage.

First, Oshima (2006a) argues that in every context the acceptable anchors comprise a contextually given set of individuals called the reference point (RP). Following the same line as Taylor (1988), this set is analyzed as a Kaplanian contextual parameter. That is to say, it is a set of individuals given directly as part of the context of utterance. Oshima (2006a) gives the following constraints on RP membership:

(167) Oshima's (2006a: ex. (12)) constraints on RP membership in English:

- a. The speaker is always a member of the RP.
- b. It is preferred for the addressee to be a member of the RP as well. The degree of preference is affected by various factors (see [Oshima's] fn.1); under certain conditions, the inclusion of the addressee in the RP is almost obligatory (e.g. *Can I {??go/come} see you?*).
- c. A non-SAP [speech act participant] (third person) entity can be chosen as a member of the RP if it is discourse-salient. Inclusion of a non-SAP entity is marginal, however, when the speaker or the addressee is the theme (i.e. the moving entity or group) or a member thereof.

After introducing the RP, Oshima (2006a,b) follows Cinque (1972) and proposes that the anchoring implication of *come* is a presupposition. This choice is motivated by the observation that the anchoring implication projects, since presuppositions are standardly assumed to be projective contents (Langendoen and Savin, 1971). On Oshima's analysis, the use of *come* presupposes that at least one member of RP is located at the destination at utterance time or event time, or else the destination is the home base of an RP member.

Oshima’s analysis of an utterance of *John is coming to Denver* is given in (169), where j is John and d is Denver. The formula is further explained below.

(168) [Context: Leslie and Ron are in Denver. Leslie says:]

John is coming to Denver.

(169) Analysis of (168) in Oshima’s (2006a,b) system:

$$\begin{aligned} & \text{come} \mapsto \lambda e_1[\lambda w_1[\langle \mathbf{move-to}(w_1, e_1, j, d); \\ & \exists y[y \in \mathbf{RP}(c^*) \wedge [\exists e_2[\mathbf{at}(w_1, e_2, y, d) \wedge [\mathbf{T-loc}(w_1, e_2) \supseteq \mathbf{Time}(c^*) \\ & \vee \mathbf{TC}(w_1, e_1, e_2)]]] \vee \exists e_3[\mathbf{home-base}(w_1, e_3, y, d) \wedge \\ & \mathbf{TC}(w_1, e_1, e_3)]]]]]]] \end{aligned}$$

The first line of (169) is what Oshima would call the “asserted content” of the utterance in (18a). It says that e_1 is an event in which John moves/travels to Denver. The “;” is Oshima’s “preditional” connective, which conjoins asserted and presupposed content, so the remainder of the lexical entry is the presupposed anchoring implication of *come*. The first clause of the presupposition (169) says there is some individual, y , that is a member of $\mathbf{RP}(c^*)$. \mathbf{RP} is a function from a context to the reference point, or RP, of that context. As discussed above, the RP is a contextual parameter, the value of which is a set of individuals. c^* is the context of utterance. As shown in (167), for any context of utterance, the RP of that context always includes the speaker, often includes the addressee, and occasionally includes someone else. For purposes of exposition, Oshima (2006:173) writes the typical RP for English in this way: “{the speaker, the addressee}”. But, following Kaplan (1989), a contextual parameter is just an individual, or, in this case, a set of individuals. So in (168), the RP is {Leslie, Ron}. The presupposition goes on to say that there is some event, e_2 , such that e_2 is an event of some member of {Leslie, Ron} being in Denver. One of two conditions holds of e_2 . Either i) the time of e_2 ($\mathbf{T-loc}(w_1, e_2)$, where $\mathbf{T-loc}$ is “temporal location”) is a super-interval of utterance time or ii) the times of e_1 (John’s trip), and e_2 (Ron or Leslie being located in Denver) overlap ($\mathbf{TC}(w_1, e_1, e_2)$, where \mathbf{TC} is “temporal

coincidence”). The final disjunct says that the presupposition can also be satisfied if there is an event of Denver being Ron or Leslie’s home base, e_3 , at the time that John travels there. In (168), the first and second conditions of the presupposition are satisfied. Leslie and Ron are at Denver at both utterance and motion time, since utterance and motion time are the same. Thus, this account correctly predicts (168) to be acceptable.

The lexical entry for *come* that yields the derivation in (169) is given in (170).

(170) Oshima 2006:ex. (51b):

$$\begin{aligned} \text{come} \mapsto & \lambda pl_1 [\lambda x [\lambda e_1 [\lambda w_1 [\langle \mathbf{move-to}(w_1, e_1, x, pl_1); \\ & \exists y [y \in \mathbf{RP}(c^*) \wedge [\exists e_2 [\mathbf{at}(w_1, e_2, y, pl_1) \wedge [\mathbf{T-loc}(w_1, e_2) \supseteq \mathbf{Time}(c^*) \\ & \vee \mathbf{TC}(w_1, e_1, e_2)]] \vee \exists e_3 [\mathbf{home-base}(w_1, e_3, y, pl_1) \wedge \\ & \mathbf{TC}(w_1, e_1, e_3)]]]]]]]]]] \end{aligned}$$

(170) gives the primary indexical version of *come*. It is a primary indexical because it takes the RP of the context of utterance, c^* .

Oshima also posits a secondary indexical version of *come* for the analysis of deictic perspective shift under attitude predicates. Oshima calls it *come** in homage to Castañeda’s (1966) *he**. Its lexical entry is given in (171). Following Oshima’s convention, here I leave off the temporal information and the home base option.

(171) Oshima 2006b: example (65):

$$\begin{aligned} \text{come}^* \mapsto & \lambda pl_1 [\lambda x [\lambda e_1 [\lambda w_1 [\langle \mathbf{move-to}(w_1, e_1, x, pl_1); \\ & \exists y [y \in \mathbf{RP}(c_1) \wedge [\exists e_2 [\mathbf{at}(w_1, e_2, y, pl_1)]]]]]]]] \end{aligned}$$

The crucial difference between the secondary indexical version in (171) and the primary indexical version in (170) is that the RP is calculated with respect to c_1 not c^* , where the latter is the context of utterance.

Oshima goes on to assume that a λ -operator is introduced at the CP node to bind the context variable in (171). This is a marked departure from Kaplan (1989), on whose theory the analysis is based, because for Kaplan contexts are not the kinds of things that

can be bound by object language operators. Granting the binding of contexts, though, the embedded clause of (172), with this binding, can be represented as in (173).

(172) [Context: Leslie and Ron are in Omaha. Tom is in Denver. Leslie says:]
Tom believes that John is coming to Denver.

(173) that John is coming* to Denver $\mapsto \lambda c_2[\lambda w_3[\exists e_3[\langle \mathbf{move-to}(w_3, e_3, j, d); \exists y[y \in \mathbf{RP}(c_2)] \wedge \exists e_4[\mathbf{at}(w_3, e_4, y, d)] \rangle]]]]]$

(173) requires that attitude predicates such as *believe* can embed functions from contexts to contents, i.e. expressions whose Kaplanian character has yet to be given a context value. To make that happen, Oshima assumes that attitude predicates are ambiguous, and that one version of a given attitude predicate embeds what he calls a propositional character, a function from contexts to contents. The variable χ ranges over propositional characters. The appropriate version of *believe* is given in (174) and labeled *believe_{sp}* to show that it stands for a “secondary perspective”. Once again, the preditional connective divides the content of *believe_{sp}* into its asserted content and its presupposed content.

(174) *believe_{sp}* $\mapsto \lambda \chi_1[\lambda x[\lambda e_1[\lambda w_1[\mathbf{believe}(w_1, e_1, x, \chi_1); \exists e_2[\mathbf{believe}(w_1, e_2, x, \lambda c_1[\lambda w_2[\mathbf{Conv}_2(\chi_1(c_1)(w_2))]]]]]]]]]$

The asserted content, which comes first, says that the subject of *believe* stands in the believing relation to the content of the complement. The presupposed content says that the subject of *believe* stands in the believing relation to the presupposed content of the complement. That’s because **Conv**₂ applies to an expression with both asserted and presupposed content and extracts the presupposed content (see Oshima 2006b example (49) for the details).

Combining (174) with (173) and adding Tom as the subject of *believe* yields the following translation of (172), which is adapted from Oshima’s example (67) involving different names.

$$\begin{aligned}
(175) \quad & \lambda w_1[\exists e_1[\langle \mathbf{believe}(w_1, e_1, t, \lambda c_2[\lambda w_3, [\exists e_3[\langle \mathbf{move-to}(w_3, e_3, j, d); \\
& \exists y[y \in \mathbf{RP}(c_2) \wedge \exists e_4[\mathbf{at}(w_3, e_4, y, d)]]]]]]]; \\
& \exists e_2[\mathbf{believe}(w_1, e_2, t, \lambda c_1[\lambda w_2[\mathbf{conv}_2(\exists e_3[\langle \mathbf{move-to}(w_2, e_3, j, d); \\
& \exists y[y \in \mathbf{RP}(c_1) \wedge \exists e_4[\mathbf{at}(w_2, e_4, y, d)]]]]]]]]]]
\end{aligned}$$

(175) looks more complicated than it is because Oshima’s formulas always include all of the asserted contents and presuppositions. Essentially, all that (175) says is that Tom believes John is traveling to Denver (first two lines) and he believes the presupposition of the embedded content (last two lines). That’s the crucial part. The second two lines say that Tom stands in the believing relation to the propositional character (set of functions from contexts to contents) that admits only contexts in which a member y of the \mathbf{RP} of the context is/was in Denver. The question, then, is whether or not the context of (172) is the right kind of context.

Oshima’s (2006: 177) discussion suggests that it is. He says in fn. 6 “I will assume that the RP adopted by the speaker of an utterance is: {the speaker, the addressee}, and that the RP adopted by the agent of a reported attitude is the agent.” Looking at a specific example, his (23), in which John tells Linda *Bob believes that Chris came to San Jose two weeks ago*, Oshima (2006: 177) writes “The RP adopted by John (in the external context of utterance) is likely to be: {John, Linda}, while the one adopted by Bob (in the context of the reported belief) is likely to be: {Bob}”. It is not obvious to me what it means to say that the agent of an attitude, here Bob, who is not a discourse participant, “adopts” a parameter of the context. Also, nothing in the meaning of *believe* in (174) makes this adoption explicit or predicts it (c.f. analyses of shifted indexicals such as Anand and Nevins 2004). Leaving those issues aside, assume that the use of *believe* does shift the RP parameter in this way. Then in (172) the $\mathbf{RP} = \{\text{Tom}\}$, by analogy to Oshima’s example. This means that for the presupposition of (175) to be satisfied, Tom needs to believe that Tom is/was located in Denver as John is traveling. Formally,

(176) $\exists e_2[\mathbf{believe}(w_1, e_2, t, \lambda c_1[\lambda w_2[\mathbf{conv}_2(\exists e_3[\langle \mathbf{move-to}(w_2, e_3, j, d);$
 $\exists y[y \in \{t\} \wedge \exists e_4[\mathbf{at}(w_2, e_4, y, d)]]]]))]]]$

Because of **conv**₂, we can ignore the conjunct about John’s movement. For the presupposition in (176) to be satisfied, then, it needs to be the case that in all of Tom’s belief worlds (w_2), there is an event (e_4) of Tom being in Denver at the time of John’s travel. On standard assumptions about Tom being self-aware, this is satisfied due to Tom’s actual presence in Denver. Therefore, the example is correctly predicted to be acceptable.

Finally, to account for examples in which the speaker or addressee is at the destination but the attitude holder does not believe it, Oshima assumes that there is another version of *believe* that is a presupposition hole, requiring its presuppositions to be satisfied according to the global context/common ground. When this version of *believe* combines with primary indexical *come*, given in (170), it correctly predicts the acceptability of examples such as (65), repeated below for convenience.

(65) [Context: Anna and Frank are at La Hacienda restaurant. They know that Mary is at home. Frank says:]

Mary believes that Sam is **coming** (here) to La Hacienda for dinner and that we are eating at home. She’s wrong on both counts. We’re here, and Sam is staying home for dinner.

In other words, it correctly predicts that the anchoring implication need not have obligatory local effect, as shown in Section 2.5.3. Of course, without some mechanism to ensure that *believe* is a presupposition hole in (65) and a presupposition filter in (15), the account predicts two unattested readings. To avoid such combinations, Oshima (2006c) posits an otherwise unmotivated syntactic feature restricting combinations of attitude predicates and deictic motion verbs to only attested readings.

Oshima’s analysis makes a number of correct predictions that eluded previous accounts. With respect to projectivity, for example, the projective behavior of the anchoring implication falls out because it is analyzed as a presupposition. Thus, the analysis accounts for the observation that the anchoring implication is projective. Due to the way in which Oshima treats presupposition and attitude predicates in general, it also accounts for the observation that the anchoring implication does not have obligatory local effect, an observation that resulted in me classifying it as a Class B projective content. Thus, in a sense, the analysis accounts for PROJECTIVE ANCHORING. In addition, for reasons described in Oshima 2006a, Oshima’s account improves predictions for examples involving the plausibly deictic motion verb *go*. In the sections that follow, I evaluate the account against the remaining generalizations.

5.4.1 ANAPHORIC ANCHORING

Oshima does not analyze the anchor as an anaphorically interpreted implicit argument. However, his analysis can account for some of the data that motivate this generalization. First, the account correctly predicts examples in which different instances of *come* have different anchors, such as (48), repeated here for convenience.

(48) [Context: Leslie and April are talking on the phone. Leslie says:]

He’ll come to my house after he comes to your house.

(48) is predicted to be acceptable on the assumption that the RP = {Leslie, April}.

In contrast, because the RP is analyzed as a contextual parameter and contextual parameters cannot be bound by natural language quantifiers, quantificational examples present a difficulty for Oshima’s approach, though perhaps not an insurmountable one. Oshima’s analysis of the purportedly quantificational example in (177) shows that he recognizes the problem.

(177) [Oshima(2006a:288 ex. (4)):]

At least two students {a. went/b. came} to talk to three professors.

There are a couple of observations worth making about this example and Oshima's account of it. First, it is not obvious that the example actually involves a quantificationally bound anchor, because the anchor in (177) is arguably the interlocutors, not the professors. Consider the adapted versions below:

(178) [Context: Jim is at the library in the center of campus, where he and his friends typically study. When Pam arrives, she notices that the area where they usually sit is virtually empty. She asks Jim why. He says:]

At least twenty students {went/#came} to talk to ten (different) professors.

(179) [Context: Jim and Pam are in the Linguistics Department, where things are busier than usual. Jim asks why. Pam replies:]

At least twenty students {#went/came} to talk to ten (different) professors.

In (178) and (179), the use of *come* is acceptable just to the extent that the professors' location coincides with that of the interlocutors. The interlocutors, not the professors, anchor *come*. Oshima's example sounds good out of the blue because both kinds of contexts are easy to imagine. However, if the professors truly could be anchors, then *come* would be acceptable in (178) and *go* would be acceptable in (179). That said, I continue to treat (177) as quantificational for the purpose of examining Oshima's proposal.²

The second important observation has to do with Oshima's analysis of (177). Oshima(2006a:291) accounts for (177) by stating that the RP for (177) includes, in addition to

²An anonymous reviewer from *Semantics & Pragmatics* questions this criticism, saying "(177) can be, say, part of a conversation between two post-doc researchers on the subway in New York and the professors under discussion may {be/have been} in multiple distinct locations (e.g. Professor₁ talked to two students in Campus A, Professor₂ talked to two students in Campus B, which is 30km away from Campus A, and so forth)". I am inclined to agree with the reviewer about this new context. However, it is worth noting that the examples considered in this dissertation involve path-PPs rather than infinitival complements. It may be that when *come* combines with an infinitival complement, the result has different properties than the combination of *come* with a path-PP. Certainly, the example seems less acceptable to me if it is *At least two students came to three office buildings* and neither the speaker nor the addressee were at or work at any of the buildings. Investigating this question is left as a task for future work.

the interlocutors, all relevant professors: “RP = {speaker, addressee, professor₁, professor₂, professor₃. . . }” This move avoids including variables in the RP. Instead, it includes all of the individuals in the domain that *three* quantifies over. Technically, this approach succeeds. However, it does so by treating quantification over the anchors of deictic motion verbs differently than other quantificational phenomena. In contrast, treating the anchor as anaphorically interpreted allows for a standard treatment of quantification over anchors.

Oshima’s account has a related problem with examples such as (148), repeated here for convenience.

- (148) [Context: Jefferson has never seen Celine or Susanne. When Jefferson was in Yaoundé last week, Dorothee took him to Celine’s house. They went to join her, but Celine wasn’t there. Today, Jefferson is greeting Susanne. When Susanne tells Jefferson her name, Jefferson doesn’t hear her. When Susanne and Jefferson talk, Jefferson begins to think she is Celine. Susanne thinks that Jefferson thinks that she is Celine. She whispers to Dorothee:]

Jefferson a buni na ma me ne Celine. A buni fe na
 Jefferson 3.SG.PRS think COMP 1.SG 1.SG COP.PRS Celine. 3.SG think also COMP
 a nga **zu** n-da j-am e-∅-sondô a nga man.
 3.SG REM **come_{zu}** CL₉-house AGR₉-1.SG.POSS AUG-CL₁-Sunday SUB₁ REM finish

‘Jefferson thinks that I am Celine. He also thinks that he came to my house last week.’

Recall that what (148) was argued to show is that a direct reference, indexical account of *zu* is not empirically adequate. Here’s why. Since *zu* ‘come_{zu}’ does not allow for deictic perspective shift under attitudes, assume that the RP for *zu* ‘come_{zu}’ is always {speaker, addressee}.³ Then, in this case, the RP = {Susanne, Dorothee}. Then the anchoring implication, on Oshima’s account, is that there is some member of {Susanne, Dorothee}, such that Jefferson believes he visited her house last week. Since the utterance includes *my*,

³Alternative, just assume that *zu* ‘come_{zu}’ is not ambiguous in the way that *come* is claimed to be, so there is no secondary indexical *zu* ‘come_{zu}’.

which Suzanne cannot use to refer to Dorothee, focus on Suzanne. The analysis predicts that (148) will be acceptable just in case Jefferson thinks he visited a location that is in fact Suzanne's home base. That prediction is incorrect. Jefferson doesn't think that, *de re* or *de dicto*. In other words, there is no place such that it is actually Suzanne's house and Jefferson thinks he visited it, and there is no place such that Jefferson would call it Suzanne's house and Jefferson thinks he visited it. So the utterance is incorrectly predicted to be unacceptable. Thus, (148) provides additional evidence against a direct reference account of the meanings of deictic motion verbs.

5.4.2 *De se* ANCHORING

Oshima's (2006a; 2006b; 2006c) analysis does not predict that the anchoring implication is a *de se* commitment of the anchor. To see why, it is useful to consider his account of examples like those in (15)-(19), repeated below, in more detail. (18)-(19) do not involve embedding under an attitude predicate and therefore are less complicated, so I start with them.

(18) [Context: Baseball player Ernie Banks is hit on the head and knocked out. While unconscious, he is taken from Chicago, where he lives and plays baseball, to a hospital in Boston. When he awakens, he has amnesia. After 3 weeks in Boston, he still doesn't know who he is. However, he has been watching TV and reading. Ernie and his doctor, Pam, often talk about what Ernie learns on TV, including what he learns about baseball. Ernie knows that Pam is an avid baseball fan who knows a lot about players from all of the major league teams, as well as an avid follower of President Obama. One day, Ernie watches a news video from one month ago showing President Obama shaking hands with Ernie Banks at home plate at Wrigley Field, the home stadium of the Chicago Cubs. Later, Pam checks on Ernie. Pam has never been to Chicago. Ernie, says:]

a. #President Obama **came** to Wrigley Field four weeks ago. He threw out the first pitch.

b. President Obama **{traveled/went}** to Wrigley Field four weeks ago. He threw out the first pitch.

(19) [Context: Identical to (18), except that Ernie regains his memory.]

President Obama **came** to Wrigley Field four weeks ago. He threw out the first pitch.

Once the first two arguments of the primary indexical version of *come* are supplied, the result is (180), where wf = Wrigley Field and bo = President Obama.

(180) Oshima 2006:ex. (51b):

$$\begin{aligned} \text{come} &\mapsto \lambda e_1[\lambda w_1[\langle \mathbf{move-to}(w_1, e_1, bo, wf); \\ &\exists y[y \in \mathbf{RP}(c^*) \wedge [\exists e_2[\mathbf{at}(w_1, e_2, y, wf) \wedge [\mathbf{T-loc}(w_1, e_2) \supseteq \mathbf{Time}(c^*) \\ &\vee \mathbf{TC}(w_1, e_1, e_2)]]] \vee \exists e_3[\mathbf{home-base}(w_1, e_3, y, wf) \wedge \\ &\mathbf{TC}(w_1, e_1, e_3)]]]]]]] \end{aligned}$$

The asserted content is just that e_1 is an event in which President Obama moves/travels to Wrigley Field. This content is true in the actual world and the common ground, so whether the asserted content is evaluated against the actual world or all the worlds in the context set, it comes out true. The key question, of course, is whether or not analysis of the anchoring implication in (180), predicts (18a) to be unacceptable and (19) to be acceptable.

The first clause of the presupposition in (180) says there is some individual, y , that is a member of $\mathbf{RP}(c^*)$. In (18), the RP is {Ernie Banks, Pam}. Since Pam has never been to Chicago, I will assume that the relevant member of the RP is Ernie Banks. So in this case, y just is the individual Ernie Banks. The presupposition goes on to say that there is some event, e_2 , such that e_2 is an event of Ernie being at Wrigley Field. One of two conditions holds of e_2 . Either i) the time of e_2 ($\mathbf{T-loc}(w_1, e_2)$, where $\mathbf{T-loc}$ is “temporal location”) is a super-interval of utterance time or ii) the times of e_1 (President Obama’s visit), and e_2 (Ernie’s being in Wrigley Field) overlap ($\mathbf{TC}(w_1, e_1, e_2)$, where \mathbf{TC} is “temporal coincidence”). The final disjunct says that the presupposition can also be satisfied if there is an event of Wrigley Field being Ernie’s home base, e_3 , at the time that President Obama travels there.

In (18), the second condition is satisfied.⁴ Ernie was at Wrigley Field when Obama visited. Furthermore, this is i) true in the actual world, ii) true in every world in the context set, i.e. entailed by the common ground. Therefore, the account incorrectly predicts (18a) to be acceptable.⁵ Note that it correctly predicts that (19), where Ernie regains his memory, is acceptable, because it makes exactly the same predictions for both examples. It cannot distinguish between the *de se* interpretation and the *de re* interpretation.

Now consider (15)-(16), repeated for convenience.

⁴Perhaps the third condition is as well, since home bases can include places of employment, but we can leave that possibility aside here.

⁵David Oshima (p.c.) suggests that the account might be saved by treating the meanings of all utterances as propositional characters, functions from Kaplanian contexts to contents, rather than propositions. I am not sure that it would, because treating embedded clauses as propositional characters does not result in correct predictions for embedded cases, as described immediately below. In any event, fleshing out this revision of Oshima’s account is beyond the scope of this dissertation.

(15) [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. The doctor later tells her friend:]

a. #Ernie believes that President Obama **came** to Chicago.

b. Ernie believes that President Obama **traveled** to Chicago.

(16) [Context: Identical to (15), except that Ernie regains his memory.]

Ernie believes that President Obama **came** to Chicago.

The analysis of (15)-(16) involves the secondary or shifted indexical version, *come**

Combining the appropriate entry for *believe* in (174) with (171) and adding Ernie as the subject of *believe* yields the following translation of (15a).

(181) Ernie believes_{sp} that President Obama came* to Chicago. \mapsto

$$\begin{aligned} & \lambda w_1 [\exists e_1 [\langle \mathbf{believe}(w_1, e_1, eb, \lambda c_2 [\lambda w_3, [\exists e_3 [\langle \mathbf{move-to}(w_3, e_3, bo, c); \\ & \exists y [y \in \mathbf{RP}(c_2) \wedge \exists e_4 [\mathbf{at}(w_3, e_4, y, c)]]]]]]]; \\ & \exists e_2 [\mathbf{believe}(w_1, e_2, eb, \lambda c_1 [\lambda w_2 [\mathbf{conv}_2(\exists e_3 [\langle \mathbf{move-to}(w_2, e_3, bo, c); \\ & \exists y [y \in \mathbf{RP}(c_1) \wedge \exists e_4 [\mathbf{at}(w_2, e_4, y, c)]]]]]]]]]] \end{aligned}$$

(181) says is that Ernie believes President Obama moved to Chicago (first two lines) and he believes the presupposition of the embedded content (last two lines). There, the second two lines say that Ernie stands in the believing relation to the propositional character (set of functions from contexts to contents) that admits only contexts in which a member *y* of the **RP** of the context is/was in Chicago. The question, then, is whether or not the context of (15) is the right kind of context. Based on the aforementioned assumption that attitude predicates are context shifters, it is. In (15) the $\mathbf{RP} = \{\text{Ernie Banks}\}$. This means that for

the presupposition of (181) to be satisfied, Ernie needs to believe that Ernie was located in Chicago when Obama visited. Formally,

$$(182) \quad \exists e_2[\mathbf{believe}(w_1, e_2, eb, \lambda c_1[\lambda w_2[\mathbf{conv}_2(\exists e_3[\langle \mathbf{move-to}(w_2, e_3, bo, c); \\ \exists y[y \in \{eb\} \wedge \exists e_4[\mathbf{at}(w_2, e_4, y, c)]])])])]]]$$

Because of \mathbf{conv}_2 , we can ignore the conjunct about Obama's movement. For the presupposition in (182) to be satisfied, then, it needs to be the case that in all of Ernie's belief worlds (w_2), there is an event (e_4) of Ernie being in Chicago at the time of Obama's visit. Since Ernie believes Ernie was there when Obama visited, this condition is satisfied. Therefore, the example is incorrectly predicted to be acceptable. Once again, the account cannot distinguish between *de se* and *de re* beliefs, provided both are beliefs that the anchor has about the anchor.

Thus, Oshima's system correctly predicts the observation that it was designed to account for: that in embedded examples where the attitude holder is the anchor, her *de se* belief that she is located at the destination is sufficient to license the use of *come*. However, it does not do so by requiring the anchor to have a *de se* belief in the anchoring implication. Rather, the combination of presupposition filter *believe* and secondary indexical *come* requires the anchor to believe of herself *de re* that she is located at the destination. Thus, the anchor's *de re* belief that she is located at the destination is predicted make the use of *come* acceptable just as her *de se* belief does. However, examples such as (15) and the other examples developed in applying the *de se* diagnostics show that this prediction is incorrect.

In essence, the main problem with Oshima's semantics is that it is based on the assumption that *come* is an indexical and should be treated using a direct reference theory of indexicality. However, examples such as (15) and (18) show that the correct generalization is that the anchoring implication is a *de se* commitment of the anchor. This generalization covers anchoring to the interlocutors as well as anchoring to the agents of attitudes. There is, of course, a close connection between *de se* content and indexicality. First and second

person indexicals themselves can be analyzed as having *de se* content as part of their meanings, following perhaps most famously Perry (1979) and Kaplan (1989). Wechsler (2010) even goes so far as to argue that the meaning of an indexical just is self-ascription (i.e. *de se* belief), and that the appearance of direct reference is epiphenomenal on facts about self-ascription and the structure of the discourse. Roberts (2014) makes a similar, though arguably less extreme, claim. On the assumption that the meanings of indexicals do at least involve self-ascription, this *de se* component, not direct reference, is what the meaning of *come* and the meanings of indexicals such as *I* have in common.

5.4.3 SALIENT-PERSPECTIVE ANCHORING

Oshima's account predicts acceptable anchors with high accuracy, better even than Fillmore's (1975). However, note that it does so in the same way that Fillmore's does. It lists possible anchors directly as part of the analysis. In other words, the constraints in (167) are more accurately thought of as empirical generalizations, not analyses with explanatory adequacy. That's because nothing in the formal analysis predicts or justifies the particular restrictions given in (167).⁶ Thus, like Fillmore (1975), Oshima essentially lists possible anchors. In addition, the approach over-generates with respect to non-interlocutor anchors, just as Fillmore's approach does. For example, it incorrectly predicts (26), repeated here for convenience, to be acceptable.

(26) [Context: Ann and Beth are in New York. Beth says:]

#Sarah is in Chicago right now. However, she is a Denver Broncos fan and loves quarterback Peyton Manning. Therefore, she is coming to Denver tomorrow.

⁶In addition, the constraints given in (167) apply to the RP in English only. To account for the fact that in other languages there are fewer acceptable anchors for deictic motion verbs, Oshima (2006a) assumes that languages differ with respect to the restrictions they impose on RP membership. In other words, cross-linguistic variation in the meanings of deictic motion verbs is really cross-linguistic variation in the possible values of a parameter of the context of utterance. This approach requires a radical reconceptualization of what a contextual parameter is, since on standard views the context consists of the same elements (e.g. speaker, addressee, utterance time, etc.) regardless of the language spoken. All else being equal, it would be preferable to maintain a standard view of the context and account for variation in anchoring in terms of lexical semantics of deictic motion verbs.

In (26), Peyton Manning is discourse salient: he could be the antecedent for the pronoun *he* in a different final sentence. The theme of the motion event is not an interlocutor. Nevertheless, the example is unacceptable.⁷

5.4.4 PERSPECTIVE-ONLY ANCHORING

Oshima's analysis does account for examples involving anchoring to centered, located perspectives. However, it does so essentially by opening the gate to non-sentient anchors incapable of having perspectives rather than by recognizing that perspectives can be centered at a location even in the absence of an individual located there. Technically, Oshima accounts for these examples by allowing non-sentient individuals to be RP members. For example, (37b), repeated below for convenience, is predicted to be acceptable on the assumption that the island is an element of the RP.

(37b) (adapted from Fillmore 1975: 67) [Context: The speaker is not on the island. She says: *There on the uninhabited island, waves lap upon the shore. Beaches sit empty as they have for millennia.*]

Occasionally, a loon **comes** to the island to roost.

Allowing non-sentient RP members makes it possible to get examples such as (37b) right, but it also makes the account massively over-generate. There are many examples for which it is possible to identify a contextually salient non-sentient individual at the destination, but the use of *come* is nevertheless not acceptable, as shown in (183).

(183) [Jerry and Leslie are in Pawnee and will remain there all day. Leslie asks where Andy is. Jerry says:]

Andy has tickets to see the Colts game in Indianapolis today. He {is coming to / just left to come to} the game.

⁷An anonymous reviewer from *Semantics & Pragmatics* wonders whether Oshima's account could be rescued by including, in the requirement for RP membership, a notion of empathy due to Kuno. Perhaps it could, in this respect, but to say for sure it would be necessary to spell out the details of the account, including an explicit formalization of empathy.

In (183) Jerry's first sentence makes the non-sentient Colts game salient in the context. The game's salience is demonstrated by the fact that it could be the antecedent for the pronoun *it* in a subsequent sentence. Nevertheless, it cannot serve as the anchor of *come*.⁸ However, if we allow salient non-sentient individuals to be anchors of *come*, then there's no way to rule out examples like (183).

In summary, Oshima's approach requires considerable theoretical complexity that is not independently motivated: a novel contextual parameter, the RP; a novel treatment of quantification; systematic ambiguity in the meanings of attitude predicates; systematic ambiguity in the meanings of deictic motion verbs; and a novel syntactic constraint to ensure that only acceptable combinations of attitude predicates and deictic motion verbs are licensed. With this complexity, it makes better predictions than the analyses that preceded it. But it still does not adequately capture the perspectival content of the meaning of *come*.

5.5 Goddard 1997

Goddard (1997) develops an analysis of *come* using the Natural Semantics Metalanguage framework. In this framework, meanings are represented using natural language expressions that are taken to be primitives. Goddard's analysis of *come* is given in (184). In addition to analyzing motion and anchoring, Goddard proposes that the meaning of *come* encodes intentional movement. This assumption accounts for the first two lines of the analysis.

- (184) X *came* to place-A =
before this, X was somewhere
X wanted to be somewhere else
because of this, X moved for some time
because of this, after this X was in place-A

⁸To see that anchoring really is the problem, note that replacing *come* with *go* makes (183) acceptable.

someone in this place could think:

X is in the same place as me

The last two lines give Goddard's account of the anchoring implication. Unlike previous formal analyses, Goddard's account does encode the perspectival nature of the meaning of *come* as part of the analysis. The final two lines represent something like the anchoring implication. Translating them into the kind of terminology I have been using, they might say that if a perspective were centered at place-A, then that perspective would be centered in the same place as X's location after movement. There's a problem with this approach, though. The problem can go one of two ways, depending on what "X is in the same place as me" is supposed to mean. If it means that the hypothetical person at place-A is supposed to be aware of X, then it requires the anchor to have information about the motion event. This is too strong, as shown in (185).

(185) [Context: The interlocutors are in Columbus. Donna is in Cleveland.]

Donna doesn't know that I came to Cleveland yesterday to deliver supplies for her surprise party.

In (185), Donna is not aware of the speaker's travel to Cleveland. Nevertheless, the use of *come* is acceptable.

