# Persons with a view. Indexical reference in reported speech and beyond

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# Persons with a view.
# Indexical reference in reported speech and beyond

by

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Halte Pèlerin mon voyage
allait de danger en danger
Il est juste qu'on m'envisage
Après m'avoir dévisagé.

Jean Cocteau, *Le Requiem*

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# Chapter 1

# Introduction

## 1.1 Indexical reference and the theory of meaning

This dissertation is essentially an inquiry about two puzzles in semantic theory. The first one concerns that class of elements known as *indexicals*, that is, linguistic elements that refer to properties of the context in which an utterance is produced. Such elements include first and second person pronouns such as *I* and *you*, adverbs such as *here* and *now*, *tomorrow*, *yesterday*, but also (arguably) more complex expressions such as the temporal *in two days* or *two years ago* (Schlenker, 2011a), or the adjective *present*. A central question in the study of indexicals is that of the way they obtain their meaning, i.e. the way they achieve reference (to a given individual, a given time, a given place, and so on). Since Kaplan (1977, 1979), the received wisdom is that indexicals are *directly referential*: they are not sensitive to other elements that usually change the meaning of a sentence, such as quantifiers (1a), and temporal or modal operators, (1b)-(1c):

(1) a. Each of us loves my mom.

b. It will soon be the case that all that is now beautiful is faded.

c. It is possible that in Pakistan, in five years, only those who are actually here now are envied. [(1b)-(1c) from Kaplan 1977: 498-499]

In (1a), the indexical possessive *my* cannot be bound by the universal quantifier *Each*, and as a consequence cannot have the interpretation that each individual with whom the speaker associates loves his own mother (with a potentially different mother for each associate), but only that each loves the speaker's own mother; similarly, the sentence (1b) cannot receive a meaning in which the expression *all that is now beautiful* is evaluated at some future time $t'$ (as required by the future tense auxiliary *will*), but only at the time of utterance $t@$, due to the presence of the indexical *now*. Last, the expression *those who are actually here now* in sentence (1c) cannot refer to the individuals that will possibly be envied in Pakistan and in five years from the time of utterance, but only to the individuals

that are in the place and location of utterance at $t@$. A *prima facie* objection would be to say that these meanings cannot come about simply because indexicals such as *I* mean something like *the speaker*; of course, assuming that the three sentence above were uttered in the model by the same individual, the reference of the indexicals they contain should remain constant through the evaluation procedure, and always refer to the speaker, and the time and place where the speaker is located. To this, Kaplan (1977) objects that sentences such as (2a) containing indexicals significantly differ from those involving standard referential expressions such as *the speaker* or constants such as names:

(2) a. [*Uttered by David in Geneva on December 11th, 2023*]
I am here now.

b. David is in Geneva on December 11th, 2023.

Echoing Kripkean insights, Kaplan (1977) points out that sentence (2a) is seemingly *a priori* true (since I do not need to know anything about the world to know that the speaker is located at the time and place at which he speaks) and yet not a necessary truth, since the referent of *I* could have been someone else in some other, different context; on the other hand, the sentence (2b) is only true *a posteriori*, since it doesn't follow from the fact that David is speaking that he is doing so in Geneva in December. Philosophers such as Kaplan (1977) and Perry (1977) believed that this tells us something about the *cognitive significance* of sentences involving indexicals, an added layer of meaning that doesn't seem to be captured by any truth-conditional paraphrase not involving indexicals. These observations (among other considerations) led them to posit that indexicals are *directly referential*: in Fregean terms, they do not obtain their reference by virtue of their *sense* (*Sinn*), but by referring directly to the objects they stand for (their *denotations*, *Bedeutungen*). As a consequence, indexicals are therefore semantically very different that any other nominal or adverbial elements of the same type, which all have a sense through which their reference is achieved.

This conclusion, however, clashes with what other areas of linguistic theorizing teach us about natural languages. For instance, it is rather clear that first and second person indexicals are personal pronouns and, as such, can be argued to be referential elements carrying person features, that is, morphosyntactic elements encoding some information about the referent the pronoun should identify (Adger and Harbour, 2008). Given what we know about the world's languages, which all distinguish at least first and second from third person across their person paradigms (Bobaljik, 2008), we should expect elements pertaining to the same natural class and exhibiting similar morphosyntactic properties (encoding person features) to also pattern at some higher level, such as the way they are interpreted: however, the facts outlined here, which Kaplan's theory aimed at accounting for, are at odds with such an uniform treatment.