The other way to understand Goddard's final line is to read it as saying that the person just needs to know that she is at place-A. This however, makes the last two lines a tautology: Someone at the place where X is would know she was at the place where X is. On this reading, the account predicts that *come* can be used to describe any motion event. Thus, depending on how the account is understood, it is either too strong or too weak. However, by introducing the idea of a hypothetical perspective holder, it does include a version of the idea that the meaning of *come* is anchored to a perspective. It does not, however, account for ANAPHORIC ANCHORING or PROJECTIVE ANCHORING. Thus, Goddard's approach comes closer to actually encoding perspectival dependence in the meaning of *come* than many other

previous analyses, even though nearly all previous analyses discuss anchoring in terms of perspective taking.

5.6 Barlew 2015b

A final way to account for the generalizations developed in Chapter 2 is presented in Barlew 2015b. There, I treat the anchor as an anaphorically interpreted implicit argument, accounting for ANAPHORIC ANCHORING. I analyze the anchoring implication as a direct update to the common ground, following analyses of conventional implicatures due to e.g. Potts (2005), McCready (2010), and AnderBois et al. (2015). This accounts for PROJECTIVE ANCHORING, because such analyses are designed to model Class B projective contents. These choices prefigure the analysis developed in this dissertation.

To handle the perspectival generalizations, I propose that the anchoring implication is actually something like “the anchor believes_{de se}, that she is located at the destination”. This correctly predicts that the anchoring implication is a *de se* commitment of the speaker. However, it does not allow for anchoring to non-belief perspectives. (186) shows why.

(186) [Context: Ron and Andy are in Pawnee. Ron says:]

I am imagining that I am stuck in a cabin in the Alaskan wilderness, and that I’ve lost my mind and think I’m in Paris. Now I’m imagining that you are coming to Alaska to rescue me.

In (186), there is no individual that believes himself to be in Alaska. Ron qua sane speaker believes himself to be in Pawnee. Ron qua character in the fantasy believes himself to be in Paris. Putting things a little more formally, following a standard Hintikka model of belief, assume that belief can be modeled using a relation from an individual, a time, and a base world to the maximal set of worlds at which all of the individual’s beliefs are true. Call the relation BEL, as in (187). Assume that a similar relation, IMG, generates worlds consistent

with an individual's imagination state. Then, for (186), embedding a meaning like BEL in the meaning of *come* leads to the two possible anchoring locations given in (188).

(187) $\text{BEL}(x, t, w) = \{w' \mid \text{the facts in } w' \text{ are consistent with } x\text{'s beliefs at } t \text{ in } w\}$

(188) a. Let w be an arbitrary world in the context set or the actual world. Then $\text{BEL}(r, t, w) \subseteq \{w' \mid \text{Ron is in Pawnee in } w'\}$.

b. Let w be an arbitrary world in the context set or the actual world. Let w'' be an arbitrary world such that $w'' \in \text{IMG}(r, t, w)$. Then $\text{BEL}(r, t, w'') \subseteq \{w' \mid \text{Ron is in Paris in } w'\}$.

(188) demonstrates that there is no perspective (here, think of it as a set of worlds) such that Ron's beliefs at the worlds in those perspectives entail that Ron is in Alaska. It is for this reason that including a particular attitude predicate in the meaning of *come* makes bad predictions. It makes it impossible to anchor to non-belief perspectives. In addition, the analysis fails to account for PERSPECTIVE-ONLY ANCHORING. Thus, the analysis in Barlew 2015b does not provide an empirically adequate account of the perspectival meaning of *come*.

5.7 Summary of previous analyses

The reviews in this chapter have demonstrated that no previous analysis accounts for all of the generalizations in (73). In particular, no previous analysis, with the possible exception of Goddard's informal account, adequately handles the perspectival nature of the anchoring implication of *come*. In the next chapter, I develop an analysis that accounts for this perspectival content.

Formal framework and analyses

In this chapter, I develop analyses of the meanings of *come* and *zu* ‘*come_{zu}*’ that account for the empirical generalizations presented in Chapters 2 and 4. Table 6.1, which is a reproduction of Table 4.4, summarizes the data, making reference to the generalizations, which are repeated for convenience as well.

(73) Empirical generalizations

a. **Perspectival generalizations:**

- i. *De se* ANCHORING: The anchoring implication of *come* is a *de se* implication.
- ii. SALIENT-PERSPECTIVE ANCHORING: The use of *come* is acceptable iff the anchor’s perspective is salient in the discourse context.
- iii. PERSPECTIVE-ONLY ANCHORING: The use of *come* is acceptable if the anchor’s perspective is centered at the destination, even if the anchor herself is not located there.

b. **Additional generalizations:**

- i. ANAPHORIC ANCHORING: The anchor and her perspective are anaphorically interpreted implicit arguments of *come*.
- ii. PROJECTIVE ANCHORING: The anchoring implication of *come* is a Class B projective content.
- iii. COMPLEMENT-DEFINED ANCHORING: The location on which the anchor’s perspective is centered is defined in terms of the path-PP complement of *come*; it is not necessarily the actual endpoint of the motion event.

Generalization	<i>come</i>	<i>zu</i> ‘come _{zu} ’
<i>De se</i> ANCHORING	yes	yes
SALIENT-PERSPECTIVE ANCHORING	yes, to all salient perspectives	yes, to a subset of salient perspectives: speaker and addressee
PERSPECTIVE-ONLY ANCHORING	yes	?
ANAPHORIC ANCHORING	yes	yes, modulo binding examples
PROJECTIVE ANCHORING	yes, Class B	yes, class TBD
COMPLEMENT-DEFINED ANCHORING	yes, path-PP complement	yes, locative complement

Table 6.1: Generalizations about the meanings of *come* and *zu* ‘come_{zu}’

As shown in Table 6.1, both *come* and *zu* ‘come_{zu}’ give rise to anchoring implications that are *de se* commitments of their anchors and projective. In addition, in both cases, the anchor are anaphorically interpreted discourse referents. The verbs differ as follows. *Come* allows for any individual with a salient perspective to serve as its anchor. In contrast, *zu* ‘come_{zu}’ allows only interlocutors as anchors. In what may be a related observation, *come* but possibly not *zu* ‘come_{zu}’ can anchor to perspectives that are not tied to any particular perspective holder.¹ Finally, in each case the anchor’s location is determined as a function of the meaning of the verb’s complement. However, because the complements have different kinds of meanings, the anchor’s location is determined differently in each case.

To account for these generalizations, I develop a framework that formally represents individuals’ perspectives and the ways in which the interpretations of particular expressions make use of them. To represent anchors and their perspectives, I draw on the work of Stalnaker (1978, 2008) and Roberts (2014). Roberts’ and Stalnaker’s theories are used to represent doxastic perspectives, *de se* implications, and the restriction of *come* and *zu* ‘come_{zu}’ to anchors with salient perspectives. I formalize Stalnaker and Roberts’ theories in a framework that incorporates and extends the dynamic semantics due to AnderBois et al.

¹With respect to *zu* ‘come_{zu}’, this generalization is tentative in that it’s based on just a few examples, and the absence of positive data. A task for future work is to make more attempts to elicit examples of this kind.

(2015; henceforth ABH). I use a dynamic framework, and this framework in particular, for two reasons. First, the framework models projection and handles anaphoric dependencies between projective and non-projective content. This capability is needed in the analysis of the anchoring implication, which is projective. Second, the framework is capable of representing content that is interpreted relative to a particular body of information. I leverage this technology to represent the claim that the anchoring implication is evaluated against the anchor’s doxastic perspective, also a body of information. ABH’s framework is a natural starting point for this work, but any framework with the same capabilities would do as well.

6.1 Perspectives in context

I have claimed all along that perspectival expressions make use of contextually available perspectival information. In the case of *come* and *zu* ‘come_{zu}’, I have argued that this information is a doxastic perspective, a body of information that represents how things are according to some individual. Making this claim precise requires a model of a context in which this kind of perspectival information can be represented. Developing such a model is the task of this section. I begin by introducing the representation of a context used in ABH’s system.

ABH’s framework is an adaptation of dynamic predicate logic (Groenendijk and Stokhof, 1991). In general, dynamic systems such as dynamic predicate logic are designed to model the information shared by the interlocutors and how it changes as the discourse progresses (Heim, 1982; Kamp, 1981; Groenendijk and Stokhof, 1991). In this system, this information is represented in essentially two ways. First, it is represented as a set of assignments of values to variables. Call this set of assignments a **discourse context**, or just a **context**.² The variables assigned values by the context represent the discourse referents that the

²Note that this is very different notion from a Kaplanian context. The latter is a situation in the actual world. Obviously this can’t be said of a set of assignments of values to variables.

interlocutors are talking about (Kamp, 1981; Heim, 1982). Each assignment assigns to a variable an element of an appropriate domain in a model. The assignments represent the interlocutors' shared information because all valid assignments reflect what the interlocutors know. For instance, say we have a model with just two individuals, Pete the parakeet and Doug the dog. And say we have a variable/discourse referent, d_1 . If the information that the interlocutors share says that d_1 is a bird, then all valid assignments will assign Pete as the value of d_1 . No other individual in the model fits that bill.

The second way that the information the interlocutors share is represented is in terms of the common ground. Following Stalnaker (1978), the **common ground** is a set of all of the propositions to which the interlocutors are committed and to which they know they're committed. This includes propositions that have been asserted and accepted over the course of the discourse, as well as shared cultural and situational knowledge. The intersection of the common ground is called the **context set**. The context set is the set of worlds compatible with the information the interlocutors share. So, for example, say the interlocutors share the information that Pete the parakeet is asleep. In addition, say that in world \mathbf{w}_1 , Pete is asleep, but in \mathbf{w}_2 he's not. Then \mathbf{w}_1 is an element of the context set, but \mathbf{w}_2 is not. Put another way, given what the interlocutors are committed to, \mathbf{w}_1 is a candidate for being the actual world, but \mathbf{w}_2 is not.

Here's how these two ways of modeling discourse information work together. Given a context (set of assignments), every assignment g assigns a value to a variable p^{cs} . p^{cs} is a propositional variable, i.e. a variable over sets of worlds. It represents the interlocutors' shared propositional information, i.e. the Stalnakerian the context set. Now, say there's a discourse context in which the only information is that a donkey brayed. Say further that the domain of individuals in the model with respect to which this discourse is interpreted is **{chiquita, burrita, fido}**, two donkeys and a dog, respectively. Assume that there are four worlds in the domain of worlds in this model: **{ $\mathbf{w}_1, \mathbf{w}_2, \mathbf{w}_3, \mathbf{w}_4$ }**. Assume further that in \mathbf{w}_1 only Chiquita brays, in \mathbf{w}_2 only Burrita brays, in \mathbf{w}_3 both bray, and in \mathbf{w}_4 neither

does. Finally, assume that d_7 is the variable for the discourse referent said to be a donkey and to bray. Then Table 6.2 gives the assignments compatible with the information the interlocutors share. In this table bold faced letters are understood as constant functions from worlds to a single individual, the one with the name that starts with that letter. This reflects the treatment of discourse referents and their interpretations as individual concepts, following ABH and Roberts (2014). Thus, for example, \mathbf{c} in Table 6.2 is the function that maps every world to **chiquita**. The “...” in the final column indicate that each assignment assigns values to other variables not listed here.

assignment	d_7	p^{cs}	...
g_1	\mathbf{c}	$\{\mathbf{w}_1, \mathbf{w}_3\}$	...
g_2	\mathbf{c}	$\{\mathbf{w}_1\}$	...
g_3	\mathbf{c}	$\{\mathbf{w}_3\}$	...
g_4	\mathbf{b}	$\{\mathbf{w}_2, \mathbf{w}_3\}$	...
g_5	\mathbf{b}	$\{\mathbf{w}_2\}$	...
g_6	\mathbf{b}	$\{\mathbf{w}_3\}$	...

Table 6.2: Assignments compatible with the interlocutors’ information in our toy context

The assignments in Table 6.2 are the only acceptable assignments because only they accurately reflect all of the interlocutors’ information. Consider, for example, g_1 . g_1 assigns the individual concept \mathbf{c} to d_7 and $\{\mathbf{w}_1, \mathbf{w}_3\}$ to p^{cs} . The individual concept \mathbf{c} maps both \mathbf{w}_1 and \mathbf{w}_3 to **chiquita** in the domain of individuals. In \mathbf{w}_1 and \mathbf{w}_3 , Chiquita brays, so g_1 is compatible with the information in the discourse. And so on for g_2 - g_6 . Because these are the only assignments that reflect this information, Table 6.2 can be said to represent the discourse context, i.e. the set of assignments compatible with the discourse information.

There are plenty of assignments that are not compatible with the information the interlocutors share. Here are some:

assignment	d_7	p^{cs}	...
g_7	c	$\{\mathbf{w}_2, \mathbf{w}_3\}$	...
g_8	c	$\{\mathbf{w}_2\}$	...
g_9	f	$\{\mathbf{w}_3\}$	...
g_{10}	b	$\{\mathbf{w}_3, \mathbf{w}_4\}$	...
g_{11}	b	$\{\mathbf{w}_4\}$	...
...

Table 6.3: Assignments not compatible with the interlocutors' information in our toy context

Assignments g_7 and g_8 are incompatible with the discourse information because they include \mathbf{w}_2 in the worlds assigned to p^{cs} , but Chiquita doesn't bray in \mathbf{w}_2 . g_9 is problematic because there's no world in which Fido is a donkey. g_{10} and g_{11} are problematic because they include \mathbf{w}_4 in the assignment to p^{cs} , but no donkey brays in \mathbf{w}_4 .

Here, then, is how the two ways of representing shared information interact. Propositional information is tracked via the common ground/context set, as in all Stalnakerian frameworks. However, anaphoric information is tracked using the context, or set of assignments, as well. For example, say, the discourse context is updated as a result of everyone agreeing that it was Chiquita that brayed. In this case, the acceptable assignments in Table 6.2 are reduced further by eliminating assignments that assign anything other than **c** to d_7 ³:

assignment	d_7	p^{cs}	...
g_1	c	$\{\mathbf{w}_1, \mathbf{w}_3\}$	...
g_2	c	$\{\mathbf{w}_1\}$	...
g_3	c	$\{\mathbf{w}_3\}$	...

Table 6.4: Assignments compatible with the interlocutors' information after update

With this introduction to how a context works, we are now ready to introduce a representation of doxastic perspectives into the context. Doing so will make it possible to account

³How this works will be made explicit below. Right now, what matters is understanding what a context is.

for the perspectival generalizations, i.e. to model the perspectival, *de se* anchoring of *come* and *zu* ‘*come_{zu}*’. As a rough illustration for how this account will go, assume for a moment that a doxastic perspective is just propositional information. Then it can be represented in the same way as the information about how the interlocutors jointly take things to be, the common ground or context set. In other words, we could designate a propositional variable to represent the anchor’s perspective. As a first pass, by brute force let p^{anchor} represent the anchor’s perspective. Then a model of context appropriate for analyzing the meanings of *come* and *zu* ‘*come_{zu}*’ would look like this:

assignment	p^{cs}	p^{anchor}	...
g_1	$\{\mathbf{w}_1, \mathbf{w}_2, \mathbf{w}_3\}$	$\{\mathbf{w}_1, \mathbf{w}_4, \mathbf{w}_5\}$	...
g_2	$\{\mathbf{w}_1, \mathbf{w}_2\}$	$\{\mathbf{w}_1, \mathbf{w}_4\}$	...
...

Table 6.5: Including the anchor’s perspective in the model of discourse (first pass)

Table 6.5 says that worlds $\{\mathbf{w}_1, \mathbf{w}_4, \text{ and } \mathbf{w}_5\}$ are compatible with how the anchor understands things to be.

What I’ve just done is similar to what we’ll end up with at the end of this section, in that it includes a variable for the anchor’s perspective in the context. However, at this point there are a lot of problems. First, as discussed immediately below, sets of possible worlds are insufficient for representing *de se* contents. For that, a finer grained tool is needed. Second, just adding p^{anchor} to the system is ad hoc. Unlike p^{cs} , there’s no a priori reason to think that interlocutors are tracking some anchor’s perspective. Furthermore, just designating someone as the anchor does nothing to account for SALIENT-PERSPECTIVE ANCHORING, the generalization that anchors are individuals with salient perspectives. Thus, this approach is subject to Taylor’s (1988) critique of Kaplanian accounts of anchoring. In the next two sections, I address these concerns, and define a representation of perspective to take the place of p^{anchor} that is capable of handling *de se* content and is not ad hoc.

6.1.1 *De se* contents

Since Lewis 1979a and Perry 1979, there has been general agreement that standard possible worlds propositions are not fine-grained enough to model *de se* belief. One standard example demonstrating this claim involves the hapless Rudolf Lingens, put in his current predicament by Perry (1977). On the standard example, Lingens is an amnesiac lost in the Stanford library, which, by hypothesis, contains all propositional knowledge. In Perry's (1977: 492) words, Lingens

reads a number of, things in the library, including a biography of himself, and a detailed account of the library in which he is lost. He believes any Fregean thought [proposition] you think might help him [find his way out]. He still won't know who he is, and where he is, no matter how much knowledge he piles up, until that moment when he is ready to say,

This place is aisle five, floor six, of Main Library, Stanford.

I am Rudolf Lingens. [emphases original]

These last two thoughts, Perry (1977, 1979), and Lewis (1979a) argue, do not distinguish possible worlds. Lingens already knew he was in a world where Lingens was lost in the Stanford library. His knowledge about how the world is, or which world he's in, hasn't changed. But his knowledge about where in the world he is has. In essence, Lingens now knows how to self-locate.

To model this kind of knowledge, Lewis (1979a) proposes to model the objects of belief (and therefore the complements of attitude predicates) as properties rather than propositions. On this treatment, Lingens' self-locating beliefs are properties such as the property of being in the Stanford library and the property of being Rudolf Lingens. When Lingens believes these properties, he self-ascribes them, i.e. he attributes them to himself. Lewis (1979a) demonstrates that it is possible to model all beliefs in this way, including those that aren't self-locating, like the belief that the water consists of hydrogen and oxygen.

On Lewis's system, believing that water consists of hydrogen and oxygen is equivalent to self-ascribing the property of living in a world where water consists of hydrogen and oxygen. Lewis argues that treating the objects of belief as properties gets all the same results as standard propositional treatments with respect to non-self-locating beliefs and has the benefit of correctly modeling self-locating beliefs as well.

Finally, Lewis (1979a) demonstrates that treating objects of belief as properties is equivalent to treating them as sets of centered worlds. Here, a centered world is an ordered pair of a center, i.e. an individual at a time, and a world. Then, in modeling some agent's beliefs, the world element of the centered worlds is a world compatible with everything the agent believes, just as on standard possible worlds propositions. The individual center is someone such that it is compatible with what the agent believes that she is that person. For example, say we are interested in modeling Lingens' beliefs before his epiphany. And say he has all propositional knowledge. Then he knows which world he is in—call it w_{72} . But now imagine that in w_{72} there are actually two amnesiacs lost in massive libraries: Lingens at Stanford and Roger Murphy, lost in the Ohio State library. Then it is compatible with what Lingens believes that he is Lingens at Stanford in w_{72} , and it is also compatible with what he believes that he is Murphy at Ohio State in w_{72} . Ignoring the time element and imagining that centers just are individuals, he is in one of two centered worlds: $\langle \mathbf{lingens}, w_{72} \rangle$ or $\langle \mathbf{murphy}, w_{72} \rangle$. When he figures out who he is, he doesn't learn anything more about what's true in w_{72} , but he does know where he is in w_{72} , so he can eliminate the possibility that he's Murphy at Ohio State. He can eliminate $\langle \mathbf{murphy}, w_{72} \rangle$ from the centered worlds he's considering as live possibilities. Thus, self-locating belief is captured via the centers, and ordinary non-self-locating belief via the worlds.

Stalnaker (2008) follows Lewis (1979a) in treating the objects of belief as sets of centered worlds with the purpose of modeling *de se* belief. However, he also argues that ignorance about where one is in the world is a kind of ignorance about which world one is in. Stalnaker makes the point by focusing on realistic cases in which an agent lacks self-locating knowledge.

In his (2008: 55) words

...all of them will be cases in which the subject's specific epistemic situation is unique in the actual world. Even though Alice didn't know, at noon, that it was then noon, it seems reasonable to believe that she never was, and never again will be, in *exactly* the same epistemic situation she is in then, with exactly the same experiences and memories that she was having at that time. And it is also reasonable to assume that no other actual person will be in exactly that situation.

The moral of the story about Alice is that facts about Alice's situation are facts about the way that a specific part of the world is. When Alice thinks about where she is and what time it is, she only has those thoughts at that place and time in a particular world. The only situations where that assumption can be reasonably questioned are artificial and fanciful according to Stalnaker. The Lingens/Murphy example clearly fits that bill.

Artificiality aside, Stalnaker proceeds to question the assumption that it is possible to know which world one is in without knowing where in the world one is in any case, even the fanciful ones. Applied to the Lingens example, Stalnaker's argument is that Lingens cannot know he is in w_{72} rather than a factually identical world, w_{84} , in which he is Murphy, without knowing whether he is Lingens or Murphy. Any information we might provide to Lingens to differentiate the two would be self-locating information. Therefore, Stalnaker proposes that the objects of belief can be represented as possible worlds propositions, even as belief states are represented as sets of centered worlds. Here, I'll adopt his approach.

Stalnaker represents belief as an accessibility relation on centered worlds. The center of a centered world consists of a subject A , and a time t , represented 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, R , is given in (189). It relates a **base centered world**, one from which an agent's beliefs are calculated, to a doxastically accessible centered world, a world that, for all the

agent of the base world believes, might be actual. The center of the base world must be a doxastic agent, because it must be capable of having beliefs. In contrast, the center of the doxastically accessible world, or belief world, can be any old individual. This reflects the observation that, for example, it's possible for Fred to believe he's an asparagus, but not for an asparagus to believe it's Fred.

(189) **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' .⁴

To make it possible to represent individual beliefs as simple possible worlds propositions, Stalnaker includes in 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 $B = C$. Removing the centers 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 (2014) extends Stalnaker's theory by using R to define a centered doxastic state. That is to say, she defines an information state that contains all of the centered worlds compatible with an agent's beliefs. For a given individual at a given time, the individual's doxastic state is the set of worlds compatible with what she believes. To represent this, Roberts (2014:29-32) defines DOX , a function from a base centered world to a doxastic state:

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

In (190) DOX uses Stalnaker's R relation to take a base centered world to a set of doxastically accessible centered worlds, or doxastic state.

⁴Stalnaker requires R to be transitive, Euclidean, and serial.

Note that if the world in the base centered world is the actual world, then DOX returns the actual doxastic state of the agent. For example, in the actual world now, I believe that I am sitting on the patio writing my dissertation. Let the actual world be \mathbf{w}_9 . Then, abusing notation a little, DOX maps $\langle\langle\text{Jefferson, now}\rangle, \mathbf{w}_9\rangle$ to a set of centered worlds such that, in every world in the set, the center is sitting on the patio writing. That is to say,

$$(191) \quad \text{DOX}(\langle\langle\text{Jefferson, now}\rangle, \mathbf{w}_9\rangle) \subseteq \{\langle\langle A', t'\rangle, w'\rangle \mid A' \text{ is sitting on the patio writing at } t' \text{ in } w'\}.$$

Thus, Roberts' extension of Lewis and Stalnaker's theory of belief provides a way to model information states that can include *de se* information. This is exactly the kind of information state against which the *de se* anchoring implication must be evaluated.

Returning to the model of a context developed earlier in this section, we can already make one change. The variable that I called p^{anchor} and represented as a set of worlds should in fact be a variable over sets of centered worlds. This change is represented in Table 6.6, where q^{anchor} , represents a set of centered worlds consistent with the anchors' beliefs. This reflects a general convention followed henceforth, where p variables are sets of (un-centered) worlds and q variables sets of centered worlds. For convenience, in the list of values assigned to q^{anchor} , I write centered worlds as \mathbf{cw}_1 , etc., ignoring their internal structure for the moment.

assignment	p^{cs}	q^{anchor}	...
g_1	$\{\mathbf{w}_1, \mathbf{w}_2, \mathbf{w}_3\}$	$\{\mathbf{cw}_1, \mathbf{cw}_4, \mathbf{cw}_5\}$	...
g_2	$\{\mathbf{w}_1, \mathbf{w}_2\}$	$\{\mathbf{cw}_1, \mathbf{cw}_4\}$	...
...

Table 6.6: Including the anchor's perspective in the model of discourse (second pass)

Taking stock, the machinery introduced so far has made it possible to define q^{anchor} as the right sort of object against which to assess the *de se* anchoring implication: a centered doxastic state. However, that's all it does. It does not say where q^{anchor} comes from.

That's because it doesn't say anything about what the base centered world from which q^{anchor} is determined. What world is this? It also doesn't explain how q^{anchor} comes to be contextually salient, regardless of what base world its calculated from. The next two sections address these problems.

6.1.2 Doxastic perspectives in discourse

Now that I have the right kind of object for q^{anchor} , I want to explain i) how, in a given context, the value of q^{anchor} is determined and ii) why q^{anchor} can be assumed to be a part of the context.

So, first of all, which set of centered worlds is q^{anchor} ? First, let's imagine that q^{anchor} is the anchor's actual doxastic state. That is to say, assume q^{anchor} is the result of applying DOX to a base centered world that has the actual world as an element. Then the common ground contains everything there is to know about the anchor's beliefs. But this can't be right. Even when the anchor is an interlocutor, the common ground does not contain all there is to know about that her beliefs. Some of them remain private. And when the anchor is not an interlocutor, or when the anchor is an interlocutor who lies, the common ground contains a partially incorrect representation of the anchor's beliefs. So treating q^{anchor} as the anchor's actual doxastic state is out.

The only possibility that's left is to treat q^{anchor} as the anchor's doxastic state according to the common ground. Informally, this makes sense because the q^{anchor} is a variable assigned a value by assignments that reflect the information that the discourse participants share. But this leads to a problem. The context set, our representation of the interlocutors' shared information is a set of worlds, not a single world. So which member of the set should be the base world to which DOX is applied. The simple answer is that all of them should be. To get the full representation of the information the interlocutors have about the anchor's beliefs, we need to consider all of the worlds they take to be live possibilities, i.e. the whole context set.

To see how to define a doxastic state in these terms, it is useful to consider an analogous example involving iterated attitudes. These are attitudes that one agent has about another agent's attitudes. For instance, say my wife, Laurie, knows that it's sunny outside. And let w_3 be the actual world. Then DOX maps $\langle\langle\text{laurie, now}\rangle, w_3\rangle$ to a set of centered worlds where it's sunny. But say I mistakenly think that she thinks it's cloudy. Recall that my doxastic state is just a set of centered worlds: $\langle\langle A', t'\rangle, w'\rangle$. Then, for any w' such that $\langle\langle A', t'\rangle, w'\rangle$ is an element of my doxastic state, DOX maps $\langle\langle\text{Laurie, now}\rangle, w'\rangle$ to a set of worlds where it's cloudy outside. This difference is an effect of my having mistaken beliefs about Laurie's beliefs.

But now say I don't know anything at all about Laurie's beliefs about the weather. Then for any w' compatible with my doxastic state, DOX may map w' to a set of centered worlds in which it's cloudy, a set of centered worlds in which it's sunny, or a set that includes worlds of both sorts. In any event, because my beliefs don't settle the question of what Laurie thinks about the weather, applying DOX to each world in my doxastic state and taking the union of the results will yield a set of worlds that includes both cloudy and sunny worlds.

These discussions show that to represent iterated attitudes, DOX needs to be applied over all of the worlds in one individual's doxastic state. So applied, it can be used to generate a model of another individual's doxastic state according to the beliefs of the first individual. For convenience, I define a function, DOX' , that does exactly this. DOX' takes a center and a set of worlds, such as the worlds in a doxastic state, and returns a set of centered worlds. Informally, the set returned is everything that the original set entails about the center's beliefs. In the examples above, for example, DOX' would return everything I know about Laurie's beliefs about the weather. The definition is preliminary, because I will revise it below to take centered worlds with individual concepts rather than individuals as centers. For convenience, I define DOX' as a three-place relation between a center, a set of worlds, and a set of centered worlds rather than as a function from a center and a set of worlds to a set of centered worlds. Defining DOX' in this way will simplify some formulas below, but

nothing else hinges on this choice.

- (192) DOX' (to be revised): For any center $\langle A, t \rangle$, set of worlds p , and set of centered worlds q , $\text{DOX}'(\langle A, t \rangle, p, q)$ is true iff
- $$q = \{ \langle \langle A', t' \rangle, w' \rangle \mid \exists w \in p [\langle \langle A', t' \rangle, w' \rangle \in \text{DOX}(\langle \langle A, t \rangle, w \rangle)] \}.$$

Applying DOX' to a 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. To see how DOX' applies in the previously discussed scenario, let p^j be the set of (un-centered) worlds compatible with my mistaken beliefs. Then for all w' such that $\langle \langle A', t' \rangle, w' \rangle \in \text{DOX}'(\langle \text{Laurie, now} \rangle, p^j)$, it is cloudy at w' . Similarly, in the case where I don't know what Laurie thinks about the weather, then there are some worlds w' such that $\langle \langle A', t' \rangle, w' \rangle \in \text{DOX}'(\langle \text{Laurie, now} \rangle, p^j)$ where it's cloudy, and other worlds w' where it's sunny.

There's a typing problem, though. Above I mentioned in passing that in this system, following AnderBois et al. (2015) and Roberts (2014), drefs for individuals are actually interpreted as individual concepts (i.e. functions from a world to an individual). But the first version of DOX' is defined over individuals A , not individual concepts. Here I redefine it.

- (193) DOX' (final): For any center $\langle d_{\langle s, e \rangle}, t \rangle$, set of worlds p , and set of centered worlds q , $\text{DOX}'(\langle d_{\langle s, e \rangle}, t \rangle, p, q)$ is true iff
- $$q = \{ \langle \langle x, t' \rangle, w' \rangle \mid \exists w \in p [\langle \langle x, t' \rangle, w' \rangle \in \text{DOX}(\langle \langle d(w), t \rangle, w \rangle)] \}.$$

As defined in (193), DOX' provides a way to identify what the common ground of a discourse entails about the anchor's doxastic state. If DOX' is applied to the anchor at a time (in other worlds, to a center with the anchor as its individual element) and the context set of the discourse, it returns the anchor's doxastic state according to the common ground.⁵

⁵Thus, DOX' is a generalized version of what Roberts (2014: 34) calls DOX_{CS} . In her words DOX_{CS} returns the set of "those worlds which reflect all the things that the interlocutors agree [an individual] believes".

It's worth noting that for any doxastic agent, once a particular time is identified as the relevant time, the common ground can be assumed to entail something about that agent's beliefs at that time. This is the case even if not much is known about the agent's beliefs, because interlocutors make certain default assumptions about doxastic agents in general. For example, they assume that a doxastic agent believes that she herself exists, that the sky is blue, etc., unless these beliefs are directly contradicted in the common ground. Karttunen, quoted in Heim 1992: 184, puts it slightly differently, but conveys essentially the same idea. He says that there is a "conversational principle to the effect that, unless it has been indicated otherwise, [another individual] can be assumed to share the speaker's beliefs." Therefore, for any doxastic agent, once a time is supplied, a dref representing that agent's doxastic perspective at that time is weakly familiar, where being weakly familiar means being entailed to exist by the common ground (Roberts, 2002, 2003). (194) states this as a condition on well-formed assignments.

(194) **Condition on well-formed assignments relative to doxastic perspectives:**

Given assignment g that assigns values for drefs d (individual concept), p^{cs} (context set), and t (time), if for some $w \in g(p^{cs})$, $g(d)(w)$ is a doxastic agent, then there is some familiar doxastic perspective $q^{(d,t)}$ such that $\text{DOX}'(\langle d, t \rangle, p^{cs}, q^{(d,t)})$.

The condition in (194) says that, given a time, for any doxastic agent, some information about that agent's doxastic perspective at that time is entailed by the common ground. And it designates a variable $q^{(d,t)}$ to store that information. As desired for the interpretation of *de se* contents, the interpretation of $q^{(d,t)}$ is a set of centered worlds.

To see how this works out in a concrete example, consider the following model \mathfrak{M} : a domain of individuals, $\{\text{laurie, jefferson, linda}\}$, a domain of worlds, $\{\mathbf{w}_1, \mathbf{w}_2, \mathbf{w}_3\}$, and a domain of individual concepts, $\{\mathbf{l}, \mathbf{x}, \dots\}$. Assume that \mathbf{l} maps every world to **laurie**. Also assume that at utterance time, it's sunny at \mathbf{w}_1 and \mathbf{w}_2 , and cloudy at \mathbf{w}_3 , and that there are no other relevant differences among worlds. Now imagine that my mother-in-law Linda

and I are out talking on the patio. Say we've established that we don't know whether Laurie knows it's sunny or thinks it's cloudy. Also, assume that we think that Laurie thinks that she's herself and knows what time it is. Assume \mathbf{t}^* is utterance time. Finally, assume that in \mathbf{w}_1 , Laurie thinks it's sunny, and in \mathbf{w}_2 , she thinks it's cloudy. What does the context look like?