Be that as it may, the last two decades have seen an increasing interest in natural language phenomena that challenge Kaplan (1977)'s traditional analysis in various ways. For instance, it appears that some languages can use *I* to refer to the speaker of some other, non-actual context under certain verbs of speech such as *say* or *tell*. As the sentence in (3a) demonstrates, this is the case of Tigrinya (Semitic), a language spoken in Eritrea and Ethiopia, in which the first person (expressed here as a morphological suffix on the verb) has to refer to the author of the reported context, Kidane. If third person is used (as English would have it to express an analogous meaning), the referent must be some other, salient male individual in the discourse, (3b).

(3) a. *Kidane kə-xɛyəd dɛliɛ ʔallɛxu ʔiłu (nɛyru)*
Kidane COMP-IMPF.leave PRF.want.1SG AUX.1SG say.3SG.M AUX.3SG.M

'Kidane$_i$ said that he$_i$ wanted to leave.'

b. *Kidane kə-xɛyəd dɛliu ʔallo ʔiłu*
Kidane COMP-IMPF.leave PRF.want.3SG.M AUX.3SG.M say.3SG.M
*(nɛyru)*
AUX.3SG.M

'Kidane$_i$ said that he$_{*i/j}$ wanted to leave.'

[Eritrea Tigrinya, personal fieldwork]

A language such as Tigrinya can therefore use first (as well as second) person indexicals to refer to some other participants than those of the actual context; constructions such as (3a) therefore have a meaning akin to their English counterpart using direct discourse, in which indexicals are enclosed between quotation marks, (4):

(4) Kidane said: "I want to leave".

Since the pioneering works of Schlenker (1999, 2003) in that area, a tremendous number of studies in syntax and semantics have been dedicated to this phenomena, dubbed *indexical shift* in the literature, uncovering more and more languages capable of shifting indexicals, among them a large number of sign languages: in American Sign Language, for instance, indexical shift is brought about by a reporting construction known as *role shift*, in which signers embody the original author of the report using a complex of non-manual markers such as eye gaze shifts, body leans, and head turns. Role shift is exemplified in Figure 1.1, which depicts the signer breaking eyegaze contact with its actual addressee in order to embody first Emma, the author of the first reported utterance, then Emma's mother:[1]

[1] Here and throughout this work, *utterance* is taken in its philosophical sense to refer to a way of realizing speech acts through intentional production of meaningful units (Green, 2021); it is modality-neutral, and does not imply that utterances have to be produced using vocalization. I therefore take it for granted that


Figure 1.1: Role shift in German Sign Language (DGS) (Herrmann and Steinbach, 2012).

Here again, the indexicals IX-1 (‘*you*’) and IX-DUAL (‘*us both*’) cannot be interpreted according to their standard meanings, since they respectively refer to the original author of the first report (Emma) and to the plurality of the original author cum its addressee (Emma and her mother), and not to the actual speech act participants.

Another class of problems for the standard treatment of indexicals come about in constructions involving ellipsis, such as those in (369) and (407) (where elided material is indicated between ⟨ angled brackets ⟩):

(5) A. I love you. [Chung 2000: (8)]

B. I do ⟨ love $\left\{ \begin{array}{c} \text{you} \\ \text{myself} \end{array} \right\}$ ⟩ too.

(6) I wanted to dance with you but you didn’t ⟨ want to dance with $\left\{ \begin{array}{c} \text{me} \\ \#\text{you} \end{array} \right\}$ ⟩.

In (369), the sentence is ambiguous between a ‘strict’ reading, in which the indexical reference remains constant across clauses, and a ‘supersloppy’ reading (a term coined by Charnavel 2019b), where the referent of *you* changes from speaker A to speaker B. This is analogous to what happens in (407), in which the ‘supersloppy’ reading is the only one available. These readings are very difficult to account under the standard theory of indexicals, since it is does not predict such ‘relational’ meanings to be available in the first place: if indexicals refer directly to some context parameter that is fixed for the entire utterance, we should certainly not expect to see a participant switch in the elided fragments of (369)-(407), contrary to what we observe. This has led Charnavel (2019b) to assume that, contrary to what the ‘direct reference’ view of indexicality advocated by Kaplan (1977) predicts, some indexicals in certain environments can indeed be interpreted

signs, the lexical unit used in sign languages, can be used to produce utterances.

as 'definite descriptions in disguise', such as 'the person you are talking to in the current context' – a view popularized for other kinds of pronouns under the name 'e-type' theories of pronouns (Evans 1977; Heim and Kratzer 1998; Elbourne 2005). The e-type theory of indexicals has the advantage of bringing indexical pronouns closer to their non-indexical (3rd person) counterparts by showing that both categories can, under certain circumstances, acquire a similar meaning through essentially the same mechanics in the interface between morphosyntax and semantics, something desirable in order to achieve a comprehensive understanding of pronominal reference across languages.