The first question to answer is which drefs are in the common ground. Since Laurie's been mentioned, there's a dref, call it d_3 , that is mapped to \mathbf{l} . Assume further that there's a dref t^* that is mapped to utterance time. Then we get the result in Table 6.7.

assignment	p^{cs}	t^*	d_3	$q^{(d_3, t^*)}$	...
g_1	$\{\mathbf{w}_1, \mathbf{w}_2, \}$	\mathbf{t}^*	\mathbf{l}	$\{\langle\langle\mathbf{laurie}, \mathbf{t}^*\rangle, \mathbf{w}_1\rangle, \langle\langle\mathbf{laurie}, \mathbf{t}^*\rangle, \mathbf{w}_2\rangle, \langle\langle\mathbf{laurie}, \mathbf{t}^*\rangle, \mathbf{w}_3\rangle\}$	...
g_2	$\{\mathbf{w}_1\}$	\mathbf{t}^*	\mathbf{l}	$\{\langle\langle\mathbf{laurie}, \mathbf{t}^*\rangle, \mathbf{w}_1\rangle, \langle\langle\mathbf{laurie}, \mathbf{t}^*\rangle, \mathbf{w}_2\rangle\}$	...
g_3	$\{\mathbf{w}_2\}$	\mathbf{t}^*	\mathbf{l}	$\{\langle\langle\mathbf{laurie}, \mathbf{t}^*\rangle, \mathbf{w}_3\rangle\}$	...
...

Table 6.7: Acceptable assignments in a context where Linda and I don't know what Laurie thinks about the weather

The assumptions that Laurie knows who she is and what time it is are simplifying assumptions allowing me to hold the center $\langle\mathbf{laurie}, \mathbf{t}^*\rangle$ constant across all of the centered worlds assigned to $q^{(d_3, t^*)}$ across all assignments. The key thing to see here is how the world component differs. Because g_1 assigns both \mathbf{w}_1 and \mathbf{w}_2 to p^{cs} , it must assign both sunny and cloudy worlds to the representation of Laurie's doxastic perspective. Therefore, centered worlds with \mathbf{w}_1 , \mathbf{w}_2 , and \mathbf{w}_3 are included in assignments to $q^{(d_3, t^*)}$. In contrast, g_2 assigns only sunny worlds to $q^{(d_3, t^*)}$, and g_3 only cloudy worlds. Now, say I assert that Laurie thinks it's cloudy and Linda accepts my assertion. Then the context, the set of acceptable assignments, is reduced. Specifically, g_1 and g_2 are no longer available, because they include sunny worlds in the set of worlds assigned to $q^{(d_3, t^*)}$. Although I still haven't said anything about how such an utterance triggers an update happens, we now have a way to model the effect the update has on the context.

Thus, Roberts’ (2014) DOX function, type-lifted to become DOX’, makes it possible to define an individual’s (centered) doxastic state as it is entailed to be according to the common ground of a discourse. This doxastic state defined according to the common ground is just what I’ve been calling a doxastic perspective. The condition on well-formed assignments in (194) assures that for a given doxastic agent and time, such a doxastic perspective is familiar. This means that, given an anchor, we now have a principled method for retrieving the anchor’s doxastic perspective. What we still lack is a mechanism for identifying agents whose perspectives are salient in the discourse. The next section deals with this problem, using independently motivated technology developed by Roberts (2014).

6.1.3 Perspective holders in discourse

To identify the subset of discourse referents that are potential anchors for *come* and *zu* ‘come_{zu}’ in a given context, I follow Roberts (2014) and assume that the context also includes a set of discourse centers. **Discourse centers** are drefs for Stalnaker-style centers (i.e. agent time pairs) that Roberts (2014) uses to model perspective holders. She argues that the interlocutors keep track of a limited set of such discourse centers. Specifically, they keep track of centers corresponding to individuals whose doxastic states are “under discussion” the discourse. This is related, though perhaps not identical, to the notion of relevance to the QUD defined in Section 2.2. The set always includes centers for the interlocutors at utterance time, since their views are always relevant for the construction of the common ground (Stalnaker, 1978). It also includes a center for any doxastic agent whose perspective is under discussion, such as the agent of an attitude predicate or the agent whose point of view is adopted in an FID context.⁶ The principal empirical domains Roberts considers are indexicals (Roberts, 2014) and epistemic modals (Roberts, 2015). However, the theory is intended to be applicable to perspectival expressions in general. Perspectival

⁶Readers interested in how the set of discourse centers evolves as the discourse progresses are referred to Roberts 2014. The introduction and removal of discourse centers introduced by attitude predicates is discussed in detail and modeled formally in this paper, in Section 6.3.3.

expressions, Roberts argues, are those that involve anchoring the content of an expression to a dref that is co-referential with a discourse center. Her view is discussed in more detail in Chapter 7, where different approaches to perspectival expressions are considered.

The set of discourse centers is defined in (195). \textcircled{c} is a variable over discourse centers. \textcircled{c}_K is the set of all discourse centers for context K .

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

The set of discourse centers \textcircled{c}_K in context K :

$\textcircled{c}_K \subseteq \{ \langle d_i, t_j \rangle \mid d_i \text{'s beliefs at } t_j \text{ are relevant in } \}$.

- a. \textcircled{c}_K always includes distinguished centers corresponding to the speaker at utterance time, \textcircled{c}^* , and the addressee at utterance time, $\textcircled{c}^\textcircled{a}$.
- 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.

(195) shows that there is a match between Roberts' independently motivated discourse centers and the anchoring of *come*: the set of possible discourse centers is exactly the set of possible anchors. Thus, on the assumption that the anchor of *come* is a discourse center, the observed range of anchors described in Section 2.2 falls out without additional stipulation. This is a welcome result, because discourse centers were developed to account for an independent perspectival phenomenon: indexicality (Roberts, 2014).

Modeling the anchor of *come* as an anaphorically retrieved discourse center accounts for ANAPHORIC ANCHORING and SALIENT-PERSPECTIVE ANCHORING using independently motivated technology. That is to say, it accounts for the limited range of possible anchors and analyzes the anchor as an anaphorically interpreted implicit argument. This latter result is accomplished simply because discourse centers are discourse referents. So are propositional discourse referents for their perspectives, as defined above. This latter observation paves the

way for the account of PERSPECTIVE-ONLY ANCHORING developed below. An additional benefit is that the system provides a way to state the domain restriction needed to model the anchoring of *zu* ‘come_{zu}’. *Zu* ‘come_{zu}’ draws its anchor from a subset of the set of discourse centers: $\{\textcircled{C}^*, \textcircled{C}^\textcircled{\text{a}}\}$. Similarly, we might propose that *Shibe*, which anchors only to the speaker, has an even further restricted domain: $\{\textcircled{C}^*\}$. As Roberts discusses, this kind of accessibility to a limited subset of discourse centers is cross-linguistically common for phenomena such as shifted indexicals.

Given a discourse context, then, for any discourse center $\textcircled{C} \in \textcircled{C}_K$, some $q^\textcircled{\text{C}}$ is entailed to exist such that $\text{DOX}'(\textcircled{C}, p^{cs}, q^\textcircled{\text{C}})$. Crucially, $q^\textcircled{\text{C}}$ is also entailed to be salient and relevant, due to the way in which discourse centers are defined. Thus, we can add to the set of variables for which all assignments give values. Now, we can say that all discourse contexts give values to p^{cs} , the context set, \textcircled{C}^* , the center corresponding to the speaker at utterance time, $\textcircled{C}^\textcircled{\text{a}}$, the center corresponding to the addressee at utterance time, $q^{\textcircled{C}^*}$, the speaker’s doxastic perspective at utterance time, and $q^{\textcircled{C}^\textcircled{\text{a}}}$, the addressee’s doxastic perspective at utterance time. In addition, other discourse centers and their perspectives can be introduced as well.

The set of discourse centers may seem to resemble Oshima’s (2006a) RP, and the domain restriction that is part of the lexical content of *zu* ‘come_{zu}’ may seem to resemble Oshima’s claim that the RP differs from language to language. However, the two systems are quite different. First, there’s the fact that elements of the set of discourse centers are discourse referents, while elements of the RP are just individuals, due to the direct reference requirements of the Kaplanian framework. That difference aside, in any given context, membership in \textcircled{C}_K is determined on an independently motivated, principled basis depending on the relevance of an individual’s doxastic state. In contrast, although Oshima describes RP membership tendencies that apply across all contexts (e.g. the addressee is often an RP member in English), for any given context RP membership is not predictable or constrained by his theory. Third, the set of discourse centers is independently motivated as part of Roberts’ analysis of indexicals, and Roberts (2015) demonstrates that it can be

used in the analysis of epistemic modals as well. The RP, in contrast, is not independently motivated. Finally, Oshima claims that the RP differs from language to language. In contrast, cross-linguistically, for any context K , \textcircled{C}_K is determined in the same way. The domain restrictions described here are selectional restrictions imposed by particular predicates, not cross-linguistic differences in \textcircled{C}_K . Admittedly, at this point these selectional restrictions are stipulations. It would be ideal to have, and it is a task for future work to develop, analyses on which they fall out just as the anchoring possibilities for English *come* do on the present account. That said, it is theoretically preferable to view the context of utterance as remaining the same across languages, essentially as a function of human cognition and interaction, and locate cross-linguistic variation in the selectional properties of predicates in particular languages.

6.1.4 Summary of Section 6.1 and review of related proposals

Taking stock, in this section I developed a notion of a context as a set of assignments of values to variables. I then used theories due to Stalnaker (1978, 2008) and Roberts (2014) to argue for including in these assignments variables corresponding to salient, relevant doxastic perspectives. This sets the stage for accomplishing several of the desiderata laid out for analyses of *come* and *zu* ‘*come_{zu}*’. First, it makes available perspectives in which *de se* information can be represented. Second, it restricts the anchors to the observed set of individuals, and third it models the anchors as discourse referents, uncontroversially making them available for anaphoric reference. What hasn’t been done is describe how the meanings of expressions are modeled in this framework, how they draw on and update the context of utterance, and how the meanings of *come* and *zu* ‘*come_{zu}*’ give rise to anchoring implications that are evaluated against the doxastic perspectives of their anchors.

Before continuing on to those tasks, it’s worth noting the similarity between the view I’m espousing here and a view due to Gunlogson (2001, 2002), Farkas (2002), Farkas and Bruce (2010), and others. Their work provides independent motivation for the general approach

I take here. On their view, following Stalnaker (1978), in addition to the common ground there are also two other sets of propositions that are important. These are the propositions to which one interlocutor but not the other is known to be committed. For each interlocutor, this includes propositions that have not yet been accepted, as well as propositions on which the interlocutors disagree. For instance, say that two strangers meet at a bus stop in Cleveland. They talk about the recent 2016 NBA finals and agree that the Cavs deserved to win. Then their common ground includes the proposition that the Cavs deserved to win, as well as other propositions representing shared cultural and situational knowledge such as the proposition that the earth is round and the proposition that the conversation is taking place at a bus stop in Cleveland. Now, say one interlocutor asserts that LeBron James deserved the MVP award. Then that proposition becomes a commitment of that interlocutor. And say the other has to think about it for a while, considering the possibility that another player might be more deserving. Until she agrees with the original statement, the original proposition is not one of her commitments, and is not part of the common ground. If she ultimately agrees, then the proposition becomes one of her commitments and part of the common ground. If she disagrees, then the proposition that LeBron did not deserve the MVP award becomes one of her commitments, and neither proposition is added to the common ground.

There are couple of points about these interlocutor commitments and their relation to the common ground that are worth mentioning. First, as Stalnaker emphasizes, these are “purported” commitments, not actual beliefs. For the purposes of a conversation, an interlocutor might lie or entertain hypotheticals. In the Cleveland example, the second interlocutor might say that LeBron deserves the award simply because she doesn’t like arguing with strangers at bus stops, even if she actually believes it should have gone to Kyrie Irving. If she does, then the proposition that LeBron deserves the award becomes one of her commitments, even though it is not among her beliefs. Second, the common ground and the interlocutors’ commitments are inter-definable (Gunlogson, 2001). To see

this, assume that A and B are engaged in a discourse. Then at any point in time A's commitments are whatever the common ground of the discourse entails them to be, and likewise for B's. So commitments can be defined in terms of the common ground. On the other hand, if commitments are defined as propositions that both interlocutors recognize a particular interlocutor as being committed to, then they are defined independent of the common ground. In that case, the common ground can be defined as the intersection of these commitments. For instance, let A represent the set of propositions that the interlocutors recognize A's to be committed to, and similarly for B . Then the common ground is the intersection of these propositions. And third, if the interlocutors are sincere, or if the theorist assumes this for simplicity, then an interlocutor's commitments comprise a subset of her beliefs. Importantly, note that a doxastic perspective as defined in this section is essentially what Gunlogson and others mean by an interlocutor's commitments, modulo the difference between centered and uncentered worlds.

Gunlogson (2001, 2002), Farkas (2002), and Farkas and Bruce (2010) formalize their insights about the discourse commitments of the interlocutors differently than I have formalized things here, in large part because they're not concerned with *de se* content. Importantly for our purposes though, these researchers demonstrate that certain linguistic forms trigger presuppositions about the commitments of particular interlocutors. In other words, the meanings of natural language expressions depend for their interpretations on information about an individual's commitments. This is just what I'm claiming about the meanings of *come* and *zu* 'come_{zu}', if we replace "commitments" with "doxastic perspective". It is for this reason that their work provides independent motivation for the underlying idea promoted in this dissertation.

For example, Gunlogson (2002) argues that the use of a rising declarative presupposes that the content of the declarative is a commitment of the addressee according to the CG. It also presumes that the content is not a commitment of. This is exemplified in (196)-(197), adapted from Gunlogson (2002: 139).

- (196) [Context: Ann sees a passerby walking a dog. She's not certain about what type the dog is, so she says:]
- a. Is that a Weimaraner?
 - b.#That's a Weimaraner?
 - c.#That's a Weimaraner.
- (197) [Context: Ann sees a passerby walking a dog. She's not certain about what type the dog is, but she's pretty sure it's a bulldog. However, the owner is wearing a shirt with a picture of the dog and the wording "I love my Weimaraner". Ann says:]
- a. Is that a Weimaraner?
 - b. That's a Weimaraner?
 - c.#That's a Weimaraner.

In both (196)-(197), Ann is not certain about which breed the dog is. As a result, the declaratives with falling intonation in (196c) and (197c) are unacceptable. If acceptable, they would commit Ann to the proposition that the dog is a Weimaraner. The syntactic interrogatives in (196a) and (197a), on the other hand, are acceptable. They do not commit Ann to having a view on the dog's breed. The acceptability of the rising declarative in (197b) shows that neither does it does not commit Ann to this proposition. If it did, (197b) would be unacceptable, like (197c). The contrast between the contexts accounts for the difference in acceptability between (196b) and (197b). In the context in (196), there is no indication that the addressee is committed to the dog being a Weimaraner, and the rising declarative is unacceptable. The context in (197) differs minimally due to the addressee's shirt, which suggests that she does have such a commitment to the dog being a Weimaraner. This makes the rising declarative acceptable in (197b) acceptable. This difference is accounted for on the assumption that the use of a rising declarative presupposes that the addressee is committed to the content of the declarative.⁷

⁷Gunlogson's account is more complex than this and involves the way that the interlocutors' commitments create what she calls "bias" in the discourse context. This brief discussion suffices here.

6.2 The interpretation of utterances and updates to the context

Now that the representation of the discourse context includes doxastic perspectives, it's time to account for the observation that the interpretations of *come* and *zu* 'come_{zu}' depend on these doxastic perspectives. To do that, we need to say more about how the framework used here models the meanings of natural language expressions.

6.2.1 Framework basics

First, note that as ABH define it, the framework consists of i) a first order predicate logic, into which natural language expressions are translated, and ii) an interpretation function that interprets expressions of the logic in a model. The first change to this system I make is to use a higher order typed logic as the logical language. I make this change because the first arguments of both *come* and *zu* 'come_{zu}' are properties.⁸ The logic is a standard higher order logic with functional and product types. It has variables, logical constants, and non-logical constants, which are defined here as needed. The models into which expressions of the logic are interpreted is relatively straightforward as well. Models consist of disjoint domains of appropriate types for the interpretation of expressions in the logic (e.g. domains for individuals, worlds, points in space, etc.) plus an interpretation function \mathcal{F} , for the interpretation of non-logical constants. For each logical constant (e.g. conjunction), its definition specifies the rules for its interpretation, as exemplified in the following sections.

As is standard in dynamic semantics an utterance is analyzed as an instruction to change the context (Kamp, 1981; Heim, 1982; Groenendijk and Stokhof, 1991). Since a context is a set of assignments, the meaning of an utterance is modeled a set of pairs of assignments: $\{\langle g, h \rangle | \dots\}$. For each such pair in the meaning of an utterance, g represents

⁸Recall that the first argument of *come* is the interpretation of path-PP such as *to Denver*, and the first argument of *zu* 'come_{zu}' is the interpretation of a locative phrase such as *e-Kribi* 'at Kribi'. On standard theories, these denote properties of paths (Zwarts, 2005) and properties of regions (Kracht, 2002, 2008), respectively. The details are given below.

an input assignment and h the corresponding output assignment. Here, ‘...’ represents the instructions that turn g into h . Then, given a discourse information state $\{g|\dots\}$, interpreting an utterance takes each g in this set to its corresponding output assignment, h , yield set of output assignments: $\{h|\dots\}$. This is the new context for the interpretation of the next utterance. The interpretation function is written $\llbracket \cdot \rrbracket^{\mathfrak{M}, \langle g, h \rangle}$, to show that interpretation is relative to a model and a pair of assignments.

To see how this works, consider the interpretation of a clause introducing a variable for a new discourse referent. In the logic, this is represented as $[v]$, where v is variable and $[\cdot]$ is the non-logical constant for discourse referent introduction. The interpretation of $[\cdot]$ is described in (198). (198) is amended below, for reasons which are made clear in the course of the discussion.

(198) **Dref introduction** (to be amended below; adapted from ABH: 17):

Given assignments g and h , $\llbracket [v] \rrbracket^{\mathfrak{M}, \langle g, h \rangle} = \top$ iff (for any variable v) g differs from h at most with respect to the value assigned to v , i.e., for any variable v' s.t. $v' \neq v$, we have that $g(v') = h(v')$.

(198) says that for all pairs $\langle g, h \rangle$ in the meaning of $[v]$, g and h differ only with respect to the value they assign to v . A given expression is defined/acceptable in a particular context just in case there is at least one assignment g in the context such that some pair $\langle g, h \rangle$ is in the meaning of the expression. If that’s the case, then the update can proceed. Thus \top here represents the possibility for update, not truth in the classic, extensional sense.⁹

Another non-logical constant that’s important to introduce at this point is dynamic conjunction. It is defined in (199). The definition relies on the idea of a “formula” in the

⁹Truth in that sense could be represented in the current theory as it is in a Stalnakerian theory of discourse, by considering at any time t , whether or not the actual world is a member of the context set at t . If it is, then the discourse is “true” in the sense that all of the propositions the interlocutors are committed to hold in the actual world. However, nothing in the dynamic semantics depends on this being the case, which is to say that the dynamic semantic framework is not really concerned with extensional truth.

language. Here I take a formula to be a well-formed expression of the type of a set of pairs of assignments.¹⁰

(199) **Dynamic conjunction** (adapted from ABH:46):

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

The dynamic conjunction of two formulas ϕ and ψ is the set of pairs of assignments $\langle g, h \rangle$ such that is some assignment k that can be an output context for the interpretation of ϕ and an input context for the interpretation of ψ .

Connectives such as $=$ and \subseteq are defined as logical constants. In each case, they place conditions on the values assigned to their arguments by the output assignment. For the purposes of this dissertation, the relevant logical constants are $=$ and \subseteq , which are defined in (200) and (201), respectively.

(200) **Equivalence on drefs** (adapted from ABH 137):

$\llbracket x = y \rrbracket^{\mathfrak{M}, \langle g, h \rangle} = \top$ iff $g = h$ and $h(x) = h(y)$.

(201) **Subset inclusion on propositional drefs** (adapted from ABH 137):

$\llbracket p \subseteq p' \rrbracket^{\mathfrak{M}, \langle g, h \rangle} = \top$ iff $g = h$ and $h(p) \subseteq h(p')$.

The interpretation of a formula equating two drefs leaves individual assignments g unchanged. It constitutes a ‘test’ in the words of Groenendijk and Stokhof (1991) and ABH on a context/set of assignments that leads to the elimination of some of the assignments in the context. It only passes through those assignments that assign the same value to x and y . Similarly, subset inclusion is defined so as to pass through only those assignments that

¹⁰Technically, this would be an expression of type $\langle \langle \sigma \times \sigma \rangle, t \rangle$, where σ is the type of assignments. Treating formulas as having this type follows Muskens (1996, 2003) and Brasoveanu (2007), and paves the way toward enhancing the current system to handle sub-sentential compositionality, a task for future work. ABH do not define well-formed formulas, nor do they define the type $\langle \langle \sigma \times \sigma \rangle, t \rangle$. However, as far as I can tell their definitions of logical constants and other formulas are consistent with assuming that well-formed formulas have this type.

assign values to p and p' such that the value assigned to p is a (possibly proper) subset of the value assigned to p' .

Non-logical constants JOHN, RUN, EAT, etc. receive their interpretation via the interpretation function \mathcal{F} . This assigns sets of elements of the appropriate domains as values to non-logical constants, as in most semantic frameworks. There's a difference, though. \mathcal{F} is relativized to worlds. ABH 2015:44 define \mathcal{F} for relations on individuals as in (202).

$$(202) \quad \forall R \text{ (} n\text{-ary relation on individuals)} \quad \forall \mathbf{w}. \mathcal{F}_{\mathbf{w}}(R) \subseteq \mathcal{D}^n$$

What relativizing \mathcal{F} to worlds means is that it assigns a possibly different value to R for each world. It also means that, in a given expression, it is possible to specify the worlds under consideration. I assume that \mathcal{F} can also assign elements of domains other than \mathcal{D} as needed. For example, following Kracht (2002), the arguments of the AT relation, roughly the meaning of English *at*, include an individual (here an individual concept), a region, and a time. In that case, \mathcal{F} assigns triples consisting of one element from each domain to AT.

The main reason that \mathcal{F} is relativized to worlds is because predication is relativized to sets of worlds. For example, rather than writing SNEEZE(d), ABH write SNEEZE $_p$ (d), to say that d sneezed in every world in p . The interpretation of an atomic formula is given in (203). Its presupposition, given in (203a) is discussed below.

(203) **Interpretation of atomic formula with predication** (adapted from ABH 137):

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

a. presupposes $h(p) \subseteq \mathbf{dom}(h(d))$ and

b. = \top iff $g = h$ and for all worlds $\mathbf{w} \in h(p)$, $h(d)(\mathbf{w}) \in \mathfrak{F}_{\mathbf{w}}(\text{SNEEZE})$

(203b) is an instruction to update the context so that, in all worlds \mathbf{w} in the set of worlds that output context h assigns to p , the individual to which $h(d)$ maps \mathbf{w} is in the extension of SNEEZE at \mathbf{w} . ABH develop this technology to allow certain expressions to update the common ground directly. This happens when a predication is relativized to p^{cs} (e.g.

$\text{SNEEZE}_{p^{cs}}(d)$). It is useful for the analysis of *come* and *zu* ‘ come_{zu} ’ because it makes it possible to express the observation that the anchoring implication is interpreted relative to the anchor’s doxastic perspective. For example, if the anchor is d_7 , the anchoring implication is interpreted relative to $q^{(d_7, t)}$, which was defined in the previous section (modulo the centered worlds vs. worlds difference, which will be dealt with below).

The presupposition in (203a) represents the way in which ABH deal with existence presuppositions. (203a) says that for SNEEZE to be predicated of d in p worlds, d must be defined in p worlds. This condition is meaningful because ABH model drefs as *partial* individual concepts, i.e. partial functions from the domain of worlds into the domain of individuals. As a result drefs are defined over only some worlds. For example, a dref introduced inside a modal environment is defined for only the worlds quantified over by the modal. This is how they account for the infelicity of examples such as (204).

(204) Annie might be eating an ice cream. #It is melting.

In (204), the interpretation of *an ice cream* introduces a dref for the ice cream. However, it is defined only over the worlds quantified over by *might*. As a result, it cannot be the antecedent for *it*, because melting is predicated of the antecedent of *it* over more than just the modal worlds.

Making sure that drefs are defined over only some worlds requires some additional machinery. In particular, it requires us to be able to specify which worlds a dref is introduced relative to. To do that, we first need to know a little more about how relativizing to propositional variables happens in general, since predication is relativized in this way as well, as defined in (203). This information is introduced via a discussion of a specific kind of propositional variable, a proposal to update the common ground.

6.2.2 Proposals to update the common ground

For ABH, every assertion includes a proposal to update the common ground. 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 represents the speaker’s intended contribution to the discourse—the content she proposes to add to the common ground. However, as with any dref, when p is first introduced, its value is not restricted. Assignments to p range over the entire domain of propositions. ABH assume that in any assertion, immediately after p is introduced, an additional clause requires it to be consistent with the current common ground. This requirement is represented by restricting assignments to p to subsets of assignments to p^{cs} . The requirement is a simplifying assumption enforcing monotonic update of the CG. The representation of the initial update to the context triggered by the utterance of an assertion is given in (205).

(205) **New proposal:** $[p] \wedge p \subseteq p^{cs}$

Due to the definition of dynamic conjunction in (199), the interpretation of (205) proceeds in two steps. First, $[p]$ is interpreted, and then $p \subseteq p^{cs}$ is. Interpreting $[p]$ just adds a dref p to all of the assignments g in the context. Then interpreting $p \subseteq p^{cs}$ imposes a test on the resulting assignments. It eliminates any assignment on which $h(p)$ is not a subset of $h(p^{cs})$.

Because p stores the content of the assertion, once p is introduced as in (205), assignments to p continue to be eliminated as the assertion is interpreted. In essence, the interpretation of the logical form of the assertion, yields a set of conditions on assignments to p . For example, assume *he sneezed* is uttered in a context in which the dref d is the value of *he*. Then the logical form of the utterance is $\text{SNEEZE}_p(d)$. Interpreting $\text{SNEEZE}_p(d)$ updates the context to require that in all worlds that h assigns to p , d sneezed. Assignments that assign worlds to p in which d did not sneeze are eliminated. The general rule for interpreting such formulas is given in (203) above.

It is instructive to see how this works out for a toy context. Assume a model with worlds \mathbf{w}_1 , \mathbf{w}_2 , \mathbf{w}_3 , and \mathbf{w}_4 . And say that all g in question map d to individual concept \mathbf{x} , and $\mathbf{x}(\mathbf{w}_1)$ sneezed in \mathbf{w}_1 . In other words, $g(d)(\mathbf{w}_1) \in \mathcal{F}_{\mathbf{w}_1}(\text{SNEEZE})$. Similarly for \mathbf{w}_2 and \mathbf{w}_4 but not for \mathbf{w}_3 . Then a partial representation of the context and updates is given in Table 6.8.

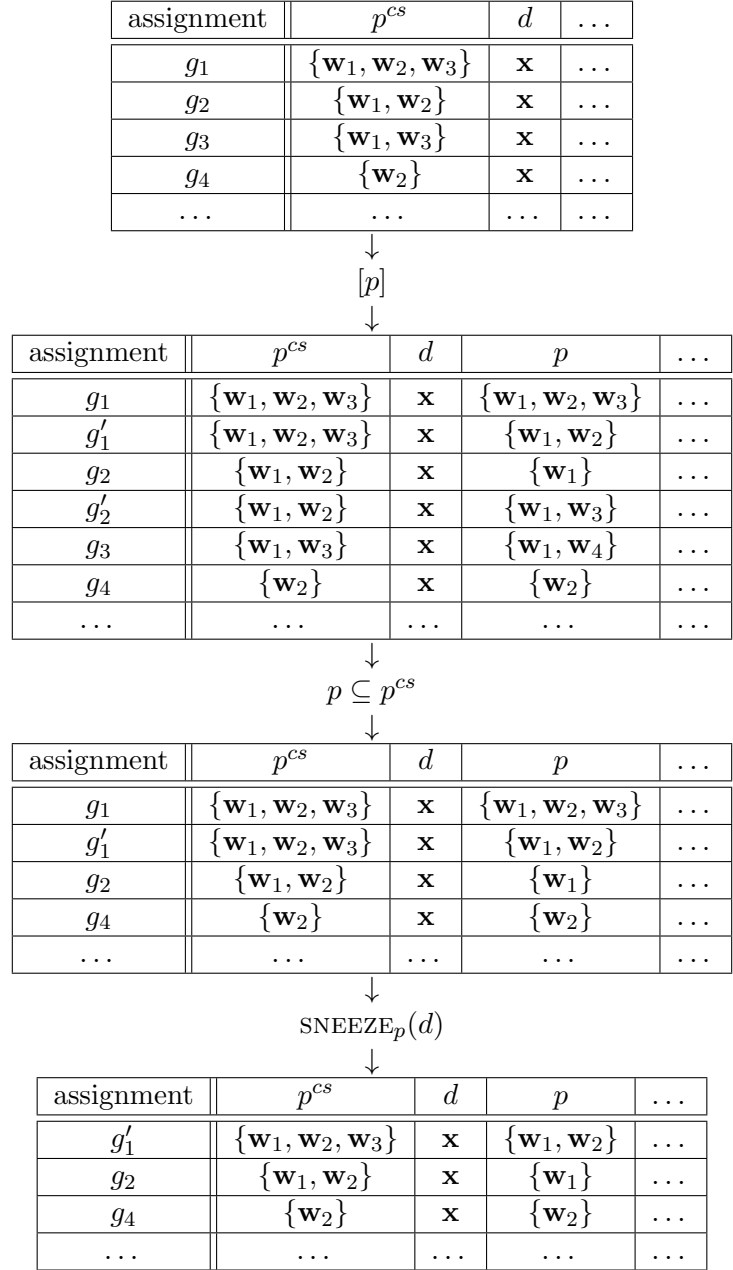


Table 6.8: Partial representation of a context and updates

In the first step in which the variable p is added, assignments assigning all possible values to p are added to the context. Then, with the restriction of p to a subset of p^{cs} , some of these are eliminated (g'_2 and g_3). Then, claiming that the $g(d)(w)$ (for any given w in p)

sneezed eliminates from the interpretation of p any worlds w in which $g(d)(w)$ didn't sneeze, specifically \mathbf{w}_3 . This eliminates g_1 , where \mathbf{w}_3 is an element of p from consideration.

Now, assume that the entire utterance in this example is just *he sneezed*. Then at the final step in Table 6.8, the interpretation of the content of that utterance is complete. At that point, for each assignment, p stores a subset of the worlds w in p^{cs} at which $g(d)(w)$ sneezed. How the update proceeds from here depend on whether or not p is accepted by the addressee. If it is, then p is added to the common ground. This is accomplished by including a conjunct for acceptance in the logical language:

$$(206) \quad \mathbf{Acceptance}: [p^{cs}] \wedge p^{cs} = p$$

If p is accepted, then (206) says to introduce a new variable for p^{cs} and then sets it equal to p .

Doing this reflects the reduction of the context set to worlds in which the content of the accepted utterance holds, as in Table 6.9.

assignment	p^{cs}	d	p	...
g'_1	$\{\mathbf{w}_1, \mathbf{w}_2\}$	\mathbf{x}	$\{\mathbf{w}_1, \mathbf{w}_2\}$	...
g_2	$\{\mathbf{w}_1\}$	\mathbf{x}	$\{\mathbf{w}_1\}$	...
g_4	$\{\mathbf{w}_2\}$	\mathbf{x}	$\{\mathbf{w}_2\}$	...
...

Table 6.9: Partial representation of a context after acceptance

Note that acceptance has the desired effect of eliminating from the context set worlds in which d did not sneeze. Specifically, \mathbf{w}_3 is no longer a member of $g'_1(p^{cs})$. Then, when a new utterance is begun, p itself is reset, just as p^{cs} is on acceptance, and p stores the content of the new utterance.

With the addition of acceptance, the entire process of asserting *He sneezed* and having it accepted can be represented as in (207). There, and in subsequent examples, I follow ABH's mode of presentation and separate different parts of the full expression for the sake

of clarity. However, as indicated by the \wedge symbol at the end of each of the first two lines, in the logic all of (207) is a single expression.

- (207) a. **New proposal:** $[p] \wedge p \subseteq p^{cs} \wedge$
 b. **Content:** $\text{SNEEZE}_p(d) \wedge$
 c. **Acceptance:** $[p^{cs}] \wedge p^{cs} = p$

The instruction for updating the context determined by an accepted utterance of *he sneezed* is just the interpretation of (207). This can be represented as in (208).

(208) Interpretation of (207):

$$[[p] \wedge p \subseteq p^{cs} \wedge \text{SNEEZE}_p(d) \wedge [p^{cs}] \wedge p^{cs} = p]^{\mathfrak{M}, \langle g, h \rangle}$$

(208) yields the sequence of updates represented in Tables 6.8 and 6.9, given the toy model and context introduced above. Below, in general, I will follow ABH’s convention and just write logical forms, dropping interpretation brackets.