Yet other phenomena include so-called *bound readings* of indexicals, as well as 'descriptive' indexicals. Bound readings of indexicals are those cases that readily challenge the observation made in (1a), such as the examples in (7):

(7) a. Only I got a question that I understood.
[Kratzer 1998: (4), after Irene Heim]

b. Every time a visiting soprano comes, we sing duets. [Levinson 2006, 105]

In both (7a) and (7b), the indexicals *I* and *we* behave like bound variables. Specifically, the sentence in (7a) has a reading that can be paraphrased as 'No other $x$ is such that $x$ got a question that $x$ understood'; in (7b), the indexical *we* has an associative value ranging over the speaker and a bound variable that co-varies in reference with the quantifier phrase *every soprano*. Descriptive indexicals are somewhat similar, but appear in different configurations:

(8) a. [*Condemned prisoner*:]
I am traditionally allowed to order whatever I like for my last meal.
[Nunberg 1993: (32)]

b. You shouldn't have opened the door! I could have been the Wolf!
[Sæbø 2015: (6), after Irene Heim]

The issue here is that in both (8a) and (8b), the indexicals *I* and *you* cannot be taken to refer rigidly to the speaker or the addressee of the current context, but rather seem to pick out their referents from a set of contexts quantified over by the adverb *traditionally* in (8a) and by the modal *should* in the counterfactual conditional (8b).

Taken together, these classes of examples all challenge the direct referential picture on which the standard analysis of indexicals we owe to Perry (1977) and Kaplan (1977) is built.

## 1.2 Overview of the dissertation

This dissertation is mainly concerned with the first two phenomena described – shifted indexicals and indexicals in ellipsis constructions, and attempts to reconnect the study of indexical reference within the broader landscape of linguistic theorizing, focusing on the study of the morphosyntax and semantics of pronominal forms in natural languages. Chapter 1 (*A unified analysis of shifted indexicals and logophoric pronouns*) examines further the phenomenon of shifted indexicality, and connects it to another field of research, the logophoric pronouns found in a variety of languages, most notably African languages (Hagège, 1974) that appear to have the same distribution and function. This part compares the two phenomena using large sets of cross-linguistic, comparative data, and assess the main theoretical accounts that have been given, arguing that they are in fact one and the same phenomenon (an idea previously sketched in Schlenker 2003). Chapter 2 (*Indexicals under role shift in Sign Language of the Netherlands: experimental insights*, written in collaboration with Evgeniia Khristoforova) is an empirical study about the phenomenon of indexical shift in Sign Language of the Netherlands (*Nederlandse Gebarentaal*, NGT), in which the interpretation of indexical pronouns under role shift was tested using experimental methods on a sample of 13 native signers. In this chapter, we argue that an important semantic difference exists between the first person pronoun IX-1 and the second person IX-2 in NGT, and that this difference can be explained by essentially the same theoretical tenets used in Chapter 1. Chapter 3 (*Quotation in the wild. Faithfulness and opacity in speech reports*) is a broader, more theoretical investigation of the traditional distinction made between direct speech and indirect speech reports. Taking a step back, it looks at the role these categories have played in shaping the theoretical and terminological concepts used to account for the linguistic phenomena discussed so far – shifted indexicals and logophoric pronouns, which are interesting precisely because they seem restricted to reporting environments; in a second step, it looks more in detail into the category traditionally described as direct speech and the impact it has on referential expressions (chief among them indexicals) that it contains; it then tries to provide an account of such effects as a form of pragmatic inference based on markedness. Last, Chapter 4 (*Elided indexicals*) explores further the distribution of indexicals in elided environments and tries to explain the attested restrictions of 'supersloppy readings' by using a pragmatic model describing how speakers and hearers retrieve information from elliptical utterances relying on (sometimes implicit) questions that drive the conversation.