Stepping back, a key observation about this system is that updating p^{cs} depends on acceptance. If p is not accepted, then its content has no impact on p^{cs} . Without acceptance, for any given assignment, p^{cs} retains its original value. And, for the entire context, p^{cs} retains the same range of values. It is for this reason that p constitutes a proposal to update p^{cs} , not a direct update of p^{cs} . That proposal can be rejected, in which case no update occurs. In contrast, p itself is updated directly as part of the interpretation of the utterance. The last transition in Table 6.8 makes this clear. The addressee has no say in the update of p . It happens automatically.

Another important observation is that what might typically be thought of as discourse or pragmatic functions are included in the logical language. In particular, these include a representation of the introduction of a new proposal ($[p] \wedge p \subseteq p^{cs}$) and a representation of acceptance ($[p^{cs}] \wedge p = p$). I don’t think this commits ABH to the idea that there are “assertion” or “acceptance” operators in the syntax. Certainly I don’t want to be committed

to this idea. Rather, I take it to be an artifact of representing the evolution of the discourse in the logic itself rather than just in changes to the model.

ABH leverage these two facts about the system—that some propositional drefs can be updated directly and that pragmatic functions can be included in logical form—to propose a novel solution to the problem of the projection of the content of appositive and appositive relative clauses (henceforth, just “appositives”). Appositives are supplemental comments that provide additional, novel information about a discourse referent (Potts, 2005). They are exemplified in (209).

(209) Kim, (who is) a circus performer, is quite limber.

In (209) the appositive is *(who is) a circus performer*. It predicates being a circus performer of the dref introduced by the interpretation of *Kim*.

ABH’s innovation is to allow p^{cs} to be directly updated without the addressee’s acceptance, just like p . In other words, just as the interpretation of $\text{SNEEZE}_p(d)$ directly updates p by restricting it to worlds w in which $g(d)(w)$ sneezed, interpreting an appositive directly updates p^{cs} . Thus an appositive “imposes” its content on the common ground. For example, in the translation of *Jerry, who sneezed, excused himself*, the appositive *who sneezed* is represented as $\text{SNEEZE}_{p^{cs}}(d)$, where the interpretation of d is an individual concept that maps all worlds in the context set to Jerry. Interpreting the appositive thus eliminates assignments that assign to p^{cs} worlds in which Jerry did not sneeze. 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} , though they do not represent the comma intonation itself in their logical forms.

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 .¹¹ Second, combined with a suitable analy-

¹¹The at-issueness data are actually more complicated. See ABH, Koev 2013, Nouwen 2014, and Martin to appear for discussion.

sis of entailment canceling operators, analyzing appositives as direct updates to p^{cs} predicts that they are projective. To see why, consider ABH’s analysis of entailment canceling operators as exemplified by sentential negation in (210).

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

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

In (210), p is the update proposal that negation is part of, and p' is a new propositional dref introduced by negation.¹² p' stores the content of the material embedded under negation, ϕ , 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 (210a) using the **max** relation, is that h assigns to p' the maximal set of worlds compatible with the interpretation of ϕ . **max** is defined in (211). There $h(p') \subsetneq h'(p')$ says that $h(p')$ is a proper subset of $h'(p')$.

(211) ABH’s (2005:46) **max**: $\llbracket \mathbf{max}^{p'}(\phi) \rrbracket \langle g, h \rangle = \top$ iff

- a. $\llbracket [p'] \wedge \phi \rrbracket \langle g, h \rangle = \top$ and
- b. there is no h' s.t. $\llbracket [p'] \wedge \phi \rrbracket \langle g, h' \rangle = \top$ and $h(p') \subsetneq h'(p')$

The second condition imposed by negation is represented in (210b). (210b) 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 (212) in (213) shows how the analysis accounts for projection. It also illustrates, in (213b), ABH’s treatment of proper names. They analyze proper names as introducing a dref and then setting it equal to a constant function from worlds to individuals,

¹²If negation is embedded, p is the propositional dref introduced by the embedding operator.

i.e. a constant individual concept. The introduction of the dref d is discussed in more detail below.

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

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

In (213b), the final conjunct introduces the new propositional variable p' . Then, in (213d), $\text{SNEEZE}_{p'}(x)$ is an update to p' , making all worlds in p' worlds where Jerry sneezed. Due to the condition on the interpretation of NOT in (210b), limiting p' in this way forces p to contain only worlds where Jerry did not sneeze. In contrast, even though the appositive is embedded under sentential negation, the appositive content is just $\text{EMPLOYEE}_{p^{cs}}(d)$ in (213c) due to the conventional content of the comma intonation. Embedding does not change the appositive's contribution to the common ground. The entailment that Jerry is an employee projects. Ultimately, in Chapter 7, I'll propose a revision to ABH's analysis of appositives. However, throughout I'll make use of this technology to allow particular content to target particular propositional variables.

Above, I mentioned that it would be necessary to revisit the definition of dref introduction. Now we have the background to do so. Note that in (213b) the dref for an individual concept d is introduced with the subscript p . That indicates that d is introduced as part of the interpretation of p . As a result, d is taken to be defined over all of the worlds in p . Those worlds are its domain. This depends on an amendment to the general rule for dref introduction given in (198). In addition to introducing individual concept dref d , the rule for dref introduction must also specify d 's domain, as in (214).

(214) **Dref introduction** (final; adapted from ABH: 124):

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

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

(214b) shows that, in the general case, when d is introduced, the propositional variable subscript represents the domain over which d is defined. For linguistically introduced drefs, this is determined by the position of the introducing expression in the logical form of the utterance. (214c) gives a special case, which is when the propositional variable is the variable for update proposal p . If p is the at-issue proposal, the domain of d 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.

One final observation: this framework does not handle sub-sentential composition. In that respect, it is like DRT and dynamic predicate logic, its predecessors. Modifying it to do so is a task for future work.

6.3 Analyzing the anchoring implication

Now it's time to model the anchoring implication. I start with an informal, simplified version in order to focus on its perspectival nature. Informally, what the anchoring implication says is that in every centered world that is part of the anchor's doxastic perspective, the center

is located at the destination. In other words, it is consistent with the anchor’s doxastic perspective that she is located at the destination. To state this implication in ABH’s system, I need to say what it means for an implication to be interpreted with respect to a set of centered worlds rather than just a set of worlds. This requires type-lifting some definitions.

6.3.1 Relativizing interpretation to doxastic perspectives

For logical constants such as dynamic conjunction, there is no change. However, for discourse referent introduction, there is a change to the way in which domains are determined. There is also a change to the way atomic formulas are interpreted. These are given in (215) and (216), respectively.

(215) **Discourse referent introduction** (type-lifted for centered worlds):

- Given assignments g and h and centered worlds proposition q , $\llbracket [d_q] \rrbracket^{(g,h)} = \top$ iff
- a. for any variable v (of any type) s.t. $v \neq d$, we have that $g(v) = h(v)$,
 - b. $\mathbf{dom}(h(d)) = \{\mathbf{w} | \langle \langle \mathbf{x}, \mathbf{t} \rangle, \mathbf{w} \rangle \in h(q)\}$

(216) **Interpretation of atomic formula** (type-lifted for centered worlds):

- Given a centered worlds proposition q and individual concept d , $\llbracket \text{SNEEZE}_q(d) \rrbracket^{(g,h)}$
- a. presupposes $\{\mathbf{w} | \langle \langle \mathbf{x}, \mathbf{t} \rangle, \mathbf{w} \rangle \in h(q)\} \subseteq \mathbf{dom}(h(d))$ and
 - b. $= \top$ iff $g = h$ and for all worlds \mathbf{w} s.t. $\{\mathbf{w} | \langle \langle \mathbf{x}, \mathbf{t} \rangle, \mathbf{w} \rangle \in h(q)\}$,
 $h(d)(\mathbf{w}) \in \mathfrak{F}_{\mathbf{w}}(\text{SNEEZE})$

(215) says that a discourse referent introduced relative to a centered worlds propositional variable q is defined over all of the worlds that are world components of an element of q . Similarly, (216) says that predication, relativized to a set of centered worlds, is true just in case it is true in all of the worlds that are components of a centered world in the set.

Next, we need a way to identify a discourse referent that picks out the centers of the centered worlds. This is defined using the SELF function in (217).

(217) Given a set of centered worlds, q , and an individual concept d , $\llbracket \text{SELF}_q(d) \rrbracket^{\mathfrak{M}, \langle g, h \rangle} = \top$
iff $g = h$ and for all $\langle \mathbf{x}, \mathbf{t} \rangle, \mathbf{w} \in h(q)$, $h(d)(\mathbf{w}) = \mathbf{x}$.

(217) says that a discourse referent d represents the self-concept associated with a set of centered worlds, or doxastic perspective, q , just in case it maps all worlds in that set to the individual who is the center at that world.

6.3.2 The anchoring implication

Imagine that we don't need a spatial semantics and can just define a predicate AT-DESTINATION. Then the anchoring implication would presuppose that there is some salient doxastic perspective q , and it would look like this:

(218) **Anchoring implication** (to be revised): $[d_q] \wedge \text{SELF}_q(d) \wedge \text{AT-DESTINATION}_q(d)$

The anchoring implication in (218) requires the anaphoric retrieval of a salient doxastic perspective, or set of centered worlds. Then, it says for worlds in this set, the center is located at the destination (at the appropriate time; assume that's part of the meaning of AT-DESTINATION). Put another way, whoever's doxastic perspective this is, she believes herself to be located at the destination. In Lewis's terms, this doxastic perspective entails self-locating at the destination, or self-ascribing the property of being located at the destination.

To show how this works in more detail, I add an informal representation of the rest of the semantic content of *come*. I continue to ignore the spatial semantics and use a predicate COME-TO to indicate motion by the subject of *come* to the destination. Then, (220) represents the translation of (219).

(219) [Context: Ron is in Columbus. He is talking on the phone to Andy, in Pawnee. He says:]

Leslie is coming to Columbus.

Because the anchoring implication must be evaluated against an anchor’s perspective, it presupposes that there is a familiar, salient perspective available in the discourse context. Here, there are two. They are $q^{\odot*}$ and $q^{\odot\odot}$. The anchoring implication will be incompatible with $q^{\odot\odot}$, so I ignore it going forward. Then the translation of (219) is as given in (220).

(220) Translation of (219) (to be revised):

- a. **New proposal:** $[p] \wedge p \subseteq p^{cs} \wedge$
- b. **At-issue:** $[d_{1p}] \wedge d_1 = \text{LESLIE} \wedge [d_{2p}] \wedge d_2 = \text{COLUMBUS} \wedge \text{COME-TO}_p(d_1, d_2) \wedge$
- c. **Anchoring implication:** $[d_{3q^{\odot*}}] \wedge \text{SELF}_{q^{\odot*}}(d_3) \wedge \text{AT-DEST}_{q^{\odot*}}(d_3) \wedge$
- d. **Acceptance:** $[p^{cs}] \wedge p^{cs} = p$

In (220b), the at-issue content of (219) is given. This content is just the implication that Leslie came to Columbus. It is part of the proposal p , which updates the common ground upon acceptance. (220c) gives the anchoring implication. The anchoring implication, in contrast, updates $q^{\odot*}$, the speaker’s doxastic perspective, with the information that this doxastic perspective includes self-location in Columbus. This is compatible with the context, so the implication goes forward.

Of course, making normal assumptions about Ron’s competence in the context of (219), the anchoring implication was entailed by Ron’s doxastic perspective before (219) was uttered. So the update in (220c) doesn’t change the context. However, there are some examples where it does add new information. One such example is (54), repeated for convenience below.

(54) [Context: In LA, Joe and Fred have just met. As they talk, Joe mentions that he moved to California in 1985, but doesn’t say from where. Fred asks “What brought you out here?”]

Joe: When I was a teenager, my uncle, who lived in California at the time, **came** to Chicago one Christmas with stories about year round sun, beaches, and girls. That was all it took.

Translating the relevant elements of Joe’s utterance in (54) yields (221). Again, I assume that the speaker’s doxastic perspective, $q^{\odot*}$, is the only one that is salient and relevant and compatible with the anchoring implication.

(221) Translation of (the relevant parts of) (54) (to be revised):

- a. **New proposal:** $[p] \wedge p \subseteq p^{cs} \wedge$
- b. **At-issue:** $[d_{1p}] \wedge d_1 = \text{UNCLE BOB} \wedge [d_{2p}] \wedge d_2 = \text{CHICAGO} \wedge \text{COME-TO}_p(d_1, d_2) \wedge$
- c. **Anchoring implication:** $[d_3 q^{\odot*}] \wedge \text{SELF}_{q^{\odot*}}(d_3) \wedge \text{AT-DEST}_{q^{\odot*}}(d_3) \wedge$
- d. **Acceptance:** $[p^{cs}] \wedge p^{cs} = p$

In (54), the anchoring implication adds new information to the context. Before the update with (221c), there were worlds in Joe’s doxastic perspective where he was in Chicago, in Minneapolis, in Bangkok, etc. That’s because the context didn’t entail anything about Joe’s location. After the utterance, the Joe’s doxastic perspective is reduced to worlds where the center was located in Chicago (at the relevant time). Due to the condition on well-formed contexts in (194), this results in a reduction of the worlds assigned to p^{cs} as well. Specifically, p^{cs} worlds are limited to those worlds for which DOX maps Joe to a doxastic state in which he was in Chicago. On the standard assumption that Joe was self-aware and so on, this restricts p^{cs} to worlds where Joe actually was in Chicago.

Next, I consider how the current system deals with deictic perspective shift under attitudes.

6.3.3 Deictic perspective shift and attitude predicates

In deictic perspective shift under attitude predicates the centers introduced by attitude predicates are available only in the scope of the attitude. To account for this local availability, first I develop an analysis of attitude predicates in the current framework accounts for the introduction of local discourse centers and thus local perspectives. Then I analyze different types of examples in which *come* is embedded under attitude predicates.

Attitude predicates: The proffered content of *believe* is given in (223). First, though, I make a novel claim about the meaning of *believe*, which is that it presupposes that there is a familiar doxastic perspective for the denotation of its subject at the time of the believing. For example, say the subject is translated as discourse referent d_i and the belief time is t . Then the use of *believe* triggers the presupposition that $q^{(d_i, t)}$ is familiar. This is represented more formally in (222). Its significance is discussed once the rest of the content of *believe* is introduced.

(222) **Presupposition of *believe*:** For any input assignment g , individual concept d_i , time t , and formula ϕ , $\llbracket \text{BEL}_p^{p'}(d_i, t, \phi) \rrbracket^{(g, h)}$ is defined iff there is some familiar propositional variable $q^{(d_i, t)}$ such that $\text{DOX}'(\langle g(d_i), g(t) \rangle), g(p^{cs}), g(q^{(d_i, t)})$

According to (222), *believe* presupposes that there is a familiar information state, $q^{(d_i, t)}$, that stores d_i 's doxastic perspective at t in every world in the update proposal, p . (222) requires $p^{(x, t)}$ to be the beliefs of d_i at t according to the common ground. In essence, this means that (222) requires the context to entail something about d_i 's beliefs. This presupposition is trivially satisfied for any suitable agent of belief by default assumptions about all doxastic agents, as discussed in Section 6.1.2. In other words, provided that the right kind of subject—one capable of having beliefs—is supplied, the presupposition will be satisfied. Thus, the presupposition encodes the selectional restriction of *believe* to individuals with doxastic states, and predicts e.g. *!That door believes you're ugly* to be semantically anomalous.

It is important to note that although all doxastic agents are assumed to have beliefs, no discourse center $\langle d_i, t \rangle$ 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 d_i 's beliefs are calculated. Together the introduction of the belief time and the presupposition of *believe* cause the local discourse center for the attitude holder at belief time to become familiar and salient.

Now consider the BEL operator mentioned in (222). It is at the heart of the meaning of *believe*. It is interpreted relative to p , the proposal under which it is introduced. It introduces a propositional variable p' . As with the NEG operator, p' stores the content of ϕ , the logical form of the embedded clause. As mentioned above, d_i is a discourse referent that corresponds to the subject of *believe*. t is the event time for the believing eventuality. The definition is given in (223) and discussed below.

$$(223) \text{ believe: } \llbracket \text{BEL}_p^{p'}(d_i, t, \phi) \rrbracket^{(g,h)} = \top \text{ iff}$$

- a. $\llbracket \mathbf{max}_{q^{(d_i,t)}}^{p'}(\phi) \rrbracket^{(g,h)} = \top$ and
- b. $\{\mathbf{w}' | \langle \langle \mathbf{x}, \mathbf{t} \rangle, \mathbf{w}' \rangle \in h(q) \wedge \text{DOX}'(\langle h(d_i), h(t) \rangle, h(p), h(q))\} \subseteq h(p')$

(223a) employs an adaptation of the **max** function defined in (211) above. As in (211), here **max** introduces a novel propositional dref, p' . However, unlike **max** above, here **max** is relativized to $q^{(d_i,t)}$, the doxastic perspective of the agent of *believe* at belief time, in a way made explicit in (224). (224) shows that **max** uses the attitude holder's doxastic perspective to constrain the value of p' , which stores the content of the embedded clause.

$$(224) \text{ max (revised): } \llbracket \mathbf{max}_{q^{(d_i,t)}}^{p'}(\phi) \rrbracket^{(g,h)} = \top \text{ iff}$$

- a. $\llbracket [p'] \wedge [p^{(d_i,t)}] \wedge p' \subseteq p^{(d_i,t)} \wedge \phi \rrbracket^{(g,h)} = \top$ and
- b. $h(p^{(d_i,t)}) = \{\mathbf{w}' | \langle \langle \mathbf{x}, \mathbf{t} \rangle, \mathbf{w}' \rangle \in h(q^{(d_i,t)})\}$ and
- c. there is no h' s.t. $\llbracket [p'] \wedge [p^{(d_i,t)}] \wedge p' \subseteq q^{(x,t)} \wedge \phi \rrbracket^{(g,h')} = \top$ and $h(p') \subsetneq h'(p')$

(224a) requires p' to be a subset of $p^{(d_i,t)}$. (224b) says that $p^{(d_i,t)}$ is just the un-centered version of $q^{(d_i,t)}$, d_i '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 d_i 's doxastic perspective and in which ϕ , the embedded content, holds.

The requirement that $p' \subseteq p^{(d_i,t)}$ means that existence presuppositions encoded in ϕ must be satisfied in worlds in $q^{(d_i,t)}$. 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 (225).

(225) 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 (225) is just $\text{STRADIVARIUS}_{p'}(d_j)$, where d_j is the translation of *it*, and p' is the propositional variable storing the content of the embedded clause. For $\text{STRADIVARIUS}_{p'}(d_j)$ to be felicitous, d_j must be defined over p' worlds. The anaphoric presupposition of *believe* ensures that it is. **max** in (224) requires p' to be a subset of (the un-centered version of) Stanley’s anaphorically retrieved doxastic state, $q^{(d_i, t)}$, where d_i is the dref introduced by the translation of *he*. The first utterance of (225) guarantees that there is a dref for a cello that is defined over all of those worlds, and thus over all worlds in p' .¹³ In addition, note that it is necessary to assume that drefs defined over worlds in p^{cs} are available under attitudes in order to allow *de re* interpretations (see ABH: 126 for discussion).

The presupposition in (222), and the adaptation of **max** in (224) account for the introduction of a new discourse center as part of interpreting an utterance with *believe*. The discourse center’s perspective is relevant in the embedded context because p' , the dref storing the content of ϕ , is a subset of $p^{(d_i, t)}$, which stores the (un-centered version of) center’s perspective. Thus, the interpretation of particular expressions in ϕ , including for example anaphoric expressions, involves using information in $q^{(d_i, t)}$. $q^{(d_i, t)}$ and its center are relevant in this way only in the scope of the attitude and any subsequent modal subordination environments.

The second condition in the meaning of *believe* is repeated as (226).

(226) $\{\mathbf{w}' | \langle \langle \mathbf{x}, \mathbf{t} \rangle, \mathbf{w}' \rangle \in h(q) \wedge \text{DOX}'(\langle h(d_i), h(t) \rangle, h(p), h(q))\} \subseteq h(p')$

¹³If other attitude predicates such as *hope* and *wish* are assumed have presuppositions similar to (222), then the current system gets results similar to Heim’s (1992). Presuppositions of content embedded under those predicates are satisfied according to the commitments of the attitude holder.

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

Come under attitudes Now, let's consider an example involving deictic perspective shift under attitudes: (227), which is translated in (228).

(227) [Context: Mary (in San Diego) believes that she is in Denver. Jeremy, in San Jose, tells Amy about Mary's delusion (that she is in Denver). Then he says:]

Mary believes that John came to Denver.

(228) Translation of (227) (to be revised):

- a. **New proposal:** $[p] \wedge p \subseteq p^{cs} \wedge$
- b. **At-issue:** $[d_{1p}] \wedge d_1 = \text{MARY} \wedge [d_{2p}] \wedge d_2 = \text{JOHN} \wedge [d_{3p}] \wedge d_3 = \text{DENVER} \wedge \text{BEL}_p^{p'}(d_1, t,$
 - i. **Motion:** $\text{COME-TO}_{p'}(d_1, d_2)$
 - ii. **Anchoring:** $[d_{3q(d_1, t)}] \wedge \text{SELF}_{q(d_1, t)}(d_3) \wedge \text{AT-DEST}_{q(d_1, t)}(d_3))$
- c. **Acceptance:** $[p^{cs}] \wedge p^{cs} = p$

In (228b) discourse referents for Mary, John, and Denver are introduced. For simplicity, they're assumed to scope wide in the syntax. (228b) also introduces the interpretation of *believe* in terms of the BEL operator. BEL introduces a propositional variable p' to store the worlds compatible with the embedded content. It also anaphorically retrieves the attitude holder, Mary's, doxastic perspective and requires p' to be entailed by it. Then (228b-i) indicates that p' worlds are those where John came to Denver. The proposal, p , is thus to update the common ground to include p worlds, those at which Mary's doxastic state entails that John came to Denver. (228b-ii) gives the anchoring implication. In contrast to (228b-i) it is not part of p' and thus does not contribute to the proposed update p . Instead,

it updates Mary's doxastic perspective with the information that she takes herself to be in Denver. This is compatible with the context, and the example is correctly predicted to be acceptable.

(228) shows that there is a sense in which, in examples involving deictic perspective shift, the motion implication and the anchoring implication target the same set of worlds for update: the worlds compatible with the agent/anchor's beliefs, $q^{(d_i,t)}$. The motion implication does so as part of a proposal to update the common in a way that restricts $q^{(d_i,t)}$ to worlds in which John traveled to Denver. The anchoring implication directly updates $q^{(d_i,t)}$ so that it includes only worlds in which Mary is in Denver. Thus, this approach makes use of both of ABH's update mechanism to account for the observation that when the anchor is an attitude holder, *come* appears to have local effect (Oshima, 2006b; Barlew, 2016b).

At this point, I want to consider what made Mary the anchor in (227). Did she have to be? The short answer is no. I've argued that the relevant doxastic perspective is anaphorically interpreted, not grammatically determined. Here's a piece of evidence in favor of that claim. In many cases, as noted above in discussions of obligatory local effect, *come* is embedded, but the anchor is not the attitude holder. An example is given in (229) and analyzed in (230).

- (229) [Context: The interlocutors are in Denver, but Mary does not know this. However, she just told the speaker that, as far as she knows, John traveled to Denver.]
Mary believes John came to Denver.

(230) Translation of (229), ignoring tense:

- a. **New proposal:** $[p] \wedge p \subseteq p^{cs} \wedge$
- b. **At-issue:** $[d_{1p}] \wedge d_1 = \text{MARY} \wedge [d_{2p}] \wedge d_2 = \text{JOHN} \wedge [d_{3p}] \wedge d_3 = \text{DENVER} \wedge$
 $\text{BEL}_p^{p'}(d_1, t,$
 - i. **Motion:** $\text{COME-TO}_{p'}(d_1, d_2)$
 - ii. **Anchoring:** $[d_{3q^{\odot*}}] \wedge \text{SELF}_{q^{\odot*}}(d_3) \wedge \text{AT-DEST}_{q^{\odot*}}(d_3)$
- c. **Acceptance:** $[p^{cs}] \wedge p^{cs} = p$

In (230), everything proceeds just as in (228) until the anchoring implication in (230b-ii). There, anchoring is relativized to the speaker's doxastic perspective, $q^{\odot*}$, rather than the attitude holders. Thus, (229) is still a proposal to update the common ground by updating its entailments about Mary's beliefs regarding John's travels. If it's accepted, updates the context is updated with the information that Mary believes John traveled to Denver. Modeling the anchoring implication as in (230b-ii) correctly predicts that it is a commitment of the speaker, and that the attitude holder need not know anything about it. She can falsely believe that the interlocutors are elsewhere, and (229) is still acceptable.

The analysis of anchoring presented here also 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 also 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 (231) (see Heim 1992).

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

In (231), 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, but it should be clear from this analysis of *believe* how they will be defined.

Having established how the update with the anchoring implication works in this system, the next question is how this account fares with respect to the generalizations laid out at the beginning of this chapter. I consider each in turn in the following sections.

6.3.4 *De se* ANCHORING

By predicating being at the destination of the center of all centered worlds in a doxastic perspective, this analysis predicts that the anchoring implication is a *de se* commitment. To see how that works out, recall examples (18)-(19), repeated here for convenience.

- (18) [Context: Baseball player Ernie Banks is hit on the head and knocked out. While unconscious, he is taken from Chicago, where he lives and plays baseball, to a hospital in Boston. When he awakens, he has amnesia. After 3 weeks in Boston, he still doesn't know who he is. However, he has been watching TV and reading. Ernie and his doctor, Pam, often talk about what Ernie learns on TV, including what he learns about baseball. Ernie knows that Pam is an avid baseball fan who knows a lot about players from all of the major league teams, as well as an avid follower of President Obama. One day, Ernie watches a news video from one month ago showing President Obama shaking hands with Ernie Banks at home plate at Wrigley Field, the home stadium of the Chicago Cubs. Later, Pam checks on Ernie. Pam has never been to Chicago. Ernie, says:]

- a. #President Obama **came** to Wrigley Field four weeks ago. He threw out the first pitch.
- b. President Obama **{traveled/went}** to Wrigley Field four weeks ago. He threw out the first pitch.

(19) [Context: Identical to (18), except that Ernie regains his memory.]

President Obama **came** to Wrigley Field four weeks ago. He threw out the first pitch.

First, consider (18). The context makes salient two doxastic perspectives: Ernie's, which is $q^{\odot*}$, and Pam's, which is $q^{\odot\odot}$. Since Pam has never been to Chicago, hers is not considered further. Assume, then, that $q^{\odot*}$ is the anaphorically retrieved doxastic perspective. Then the translation of (18) is given in (232).

(232) Translation of (the relevant parts of) (18) (to be revised):

- a. **New proposal:** $[p] \wedge p \subseteq p^{cs} \wedge$
- b. **At-issue:** $[d_{1p}] \wedge d_1 = \text{OBAMA} \wedge [d_{2p}] \wedge d_2 = \text{WRIGLEY FIELD} \wedge$
 $\text{COME-TO}_p(d_1, d_2) \wedge$
- c. **Anchoring implication:** $[d_3 q^{\odot*}] \wedge \text{SELF}_{q^{\odot*}}(d_3) \wedge \text{AT-DEST}_{q^{\odot*}}(d_3) \wedge$
- d. **Acceptance:** $[p^{cs}] \wedge p^{cs} = p$

The at-issue component of (18) is just that President Obama traveled to Wrigley Field. The anchoring implication is given in (232c). It says to update Ernie's doxastic perspective with the content that he was at Wrigley Field when Obama visited. The problem is that doing this causes a contradiction with the common ground. The common ground, as stored in p^{cs} , entails that Ernie doesn't know where he was four weeks ago. Put more technically, the common ground requires that for any q^{\odot} such that $\text{DOX}'(\langle d_i, t \rangle, p^{cs}, q^{\odot})$, where d_i maps to Ernie and t maps to four weeks ago, the centers of the centered worlds in q^{\odot} must self-locate in all sorts of different places: Chicago, Minneapolis, Bangkok, wherever. That's what it means for Ernie not to know where he was. His doxastic alternatives have to include the possibility that he was pretty much anywhere. Thus, updating $q^{\odot*}$ with the information that the center was at Wrigley field yields a contradiction, and the example is correctly predicted to be unacceptable. Contrast this with (19), where Ernie regains his memory. There is no contradiction, and the example is predicted to be acceptable.

The same observations apply, *ceteris paribus*, to embedded examples. Consider (15) and (16), repeated for convenience.

(15) [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. The doctor later tells her friend:]

a. #Ernie believes that President Obama **came** to Chicago.

b. Ernie believes that President Obama **traveled** to Chicago.

(16) [Context: Identical to (15), except that Ernie regains his memory.]

Ernie believes that President Obama **came** to Chicago.

In the context in (15), the possible anchoring doxastic perspectives are the doctor's, the friend's, and Ernie's. By hypothesis, the doctor's and the friend's are not relevant (if they were, this would be a different kind of example). So, I focus on Ernie's. Ernie's doxastic perspective at utterance time is made familiar, salient, and relevant by its retrieval as part of the interpretation of *believe*, as described in the previous section. The translation of (15a) is given in (233).

(233) Translation of (15a) (to be revised):

a. **New proposal:** $[p] \wedge p \subseteq p^{cs} \wedge$

b. **At-issue:** $[d_{1p}] \wedge d_1 = \text{ERNIE} \wedge [d_{2p}] \wedge d_2 = \text{THE DOCTOR} \wedge [d_{3p}] \wedge$
 $d_3 = \text{CHICAGO} \wedge \text{BEL}_p^{p'}(d_1, t,$

i. **Motion:** $\text{COME-TO}_{p'}(d_1, d_2)$

ii. **Anchoring:** $[d_{3q^{(d_1, t)}}] \wedge \text{SELF}_{q^{(d_1, t)}}(d_3) \wedge \text{AT-DEST}_{q^{(d_1, t)}}(d_3))$

c. **Acceptance:** $[p^{cs}] \wedge p^{cs} = p$

(233) shows that (15a) runs into the same problem as discussed above. The anchoring implication (233b-ii) updates Ernie’s doxastic perspective with the information that, at the relevant time, he was in Chicago. However, this leads to a contradiction, because the common ground already entails that Ernie’s doxastic perspective does not include this self-locating information.

Thus, in both matrix and embedded cases, this system makes the correct prediction that the anchoring implication must be a *de se* commitment of the anchor. The same observation applies, *ceteris paribus*, for the *de se* anchoring of *zu* ‘come_{zu}’.

6.3.5 SALIENT-PERSPECTIVE ANCHORING

The present account predicts that the anchor of *come* is an individual with a salient, relevant perspective. That’s because the anchoring implication anaphorically retrieves such a perspective. To be retrievable, this perspective must be salient and relevant.

The situation is not so simple with *zu* ‘come_{zu}’. One element of variation between *come* and *zu* ‘come_{zu}’ is that *zu* ‘come_{zu}’ restricts acceptable anchors to the speaker and the addressee. The way to model this is to limit the anaphorically retrieved doxastic perspective to q^{\odot^*} and $q^{\odot^{\otimes}}$. This can be stipulated in as a domain restriction: $q \in \{q^{\odot^*}, q^{\odot^{\otimes}}\}$.¹⁴ Similarly, the anchoring of Shibe *ji* ‘come’ to only the speaker, for example, could be represented as a domain restriction to $q \in \{q^{\odot^*}\}$. In addition, the difference between anchoring at utterance time and anchoring at event time can be represented as a condition on the time element of discourse centers to which these perspectives are available. Thus, the

¹⁴Searching for a non-stipulative account where this restriction falls out is a task for future work. One possibility is to assume, following Ninan (2010), Torre (2010), and Kindermann (2016) and assume that the right way to represent the context set is with multi-centered worlds, not un-centered worlds. On this assumption, the context set consists of centered worlds the center of which is a tuple of individuals, possibly limited to the interlocutors, and certainly with designated slots in the tuple for each interlocutor. If the context were represented in this way, then the restriction to interlocutor anchors in the meaning of *zu* ‘come_{zu}’ could be modeled as a domain restriction to centered worlds in p^{cs} . This would make the anchoring update of *zu* ‘come_{zu}’ a true direct update or imposition on the common ground in the sense intended by ABH. For now, I leave investigating this possibility for future work, and content myself with being able to state the restriction clearly.

current system allows for the representation, in formal terms, of all of the cross-linguistic variation in deictic motion verb anchoring discussed by e.g. Gathercole (1978), Nakazawa (2007), and Oshima (2006a).

At present, however, all the account can do is represent this variation. It does not offer an explanatory account of it. In other words, it does not predict implicational generalizations such as the generalization that any deictic motion verb with allows anchoring to the addressee will also allow anchoring to the speaker, and the generalization that any deictic motion verb which allows anchoring at event time will also allow anchoring at utterance time. On the current account, it is reasonable to expect that there could be a deictic motion verb that allows anchoring only to the addressee, i.e. one with the domain restriction $q \in \{q^{\text{Ⓢ}}\}$. However, to date, no such deictic motion verb has been documented. It is not yet clear whether allowing for such verbs is a blessing or a curse. While the implicational generalizations in the literature are real, they are based on a relatively small sample of deictic motion verbs from a relatively small sample of languages. Thus, they may not hold when more data are gathered. Assuming they do, though, it is a task for future work to understand why these implicational generalizations hold, and what they tell us about the relations between different perspectives and perspective holders being tracked in the discourse context. It is worth noting that this is a task for every account. No previous account predicts the implicational data, except to the extent that they include them directly in the theory (c.f. Oshima's (2006a) conditions on RP membership).

6.3.6 PERSPECTIVE-ONLY ANCHORING

Recall that, in some cases, the speaker makes a perspective available that is not her own doxastic perspective but is a centered perspective that she has access to. In those cases, repeated below for convenience, the speaker presents physical information associated with a centered perspective located at the destination, or else indicates that she has access to such information.

- (35b) [Context: Ann loves to watch a badger web cam from a state park in Wisconsin. The web cam shows a clearing in the park. Today, she opens the website, and then says to Chris:]
 Ooh, a badger just **came** to the clearing.
- (36b) [Context: Leslie says: *Last night while doing guided imagery I pictured a little cabin in the woods with no one around.*]
 I pictured Ron **coming** out of the cabin and beginning to cut wood.
- (37b) (adapted from Fillmore 1975: 67) [Context: The speaker is not on the island. She says: *There on the uninhabited island, waves lap upon the shore. Beaches sit empty as they have for millennia.*]
 Occasionally, a loon **comes** to the island to roost.

On the assumption is that the context makes familiar and salient a centered information state such that the centers of that state are located at the destination, these examples fall out on the current account. Take (35b) as an example. There, the camera located in the state park offers the same kind of visual/perceptual access that a human would have were she located at that spot. Once Ann indicates that she has access to the perceptual information the camera makes available, then there is a set of centered worlds that is familiar and salient such that in it Ann's consciousness is located at the state park. Note that this isn't Ann's doxastic state, but it's of the same type as Ann's doxastic state. It's an imagination state of sorts. Following Heim (1982), Roberts (1996), and Anand (2011), I assume that such states are manipulations of doxastic states. If we call this state q^{ca} (for "camera Ann") and assume it is entailed to exist by the context, then (35b) receives the translation in (234). Like all of the translations about, this translation is labeled "to be revised" because the formal system does not yet incorporate the spatial semantics necessary to accurately represent the path component of the anchoring implication. However, the perspectival component of the meaning will remain just as it is represented here. For convenience, I treat the definite

description *the clearing* in the same way that proper names are treated above rather than developing a treatment of definites in this system.

(234) Translation (of the relevant parts) of (35b) (to be revised):

- a. **New proposal:** $[p] \wedge p \subseteq p^{cs} \wedge$
- b. **At-issue:** $[d_{1p}] \wedge \text{BADGER}_p(d_1) \wedge [d_{2p}] \wedge d_2 = \text{THE.CLEARING} \wedge$
 $\text{COME-TO}_p(d_1, d_2) \wedge$
- c. **Anchoring implication:** $[d_{q^{ca}}] \wedge \text{SELF}_{q^{ca}}(d) \wedge \text{AT-DESTINATION}_{q^{ca}}(d) \wedge$
- d. **Acceptance:** $[p^{cs}] \wedge p^{cs} = p$

The presupposition of *come* requires the retrieval of a salient perspective from the context. In this case, the perspective is that made available by the camera. It is salient both because the context entails that Ann is paying attention to it and because it is under discussion. The anchoring implication in (234c) says that this perspective is centered at the destination, i.e. at the clearing. In other words, for all centered worlds in the perspective, the center is located at the clearing. This is compatible with the context, so the example is predicted to be acceptable. Crucially, nothing in the way the perspective, q^{ca} is defined, requires that all of the centers in that perspective be Ann, or that the perspective be Ann's doxastic state.

This is also another place of potential cross-linguistic difference. Though more data need to be elicited, at present there is no evidence that *zu* 'come_{zu}' is acceptable in cases such as this. The difference is accounted for by the domain restriction stipulated in the previous section. If the only acceptable anchoring perspectives for *zu* 'come_{zu}' are $q^{\odot*}$ and $q^{\odot^{\otimes}}$, then q^{ca} is not accessible because it is not among them.

6.3.7 ANAPHORIC ANCHORING

This generalization is accounted for on the current analysis as well. The anchoring doxastic perspective is anaphorically retrieved, and this is given as a presupposition of *come*. Thus

the binding data are predicted and given a standard analysis.¹⁵

6.3.8 PROJECTIVE ANCHORING

This analysis predicts that the anchoring implication projects. This works in essentially the same way that the projection of appositives works for ABH. Recall that for ABH, an appositive projects because it does not update the proposal p but rather directly updates the common ground, as represented by p^{cs} . Entailment canceling operators such as negation, in contrast, target p . On the present analysis, the anchoring implication of *come* behaves similarly. It updates an anaphorically retrieved doxastic perspective rather than the proposal for update p . As a result, it is not targeted by negation. This is illustrated in (235), which is uttered in the same context as (219) and translated in (236).

(235) [Context: Ron is in Columbus. He is talking on the phone to Andy, in Pawnee. He says:]

Leslie is not coming to Columbus.

(236) Approximate translation of (235) (to be revised):

- a. **New proposal:** $[p] \wedge p \subseteq p^{cs} \wedge$
- b. **Content:** $[d_{1p}] \wedge d_1 = \text{LESLIE} \wedge [d_{2p}] \wedge d_2 = \text{COLUMBUS} \wedge$
 $\text{NOT}_p^{p'}(\text{COME-TO}_{p'}(d_1, d_2) \wedge$
- c. **Anchoring implication:** $[d_{3q}] \wedge \text{SELF}_q(d_3) \wedge \text{AT-DEST}_q(d_3) \wedge$
- d. **Acceptance:** $[p^{cs}] \wedge p^{cs} = p$

In the translation of (235) in (236), the anchoring implication is interpreted within the scope of negation. However, it is not affected by negation because it is interpreted as an update to the anaphorically retrieved doxastic perspective q .

¹⁵The unavailability of binding in some examples involving *zu* ‘come_{zu}’ requires additional investigation. This is a task for future work.

I have chosen to represent the anchoring implication as an update to the anchor's perspective due to the evidence from English that it need not be entailed by the context prior to the use of an utterance with *come* or *zu* 'come_{zu}'. This is part of what it means to say that the anchoring implication of *come* is a Class B projective content, like the content of an appositive. That said, there are examples that suggest that *come* does exercise a constraint on the context (Oshima, 2016). To emphasize these examples and treat the anchoring implication as a presupposition, the anchoring implication can be stated as a constraint on input assignments g that must hold for all g in the context.

All that's left, then, is COMPLEMENT-DEFINED ANCHORING, the generalization that for both *come* and *zu* 'come_{zu}' the location involved in the anchoring implication is defined with respect to the meaning of the complement of the deictic motion verb. It is now time to make that part of the analysis explicit.

6.3.9 COMPLEMENT-DEFINED ANCHORING

I start with *zu* 'come_{zu}' to avoid the complexities involved in dealing with path-PPs such as *to Denver* and *through the tunnel*. Still, even the analysis of *zu* 'come_{zu}', requires some additional basic and complex types, primarily to handle the spatial semantics:

(237) Additional basic types needed to analyze the meaning of *zu* 'come_{zu}':

- a. sp : points in space
- b. n : real numbers
- c. $\epsilon \subset e$: events

- (238) Additional complex types needed to analyze the meaning of *zu* ‘come_{zu}’:
- a. $r \subset \langle sp, t \rangle$: regions (path-connected sets of points, defined as a subtype in Barlew 2016b: Appendix 1)
 - b. $p \subset \langle n, sp \rangle$ paths (a continuous function from the real interval [0,1] to points in space, following Zwarts 2005: 775)
 - c. $\langle r, t \rangle$: properties/sets of regions (following Kracht (2002, 2008); Barlew (2016b), this is the type of locative phrases such as *in Denver*)

Following Zwarts (2005), a path is a continuous function from the real interval [0,1] to points in space. A given path γ maps 0 to its startpoint and 1 to its endpoint. I assume every point can automatically be type shifted to the region that contains only it (i.e. the singleton set of points) when a type mismatch occurs. This is just a variant of Partee’s (1987) IDENT type shifter from e to $\langle e, t \rangle$, adapted for points and regions. Making this assumption allows a predicate over regions to apply to the endpoint of a path, as it does in the translation of *zu* ‘come_{zu}’.

With these tools in place, recall that *zu* ‘come_{zu}’ composes with a locative marked argument, as illustrated in (91), repeated here for convenience.

- (91) [Context: Abondo and Bella are in Avebe. Guy is in Ebolowa. Guy leaves Ebolowa, traveling to Avebe. As he is traveling, Abondo says:]

Guy a zu Avebe.
 Guy 3.SG.PRS come_{zu} LOC.Avebe

‘Guy is coming to Avebe.’

(91) shows that *zu* ‘come_{zu}’ takes two arguments, a locative complement and its subject. The current system does not deal with sub-sentential compositionality, so I represent the content of *zu* ‘come_{zu}’ by translating (91) in (239). In (239), AT is a relation between an individual and a region that holds if the individual is at the region.¹⁶ e is a discourse referent

¹⁶See Kracht (2002); Barlew (2016b) for details. For simplicity, I continue to ignore times.

for an event. MOVE is a predicate with a basic motion meaning, following Talmy (1975), Goddard (1997), and Oshima (2006b). TRACE is a function from an event to the path of that event’s theme, following Zwarts (2005). LOC is a function that takes an individual as its argument and returns the region in space occupied by that individual, following Wunderlich (1991); Zwarts and Winter (2000); Kracht (2002).

(239) Translation of (91):

- a. **New proposal:** $[p] \wedge p \subseteq p^{cs} \wedge$
- b. **At-issue:** $[d_{1p}] \wedge d_1 = \text{GUY} \wedge [d_{2p}] \wedge d_2 = \text{AVEBE} \wedge [e_p] \wedge \text{MOVE}_p(d_1, e) \wedge \text{AT}(\text{TRACE}(e)(1), d_2)$
- c. **Anchoring implication:** $[d_3 q^{\circ*}] \wedge \text{SELF}_{q^{\circ*}}(d_3) \wedge \text{AT}_{q^{\circ*}}(\text{LOC}(d_3), d_2)$
- d. **Acceptance:** $[p^{cs}] \wedge p^{cs} = p$

(239b) introduces discourse referents for proper names, as in many examples above. Then, it introduces an event e , and says that e is an event in which d_1 , i.e. Guy, moves. The final conjunct says that the location designated by $\text{TRACE}(e)(1)$, i.e. the endpoint or destination of Guy’s path, is located at d_2 , i.e. Avebe. In plain English, Guy traveled to Avebe. Here AT is taken to be the contribution of the locative marker e - ‘LOC’.¹⁷

The anchoring implication is also defined in terms of the the content of the locative complement. (239c) introduces a discourse referent for the *de se* self, as in all of the

¹⁷The reader may have noticed that in different situations AT seems to take different types of arguments, sometimes an individual concept (as in the anchoring implication of *come* in Chapter 2) and sometimes a location (as in the motion implication of *zu* ‘come_{zu}’). There are two ways this can be handled. Both involve the function LOC, which maps an individual and a time to the region in space occupied by that individual (Wunderlich, 1991; Zwarts and Winter, 2000). On the first option, it is assumed that the argument of AT is a region, and there is a type-shifter that more or less just is LOC. On this story, when AT attempts to compose with an individual concept, the type-conflict triggers a type shift from individuals to regions. On the second option, it is assumed that the domain of LOC is the union of the domains of individuals and regions, and that on regions LOC is just the identity function. Then, it is further assumed that LOC is built into the meaning of AT, allowing it to take both individuals and regions as arguments. One way to implement the second approach is to assume that regions are a subtype of individuals, following (Barlew, 2016b). Since nothing hinges on which option is chosen, here I ignore the complication entirely, and give AT arguments of both types.

examples above, but this time the final conjunct is different. It says that according to $q^{\odot*}$, the anchor’s doxastic perspective, the anchor is located at Avebe. This is the desired result.

Moving on to analyze the meaning of *come*, things are slightly more complex. Following Zwarts (2005), the denotation of a PP is a set of paths with particular attributes. For example, *to x* denotes the set of paths that begin outside x , make exactly one transition to being at x , and end at x , as defined in (240) and schematized in (241). This way of schematizing paths is illustrated in Figure 6.1.

(240) **Set theoretic version of the meaning of *to x***: $\{\gamma \mid \text{there is an interval } I \subset [0, 1]$ including 1 and consisting of all the $i \in [0, 1]$ for which $\gamma(i)$ is at $x\}$.

(241) **Schematic representation of (240)**: $\{- \dots + + + \}$, where - represents an interval where the theme is not at x and + represents an interval where the theme is at x .

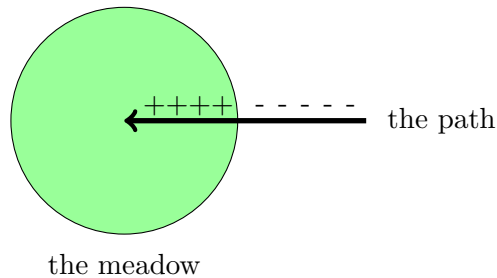


Figure 6.1: A path to the meadow

As illustrated in Figure 6.1, a path γ can be described as *to the meadow* just in case it ends in the meadow. More specifically, γ has to start outside the meadow. Therefore, $\gamma(0)$ is mapped to some location not at the meadow, a location that is symbolized with “-”. Then, at some point γ transitions to mapping elements of $[0, 1]$ to points at the meadow. These are symbolized with “+”. Finally, $\gamma(1)$, the endpoint, is at the meadow. The meaning of *to the meadow* is the set of all paths that have this structure.¹⁸

¹⁸These paths are not all as simple as the one illustrated in Figure 6.1. Some of them wind around a bit before entering the meadow, some wind around a bit after, and some enter the meadow, exit, and return. The key is that all of them start not at the meadow and end at it.

The denotation of *to* is translated into ABH’s system in (242). Path drefs are treated on a par with partial individual concepts by being relativized to sets of worlds.

$$(242) \quad \llbracket \text{TO}_p(\gamma, d) \rrbracket^{(g, h)} = \top \text{ iff } g = h \text{ and for all } \mathbf{w} \in h(p), h(\gamma)(\mathbf{w}) \text{ is a path such that there is an interval } I \subset [0, 1] \text{ including 1 and consisting of all the } i \in [0, 1] \text{ for which } \gamma(i) \text{ is at } h(d)(\mathbf{w}).$$

Other PPs have similarly structured denotations, but place different conditions on the paths (see Zwarts 2005 for details).

Now, assume that, like *zu* ‘*come_{zu}*’, *come* introduces a motion event. Then, when the meaning of *come* composes with its argument, it predicates the path-PP complement denotation of the trace of the event. On these assumptions, the at-issue content of e.g. *Ron came to Denver* is as given in (243):

$$(243) \quad \text{At-issue content of } \textit{Ron came to Denver}: \\ [d_{ip}] \wedge d_i = \text{RON} \wedge [d_{jp}] \wedge d_j = \text{DENVER} \wedge [e_p] \wedge \text{MOVE}_p(d_i, e) \wedge \text{TO}_p(\text{TRACE}_p(e), d)$$

(243) says that the theme of the motion event moves along the path denoted by the PP with which *come* combines. This has the welcome result that it allows *come* to compose with any sort of path-PP in a natural way.¹⁹

But what about the anchoring implication? The informal generalization, stated in quasi-Fillmorean terms, is repeated here:

- (72) **Anchoring implication** (quasi-Fillmorean): A salient perspective is centered in a region that can be described using a location phrase corresponding to a bounded sub-PP of the path-PP complement of *come*.

Of course, I don’t have recourse to the kind of transformational system Fillmore (1965) uses to account for the anchoring implication. I can’t just define the “location phrase”

¹⁹ *Come* also composes with locative PPs, as in *Come in the house now!* In these cases, I assume that the meaning of *come* coerces the locative PP to have a path meaning, with the locative meaning indicating the destination. However, this is a task for future study.

in terms of natural language expressions. Luckily, exactly the locational meaning needed can be defined in terms of independently motivated properties of paths. Specifically, below I define a relation between a set of paths \mathcal{P} (i.e. a PP denotation) and a path γ , which I will call an **anchoring subpath**. I then use this relation to pick out sets of all and only the bounded subpaths of the paths in the denotation of \mathcal{P} . This, in turn, will make it possible to define the location of the anchor in terms of the PP complement of *come* without involving grammatical transformations or introducing additional English “corresponding location phrases”.

To define this formally, we need the concatenation function, subpath relation, and cumulativity relation. All of these are defined following Zwarts (2005), starting with concatenation.

(244) Concatenation (adapted from Zwarts 2005: 775):

For paths γ , δ , and ρ , $\gamma + \delta = \rho$ iff there is an $h \in [0, 1]$ and there is a monotone increasing bijection α from $[0, h]$ to $[0, 1]$ such that for all $i \in [0, h]$, $\rho(i) = \gamma(\alpha(i))$ and there is a monotone increasing bijection β from $[h, 1]$ to $[0, 1]$ such that for all $i \in [h, 1]$, $\rho(i) = \delta(\beta(i))$.

(244) defines by mapping the domains of the two concatenated paths, γ and δ , into the domain of the new path, ρ . Due to the way in which the mapping is defined, the path originally labeled as γ constitutes the first part of ρ and the path labeled δ constitutes the second part. These two intersect at the point $\rho(h)$, which is the endpoint of γ and the startpoint of δ . Thus, concatenation is a partial function defined only for pairs of paths that share points in the requisite way.

The subpath relation is defined using the concatenation function:

(245) Subpath (adapted from Zwarts 2005: 776):

Subpath (notated \leq) is a relation between paths γ and δ , such that $\gamma \leq \delta$ iff there are paths ρ and ρ' such that $\rho + \gamma + \rho' = \delta$.

The definition in (245) guarantees that γ is the same path as δ but restricted to only part of δ 's range.

Finally, cumulativity is defined in (246). It is defined over sets of paths \mathcal{P} . Thus it is a property of PP denotations, which are sets of paths.

- (246) Cumulativity (adapted from Zwarts 2005: 751): Given a set of paths \mathcal{P} , \mathcal{P} is cumulative just in case
- a. there are paths γ and δ in \mathcal{P} such that $\gamma+\delta$ exists and
 - b. for all γ and δ in \mathcal{P} , if $\gamma+\delta$ exists it is also in \mathcal{P} .

The definition of cumulativity in (246) says that a set of paths has the property of being cumulative just in case, for any two paths in the set, if the two can be concatenated, then their concatenation is also in the set.

Zwarts (2005) shows that boundedness is defined in terms of cumulativity. Specifically, a set of paths is bounded if it is non-cumulative (Zwarts 2005: 753). To see this, consider the difference between the unbounded set of paths denoted by *along the river* and the bounded set denoted by *into the river*. For the unbounded case, take any two paths along the river such that the endpoint of the first is the startpoint of the second. Then the result of concatenating those two paths is still a path along the river. So *along the river* is cumulative, and unbounded (recall that it is shown to be unbounded because it combines with e.g. *for an hour*). In contrast, *into the river* is bounded. It is also non-cumulative. That's because every path in the denotation of *into the river* begins outside the river and ends inside it. Thus, there are no paths in the denotation such that they can be concatenated, and *into the river* fails to satisfy the condition in (246a).

Cumulativity and subpath can be used to pick out the bounded subpaths of any set of paths. This is exactly what we need to adequately define the anchoring implication, so I call these the anchoring subpaths of the set.

(247) Given a set of paths \mathcal{P} , the anchoring subpaths of $\mathcal{P} =$

$$\{\gamma \mid \exists \delta [\mathcal{P}(\delta) \wedge \gamma \leq \delta \wedge \neg \exists \gamma' [\mathcal{P}(\gamma') \wedge \mathcal{P}(\gamma + \gamma')]]\}$$

(247) defines the anchoring subpaths of a set of paths \mathcal{P} . These are all the paths γ such that there is some path δ in the extension of \mathcal{P} that γ is a subpath of. This ensures that the set identifies subpaths. The second half of (247) ensures that it identifies bounded paths. It says that there's no γ' such that γ' is an element of \mathcal{P} and γ concatenated with γ' is also in the \mathcal{P} .

The best way to see the effect of this definition is with a specific example such as (248). Here, \mathcal{P} is *to d*.

(248) The anchoring subpaths of *TO y*

$$\{\gamma \mid \exists \delta [\text{TO}(\delta, d) \wedge \gamma \leq \delta \wedge \neg \exists \gamma' [\text{TO}(\gamma', d) \wedge \text{TO}(\gamma + \gamma', d)]]\}$$

Which paths γ are picked out by (248)? First, each is the subpath of some path *to d*. This includes paths that do not reach *d*, which could be symbolized as $\{- - -\}$. It also includes paths that start already at *d*, symbolized $\{+ + + +\}$. And it includes paths *to d* themselves, with the structure $\{- - - + + +\}$. Second, each path γ is such that it cannot be concatenated with another path *to d* to yield a path that is also *to d*. Which are these? Taking it in cases, if we concatenate a subpath of the first sort, one that's entirely outside *d*, with a path in the denotation of *to d*, then the result is a path *to y* (schematically: $\{- - - -\}$ concatenated with $\{- - - + + +\}$ yields $\{- - - - - - + + + +\}$). So paths beginning and ending outside *d* are ruled out by this condition because they can be concatenated with another path in the denotation of *to d* to yield a path also in the denotation of *to d*. On the other hand, paths of the second two types meet the condition. For any path that ends at *d* (schematically any path that ends on a +), there is no path in *to d* that can be concatenated with it. That's because every path *to d* begins not at *d* (schematically, on a -). So the subpaths γ picked out by (248) are exactly those needed for anchoring: the ones that end at *d*.

This formulation also returns correct anchoring subpaths for route-PPs. Recall the generalization related to route-PPs from Section 2.6. For a route-PP, the anchor can either be located at the destination, or she can be located at the reference location denoted by the object of *through*. To make this claim, I rely on the analysis of *through*-PPs in (249), adapted from Zwarts (2005: 763).

(249) *through* $y = \{\gamma: \text{there is an interval } I \subseteq [0, 1] \text{ that includes neither } 0 \text{ nor } 1 \text{ and that consists of all the } i \in [0, 1] \text{ for which } \gamma(i) \text{ is in } y.\}$

Schematically: { - - - + + + - - - }

(250) The anchoring subpaths of the set of paths *through* d :

$\{\gamma | \exists \delta [\text{THROUGH}(\delta, d) \wedge \gamma \leq \delta \wedge \neg \exists \gamma' [\text{THROUGH}(\gamma', d) \wedge \text{THROUGH}(\gamma + \gamma', d)]]\}$

Table 6.10 summarizes the results of (250). Any set of subpaths marked with a ✓ in the last column is in the set of anchoring subpaths. It is a bounded subpath of a path the denotation of *through* y . Any path with an ✗ is not.

Description	Schematic	Can be concatenated with γ'	anchoring subpath
<i>through</i> d	{ - - - + + + - - - }	yes	✗
<i>not at</i> d	{ - - - }	yes	✗
<i>to</i> d	{ - - - + + + }	no	✓
<i>from</i> d	{ + + + - - - }	no	✓
<i>at</i> d	{ + + + }	no	✓

Table 6.10: Anchoring subpaths of *through* d

As shown in Table 6.10, the anchoring subpaths end either at d (on a +) or outside d after having left it, just as desired.

It will be easier to abbreviate the notion of an anchoring subpath defined in (247) than to write it into the meaning of *come* each time, so I define the anchoring (sub)path, or A-PATH relation as a logical constant in (251).

(251) Given a centered proposition $dref$ q , a path γ , and a property of paths \mathcal{P} ,

$\llbracket \text{A-PATH}_q(\gamma, \mathcal{P}) \rrbracket^{\mathfrak{M}, \langle g, h \rangle} = \top$ iff $g = h$ and

- a. $\llbracket [\delta_q] \wedge \mathcal{P}_q(\delta) \wedge \gamma \leq \delta \rrbracket^{(g,h)} = \top$ and
- b. there is no j s.t. $\llbracket [\gamma'_q] \wedge \mathcal{P}_q(\gamma') \wedge \mathcal{P}_q(\gamma + \gamma') \rrbracket^{(h,j)} = \top$

The condition in (251a) ensures that the anchoring subpath, γ , is the subpath of some path in denotation of the PP-complement. Then (251b) ensures that it is a subpath of the right sort, i.e. with its endpoint in one of the appropriate anchoring locations.

With this notion appropriately defined, it is now possible to write the anchoring implication of *come* properly. To do this, I revisit the translation of the simple example (219), which is repeated for convenience here. The translation relies on the assumption that an argument to the A-PATH relation, the denotation of *to Columbus*, can be written as $\lambda\gamma.\text{TO}(\gamma, d_2)$, where d_2 is a discourse referent corresponding to Columbus. This is a bit of a stretch now, but it won't be when subsentential compositionality is added to the system.

(219) [Context: Ron is in Columbus. He is talking on the phone to Andy, in Pawnee. He says:]

Leslie is coming to Columbus.

(252) Translation of (219) (final):

- a. **New proposal:** $[p] \wedge p \subseteq p^{cs} \wedge$
- b. **At-issue:** $[d_{1p}] \wedge d_1 = \text{LESLIE} \wedge [d_{2p}] \wedge d_2 = \text{COLUMBUS} \wedge [e_p] \wedge \text{MOVE}_p(d_1, e) \wedge \text{TO}_p(\text{TRACE}(e), d_2) \wedge$
- c. **Anchoring implication:** $[d_3 q^*] \wedge \text{SELF}_{q^*}(d_3) \wedge [\gamma q^*] \wedge \text{A-PATH}_{q^*}(\gamma, \lambda\gamma.\text{TO}(\gamma, d_2)) \wedge \text{AT}_{q^*}(d_3, \gamma(1))$
- d. **Acceptance:** $[p^{cs}] \wedge p^{cs} = p$

The at-issue content in (252b) is just as expected. The new version of the anchoring implication is in (252c). As expected, it introduces a discourse referent d_3 for the *de se* self of the anchor. Then, it introduces a discourse referent γ for a path, and says that γ is an

anchoring subpath of the set of paths to Columbus. Finally, it requires the *de se* self to be located at the end of the anchoring subpath. This is the desired result.

It is important to note that nothing in the anchoring implication makes reference to the actual motion path, which is denoted by $\text{TRACE}(e)$. This is desirable, because it means that the anchor is not required to be aware of the motion event, and it means that the anchor need not be located at the actual endpoint of the motion path. Instead, the A-PATH relation designates a set of paths, all with potentially different endpoints, and the anchor's location can be the endpoint of any path γ in the set. This has the effect of defining Fillmore's "corresponding location phrase". That is because the location phrase denotes a property of regions that holds of the region comprised of all the endpoints of the paths picked out by A-PATH. A simple example makes this clear. Take all of the paths in the denotation of *into the river*. All of these are picked out by A-PATH, because *into the river* is itself bounded. Each of these paths ends at a possibly different point in the river. As a result, the endpoints of all of them, together, make of the largest member of the set of regions denoted by *in the river*. Just as Fillmore proposed, for an utterance of *John came into the river* to be acceptable, the anchor's location must be in the river.

By including A-PATH in the semantics of *come* and defining the anchoring implication of *zu* 'come_{zu}' in terms of the meaning of its locative complement, the present approach improves over previous approaches. It COMPLEMENT-DEFINED ANCHORING, which was previously not recognized as a generalization.

6.4 Final lexical entries for *zu* 'come_{zu}' and *come*

Since the present framework does not represent sub-sentential composition, I write final versions of the meanings of *zu* 'come_{zu}' and *come* as though they were logical constants. These serve as placeholders until compositionality is added to the system.

The lexical entry for *zu* ‘come_{zu}’ is given in (253). The lexical entry for *come* is in (254). The two are compared and discussed below.

(253) Meaning of *zu* ‘come_{zu}’:

a. **Presupposition:** For any context g , property of regions P , and discourse referent d , $\llbracket \text{ZU}_P(P, d) \rrbracket^{\mathfrak{M}, \langle g, h \rangle}$ is defined iff there is some familiar doxastic perspective q in $\{q^{\text{Q}}, q^{\text{Q}^*}\}$.

b. $\llbracket \text{ZU}_P(P, d) \rrbracket^{\mathfrak{M}, \langle g, h \rangle} = \top$ iff

i. **At-issue:**

$$\llbracket [e_p] \wedge \text{MOVE}_P(d, e) \wedge P_p(\text{TRACE}_P(e)(1)) \rrbracket^{\mathfrak{M}, \langle g, k \rangle} = \top \text{ and}$$

ii. **Anchoring implication:**

$$\llbracket [d'_q] \wedge \text{SELF}_q(d') \wedge P_q(\text{LOC}(d')) \rrbracket^{\mathfrak{M}, \langle k, h \rangle} = \top,$$

(254) Meaning of *come*:

a. **Presupposition:** For any context g , property of paths \mathcal{P} , and individual concept d , $\llbracket \text{COME}_P(\mathcal{P}, d) \rrbracket^{\mathfrak{M}, \langle g, h \rangle}$ is defined iff there is some familiar doxastic perspective q .

b. $\llbracket \text{COME}_P(\mathcal{P}, d) \rrbracket^{\mathfrak{M}, \langle g, h \rangle} = \top$ iff

i. **At-issue:**

$$\llbracket [e_p] \wedge \text{MOVE}_P(d, e) \wedge \mathcal{P}_p(\text{TRACE}_P(e)) \rrbracket^{\mathfrak{M}, \langle g, k \rangle} = \top \text{ and}$$

ii. **Anchoring implication:**

$$\llbracket [d'_q] \wedge \text{SELF}_q(d') \wedge [\gamma_q] \wedge \text{A-PATH}_q(\gamma, \mathcal{P}) \wedge \text{AT}_q(d', \gamma(1)) \rrbracket^{\mathfrak{M}, \langle k, h \rangle} = \top,$$

As shown in (253a) and (254a), both *zu* ‘come_{zu}’ and *come* presuppose an anaphorically retrievable (i.e. familiar, salient) doxastic perspective, q . Technically, this means that in every input context g , there will be such a doxastic perspective. It is in this sense, then, that their meanings are perspectival and that they depend for their interpretation on contextually supplied perspectival information. In addition, the exact type of perspective dependence is

a point of cross-linguistic variation. *Zu* ‘come_{zu}’ restricts its doxastic perspectives to those of the interlocutors, whereas *come* is much more promiscuous.

The at-issue contents in (253b-i) and (254b-i) reveal an important cross-linguistic difference as well. The two verbs take arguments of different types. *Zu* ‘come_{zu}’ takes a property of regions denoted by a locative phrase, while *come* takes a property of paths, denoted by a path PP. The argument of *zu* ‘come_{zu}’ is predicated of a location at the end of its motion path, or TRACE. In contrast, the argument of *come* is predicated of its entire motion path. There are cross-linguistic similarities here as well, though. Both verbs introduce motion events in which the individuals denoted by their subjects move along paths that are defined in terms of their complements.

For both verbs, the heart of the perspectival content is in the anchoring implication. These implications are interpreted relative to the presupposed doxastic perspective, q . This is ensured in the lexical entry by letting q be the same variable in the presupposition and the anchoring implication. In this system, as in dynamic predicate logic, variables persist across clause boundaries until they are redefined. For both *zu* ‘come_{zu}’ and *come*, the anchoring implication designates a self-locating property. Technically, that’s a property that holds of all the centers of the centered worlds that make up the anaphorically retrieved doxastic perspective. Informally, it’s a property that someone adopting that doxastic perspective would ascribe to herself. For *zu* ‘come_{zu}’, the property is being located in the place described by the locative complement. For *come*, the property is being located at the end of an anchoring subpath of the PP complement. For each verb, the anchoring implication updates the doxastic perspective with this property. As long as this update can go throughout without creating contradiction, the use of *zu* ‘come_{zu}’ or *come* is acceptable. Where it creates contradiction, either because of information already in the doxastic perspective or because of what the common ground entails about the doxastic perspective, the update fails, and the use of *zu* ‘come_{zu}’ or *come* is unacceptable.²⁰

²⁰Throughout, I have ignored the issue of when the anchor must be located at the destination. It is orthogonal to the purpose of this dissertation to account for the fact that utterance/belief time and event

This analysis thus rests squarely on the claim made in Chapter 1: that perspectival expressions depend semantically on contextually supplied perspectival information. Furthermore, this is the case not just in English but in the typologically unrelated language Bulu. And it's the case not just for two lexical items with identical meanings, but for two lexical items with significant variation in their meanings. As a result, the observation the dependence on doxastic perspectives is at the heart of the meanings of both expressions suggests that it may be at the heart of what it is to be perspectival. In the next chapter, I explore the implications of this view.

time are the only possibilities for both *come* and *zu* 'come_{zu}'. That said, I see two choices. The first is just to assume that these two times are lexically specified, following Oshima (2006b). The alternative is to appeal to a more general process such as anaphora resolution. On this kind of account, utterance time and reference time are expected to be possible values of *t*, given that both play important roles in interpretation and can therefore be assumed to be salient. The difficult task for such an account is ruling out other salient times as possible antecedents. I thank an anonymous *Semantics & Pragmatics* reviewer for helpful comments on this question, and leave it for future work.

Implications for theories of perspectival expressions

In this chapter, I discuss implications of the analysis of *come* and *zu* ‘*come_{zu}*’ developed in the previous chapter. In so doing, I develop a vision for the analysis of perspectival expressions generally. The basic idea is that perspectival expressions are expressions that depend for their interpretation on perspectival information. This may seem repetitive or tautological, but recall the discussion of previous analyses of *come* in Chapter 5. Every account discussed in that section proposes that the interpretation of *come* involves perspective taking. But in each case, except for the account of Goddard (1997), the only contextual information contributed to the interpretation is the anchor (or her actual location). No previous analysis proposes that the interpretation of a deictic motion verb involves contextually supplied perspectival information. The situation is much the same for previous accounts of perspectival expressions, with a few important exceptions. I hope to offer grounds for re-thinking this generally accepted approach.

The chapter is organized as follows. Section 7.1 demonstrates how the analysis developed in the preceding chapter can be extended naturally to apply to another perspectival expression: appositives and appositive relative clauses. Section 7.2 generalizes beyond perspectival expressions that, like *come* and *zu* ‘*come_{zu}*’ depend on doxastic perspectival information. There I argue for a notion of perspectival information that ranges over different kinds of perspectives. In Section 7.3, I propose a novel definition of perspectival expressions based on observations made in the preceding sections. Then, Section 7.4 considers previous diagnostics for and taxonomies of perspectival expressions and considers them in light of the definition proposed in Section 7.3.

7.1 An analysis of appositives as direct updates to doxastic perspectives

The analysis of *come* and *zu* ‘*come_{zu}*’ developed in Chapter 6 assumes that doxastic perspectival information—and perspectival information associated with other attitudes—is tracked and checked or directly updated as the meanings of particular expressions require. This approach to perspectival information can be used to analyze other plausibly perspectival phenomena. In some cases, this kind of work on other perspectival phenomena served to motivate the present account. Gunlogson (2001, 2002), Farkas (2002), Romero and Han (2004), and Farkas and Bruce (2010), for example, have all proposed that the interpretations of particular expressions involve the doxastic perspectives of the speaker and/or the addressee. It should be relatively straightforward to express many of their results in the system developed in Chapter 6.

For example, consider again the use of rising declaratives. These are analyzed by Gunlogson (2001, 2002) as presupposing that the addressee is committed to the content of the declarative, according to the common ground. This can be straightforwardly represented as a presupposition about $q^{\textcircled{a}}$, the addressee’s doxastic perspective. In addition, another use of rising declaratives can be analyzed in the current system. This use involves free indirect discourse (FID) context. In FID contexts, the relevant individuals are not the speaker and the addressee, but rather the FID attitude holder and someone she is interacting with, as in (255).

(255) Ann saw a bulldog walking toward her. Her heart began to beat fast. A lump rose in her throat. Sure, it was on a leash, but so had been the bulldog that savaged her sister. And this woman was talking on the phone, not even half paying attention to the dog. “I’m just out walking my Weimaraner Fifi” she was saying. Wait. Weimaraner? That’s a Weimaraner?

In (255), the speaker and addressee's commitments do not enter in to determining the acceptability of the final sentence. Rather, it is Ann who cannot be committed to the dog being a Weimaraner, and the woman she's interacting with who must be so committed. This can be modeled on the present approach, which predicts that centers and doxastic commitment states are available for both Ann and dog walker (Ann because she is the FID subject, and the dog walker because her speech is reported). This example illustrates one benefit of incorporating Roberts' discourse centers into the analysis. It makes it possible to extend previous accounts focused narrowly on the commitments of discourse participants.

Another benefit is that it offers a straightforward way to analyze an additional perspectival phenomenon: appositives (and appositive relative clauses; Amaral et al. 2007; Harris and Potts 2009; AnderBois et al. 2015; Koev 2015). Following Amaral et al. (2007), Harris and Potts (2009), Roberts (2014), and Koev (2015), there are at least two kinds of appositives: speaker-oriented and non-speaker-oriented. Speaker-oriented appositives are understood to be commitments of the speaker. An example is given in (256)

(256) [Context: Chris and Ann are talking. Ann says:]

Ron, (**who is**) **a government worker**, hates the government.

In (256), the implication that Ron is a government worker is understood to be a commitment of Ann's. In contrast, non-speaker-oriented appositives are interpreted as commitments of individuals other than the speaker, as in (257).

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

Due to this difference, non-speaker-oriented appositives and speaker-oriented appositives appear to yield two different kinds of update to the common ground. A speaker-oriented appositive with content p is usually claimed to update the common ground with p (Potts 2005; ABH). In contrast, an appositive oriented to some individual x , updates the common ground with something like ‘ x believes p ’, as in (257).

For ABH, following Harris and 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 (257). In (257) there is neither an attitude predicate nor a general agent shift. Mary cannot be the speaker-like agent for the penultimate sentence with the appositive, 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 in this dissertation allows for a unified, perspectival analysis of both kinds of appositives. First, assume that in (257) there is a pragmatically introduced discourse center corresponding to Mary due to the relevance of her perspective in the discourse. Call this discourse center \textcircled{c}^M , and let her doxastic perspective be represented as q^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, just like the related meaning of *come* retrieves and updates the anchor’s perspective. Then, in (257), q^M is retrieved from the context, and the content of the appositive in (257) is a direct update to q^M . The translation of the appositive is $ALIEN-OVERLORD_{q^M}(d)$, where d is a $dref$ set equal to Mr. Rogers. Directly updating q^M

in this way eliminates from the context all assignments that assign worlds to q^M in which Mr. Rogers is not the alien overlord. This does not update the common ground with $\text{ALIEN-OVERLORD}(d)$, the content of the appositive itself, but rather with the equivalent of ‘Mary believes $\text{ALIEN-OVERLORD}(d)$ ’.

Crucially, this approach generalizes to speaker-oriented appositives. Following Koev 2015, speaker-oriented appositives can be analyzed as updating the speaker’s perspective, $q^{\odot*}$. This move unifies the analyses of speaker-oriented and non-speaker-oriented appositives. The apparent update of the CG with the appositive content, call it p , which Potts (2005) and ABH seek to account for, is then analyzed as arising due to pragmatic rather than semantic factors, following general discourse principles described by 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 $q^{\odot*}$ with p ultimately does result in p being added to the CG. However, this update is due to pragmatic principles rather than conventional content. Thus, assuming that the meanings of particular expressions or constructions require the anaphoric retrieval of perspectival information makes it possible to offer a unified analysis of speaker and non-speaker-oriented appositives. This approach to appositives obviously needs to be fully fleshed out in more detail. However, the sketch presented here should show how such an account would go. It also demonstrates one extension of the technology and approach to doxastic perspectival content developed in this dissertation.

Just as rising declaratives and appositives can be analyzed in terms of doxastic perspectives, it seems likely that other perspectival expressions will be amenable to an analysis in terms of doxastic perspectives. For example, working in the system developed by Farkas and Bruce (2010), Smith et al. (2015) analyze the meanings of predicates of personal taste such as *tasty* and *fun* in terms of the speaker’s discourse commitments (i.e. doxastic perspective).

And predicates of personal taste are prototypical perspectival expressions in that they are so-identified by nearly every account. However, there are also perspectival expressions that do not have doxastic or attitudinal content, such as spatial perspectival expressions like *behind*. Thus for a unified theory of perspectival meanings, we need to understand how the meanings of those expressions relate to the meanings of expressions that draw on doxastic perspectival information, such as *come* and *zu* ‘come_{zu}’. Broadening the theory in this way is the task of the next section.

7.2 Toward a unified analysis of perspectival expressions

An alternative way of thinking about the data and analysis in this dissertation is to say that there are more modal expressions than previously thought. Thinking in this way, one could say that both *come* and appositives give rise to entailments about specific perspectival modal bases. On this way of thinking, one might want to go further and say that all of this talk about perspective and anchoring to a particular anchor/perspective holder is superfluous. In this section, I want to argue that this idea—that all we really need are more kinds of modal meanings—misses a significant generalization. This generalization goes back to an old idea called the localist hypothesis. Lyons (1977: 718) describes the **localist hypothesis** by saying that ‘spatial expressions are more basic, grammatically and semantically, than various kinds of non spatial expressions ... in that they serve as structural templates, as it were, for other expressions’. The claim is based in part on the assumption that spatial cognition is evolutionarily primary. Lyons illustrates the hypothesis by showing how the meanings of tense morphemes, aspect morphemes, and a host of other expressions can be analyzed using structural templates already required for the analysis of spatial expressions.

In this section, I advance a neo-localist approach to perspectival meanings, drawing on insights from Roberts (2014, 2015), Barlew (2016b), Barlew et al. (2016), and, from the philosophical literature, Moline (1968) and Vázquez Campos and Liz Gutiérrez (2015).

Specifically I argue that there are at least two kinds of perspectival meanings: spatial and doxastic. I argue that both of these have a common underlying structure. Finally, I propose that this structure is the defining feature of perspectival meanings and, by extension, perspectival expressions. The discussion begins with a metaphor illustrating the structure adapted from Moline (1968).

7.2.1 A metaphor for linguistically relevant perspectives

Moline discusses perspective using the metaphor of photography. He says that a spatial point of view is “a vantage point of the sort a photographer might seek” (1968: 192). I flesh out Moline’s metaphor using the following vignette:

A photographer stands at an overlook about to take a picture of a valley below. She looks through her camera’s viewfinder at a church with a red door. She scans right to a field of ripe corn, and then raises the lens to focus on the ridge line across the valley. She steps backward, bringing a few leaves from the tree she’s standing under into view. Finally, with the composition just right, she takes the photo.¹

From the elements of this vignette, it is possible to define a set of terms for describing linguistically relevant perspectives. First, at any given moment, the photographer’s **perspective** itself consists of is whatever is visible in the viewfinder (e.g. the church, the cornfield, or the ridge line). Put another way, at any point in time, the photographer’s perspective is spatial information that she has access to via the camera lens. It is information about a subset of a particular **domain**, the domain of physical space (Roberts 2014). The perspective is determined by two factors: where the photographer is—the overlook—and which way she is facing—right, left, or across the valley. I’ll call the first factor the **origin** of her perspective, and the second the **orientation**. And I’ll call the combination of an origin and an orientation a **point of view** (POV), following Barlew (2016b). The POV determines the perspective. If the photographer scans left or right or steps forward

¹This description refers to the Sequatchie Valley viewed when descending from Walden’s Ridge.

or backward, what’s in her viewfinder—her perspective—changes. This observation offers another way to think about the orientation: as an accessibility relation between the origin and the perspective. Given an origin, the orientation defines the space that’s accessible from that origin. Finally, there’s the **perspective holder** herself, the individual who is at the POV and has the relevant access. In this case, that’s the photographer. Together, I call all of these terms the **perspectival meaning schema**. The perspectival meaning schema is summarized in Table 7.1.

Element	Metaphorical realization
domain	physical space
origin	the overlook
orientation	the direction the camera is facing
POV	⟨origin, orientation⟩
perspective	the visual information accessible in the viewfinder, given the POV
perspective holder	the photographer

Table 7.1: Elements of the perspectival meaning schema

The first lesson to be learned from this metaphor is that a perspective is a body of information, just as I have argued above. The second is that this body of perspectival information doesn’t just appear *ex nihilo*. Rather, it is defined relative to a POV and some notion of access. In the vignette, metaphor, the relevant notion is visual access as mediated by the camera lens. A final lesson is that the perspective holder is not strictly necessary to define the other elements of the metaphor. A camera mounted on a tripod with an automatic shutter would define an origin, an orientation, and a body of accessible visual information, even if there were no perspective holder present to look through the viewfinder. With these terms, we can now define multiple linguistically relevant perspectival meaning schemas. This is the task of the next two sections.

7.2.2 The spatial perspectival schema

The first perspectival meaning schema to develop is the spatial perspectival schema. This is done in Table 7.2.

Element	Spatial realization
domain	physical space
origin	point in space
orientation	vector
POV	⟨origin, orientation⟩
perspective	a subset of the domain (i.e. a set of points in space)
perspective holder	if present, an individual

Table 7.2: Elements of the spatial perspectival meaning schema

In English and the Bantu language Mushunguli (Somalia), the meanings of spatial expressions are sensitive to elements of this schema. Specifically, they are sensitive to contextually supplied spatial POVs (Barlew, 2016b).

To understand the argument for analyzing spatial perspectival expressions in this way, it is useful to know a little about spatial frames of reference (Levinson, 2003). A frame of reference is a coordinate system consisting of a set of directions relevant for the interpretation of linguistic expressions. Levinson (2003) proposes a typology of three such coordinate systems: absolute, intrinsic, and relative.² Cross-linguistically, many spatial expressions can be used in both intrinsic and relative frames of reference. Examples in English include *behind*, *in front of*, *to the right of*, and *to the left of*. Uncontroversially, the meanings of these expressions take as their first argument an individual called the **Ground** (this terminology is from Talmy 1975; for the semantics of e.g. *behind*, see Zwarts and Winter 2000 and Kracht 2008). The Ground is denoted by the object of the preposition. For example, in *behind the car* the Ground is the car. With just the Ground specified, *behind the car*

²Danziger (2010, 2011), Bohnermeyer and O’Meara (2010), and Bohnermeyer (2011, 2012) revise the typology by including additional frames of reference. However, I stick with Levinson’s original typology because the only frames of reference relevant for this discussion are the intrinsic frame of reference and the relative frame of reference.

has at least two interpretations. Interpreted in the intrinsic frame of reference, *behind the car* denotes a location near the back bumper and tail lights of the car. Interpreted in the relative frame of reference, *behind the car* denotes a location on the opposite side of the car from some POV. These readings are illustrated in (258) and (259), which are depicted visually in Figure 7.1.

- (258) **Intrinsic frame of reference:** [Context: Leslie is about to back out of the driveway. Sitting on the back porch, Ben yells:]
 Stop! The dog is **behind** the car.
- (259) **Relative frame of reference:** [Context: Ben and Leslie are looking for their dog. They are standing in the yard facing their car. The side closest to them is the passenger side. Leslie says:]
 Look. The dog is **behind** the car. He's near the driver door waiting to get in.

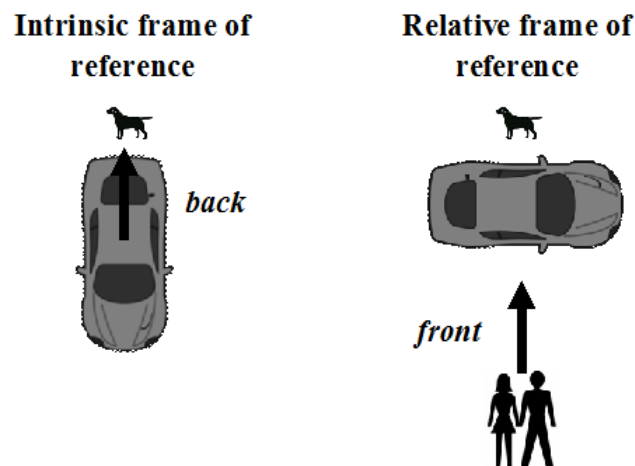


Figure 7.1: Directions involved in the interpretation of *behind*

Based on examples like these, Levinson proposes that when used in the relative frame of reference, the meanings of *behind* and other spatial expressions take an additional argument: an implicit argument corresponding to the observer or perspective holder from whose POV the scene is viewed.

For Levinson (2003), no such second argument is involved in the interpretation of spatial expressions used in the intrinsic frame of reference. Thus, *behind* and its cross-linguistic equivalents are polysemous, with one meaning that takes a single argument and another meaning that takes two arguments. Bohnemeyer (2012) rightly critiques this kind of approach as positing systematic cross-linguistic ambiguity and poly-adicity in the meanings of spatial expressions used in both frames of reference. To remedy this problem, Bohnemeyer proposes that such expressions always take two arguments, one that is the Ground and the other that provides the directions used to define the coordinate system or frame of reference. In the intrinsic frame of reference, the two arguments just happen to be identical. In the relative frame of reference, the second argument is an observer, just as Levinson proposes.

Bohnemeyer's (2012) account runs into trouble because treating the second argument in the relative frame of reference as a perspective holder leads to incorrect predictions. There are two kinds of problems. The first involves examples that do not include a perspective holder but nevertheless do involve the relative frame of reference. The second involves the meaning of *behind* specifically. Both problems are eliminated if the second argument of spatial expressions in the relative frame of reference is assumed to be a spatial point of view (POV).

The first problem for perspective-holder/observer based accounts is that perspective holders are not strictly necessary for the use of spatial expressions in the relative frame of reference. (260), adapted from Barlew 2016b, illustrates. A context for the example is depicted in Figure 7.2.

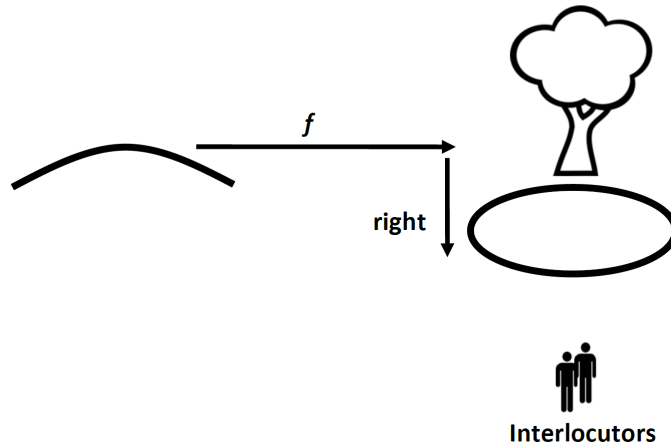


Figure 7.2: Defining a POV without an oriented individual

(260) Ann: Is the pond just in front of the the large oak tree?

Ron: Yes, that's correct. And from that hill over there, the pond is to the right of the large oak tree.

In (260), Ron's use of *right* is acceptable even though there is no individual, sentient or otherwise, that makes a POV familiar. Rather, the interpretation of *from that hill over there* makes a location (at the hill) and an orientation, technically a vector (from the hill to the tree), salient. The POV argument of *right* is determined by the interpretation of these expressions, as Figure 7.2 indicates. This is predicted on an analysis on which POVs, not perspective holders, determine coordinate systems for the relative frame of reference.

The second empirical problem involves the meaning of *behind*. To see the problem, assume, following Bohnemeyer (2012), that in the intrinsic frame of reference—the frame of reference that does not involve an observer—the implicit argument of *behind* is just the Ground itself. On this uncontroversial assumption, the intrinsic axes of the Ground determine the coordinate system. In such a case, the direction involved in the interpretation of e.g. *behind the car* is the intrinsic *back* axis of the second implicit argument of *behind*,

the car.³

Now, assume, following Bohnemeyer (2012), that in the relative frame of reference the second argument is just the observer or perspective holder. Continuing to use *behind the car* as the example, note that in the relative frame of reference, *behind the car* denotes a location further away from the perspective holder than the car in the direction that the perspective holder is facing. In other words, the direction involved here is the perspective holder’s intrinsic *front* axis. Thus, in each frame of reference, the meaning of *behind* maps its implicit argument to a different axis. The difference is most easily illustrated using two examples where the second arguments are identical but the frames of reference are distinct, as in (261). The problem with mapping the implicit argument to an axis is demonstrated in Table 7.3.

(261) **Two examples in which the second argument of *behind* is Joe:**

- a. **Intrinsic frame of reference:** Fred: The dog is behind Joe.
- b. **Relative frame of reference:** Joe: The dog is behind the tree.

Example	Argument structure	Axis	location relative to Joe
(261a)	BEHIND(Joe, Joe)	<i>back</i>	behind Joe, at his heels
(261b)	BEHIND(the tree, Joe)	<i>front</i>	in front of Joe, on the far side of the tree

Table 7.3: Mapping the second argument of *behind* to an axis

In (261a) *behind* maps Joe to his *back* axis. In (261b), it maps Joe to his *front* axis. Thus, this approach continues to posit systematic cross-linguistic ambiguity, just without the additional assumption of poly-adicity.

Assuming that the meaning of *behind* can take either an individual or a POV as its second argument accounts for examples such as those in (261). All that is needed are two additional assumptions. First, assume that an observer makes a POV familiar and salient by being

³It is for this reason that the frame of reference is called “intrinsic”. It is also for this reason that the intrinsic frame of reference is unavailable if the Ground is not conceptualized as having intrinsic axes in the horizontal plane. Thus, in English, *behind the tree* does not have an intrinsic frame of reference interpretation.

located in a particular place (origin) and facing a certain direction (orientation/vector). This assumption is justified by the observation that, like perspectival information associated with *come*, spatial perspectival information is anaphorically retrieved (Barlew, 2016a). Second, assume that *behind* maps individual arguments to their intrinsic *back* axes but maps POVs—i.e. pairs of a location and a direction—to the direction element of the POV. Then the difference between the examples in (261) is predicted.^{4,5}

The discussion above demonstrates that assuming that the meanings of perspectival spatial expressions depend on familiar POVs improves analyses of their meanings. However, one might wonder whether it is reasonable to think that the interlocutors attend to and keep track of the spatial POVs of those around them. To the extent that those POVs are determined by the location and direction of gaze of sentient, mostly human perspective holders, research in psychology and psycho-linguistics suggests that they do. Studies such as Böckler et al. 2011, Liebal et al. 2009, Staudte and Crocker 2011, and Rohde and Frank

⁴See Barlew 2016b for details. For an approach on which the meanings of expressions such as *behind* always involve an implicit observer, even in the intrinsic frame of reference, see Sundaresan and Pearson (2014). It is beyond the scope of this dissertation to develop a full critique of this approach, but here is one difficulty. To make the correct predictions about the meanings of *behind* and *in front of* in utterances involving the relative frame of reference (e.g. *the ball is {behind/in front of} the tree*), Sundaresan and Pearson need to assume that the hypothetical observer located at the tree is facing the speaker (or whoever the relevant perspective holder is). Then, the hypothetical observer's front faces the speaker. As a result, the approach predicts that the hypothetical observer's left is the speaker's right, and vice versa. But this prediction is incorrect. In the relative frame of reference, the direction indicated by *left* is the speaker's left, and the direction indicated by *right* is the speaker's right. It is this observation that leads Levinson (2003) to suggest that the relative frame of reference is derived by the translation of the horizontal axes of the observer rather than by rotation (i.e. by "flipping" the observer's front-back/left-right coordinate system rather than rotating it). This option is not available to Sundaresan and Pearson, though, because flipping a hypothetical observer would result in the incorrect prediction that *below the tree* means skyward from the tree. It would also rely on the bizarre assumption that, when using the relative frame of reference, a the speaker imagines herself upside down and located at the location of the Ground. The basic problem, then, is that there is no way to position a hypothetical observer that gets all of the axes in the relative frame of reference right.

⁵Marie-Catherine de Marneffe (p.c.) rightly points out that the example in (261b) is acceptable in a context in which Joe is standing with his back to the tree, terrified of a dog on the other side. In this case, if the second argument of *behind* were just Joe, the meaning of *behind* would need to map that argument to its back axis, making the mapping for the relative frame of reference indistinguishable from the mapping for the intrinsic frame of reference. This observation provides further motivation for assuming that abstract POVs are involved in the interpretation of spatial expressions in the relative frame of reference. In this case, the relevant POV is the one defined in terms not of Joe's physical front but what we might call his attentional front. In the context described, all of his attention is focused through the tree in the direction of the dog. Investigating uses of this sort and the ways in which POVs can be made familiar is a task for future work.

2011 provide experimental evidence that interlocutors track each other’s gaze (the directional component of the POV of a perspective holder) and use the information gathered from doing so in resolving the meanings of referential expressions (see also studies cited in Roberts 2011). Furthermore, Samson et al. (2010), Xu et al. (2011), and studies cited therein show that this gaze tracking is automatic and instantaneous, even when it is detrimental to the task at hand, study participants are under unrelated high cognitive loads, and the individual whose gaze is being tracked isn’t even an interlocutor. Thus, the evidence suggests that people do pay attention to others’ POVs, just as the analysis of perspectival spatial expressions developed in Barlew 2016b assumes.

7.2.3 The doxastic perspectival schema

The previous section argued that perspectival spatial expressions depend on contextually supplied perspectival information. Specifically, it showed that they depend on a contextually supplied spatial POV. Chapters 1-6 are dedicated to arguing that the meanings of *come* and *zu* ‘come_{zu}’ depend on doxastic perspectival information, and Section 7.1 argued that other perspectival expressions such as appositives do as well. In this section, I show how the elements of the general perspectival schema proposed in Section 7.2.1 are present in the doxastic domain as well, following Roberts (2014) and Barlew et al. (2016).

Roberts (2014) proposes that a spatial POV can be used to define a spatial perspective—a subset of the domain of physical space that is accessible from the POV—in the way described in Section 7.2.1.⁶ Roberts (2014) also demonstrates that it is possible to define a doxastic perspectival schema on analogy to the spatial perspectival schema To do that, all that is

⁶The precise notion of accessibility needed in the spatial domain remains undefined, as do the exact shape and boundaries of the perspective itself. See O’Keefe 2003 for discussion of the kinds of space that are perceptually accessible, given a POV and a mammalian perceptual apparatus. See Enfield (2003) for arguments that in some cases spatial meanings depend on spaces that are accessible as areas of engagement, i.e. areas in which an individual is completing a particular action, rather than perceptually accessible. Researching the notion of accessibility that is relevant in the physical domain is a task for future work. Leaving spatial accessibility undefined here is unproblematic because the interpretation of perspectival spatial expressions depends on the POV, not the perspective itself.

needed are tools already used in the analysis of deictic motion verbs developed in Chapter 6. Recall Roberts' DOX function, which takes a centered world to a set of doxastically accessible centered worlds. This function, which is defined in terms of Stalnaker's (2008) doxastic accessibility relation R , is repeated here for convenience:

(190) **Doxastic state:** Given a base centered world $\langle\langle A, t \rangle, w\rangle$,

$$\text{DOX}(\langle\langle A, t \rangle, w\rangle) = \{\langle\langle A', t' \rangle, w'\rangle \mid \langle\langle A, t \rangle, w\rangle R \langle\langle A', t' \rangle, w'\rangle\}$$

To define the doxastic perspectival schema, note that DOX is an accessibility relation between a centered world and a set of centered worlds. Centered worlds can be thought of as possibilities or ways things might be. And the domain of centered worlds can be thought of as the space of possibilities, or logical space. Thus, a single centered world is a location in logical space, or an origin. Similarly, DOX is a relation which, given an origin, makes a subset of logical space available. In other words, it is a doxastic orientation that makes a doxastic perspective available. Thinking in these terms yields the following doxastic perspectival schema, adapted from Roberts 2014: 32, and ignoring time.

Element	Doxastic realization
domain	the space of possibilities (centered worlds)
origin	a centered world
orientation	DOX
POV	$\langle\langle \text{centered world}, \text{DOX} \rangle$
perspective	a subset of the domain (i.e. a set of centered worlds)
perspective holder	a doxastic agent

Table 7.4: Elements of the doxastic perspectival meaning schema

Defining the elements of the doxastic perspective in terms of the general perspectival schema makes it clear that doxastic perspectives are structurally analogous to spatial perspectives. The discussion of spatial expressions in the previous section, and the analyses of *come* and *zu* 'come_{zu}' provide evidence that analyses of perspectival expressions are improved by treating them as depending on perspectival information of the sort made available by the

elements of the perspectival meaning schema. In the next section, I flesh this idea out a bit further by contrasting the kinds of analyses argued for here with previous accounts of perspectival phenomena in general.

7.2.4 Improvements over previous analyses of perspectival expressions

Assuming that the interpretation of spatial perspectival expressions depends on a spatial POV and that the interpretation of doxastic perspectival expressions depends on a doxastic perspective improves previous analyses of the meanings of perspectival expressions. I don't want to belabor this point too much. Any analysis on which the implicit argument of e.g. *behind* is taken to be merely an individual will be subject to the problems described in Section 7.2.2. And any account on which the meaning of *come* is analyzed as requiring merely an anchor argument will be subject to the problems described in Chapter 5. By and large, previous analyses of the class of perspectival expressions make exactly these assumptions about the implicit arguments of e.g. *behind* and *come*, just like previous accounts of the meanings of spatial expressions do. To illustrate, I consider the accounts of Sells (1987), Speas and Tenny (2003), and Bylinina et al. (2014, 2015). Then I turn to the account of Mitchell (1986), which differs from the others in important ways.

Sells 1987 Sells (1987) analyzes the meanings of logophoric pronouns in a variety of languages such as Mundang, Icelandic, and Japanese. Briefly, a logophoric pronoun is a pronoun that occurs embedded under a communication or attitude predicate and is co-referential with the subject of the predicate (Sells, 1987; Culy, 1994, 1997). The antecedent of the pronoun is the individual “whose speech, thoughts, feelings, or general state of consciousness” are reported (Clements 1975: 141, qtd. in Sells 1987: 445). The example from Mundang in (262), which Sells (1987: 446) borrows from Hagege (1974), illustrates using the logophoric pronoun *ʒi* ‘LOG’. Glossing follows Sells (1987).

- (262) à fá mò ʔ̄ z̄ì nē
 Pro say you see **Log Q**
 ‘He_i asked if you saw him_i’

In (262), *z̄ì* ‘LOG’ is co-referential with the subject of *fá* ‘say’, as the subscripts indicate. This is the person whose perspective is being reported.

Sells analysis is designed to account for the limitation of the antecedents of logophoric pronouns to perspective holders. To do that, he proposes that every discourse context specifies values for three logophoric roles: SOURCE, SELF, and PIVOT. The value of each role is a discourse referent for a perspective holder, and each is relativized to a different sort of perspective. Specifically, the SOURCE is an individual who makes a report, the SELF is an individual “whose ‘mind’ is being reported” (Sells 1987:455), and the PIVOT is an individual from whose spatio-temporal perspective a report is made. Different logophoric pronouns are then analyzed as referring anaphorically to the discourse referents assigned to different roles. For example, Japanese *zibun*, which Sells glosses as ‘self’, is argued to take the discourse referent assigned to the PIVOT role as its antecedent. In contrast, Icelandic *sig* ‘self’ takes the discourse referent assigned to the SELF role as its antecedent.

Because Sells analyzes the meanings of pronouns, the focus on perspective holders, the individuals representing the SOURCE, SELF, and PIVOT, is unproblematic for Sells’ analysis. However, Sells discussion of expressions such as *come* and *beloved* indicates that he intends these roles to be relevant for the interpretation of perspectival expressions generally, not just logophoric pronouns. Presumably, then, he expects that the meanings of these expressions take drefs assigned to logophoric roles as arguments. Importantly, this means that an analysis of perspectival expressions based on Sells 1987 would correctly predict the anaphoricity data. However, such an account of the meaning of e.g. *behind* or *come* would make incorrect predictions about the data demonstrating POV and perspective dependence, at least without substantial modification. The reason is because all that the three logophoric roles can contribute to the semantics is a dref for an individual. As a result, there is no obvious

way for an analysis based merely on incorporating those roles into the semantics to model the differences between intrinsic and relative frames of reference discussed above, or the interpretation relative to a perspective and *de se* contents necessary for analyzing *come*.

Speas and Tenny 2003 Contra Sells (1987), Speas and Tenny (2003) argue that there is only one perspectival discourse role. Their argument is based in part on a proposed cross-linguistic generalization. The generalization is that no language grammaticalizes more than one logophoric role. In other words, even though e.g. Japanese *zibun* ‘self’ and Icelandic *sig* ‘self’ may require perspective holder antecedents with different properties, neither Japanese nor Icelandic nor any other documented language has both a term with the meaning of *zibun* ‘self’ and another distinct term with the meaning of *sig* ‘self’. This claim leads Speas and Tenny (2003) to propose that there is a single perspectival discourse role.

The way that Speas and Tenny define this role has to do with both a theoretical choice and an additional generalization. The generalization is that in some cases certain speech acts seem to determine which individual is the relevant perspective holder. For example, in many cases, in declaratives, the speaker is the relevant perspective holder, while in questions, the hearer is. This observation has been made across expressions and languages, and is sometimes called “interrogative flip” or “evidential flip” (Fillmore, 1975; Mitchell, 1986; Oshima, 2006a,b; Smith, 2009; Roberts, 2015). This is illustrated using the predicate of personal taste *tasty*, widely assumed to be perspectival.

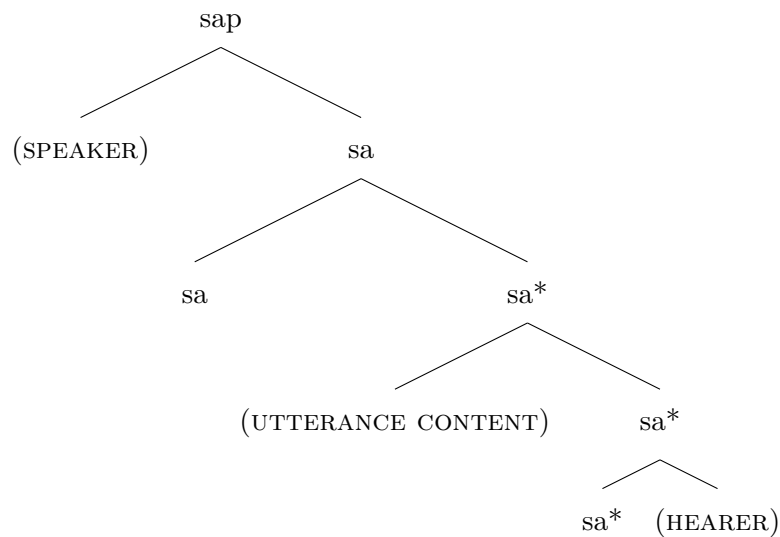
(263) [Context: Tom and Donna are looking at a pie with a few slices gone. Tom says:]

- a. The pie is **tasty**.
- b. Is the pie **tasty**?

(263a) understood as communicating that the pie is tasty according to Tom. (263b) is taken to ask whether it is tasty according to Donna.

The theoretical choice that Speas and Tenny make is to assume, following Ross (1970), among others, that different speech acts are defined in terms of different syntactic configurations. In particular, each kind of speech act corresponds to a particular way of configuring a functional projection they call the speech act progression (sap), which occurs in the left periphery of all sentences. The sap for a declarative is represented in (264).

(264) **Speas and Tenny's (2003: 320) speech act projection in a declarative:**

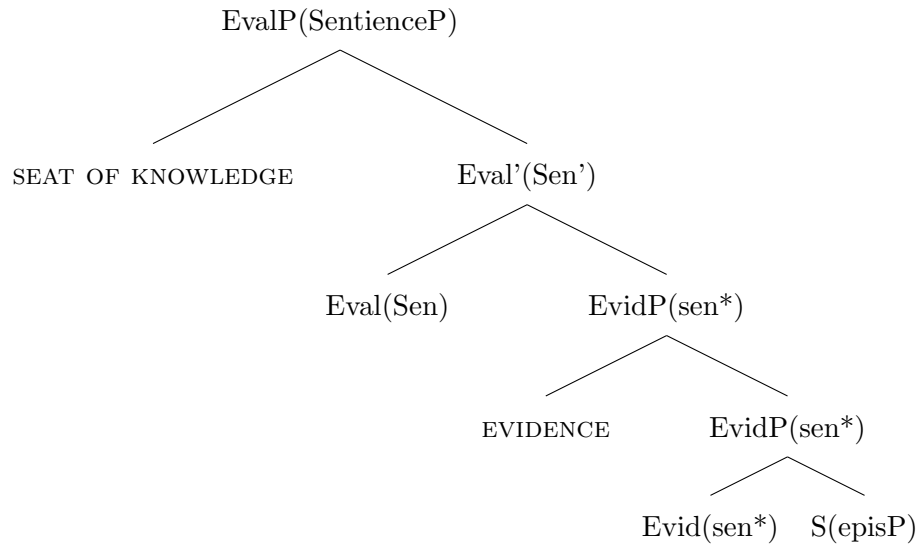


As shown in (264), in a declarative, SPEAKER dominates UTTERANCE CONTENT which in turn dominates HEARER. In contrast, they propose that in an interrogative, the hearer moves up to the specifier of sa. Then HEARER, not SPEAKER, is the closest role dominating UTTERANCE CONTENT.

Here is how Speas and Tenny leverage their assumptions about the syntax-pragmatics interface and the left periphery to account for the two generalizations mentioned above. First, they posit an additional functional projection in the left periphery called the Sentience or Point of View projection. The Sentience Projection consists of an Evaluation Phrase (EvalP) which dominates an Evidential Phrase (EvidP). The specifier of EvalP is called the SEAT OF KNOWLEDGE. The value of this node is the individual relevant for the interpretation

of perspectival expression, i.e. the perspective holder. The sentence projection is given in (265).

(265) **Speas and Tenny's (2003: 334) sentence projection:**



Assuming that there is only one SEAT OF KNOWLEDGE node accounts for the generalization that no language grammaticalizes two logophoric pronouns. The next goal is to account for the ways in which utterance type determines the SEAT OF KNOWLEDGE. Put another way, the main goal for Speas and Tenny is to determine how the SEAT OF KNOWLEDGE is determined in general. They want to be able to predict, for example, that it corresponds to the speaker in a declarative and the addressee in an interrogative, as shown in (263). To do that, they assume that the Sentence Projection sits above the logical form of the utterance content itself but under sap. Specifically, the sentence projection is part of the UTTERANCE CONTENT node in the specifier of sa*. As a result, in a declarative, only the SPEAKER c-commands the SEAT OF KNOWLEDGE. Therefore, the SPEAKER binds the SEAT OF KNOWLEDGE, and the speaker is the relevant perspective holder. In contrast, in an interrogative, the HEARER moves up to the specifier of sa, as mentioned above. As a result, it c-commands and can bind the SEAT OF KNOWLEDGE, and the relevant perspective holder can be the addressee. Similarly, when UTTERANCE CONTENT is embedded under an attitude

predicate, the attitude holder/subject c-commands and can bind the SEAT OF KNOWLEDGE. Thus perspective shifting is accounted for configurationally.

To account for distinctions among different types of perspective holders without positing more than one logophoric pronoun, Speas and Tenny propose that Sells' SOURCE role corresponds to pronominal elements bound by the highest argument in sap (i.e. the speaker or the subject of a communication predicate); the SELF role corresponds to elements targeting the SEAT OF KNOWLEDGE; and the PIVOT role corresponds to elements targeting an argument in lexical conceptual structure that is co-indexed with the SEAT OF KNOWLEDGE.

Like Sells (1987), Speas and Tenny intend their analysis to apply not just to logophoric pronouns but to all manner of perspectival expressions. They are more explicit about this claim than Sells, giving a list of perspectival expressions that they take to depend on the SEAT OF KNOWLEDGE. Similarly, like Sells, their main focus is predicting which perspective holder is involved in the interpretation of given perspectival expression. Where Sells complicates the pragmatics to achieve this goal, they complicate the syntax. However, their approach is subject to the same critique that Sells' is. An analysis on which *behind* or *come* or *zu* 'come_{zu}' depends for its interpretation on the value of the SEAT OF KNOWLEDGE node is an analysis on which it depends on an individual. Thus, it runs into the same problems discussed above. There's no prediction of *de se*-ness, and no way to account for examples involving perspectives not centered on an individual anchor.

There is one way in which Speas and Tenny (2003) make better predictions than Sells and pave the way toward further improvements, including the approach developed in this dissertation. For one empirical domain, evidentials, they allow for a body of perspectival information. Specifically, Speas and Tenny tentatively propose that in EvidP, embedded by EvalP, the specifier position can be occupied by a body of evidence. Their motivating example is from Makah (Wakashan, United States), which contains an evidential morpheme encoding inference based on physical evidence. They suggest that the physical evidence itself occupies the specifier of EvidP, though they do not say exactly what that means for

the compositional semantics. This may be equivalent to saying that a body of physically accessible information occupies a particular node in logical form. It is not clear why they countenance this move for evidentials only, and not for other perspectival expressions, but it might be possible to generalize the approach. If this were done, then Speas and Tenny's account might track more closely with the approach taken in this dissertation.

Bylinina et al. 2014, 2015 Bylinina et al. (2015, 2015) come closer to the approach taken in this dissertation. That's because they divide perspectival expressions into two categories: pronominal perspectival expressions and evidential perspectival expressions. This latter category, like Makah evidentials on Speas and Tenny's (2003) account, depends on a contextually supplied body of evidence. For, Bylinina et al., this class is larger than just evidentials, though. It also includes epistemic modals and subjective predicates such as *expensive* (and presumably *tasty*), as well as evidentials. Thus Bylinina et al. (2014, 2015) countenance a wider role for doxastic perspectival information than the other previous accounts discussed so far.

They do not, however, countenance a role for perspectival information in the interpretation of what they call pronominal perspectival expressions, among which they include spatial expressions such as *behind* and deictic motion verbs such as *come* and *zu* 'come_{zu}'. Instead, pronominal perspectival expressions are analyzed as depending for their interpretation on a contextually determined perspective holder, just as on the accounts of Sells (1987) and Speas and Tenny (2003). As a result, their analyses are susceptible to the same critiques. To see this, consider their analyses of *to the left*. Working in two slightly different frameworks, they provide (266a) as an informal indication of how an analysis of *to the left* should go and (266b) as an informal lexical semantics for *left*. In (266a), p is the relevant perspective holder, w is the world of evaluation, g is an assignment function, and E is a contextually salient body of information (not relevant for interpreting *left*). In (266b), c is a context and P_c represents the relevant perspective holder, an element of that context.

(266) **Interpretations of *to the left* in a perspective-holder based semantics:**

a. **Bylinina et al.’s (2014: ex. (45)) informal account of *to the left*:**

$\llbracket \text{John is to the left of Mary} \rrbracket_{w,g}^{p,E} \Leftrightarrow \text{John is on the left side of Mary relative to } p$
in w .

b. **Bylinina et al.’s (2015: ex. (18a)) informal account of *left*:**

$\llbracket \text{left} \rrbracket_c = \lambda x_e \lambda y_e. y$'s location is to the left of x 's location relative to P_c .

Bylinina et al.’s informal translations show that, however “relative” is realized formally, the contextual information that the meaning of *to the left* incorporates is just the relevant perspective holder, not a POV. The same observations will hold, *ceteris paribus*, for an analysis of *come* based on their approach, because their diagnostics place it among the pronominal perspectival expressions.⁷ Their analyses of these expressions are therefore subject to the same critique. However, importantly, they expand the use of bodies of perspectival information beyond those proposed by Speas and Tenny’s (2003). In this way, their account also prefigures this dissertation work.

Mitchell 1986 I have left Mitchell’s (1986) account of perspectival expressions for last even though it precedes those discussed above because it differs from them in an important way. It includes a consistent emphasis on the mental state of the perspective holder. That is to say, it emphasizes perspectival information. Ultimately, it does so in a way that makes incorrect predictions. But, nevertheless, it provides an important building block for the kind of account developed in this dissertation.

Mitchell (1986) bases his account on the idea that utterances have two kinds of semantic content: external content (EC) and internal content (IC). External content is essentially the propositional content. Internal content, in contrast, is the content as it is represented to

⁷This point is important. It’s not just the case that Bylinina et al. (2014, 2015) assign *come* to the class of pronominal perspectival expressions. Rather, the diagnostics designed to identify evidential perspectival expressions fail to identify it as such. Thus, the problem is deeper than simple misidentification.

the speaker/believer in her own mind. This is illustrated in (267)-(268). These examples illustrate the system without involving a perspectival expression.

(267) [Context: Quintus has amnesia, but he has recently found and begun reading his old diary. He doesn't recognize that the diary is his, but he does know it is the diary of a war hero named Quintus. Someone familiar with the situation says:]

Quintus thinks he's reading his diary.

(268) Mitchell's (1986: 62) analysis of (267)

Quintus – $\lambda x.x$ thinks $\left\{ \begin{array}{l} \text{EC: } x \text{ read } x\text{'s diary} \\ \text{IC: } \exists y.x \text{ read } y\text{'s diary} \end{array} \right.$

The expression of interest in (267) is *his*. *His* is used to refer to Quintus, so in the external content, the propositional content without any idea of self-ascription, the two are represented using the same variable, x . In contrast, in the internal context, the variable for the diary owner, y is existentially bound. This represents the idea that Quintus self-ascribes only being the reader (x) of the diary. Putting this in terms of discourse referents (Mitchell talks in terms of files, following Heim 1983), in the interlocutors' common context, there's a single discourse referent for the reader and the owner of the diary. In contrast, Quintus has, in his own mind, two distinct mental referents, or files, for two potentially distinct individuals.

Next, Mitchell adds two components: a situation semantics framework, and a notion of a point of view thematic role. This thematic role is an element of the argument structure of perspectival expressions. Mitchell (1986: 118) assumes that when a speaker uses a first person pronoun, she self-ascribes content, and that when self-ascription is made, point of view variables (arguments in the point of view thematic role) are bound self-ascription variables. This leads him to the analysis of an utterance with *come* involving such a point of view variable.

(269) The dog is coming at me from the garage.

(270) Mitchell's (1986: 118) analysis of (269):

a. EC: $\lambda s : \mathbf{scome-at}(s)$

Agent(s) = [the dog]

Source(s) = [the garage]

Goal(s) = Point of view(s) = Speaker(s)

b. IC: $\lambda x \exists s : \mathbf{scome-at}(s)$

Agent(s) = [the dog]

Source(s) = [the garage]

Goal(s) = Point of view(s) = x

(270a) shows that the external content of (269) is the set of situations s such that in s is a situation in which the dog comes at the speaker from the garage. The internal content is the property, following Lewis (1979a), of being in a situation in which the dog is coming at oneself. This property is self-ascribed by the speaker.

Thus, Mitchell's account shares with the account developed above the prediction that the anchoring of *come* is *de se*. It also shares the idea that the anchor argument is anaphorically interpreted. It is not clear what Mitchell's analysis predicts with respect to the projectivity of the anchoring implication, since he does not discuss differences in the ways in which external and internal content behave relative to entailment canceling operators. It is also clear that Mitchell's characterization of the anchoring implication, at least as represented in (270), is not correct. On Mitchell's account, the anchor must be aware of the motion event. She must self-ascribe being the goal of it. In fact, all the anchor needs to self-ascribe is being located at the destination, as shown in (185), repeated from above.

(185) [Context: The interlocutors are in Columbus. Donna is in Cleveland.]

Donna doesn't know that I came to Cleveland yesterday to deliver supplies for her surprise party.

In (185), Donna is not aware of the speaker's travel to Cleveland. She is, however, presumably aware that she is in Cleveland.

These details aside, the bigger picture critique of Mitchell's account is that the lexical semantics of perspectival predicates are more complicated than can be represented by just adding a thematic role to the semantics. In this respect, Mitchell needed the insights of Fillmore (1965, 1966) that the self-ascribed content of *come* is the anchoring implication. It's not just a particular way of looking at the proffered content of *come*. Furthermore, Mitchell's account is overly restrictive, because it requires all perspectival expressions to give rise to *de se* internal content. But that's not right. Spatial perspectival expressions such as *to the left*, for example, do not give rise to *de se* implications:

(271) [Context: April and Andy are sitting across a coffee table from Fred. On the coffee table between them, there is an ashtray and, beside it, some money.] Look at Fred sleeping in that chair over there. All the while, just to the left of the ash tray, from his perspective, and totally within reach, sits \$10,000 cash.

In (271), Fred need not believe *de se* that the cash is to the left of the ash tray. The example is acceptable in a context in which the cash was set down after he fell asleep and will be removed before he wakes up. Furthermore, he need not have any beliefs about which direction is *left* relative to the ash tray. It too might have never been there when he was awake. In any event, it is clear that at the time of interpretation, he has no *de se* beliefs about either, even if he had some before falling asleep. If there's any doubt about this, imagine a minimally different situation in which Fred is no longer living.

Thus, Mitchell's analysis runs into trouble too, but not because it ignores perspectival information. Rather, it incorporates perspectival information, and specifically *de se* belief, even when it doesn't need to. In addition, with respect to spatial expressions, because his account involves merely an individual, not a POV in my technical sense, it is susceptible to the same challenges as the other accounts discussed.

7.3 Defining perspectival expressions in terms of perspectival schemas

The observation that both spatial and doxastic perspectival expressions depend for their interpretation on elements of perspectival schemas suggests the definition of perspectival expressions given in (272), which follows Roberts’s (2014) characterization of indexicals, which she argues are perspectival in the sense intended here.

(272) **Perspectival expressions:** Perspectival expressions are which depend for their interpretation on either a POV or a perspective defined with respect to a POV.

The key element of (272) is that it limits perspectival information to POVs and resulting perspectives. Given that so far we have identified spatial and doxastic perspectival meaning schemas, this yields the set of possible antecedents in Table 7.5.

Perspectival expression	Possible arguments	
	POV	perspective
spatial	\langle location, direction \rangle	region (set of points in space)
doxastic	\langle centered world, DOX \rangle	information state (set of centered worlds)

Table 7.5: Possible arguments of perspectival expressions

Defining perspectival expressions in this way rules out certain kinds of expressions. Specifically, it rules out expressions that depend, for example, on just an origin. In the spatial domain, this means ruling out expressions such as *nearby* and *local*. These expressions require for their interpretation just a location. They indicate relative proximity to that location. (273) and (274) illustrate:

(273) [Context: Fred and Anna are at OSU. Fred is telling Anna about the restaurants in Clintonville, a neighborhood north of there.]
Northstar Cafe is at 2233 North High Street. There, a Chinese place near there, and Jeni’s Ice Cream is **nearby**, too.

(274) [Context: Amy and Johnny are in Ohio. Amy is telling Johnny about drinking options in Cambridge, MA:]

Cambridge doesn't have much in the way of dive bars. But there is a **local** bar called the Thirsty Scholar that is pretty cool.

In (273), *nearby* means near the Northstar Cafe. Similarly, *local* means local to Cambridge. There's no sense in which these meanings depend on anyone viewing anything in a particular way, or having access to a particular kind of spatial information. If we consider them to be perspectival, as many researchers do (Mitchell, 1986; Bylinina et al., 2014, 2015), then it becomes unclear how to rule out many other expressions, including phrases such as *across the street*, which can depend on an implicit location argument for its interpretation as well. In some sense, we run the risk of counting as perspectival any expression with an implicit argument (Partee, 1989) that can, in some contexts, be filled by a human individual.

Thus, examples (273) and (274) reveal an important difference between perspectival and non-perspectival expressions. For non-perspectival expressions, providing just one component of a POV—just a location, for example—is sufficient to make their use acceptable. To interpret *nearby* and *local*, all that is needed is a location. No orientation is relevant. In contrast, on the definition proposed above, for truly perspectival expressions, the POV or perspective themselves are essential. *To the left* cannot be interpreted without information about a location and an orientation, and *come* cannot be interpreted without information about a doxastic perspective.

Similarly, it's arguable that some indexicals such as *I* are not considered perspectival on this definition. This is because they can be analyzed as depending only on the origin of a doxastic perspective, an agent, not a point of view or perspective. Not including indexicals is one difference between the present account and that of Roberts (2014). For Roberts, indexicals are a subset of perspectival expressions precisely because their interpretations

depend on a doxastic origin, specifically the discourse center element of such an origin.⁸

This definition is fairly weak, despite ruling out some expressions. To make this it stronger, I add a constraint to the types of orientations/accessibility relations that can be used to define novel perspectival schemas.

(275) **Constraint on perspectival accessibility relations:**

An orientation/accessibility relation is only acceptably part of a perspectival schema if it is a kind of accessibility relation that is available to a human perspective holder.

This represents the basic insight that what perspectival expressions do is allow people to inform each other about different human individuals' perspectives, not just about certain kinds of information in general.

The key to allowing this definition to apply to all sorts of perspectival expressions is that it is not bound to a particular perspectival meaning schema. Unfortunately, as a result, it does not offer a way to construct theory-neutral diagnostics for perspectival expressions such as those for projectivity and *de se* expressions used in Chapters 2 and 4. It doesn't define a class of natural class of "perspectival expressions" in terms of a set of observable linguistic phenomena. For example, it doesn't say that all perspectival expressions give rise to *de se* implications—spatial ones do not—or that all perspectival expressions can anchor to the attitude holder when embedded under an attitude predicate—*zu* 'come_{zu}' cannot. The reason for this difficulty has to do with the localist hypothesis. What unifies perspectival expressions is a structural similarity, where structural has to do with the components of meanings and how they relate to each other. But even though this structural similarity exists, there's no reason to expect that an expression with a spatial POV as an implicit

⁸I don't want to make too much of this difference. On a story like those of Gunlogson (2001, 2002), Farkas and Bruce (2010), Lauer (2013), and, arguably, Stalnaker (1978) and Roberts (2012), the common ground is constructed in terms of the doxastic perspective, or commitments, of the speaker. As a result, when she uses *I* to refer to herself, she does so with respect to her own perspective on herself. This means that *I* gives rise to *de se* implications, just as Roberts (2014) argues.

argument and one with a doxastic perspective as an implicit argument should behave the same way, modulo the observation that both have anaphoric presuppositions.

Despite this limitation, until a better alternative arises, I will stick with the definition in (272). Partially, that’s because diagnostics offered previously in the literature do not work. Either they’re too restrictive, or they’re too permissive. So there are no viable alternatives based on theory neutral tests. In addition, I would argue that this definition hits a kind of Goldilocks zone precisely because it rules out merely anaphoric expressions like *local* on the one hand, and indexical expressions like *I* on the other (see Bylinina et al. 2015 on this point). To see this improvement, it is useful to consider previous diagnostics in the literature, and to understand where they are problematic.

7.4 Previous diagnostics for perspectival expressions

There have been several attempts to identify and catalog perspectival expressions—expressions that have been variously called “point of view sensitive” expressions (Mitchell, 1986), “logophoric” expressions (Sells, 1987), “point of view phenomena” (Speas and Tenny, 2003), “subjective” expressions (Smith, 2009), or “perspective sensitive items” (Bylinina et al., 2014, 2015). Sometimes researchers identify expressions as perspectival by appealing to specific linguistic diagnostics, and sometimes they just list types of perspectival expressions (e.g. Speas and Tenny 2003).⁹ The two examples of clear diagnostics in the previous literature come from Mitchell (1986) and Bylinina et al. (2014, 2015). I discuss these two sets of diagnostics in the next two sections.

⁹This is not to say e.g. Speas and Tenny (2003) do not present linguistic evidence. Rather, it is merely to note that they do not identify specific linguistic behaviors belonging to all and only perspectival expressions, and they do not present clear diagnostics that can be applied to novel expressions.

7.4.1 Mitchell's (1986) diagnostics and taxonomy for perspectival expressions

Mitchell's (1986) taxonomy of perspectival expressions is perhaps the first attempt to define the class.¹⁰ Mitchell gives two broad categories of perspectival expressions: spatio-temporal and cathectic. Spatio-temporal perspectival expressions are taken to depend on a particular individual's spatio-temporal point of view. Cathectic expressions depend on the response that a particular experiencer has to an experience. An examples of each type is given in (276) and (277), respectively.

(276) **Spatio-temporal perspectival expression:**

John entered the room. **In front of** the table was a large package.

(Mitchell 1986:3, example (7))

(277) **Cathectic perspectival expression:**

A: Did you like *The Meaning of Life*?

B: No, it was pretty **boring**.

(Mitchell 1986:6, example (12))

Mitchell proposes that interpreting the second sentence in (276) involves implicitly adopting the John's spatial perspective. This perspective is introduced in the first sentence of the example, which locates John in a particular physical spot in the room. The second sentence then communicates that the package was near the side of the table closest to John, the side John was facing.¹¹ In contrast, in (277), spatial position is irrelevant. We understand

¹⁰Arguably, Fillmore's (1975) "deictic" expressions are perspectival. However, Fillmore (1975:16) defines deictic expressions in terms of developing "an understanding of the roles sentences can serve in social situations occurring in space and time" and "knowing the class of situations in which [a sentence] could be appropriately uttered, and knowing what effect it could be expected to have in that situation". In other words, Fillmore's focus is on the relations between linguistic expressions and the context, rather than more specifically on the relations between linguistic expressions and the perspectives of particular individuals. Therefore, I do not describe Fillmore's taxonomy in detail here.

¹¹Strictly speaking, the second sentence doesn't have to mean that. (276) could be spoken by someone in the room with John, in which case the package could be between her and the table. However, the absence of a context in Mitchell's example makes this interpretation unlikely. In the example as given, the only salient spatial perspective is John's.

B's response to mean that in her judgment, based on her experience, *The Meaning of Life* was boring. These examples illustrate the spatio-temporal and cathectic perspectival expressions, respectively.

Mitchell presents four kinds of evidence to support his claims that particular expressions are perspectival. As far as I can tell, the first kind of evidence is meant to apply to all perspectival expressions, and the other three are meant to apply only to cathectic perspectival expressions. Thus, these kinds of evidence can be thought of as diagnostics, though Mitchell does not exactly frame them as such. Together, they are intended to (i) identify the class of perspectival expressions and (ii) subdivide it into Mitchell's two categories.

The attribute that all perspectival expression purportedly share is ambiguity under attitude predicates. Specifically, when embedded, perspectival expressions are taken to be ambiguous between a speaker-oriented interpretation and an attitude holder oriented interpretation. In Chapter 2, I showed that *come* is ambiguous in just this way. Either the speaker or the attitude holder (or the addressee, for that matter), can be the anchor. Here is another example from Mitchell 1986: 2. The purported perspectival expression is *nearby*.

(278) John thinks that Bill works in a nearby bank.

Mitchell proposes that (278) is ambiguous between a reading on which the bank is near John and one on which it is near the speaker's location at utterance time.

To see how this claims works as a diagnostic works, consider (279), with the perspectival expression *to the left*. (279b) and (279a) disambiguate (279) in favor of a reading anchored to the speaker's perspective and a reading anchored to the attitude holder's, respectively.

(279) Fred thinks the treasure is buried **to the left** of the tree.

- a. **Interlocutor perspective:** [Context: The interlocutors are standing at the south edge of a meadow, facing a large tree at the center of the meadow. Fred has told them that there's a treasure buried to the west of the large tree. One says:] (279)

- b. **Attitude holder perspective:** [Context: Fred is standing at the south edge of a meadow, facing a large tree at the center of the meadow. He begins walking toward a spot a few meters west of the tree. An observer, standing on the east side of the meadow, says:] (279)

In (279a), Fred does not necessarily know that the interlocutors are at the clearing, let alone which side of the clearing they're standing on. Therefore, the only perspective with respect to which *to the left* can be interpreted is that of the interlocutors. In contrast, in (279b), from the interlocutors' perspective, the location where Fred thinks the treasure is buried is behind the tree, not to the left of it. The fact that (279) is acceptable and true in (279b) shows that in that context *to the left* is interpreted relative to Fred's perspective.

This kind of ambiguity is widely accepted as a hallmark of perspectival expressions. However, it is typically described as “perspective shifting” or “shiftability” rather than ambiguity (see e.g. Bylinina et al. 2014, 2015). The more general assumption is that by default perspectival expressions depend on the perspective of the speaker, but that they “shift” to other perspectives in certain contexts (see Fillmore 1975; Sells 1987; Speas and Tenny 2003; Roberts 2014; Bylinina et al. 2014, 2015 for perspectives on this idea). According to Mitchell, the expressions identified by this diagnostic are what he calls spatio-temporal perspectival expressions. He divides these into several types, as presented in (280).

(280) **Types of spatio-temporal perspectival expressions:**

- a. **Relative position:** *nearby, far off, current, recent, former, imminent, etc.*
- b. **Orientation:** *to the left, up ahead, clockwise, etc.*
- c. **Socio-cultural organization of space:** *local, foreign, neighbor, from out of state, etc.*
- d. **Directed paths:** *around the corner, across the street, over the hill, etc.*
- e. **Deictic motion verbs:** *come, go, send, bring, take, etc.*

It seems likely that Mitchell's first diagnostic does apply to most, if not all expressions that would be classified as perspectival on the diagnostic developed above. However, it also seems to identify as perspectival many expressions that, at least a priori, don't seem to depend on an individual's perspective. One of these, which Mitchell recognizes is *food*. In general, in an utterance such as *John thinks that food is gross*, it is assumed that John thinks the food is food. But now suppose John is traveling among the Yup'ik in Alaska and comes across a pit full of stinkheads.¹² He might think they're gross without knowing they're food. In fact, he might think they're garbage. Nevertheless, someone in the know might say *John thinks that food is gross*. In that case *food* appears to be anchored to the speaker's perspective. However, this looks very much like a standard *de re/de dicto* ambiguity. More importantly, the diagnostic will identify any expression that can participate in a *de re/de dicto* ambiguity. Therefore, it is too permissive.

Mitchell's additional diagnostics are designed to identify only cathectic perspectival expressions. Recall that these are expressions with meanings that draw upon the experiences or opinions of some perspective holder. Here are Mitchell's three tests for identifying cathectic expressions:

(281) **Mitchell's (1986) tests for cathectic expressions**

- a. Cathectic expressions participate in **the denial paradigm**.
- b. Cathectic expressions can be **embedded under *find***.
- c. Cathectic expressions **shift perspective holders under *must***.

These diagnostics have been discussed under other guises in the literature, often in the literature on predicates of personal taste. For instance, what Mitchell calls the denial paradigm is elsewhere called "faultless" or "subjective" disagreement (Lasersohn 2005; Stephenson 2007; Pearson 2013a, among others). An expression participates in the denial

¹²Stinkheads are fish heads buried for a time in order to ferment and then eaten.

paradigm if it can be asserted by one party in a conversation and denied by another without either seeming to have said something false, as in (282). In (282), the perspectival expressions are the predicates of personal taste *tasty* and *yucky*.

(282) **Cathectic expressions: the denial paradigm:**

April: Sushi is **tasty**.

Ben: No, it's not. It's **yucky**.

In (282) April and Ben contradict each other, at least on the face of it, but informally neither seems to have said something false. They seem instead to have merely expressed their personal opinions.

The *find* test is also used in the literature on predicates of personal taste (see especially Sæbø 2009; see Coppock 2016 for a related phenomenon in Swedish). Its application, again with the predicate of personal taste *tasty*, can be seen in (283).

(283) **Cathectic expressions: Embedding under *find*:**

[Context: Following (282), Leslie says:]

a. April finds sushi **tasty**.

b. Ben finds sushi **to contain raw fish**.

In (283a), the perspectival expression *tasty* embeds uncontroversially under *find*, arguably because its content is perspectival. In contrast, (283b) is odd because the judgment embedded under *find* is not perspectival, or subjective.¹³

Finally, Mitchell's third test is obligatory shifting under *must*, which is discussed by Pearson (2013a) with respect to predicates of personal taste. The idea is that when a cathectic expression is embedded under *must*, the perspective shifts to someone other than the speaker, as in (284):

¹³There is a scientific use of *find* that's different. Say the contents of sushi were in doubt or in dispute, and Ben conducted experimental research to determine whether or not sushi contained raw fish. Then (283b) would sound much better. This use is not the one intended in the *find* diagnostic.

(284) **Cathectic expressions: Shifting under *must*:**

Andy: Sushi must be **tasty**.

The intuition is that when he utters (284), Andy can't be expressing his own opinion. He has to mean that sushi is tasty to someone other than himself, or on the basis of experience other than his own.

(285) presents Mitchell's taxonomy cathectic expressions, which, like spatio-temporal perspectival expressions, are subdivided into several types.

(285) **Types of cathectic perspectival expressions**

- a. **Ability:** *easy, useful, difficult, available, food, poison, etc.*
- b. **Boring class:** *boring, interesting, amusing, pleasant, startling, attractive, friend, enemy, a nuisance, a weed, etc.*
- c. **Perception:** *Loud, soft, bitter, sweet, ?hot, cold, warm, cool, visible, audible, tangible, etc.*
- d. **Cognitive:** *obvious, obscure, strange, familiar, usual, unusual, etc.*
- e. **Predicate ascription verbs and adjectives:** *obvious [to x that p], suggest [to x that p], reveal [to x that p], make manifest [to x that p], seem/appear [AP to x], seem/appear [to x that p], indicate [to x that p], etc.*

Mitchell's cathectic expressions may well form a special class of expressions. However, it does not include all perspectival expressions. Thus, whereas the ambiguity diagnostic above is too permissive, together these three diagnostics are too restrictive to identify all and only perspectival expressions. For example, the class does not include *come*. The use of *come* does not give rise to faultless disagreement, *come* does not embed under *find*, and it does not shift under *must*, as shown in (286).

- (286) a. [Context: April is in Pawnee and Ben is in Washington. They are talking on the phone.]
 April: John came to Pawnee.
- i. Ben: No he didn't. John **came** to Washington
 - ii. Ben: #No, he didn't. John went to Pawnee.
- b. Leslie: ??April finds that John **came** to Pawnee.
- c. April: John must be **coming** to Pawnee.

In (286a-i), Ben can disagree with April about where John went, in which case there is no faultlessness. In (286a-ii), he cannot disagree as part of an attempt to deny the perspectival content of *come*. In (286b), the result of embedding *come* under *find* is bizarre. And in (286c), embedding *come* under *must* does not shift the perspective holder; it is still April's perspective that is relevant. Thus, Mitchell's tests do not identify *come* as cathectic.

To sum up, Mitchell's diagnostics and taxonomy suggest that perspectival expressions have the potential to depend on the perspectives of different individuals—sometimes the speaker, sometimes an attitude holder—depending on the context. This shiftability is often taken to be a hallmark of perspectival expressions and used to differentiate them from pure indexicals (see Bylinina et al. 2014, 2015; for a view that questions this division, see Roberts 2014). The diagnostics and taxonomy also show that a subset of perspectival expressions, those Mitchell labels cathectic, depend for their interpretation on the subjective experiences of an experiencer. It is for this reason that they participate in the denial paradigm, embed under *find*, and shift under *must*, which arguably has a non-direct evidential component (von Stechow and Gillies, 2010). Shiftability and subjectivity are thus two central aspects of perspectival meanings, according to Mitchell. This is congruent with claims made in this dissertation as well. However, Mitchell's linguistic tests fail to identify all and only perspectival expressions, despite highlighting shiftability and subjectivity.

7.4.2 Bylinina et al.’s (2014, 2015) diagnostics and taxonomy for perspectival expressions

In a sense, Bylinina et al.’s (2014, 2015) diagnostics adapt Mitchell’s non-cathectic, general diagnostic. Specifically, like Mitchell’s general diagnostic, they focus on shiftability. However, they generalize to additional environments besides embeddings under attitude predicates. They also allow for expressions that shift obligatorily under attitudes and therefore do not give rise to the ambiguity required by Mitchell’s general diagnostic. For example, due to this second change, Bylinina et al. identify the modal auxiliary *might* as perspectival. They argue that *might* typically anchors to the speaker’s perspective in declarative main clauses, and that it obligatorily anchors to the attitude holder’s perspective when embedded under an attitude predicate. Thus it displays shiftability, but does not give rise to an ambiguity when embedded. For Bylinina et al., this kind of shiftability is sufficient to diagnose an expression as perspectival. In contrast, Mitchell’s general diagnostic does not identify *might* as perspectival, due to the absence of ambiguity in embedded examples. Thus, Bylinina et al. (2014, 2015) identify a broader range of perspectival expressions than Mitchell, but nevertheless a similar set. Their diagnostics are given in (287).

(287) **Bylinina et al.’s (2014) diagnostics for perspectival expressions:**

- a. Perspectival expressions have a **default speaker-orientation**.
- b. Perspectival expressions are **shiftable** in certain grammatical constructions.
- c. Within a given domain, perspectival expressions **shift together**.

The first criterion says that perspectival expressions are by default interpreted relative to the speaker’s perspective. Bylinina et al. acknowledge that defining “default” rigorously is a difficult task that they do not undertake. In their words, “what counts as a ‘default’ is not so easy to pin down in rigorous terms” (Bylinina et al 2015: 68). However, they suggest that the notion should be intuitively clear. The second criterion is related to the first. It says that in certain contexts, for example in questions, the perspective with respect to which a

perspectival expression is interpreted can shift to someone other than the speaker. In some cases, this shift is obligatory, but in others it is optional. Finally, the third criterion is that perspectival expressions shift together. Bylinina et al. argue that these criteria differentiate perspectival expressions from general context-sensitive expressions on the one hand and pure indexicals on the other.

One problem with Bylinina et al.'s diagnostics, which their discussion of 'default' anchoring acknowledges, is that they do not provide an iron clad test. The fact that an expression is not interpreted relative to the speaker's perspective in a particular context does not clearly show whether or not it is so interpreted by default.

In addition, some of Bylinina et al.'s empirical claims are suspect. For example, Bylinina et al. propose that perspectival expressions in a VP can shift to the perspective of the subject. They give (288) as an example with *attractive* as the perspectival expression, but do not include a context.

(288) **Bylinina et al.'s (2014: ex. (19a)) proposed example of shifting to the subject's perspective:**

John sat next to an **attractive** linguist.

Bylinina et al. propose that (288) has a reading on which the linguist's attractiveness is evaluated relative to John's perspective rather than the speaker's. A context such as that in (289) seems to provide support for this claim. However, if *attractive* really can be evaluated relative to John's perspective, then there's no accounting for the unacceptability of (289) itself.

(289) [Context: Ann wasn't with John on the plane, but he told her he sat next to a linguist he found attractive. Ann says:]

??There are no attractive linguists, but John sat next to an **attractive** linguist (on the plane).¹⁴

¹⁴There is a reading where, accompanied by certain prosodic or gestural cues (e.g. "air quotes") the second *attractive* in (289) can be interpreted relative to John's perspective. However, the necessity of prosodic or

The fact that (289) is marginal suggests *attractive* cannot be interpreted according to the perspective of the subject in all cases. Instead, it seems to suggest that the perspectival content of *attractive* must be at least compatible with the speaker's judgments as well. The contrast between (290a), which also attempts to anchor perspectival content in a VP to the subject of the VP, and (290b), which anchors perspectival content to an attitude holder, provides further support for this hypothesis.

(290) [Context: Ron and April are talking at a party, where John is also in attendance.

April says:]

a. #That cake is **yucky**, but John devoured that cake that is **tasty**.

b. That cake is **yucky**, but John thinks that cake is **tasty**.

If shifting is possible at all in (290a), it is only for the purpose of irony, not for the sincere assertion of the proposition that, according to John, the cake was *tasty*. In contrast, in (290b) shifting is acceptable when *tasty* is embedded under an attitude predicate. This suggests that if VP-internal shifting really is possible, it is of a different, possibly more limited sort than shifting under attitude predicates.

For a second example of problems with Bylinina et al.'s generalizations, consider their requirement that perspectival expressions in the same environment shift together, given as the diagnostic in (287c). To support this claim, Bylinina et al. (2014) provide (291), their example (35).

(291) **Bylinina et al.'s (2014) purported example of shift-together:**

Wei talked to a **foreigner** (who was sitting) **on the left**.

Bylinina et al. (2014) claim that (291) has a reading on which *foreigner* means foreign to Wei and *left* means left relative to Wei's position. It also has a reading on which both gestural cues strengthens the point being made here. If the grammatical positions of *John* (as subject) and *attractive* (in VP) were what made the shift possible, then the additional cues would not be needed. Furthermore, the additional cues make the grammatical position irrelevant. With the right prosody and/or air quotes, the same shift is available for e.g. *There are no attractive linguists, but an attractive linguist sat next to John on the plane*, even though here *John* is not the subject and *attractive* is not in the VP.

are interpreted relative to the speaker's perspective. However, they claim that it does not have a mixed reading, where one perspectival expression is interpreted relative to the speaker's perspective and the other relative to Wei's. This might be right for (291), but not because perspectival expressions must shift together. Note that in (291) the typically overt, non-perspectival argument of *to the left* (e.g. the tree in *to the left of the tree*) is implicit. If this argument is resolved to Wei or to the speaker, the most likely antecedents, then the use of *to the left* in (291) actually ceases to be perspectival. In such a case, the first argument of *to the left* has intrinsic axes, and *to the left* is interpreted relative to those axes, as in *to the left of the house* or *to the left of the car* in the intrinsic frame of reference (see Levinson 2003; Bohnermeyer 2012). Thus, in (291), leaving the object of *to the left* unspecified results in a confound. It makes it impossible to correctly identify the source of the observed shift-together effect.

The acceptability of a mixed perspective example involving *to the left* and *foreigner* is demonstrated in (292), where *to the left* has an overt argument without intrinsic axes.

(292) [Context: Yitzhak is a Israeli operative working in the United States. He observes suspected terrorist Bill, a US citizen, meeting with an Israeli national. From Yitzhak's perspective, Bill and the suspect are standing to the left of a large tree in Central Park. Later, Bill brings {a CIA agent/another Israeli operative} to the spot where he observed the meeting and says:]

Bill talked with a **foreigner to the left** of that tree.

In (292), the suspect is a foreigner from Bill's perspective but not from Yitzhak's, while *to the left* is interpreted relative to Yitzhak's perspective.

To see that this effect is general and does not depend on e.g. *foreigner*, which we might ultimately want to analyze as non-perspectival for reasons not worth discussing here, consider (293), where *to the left* is paired with the modal *might*. In (293a), both *to the left*

of and *might* are in the same environment in that they are embedded under an attitude predicate with Bill as the subject. In (293b), both are in the matrix clause.

- (293) a. [Israeli agent Yitzhak and his colleagues are watching Bill in the park. He is talking with another man. This man is standing facing Bill with his back to a large tree. From Yitzhak's vantage point, the man is standing against the left side of the tree. Yitzhak says:]
Bill thinks the other man **to the left** of the tree **might** be an Israeli agent (even though actually he's not).
- b. [Context: Yitzhak and his colleagues are observing Bill in the park. They are south of a large tree, and they know that there's a man lurking on the north side of the tree, but they don't know who he is. Bill approaches the tree from the west. Yitzhak says:]
Bill's walking toward the tree. Now he's moving to the left. We have to get our audio equipment running ASAP! The man **to the left** of the tree **might** be Bill's handler.

In (293a), *to the left* is interpreted relative to Yitzhak's perspective, but *might* is interpreted relative to Bill's. Yitzhak knows who the Israeli agents are and are not, so only Bill can anchor *might*. In (293b), the conditions are reversed. *To the left* is interpreted relative to Bill's perspective as he approaches the tree. On the assumption that Bill knows his own handler, *might* can only be interpreted relative to Yitzhak's perspective. These examples show that there is more variability in shifting than Bylinina et al. (2014, 2015) countenance, and that shift-together is too strong a constraint to include as a diagnostic for perspectival expressions. Setting the shift-together diagnostic aside however, Bylinina et al.'s diagnostics and their emphasis on shiftability provide an important generalization of Mitchell's approach. They also re-emphasize the centrality of shiftability for the meanings of perspectival expressions, a point which broadly follows Mitchell (1986), Sells (1987),

Speas and Tenny (2003), and Smith (2009).

Finally, then, here is Bylinina et al.'s taxonomy. Like Mitchell's (1986), it is divided into two categories. Bylinina et al.'s categories are "pronominal" perspectival expressions and "evidential" perspectival expressions. The categories are distinguished by different patterns of perspective shifting. The claim is that pronominal perspectival expressions shift optionally in VP-internal positions, the antecedents of conditionals, questions, and under attitude predicates, but evidential perspectival expression shift optionally in the first two environments and obligatorily in the last two. Here is the taxonomy with some sample expressions:

- (294) a. **Pronominal perspective sensitive items**
- i. relative locative expressions (e.g. *to the left*)
 - ii. relative socio-cultural expressions (e.g. *foreigner*)
 - iii. perspective-sensitive anaphora (e.g. Japanese *zibun* 'SELF')
- b. **Evidential perspective sensitive items**
- i. subjective predicates (e.g. *expensive*)
 - ii. epistemic modals (e.g. *might*)
 - iii. evidentials (e.g. Japanese *rashii* 'INFERENCE')

Bylinina et al.'s categories overlap with Mitchell's spatio-temporal and cathectic classes, respectively, but they do not correspond to them. For example, in addition to Mitchell's spatio-temporal perspectival expressions, pronominal perspectival expressions include perspective sensitive anaphora, what Sells (1987) calls logophoric pronouns. Similarly, in addition to Mitchell's cathectic predicates, which Bylinina et al. call "subjective", evidential perspectival expressions include epistemic modals and evidentials. Importantly for the purposes of this dissertation, like Mitchell (1986), Bylinina et al. (2014) include deictic motion verbs such as *come* among relative locative expressions.

7.4.3 Summary of perspectival taxonomies

This section summarizes taxonomies of perspectival expressions in the literature. Before moving to the summary, I will add Speas and Tenny's (2003) list, which, unlike Mitchell and Bylinina et al.'s taxonomies, is not organized into larger groupings.

- (295) **Speas and Tenny's (2003) taxonomy of perspectival expressions:**
- a. logophoric pronouns (as described in e.g. Sells 1987; Culy 1994, 1997)
 - b. long distance reflexives
 - c. modals (e.g. *might, may*)
 - d. speaker-evaluative adjectives and epithets (e.g. *damned, bastard*)
 - e. psychological predicates (e.g. *beloved*)
 - f. discourse oriented adverbs
 - i. evidential adverbs (e.g. *apparently, inexplicably*)
 - ii. evaluative adverbs (e.g. *fortunately, regrettably*)
 - iii. speech-act adverbs (e.g. *honestly, frankly*)
 - g. spatial deictics (e.g. *here, left*)
 - h. temporal deictic (e.g. *now, yesterday*)
 - i. person marking
 - j. oriented predicates (e.g. *come, go*)
 - k. switch reference systems
 - l. short distance pronouns
 - m. discourses in free indirect style
 - n. speech act mood morphology (e.g. morphemes distinguishing questions, statements, imperatives, declaratives, and subjectives)

Like Mitchell's and Bylinina et al.'s taxonomies, Speas and Tenny's list displays considerable variability in syntactic category and kind of meaning, extending to function morphemes such as person and mood marking on verbs.

Table 7.6 includes expression types from Bylinina et al. (2014, 2015), Mitchell (1986) and Speas and Tenny (2003), as well as expression types that Fillmore (1975) considers deictic, and Smith (2009) considers "subjective", by which she means related to a perspective. In the

table, a checked box indicates that a source considers the expression type to be perspectival, while an unchecked box indicates that the source does not mention the expression type. This is obviously not equivalent to assuming it is not perspectival, since no authors claim to give an exhaustive list.

Expression Type	B. et al.	Fillmore	Mitchell	S & T	Smith
deictic motion verbs	✓	✓	✓	✓	
spatial orientation	✓	✓	✓	✓	
proximity predicates	✓		✓		
spatial indexicals		✓		✓	
directed paths	✓		✓		
socio-cultural predicates	✓		✓		
logophoric pronouns	✓			✓	✓
long distance reflexives	✓			✓	✓
modals	✓	✓		✓	✓
evidentials	✓			✓	✓
perception verbs					✓
epithets/emotives				✓	✓
psych/perception predicates			✓	✓	
ability predicates			✓		
predicates of personal taste	✓		✓		
cognitive predicates	✓		✓		
predicate ascription predicates			✓		
discourse adverbs				✓	✓
tense		✓		✓	✓
possessive pronouns					✓
person		✓		✓	
switch reference				✓	
speech act/mood morphology				✓	✓
free indirect discourse				✓	✓
PRO under control verbs			✓		
communication predicates					✓
propositional attitude predicates					✓
scene descriptions					✓
discourse deictics		✓			

Table 7.6: Arguably Perspectival expressions

Table 7.6 demonstrates the variability in plausibly perspectival expressions across and within languages. I say “plausibly” because calling an expression “perspectival” or “point of view

sensitive” does not make it so, and there might be expressions included in Table 7.6 list that turn out not to be perspectival, on further scrutiny. Applying the definition for perspectival expressions developed in this dissertation to these types of expressions and others is a task for future work.

Table 7.6 shows that there is considerable overlap, but also some disagreement, about which expressions are perspectival. In addition it is by no means exhaustive, especially when the broader literature is considered. For example, Amaral et al. (2007) and Harris and Potts (2009) present evidence that the implications associated with appositives and non-restrictive relative clauses are perspectival in the sense that they are commitments of an individual agent, possibly but not necessarily the speaker. That is to say, they are speaker commitments by default and shift in certain environments, satisfying Bylinina et al.’s (2014) first two criteria. Furthermore, Harris and Potts (2009) demonstrate that appositive content is more likely to shift in a context that includes a predicate of personal taste, i.e. another perspectival expression. Thus, if we treat shifting together as a tendency rather than an absolute requirement, then appositives and non-restrictive relative clauses satisfy Bylinina et al.’s third criterion as well. However, they are not included in any taxonomy represented in Table 7.6.

In addition to suggesting that perspectival expressions are pervasive, Table 7.6 reveals a couple of generalizations about the state of the literature on perspectival expressions. First, overlap in expressions classified as perspectival suggests that researchers intend to characterize similar, if not identical, empirical domains, even though each uses different terminology to describe the domain itself, and there is some measure of disagreement about certain expressions. However, the fact that there are differences among the expressions identified as perspectival reveals a problem with the current state of the literature. The problem is that there are no cross-linguistically applicable diagnostics that reliably identify a natural class or natural sub-classes of perspectival expressions. As a result, the full class of perspectival expressions and its natural sub-classes have yet to be identified. This

dissertation does not solve this problem. Doing so represents an important task for future work. However, it does suggest a definition which differs from previous definitions in its emphasis on perspectival information. It also demonstrates that incorporating perspectival information improves analyses of perspectival expressions. If this result holds across additional perspectival expressions, then it would constitute support for the definition proposed here.

Conclusion

In this dissertation, I have attempted to show that the interpretation of a perspectival expression truly does depend on a contextually supplied perspective, a body of information representing the way an individual sees things or imagines things to be. To make this case, I investigated the meanings of two perspectival expressions in two typologically unrelated languages: *come* in English and *zu* ‘come_{zu}’ in Bulu. The investigations yielded a set of previously unnoticed generalizations about the meaning of *come*, and showed that they apply, with certain modifications, to the meaning of *zu* ‘come_{zu}’ as well. The generalizations are given in (73), repeated one final time for convenience. The cross-linguistic similarities and differences are represented in Table 8.1, also repeated from above.

(73) **Empirical generalizations**

a. **Perspectival generalizations:**

- i. *De se* ANCHORING: The anchoring implication of *come* is a *de se* implication.
- ii. SALIENT-PERSPECTIVE ANCHORING: The use of *come* is acceptable iff the anchor’s perspective is salient in the discourse context.
- iii. PERSPECTIVE-ONLY ANCHORING: The use of *come* is acceptable if the anchor’s perspective is centered at the destination, even if the anchor herself is not located there.

b. **Additional generalizations:**

- i. ANAPHORIC ANCHORING: The anchor and her perspective are anaphorically interpreted implicit arguments of *come*.
- ii. PROJECTIVE ANCHORING: The anchoring implication of *come* is a Class B projective content.
- iii. COMPLEMENT-DEFINED ANCHORING: The location on which the anchor’s perspective is centered is defined in terms of the path-PP complement of *come*; it is not necessarily the actual endpoint of the motion event.

Generalization	<i>come</i>	<i>zu</i> ‘ <i>come_{zu}</i> ’
<i>De se</i> ANCHORING	yes	yes
SALIENT-PERSPECTIVE ANCHORING	yes, to all salient perspectives	yes, to a subset of salient perspectives: speaker and addressee
PERSPECTIVE-ONLY ANCHORING	yes	?
ANAPHORIC ANCHORING	yes	yes, modulo binding examples
PROJECTIVE ANCHORING	yes, Class B	yes, class TBD
COMPLEMENT-DEFINED ANCHORING	yes, path-PP complement	yes, locative complement

Table 8.1: Generalizations about the meanings of *come* and *zu* ‘*come_{zu}*’

I used these generalizations to make the case that interpreting *come* and *zu* ‘come_{zu}’ involves the retrieval of a salient perspective from the context and the evaluation of the anchoring implication according to that perspective. I developed an analysis based on this assumption by embedding central elements of Roberts’s (2014) theory of doxastic perspectives in ABH’s (2015) dynamic semantics. The analysis of *come* based on this approach both makes better empirical predictions than previous accounts and establishes, for the first time, an explicit connection between the lexical semantics of *come* and the intuition, shared by researchers since Fillmore, that the interpretation of *come* involves adopting a particular perspective. It also correctly predicts the Bulu data. Finally, in Chapter 7, I argued that the approach to perspectival expressions developed for the analyses of *come* and *zu* ‘come_{zu}’ generalizes to the meanings of other perspectival expressions, and I sketched the beginnings of a generalized account. Working out the details of this approach and understanding how it applies to and must be modified for other perspectival expressions within and across languages represent the logical next steps for this program of research.

In treating perspectives as bodies of information, this dissertation follows recent work where bodies of information associated with individuals’ perspectives have been shown to be relevant for analyzing natural language meanings (e.g. Farkas and Bruce 2010; Lauer 2013; Roberts 2014). Like these researchers, I assume that perspectives play a significant role in both the structure of the discourse and the interpretation of particular expressions. Since both general discourse principles such as those discussed by Lauer (2013) and the lexical semantics of particular expressions such as *come* make use of perspectival information, it makes sense to assume that the interlocutors keep track of such information just as they keep track of the common ground. This dissertation formally models how they do that. More importantly, by embedding elements of Stalnaker (2008) and Roberts’ theories in AnderBois et al.’s semantics, this dissertation takes the first steps toward creating a formal framework for the analysis of perspectival content in general, in the spirit of Mitchell 1986.

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Appendix A

Glossing abbreviations

1	first person
2	second person
3	third person
AGR#	noun class agreement
AUG	augment
CL#	noun class
COMP	complementizer
CONJ	conjunction
CONN	Bantu connective
DEF	definite
DEM	demonstrative
DIST	distal
FUT	future
HAB	habitual
IMM	immediate past
IMP	imperative
LOC	locative
PL	plural
POSS	possessive
PRF	perfect
PROX	proximal
PRS	present
PSB	possibility modal
PST	past
PTCP	participle
Q	question marker
REC	recent past
REM	remote past
SG	singular
SUB#	noun class subject agreement

Table A.1: Abbreviations used in glossing (following the Leipzig Glossing Rules wherever possible)

Appendix B

Bulu phoneme inventory

Here I present a phoneme and grapheme inventory. The writing system is that used by Bates (1926) and colleagues and widely in use among Bulu speakers today.

grapheme	phoneme
a	/a/
b	/b/
d	/d/
é	/e/
e	/ə/
f	/f/
g	/g/
h	/h/
k	/k/
kpw	/g ^w /
l	/l/
m	/m/
n	/n/
ng	/ŋ/
ô	/o/
o	/ɔ/
p	/p/
s	/s/
t	/t/
ty	/tʃ/
u	/u/
v	/v/
w	/w/
y	/j/
z	/z/
'	/ʔ/

Table B.1: Bulu practical orthography graphemes

De se diagnostics: Multiple applications

Diagnostics 1 and 2, introduced in Section 2.1.1, work in tandem to identify expressions that give rise to *de se* content. They are repeated here for convenience.

(296) **Diagnostic 1: Identifying *de se* content**

- a. Test 1a:
 - i. Construct C so that C entails that
 - (1) $R_{de\ se}(x, m)$ is false and
 - (2) $R_{de\ re}(x, m)$ is true.
 - ii. Ask for an acceptability judgment for an utterance of S in C.
- b. Test 1b:
 - i. Construct a context C' s.t. C' is minimally different from C in that C' is compatible with $R_{de\ se}(x, m)$ ¹
 - ii. Ask for an acceptability judgment for an utterance of S in C' .
- c. Results: if S is judged to be unacceptable in C and acceptable in C' , this is evidence that an utterance of S in C and C' gives rise to an implication that $R_{de\ se}(x, m)$.

¹If $R_{de\ se}(x, m)$ is a presupposition triggered by the use of ϕ , C' may need to entail $R_{de\ se}(x, m)$ rather than simply being compatible with it.

(297) **Diagnostic 2: Identifying *de se* expressions**

a. Variant 1:

i. Construct a minimal variant of S, call it S', s.t.

(1) S and S' differ only w.r.t. ϕ and

(2) all implications n_1, \dots, n_n entailed by the utterance of S in C, are also entailed by the utterance of S' in C (except $R_{de\ se}(x, m)$).

ii. Ask for an acceptability judgment of an utterance of S' in C.

b. Variant 2:

i. If it is not possible to use Variant 1, construct a sentence S' s.t.

(1) S' does not include ϕ but is otherwise as close to S as possible and

(2) all implications n_1, \dots, n_n entailed by the utterance of S in C are also entailed by the utterance of S' in C (except $R_{de\ se}(x, m)$).

ii. Ask for an acceptability judgment of an utterance of S' in C.

c. Results: If S' is judged to be acceptable in C, then this is evidence that it is the presence of ϕ in S that gives rise to the implication $R_{de\ se}(x, m)$.

They can be applied to a wide range of expression across different languages. To demonstrate, I apply them here to the English first person indexical *I*, the English communication verb *boast*, and the Ewe logophoric pronoun *yè* 'LOG'. These expressions have been shown to (not) give rise to *de se* contents (Perry, 1979; Pearson and Roeper, 2016; Pearson, 2013b). Thus, along with Morgan's examples, they constitute adequacy measures for the diagnostic itself. The data below show that the diagnostics yield the same results claimed in the literature. The use of *I* and *boast* gives rise to a *de se* implication, while the use of *yè* 'LOG' does not. Before each example, I identify the components of the example, as in Table 2.1. The purpose of this is not to be pedantic, but to aid fieldworkers applying this diagnostic in their construction of similar examples.

C.1 Diagnosing English *I* as a *de se* expression:

Diagnostic 1 is applied via the combination of (299a) and (300), stated in the context of (5), which is repeated below for convenience. Diagnostic 2 is applied in (299b). (298) schematizes the example by delineating its components, as was done in Table 2.1. This makes clear how the components work together to yield the contexts presented.

(298) Components of (299):

- a. $\phi = I$
- b. $S = I \text{ am a great short stop.}$
- c. $S' = \text{Ernie Banks is a great short stop.}$
- d. $C = \text{context of (299)}$
- e. $C' = \text{context of (300)}$
- f. $x = \text{Ernie Banks}$
- g. $R_{de\ se} = \text{BELIEVE}_{de\ se}$
- h. $R_{de\ re} = \text{BELIEVE}_{de\ re}$
- i. $m = \text{Ernie Banks is a great short stop.}$

(5) Ernie Banks context (from Morgan 1970:380), repeated for convenience:

Suppose that the baseball player Ernie Banks gets beamed, develops amnesia, and is taken to the hospital, where I am his doctor. He doesn't know his name. I, his doctor, know who he is, but I don't tell him. I observe his behavior over a period of time while he's in the hospital with no identity. During this time, he reads in the newspapers about a baseball player named Ernie Banks. He decides he likes Ernie Banks, and would like him to leave Chicago and go to New York to play for the Mets.

(299) [Context of (5), adding that since the accident Ernie has not played any baseball.
Ernie says:]

a. #**I** am a great short stop.

b. **Ernie Banks** is a great short stop.

(300) [Context of (299), except Ernie regains his memory.]

I am a great short stop.

The context of (299) is appropriate for Diagnostic 1, because it entails $BELIEVE_{de\ re}(eb, m)$ but not $BELIEVE_{de\ se}(eb, m)$. C' in (300) is minimally different in that Ernie knows who he is, and therefore believes about himself that he is a great short stop. (299a) is unacceptable in C but acceptable in C' . Thus, Diagnostic 1 reveals that an utterance of *I am a great short stop* in C gives rise to *de se* content. Diagnostic 2, applied in (299b), demonstrates

that it is the presence of *I* that causes this *de se* content to arise.^{2,3}

²Anand (2006) observes that the presence of a first person indexical in an embedded context is not sufficient to require a *de se* attitude ascription in the embedded context.

- (i) [Context: Sunny hears a recording of herself but doesn't recognize her voice. She thinks the recording sounds bad. Later she learns that it was in fact her singing. She says:]
I thought **my voice** sounded bad.

This example does not involve *de se* attitude attribution. At the time of thinking reported in the utterance of (i), Sunny did not recognize her voice. So she is not attributing having held a *de se* attitude to herself. However, we might want to say that *my* gives rise to *de se* based on examples due to Kaplan (1989) such as the famous difference between *My pants are on fire* and *That guy's pants are on fire*, said while unknowingly looking into a mirror. Is (i) then a problem for the diagnostics?

The short answer is no. Here, it is arguably the projective content of the possessive, namely that there is a possessive relation between the antecedent of *my* and the voice in question, that is the *de se* implication triggered by the use of (i). Following Tonhauser et al. (2013), this implication need not have local effect. That is to say, it need not be true according in the most local (i.e. the embedded) context. This implication may be evaluated at the global level. Let's represent the proposed *de se* implication of (i) as $R_{de\ se}(\text{spkr}, \text{'the voice is the speaker's'})$. If this is on the right track, then the context of (i) actually is not appropriate for applying the *de se* diagnostics. That's because the context entails $R_{de\ se}(\text{spkr}, \text{'the voice is the speaker's'})$, and to be appropriate for applying the diagnostics it should entail $\neg R_{de\ se}(\text{spkr}, \text{'the voice is the speaker's'})$.
Now consider (ii).

- (ii) [Context: Pavarotti heard a recording of someone singing. It was actually him, but at the time, he didn't realize it. He said "That guy is terrible." Later, someone told him the recording was of him. Now, he says:]
I thought **I** sounded terrible.

This context is not appropriate for the diagnostic either. There is no *m* such that Pavarotti believes *m* about himself *de re* but not *de se*. These examples demonstrate that there is something crucial about framing the diagnostic contexts *C* and *C'* in terms of present beliefs. They also demonstrate the importance of correctly identifying the *de se* content triggered by a particular expression in a particular utterance. Finally, they show that there is something different about the *de se* contents of *I* and those of infinitival complements in control constructions. The latter do require *de se* attribution, as Morgan demonstrates. Thus, for instance, upon regaining his memory, Ernie cannot say *While in the hospital with amnesia, I wanted to play for the Mets* and the doctor cannot say the analogous third person version. Investigating this difference is a task for future work. But note that the fact that *I* does not pattern with infinitival complements here does not show that it has no *de se* content. Neither does it invalidate the diagnostic, which shows that both expressions have *de se* content.

³Craige Roberts (p.c.) points out that these diagnostics do not demonstrate that *I* or any other *de se* expression is semantically *de se*. In any context, *I* picks out the speaker. Excluding contexts in which people speak without knowing it (e.g. trances, unconscious babble, etc.), in every context the speaker knows that she is speaking. As a result, examples such as (299a) can give rise to *de se* content pragmatically. (299a) can be interpreted as being a *de se* commitment of the speaker due to an inference based on this potentially non-*de se* conventional content of *I*. This observation does not undermine the diagnostics. An utterance with *I* does give rise to a *de se* implication (Diagnostic 1), and the expression that causes this result is *I* (Diagnostic 2). However, it does show that the diagnostics do not provide an analysis and do not privilege a semantic analysis over a pragmatic one.

C.2 Diagnosing English *boast* as a *de se* expression

Recent work by Pearson and Roeper (2016) presents experimental results showing that native speakers of English robustly interpret *boast* as contributing *de se* content. The context in (302) is from their work, as is the content of *m* in (301).

(301) Components of (302):

- a. $\phi = \textit{boast}$
- b. $S = \textit{Mary boasted that she deserved the prize.}$
- c. $C = \textit{context of (302)}$
- d. $x = \textit{Mary}$
- e. $R_{de\ se} = \textit{BELIEVE}_{de\ se}$
- f. $R_{de\ re} = \textit{BELIEVE}_{de\ re}$
- g. $m = \textit{'That Mary deserves the prize reflects well on Mary.'}$
- h. $n_1 = \textit{'Mary said that she deserves the prize.'}$

(302) [Context: Mary, Bob and John all like baking. Their teacher, Mr. Smith, wanted to know to know which of them baked the best cookies. He had an idea. Each of them would bake a batch of cookies, and then one of them would taste them and decide which one he or she thought was the best. Mr. Smith would give a prize to whoever's cookie was judged the best. Mr. Smith picked Mary to be the judge, and decided that she should wear a blindfold for the tasting so she wouldn't know whose cookie was whose. When Mary tasted her own cookie, she couldn't tell that it was hers. She said 'This is the best cookie. Whoever baked this cookie deserves the prize.' Sam had been keeping track of who made which cookie, so that he could go and tell the results to Mr. Smith. He went to Mr. Smith and said:]

- a. Mary **boasted** that she deserved the prize. – FALSE
- b. Mary **said** that she deserved the prize. – TRUE

(303) [Context: Identical to (302), except that Mary recognizes the cookie as hers, and Sam and Mr. Smith know it.]

Mary **boasted** that she deserved the prize.

As indicated, according to Pearson and Roeper, (302a) is judged to be false in (302). In the minimally different (303), where $BELIEVE_{de\ se}(mary, m)$ is entailed, the example is acceptable and possibly true (this represents my own judgment, and ignores the fact that the way in which Mary says her cookie is the best may impact whether or not she is judged as boasting). This demonstrates that (302a) gives rise to *de se* content. The acceptability of the minimal variant S' in (302b) demonstrates that the *de se* content is due to *boast*. Thus, the diagnostics confirm Pearson and Roeper's claim.

C.3 Diagnostic the Ewe logophoric pronoun *yè* as a non-*de se* expression

(305) is example (31) in Pearson 2013b:454. Briefly, a logophoric pronoun is a pronoun that must appear embedded under a communication or attitude predicate and must be co-referential with the subject of the predicate (Culy, 1994, 1997; Sells, 1987). Pearson uses the example to show that the logophoric pronoun *yè* in Ewe does not give rise to *de se* content. The components of the example are given in (304).

(304) Components of (305):

- a. $t = y\grave{e}$ (logophoric pronoun)
- b. $S = \textit{John be } y\grave{e} \textit{ le cleva}$ ‘John say LOG COP clever’
- c. $C =$ context of (305)
- d. $x =$ John
- e. $R_{de\ se} = \text{BELIEVE}_{de\ se}$
- f. $R_{de\ re} = \text{BELIEVE}_{de\ re}$
- g. $m =$ ‘John is clever.’

(305) [Context: John has just found an old paper that he wrote, but he doesn’t realize that he is the author of the paper. He reads the paper and is impressed by what a good paper it is. He says “Whoever wrote this paper is clever”.]

John be **y** \grave{e} le cleva
John say LOG COP clever

‘John said that he was clever.’

The context C of (305) is the appropriate kind of context for Diagnostic 1a. It entails $\text{BELIEVE}_{de\ re}(j, m)$ but not $\text{BELIEVE}_{de\ se}(j, m)$. (305) is acceptable in C . Therefore, the Diagnostics developed here do not identify $y\grave{e}$ ‘LOG’ as giving rise to *de se* content, just as Pearson argues.

It is important to note that the absence of a positive result in a particular example does not show that the use of an expression can never be used in the encoding of a *de se* implication. For example, Castañeda (1966) demonstrated that third person pronouns embedded under attitude predicates are ambiguous between *de se* and *de re* interpretations. Thus, in some instances *he* has a *de se* interpretation. However, a negative result is evidence that a given expression does not give rise to *de se* content obligatorily.