# Chapter 2

# A unified account of logophoricity and indexical shift

## Overview

Some languages make use of 'shiftable' indexical pronouns (SIs), such as *I* and *you*, and use them anaphorically to refer to participants of the speech event being reported; other languages use dedicated 'logophoric' pronouns (LPs) in order to achieve this. Albeit functionally related, SIs and LPs received very different treatments in the formal literature (Koopman and Sportiche 1989; Anand 2006; Baker 2008; Deal 2020 i.a.). This is both conceptually and empirically undesirable, mostly because existing theories fail to do justice to the cross-linguistic distributional and interpretive similarities between the two classes of pronouns. In this piece, I sketch an alternative account, inspired by Schlenker (2003), according to which both LPs and SIs contrast with *bona fide* indexicals in languages such as English, which morphosemantic makeup involves an ACTUAL feature that combines with person features in a constrained fashion in the pronominal paradigm. A consequence of the theory is that neither SIs nor LPs are 'genuine' indexicals in the sense of Kaplan (1977), since their potential referents are not restricted to participants of the utterance context; by contrast, first and second person pronouns in languages such as English spell out a complex bundle of features consisting of at least an [AUTHOR] and an [ACTUAL] feature. This featural approach, combined with the appropriate competition mechanism (Heim 2008; Sauerland 2008b; Sauerland and Bobaljik 2022), is able to explain most of the distributional properties of both classes of pronouns, while contributing to an empirically-motivated critique of traditional theories of indexicality.

## 2.1 Introduction

Following Kaplan (1977), contemporary semantic theories assume that indexicality is a property shared by a dedicated subset of specific lexical items in natural languages, i.e. those elements that refer directly to some parameters of the utterance context. The class of indexicals typically includes first and second person pronouns (singular and plural), as well as adverbs such as *here, now, tomorrow* and *today*, and are interpreted conventionally as referring directly to various parameters of the utterance context - the speaker of $c$, the addressee of $c$, the location of $c$, and so on.

However, in a wide variety of languages, indexicals can be used in attitude reports to refer to parameters of the event being reported, much like in English indirect speech. This is illustrated in (3a) for Eritrea Tigrinya (Semitic)[1], and in (10) for Zazaki (Iranian):[2]

(9) *Kidane kə-xɛyəd* ***dɛliɛ*** ***ʔallɛxu*** *ʔilu* *(nɛyru)*
Kidane COMP-IMPF.leave **PRF.want.1SG** **AUX.1SG** say.3SG.M AUX.3SG.M

'Kidane$_i$ said that he$_i$ wanted to leave.'

[Tigrinya, personal fieldwork]

(10) *Hɛsen-i* *mɨ-ra* *va* *kɛ* ***ɛz*** *dɛwletia*
Hesen-OBL 1SG-OBL say COMP **1SG.NOM** rich.be.PRS

'Hesen$_i$ tells me$_{S\,pk}$ that he$_{i,S\,pk}$ is rich.'

[Zazaki, Anand and Nevins 2004: (4)]

In (9), the first person markings on the embedded verb *dɛliɛ* and auxiliary *ʔallɛxu* do not induce reference to the utterance speaker, but to the reported speaker, *John*. In (10), the nominative first person *ɛz* embedded under *va* '*say*' can either refer to *Hesen* or the utterance speaker. Use of such 'shiftable indexicals' (henceforth, SIs), has been reported for languages pertaining to different families, ranging from Semitic (Amharic, Tigrinya) to Athabaskan (Slave) and Turkic (Uyghur, Chuvash).

Another, typologically unrelated phenomenon is that of logophoric pronouns (LPs)[3], which seem to functionally fulfill a similar role than first and second person SIs, i. e. referring to the author or addressee of the original speech report:

[1] Unless otherwise stated, all Eritrea Tigrinya examples come from personal fieldwork. Tigrinya data was elicited with the help of two native speakers from South Eritrea (regions of Debub and Gash-Barka, respectively).

[2] Here is a list of glossing conventions used in this paper:

[3] This paper is only concerned about logophoric *pronouns* in the seminal sense of Hagège (1974), and not by other linguistic elements that have been labeled 'logophors' in some other, theoretically different, way in the generative syntax literature, such as long-distance anaphors (i. e., anaphors that seem not to obey the 'condition A' principle of Binding Theory; see i. a. Kuno (1987), Reinhart and Reuland (1993), Charnavel and Sportiche (2016)). For arguments that the former class is typologically not reducible to the latter, see Culy (1994a) and Dimmendaal (2001).

(11) a. *Kofi be* ***yè*** *dzo* [Ewe, Clements 1975]
Kofi say **LOG** leave

'Kofi$_i$ said that he$_{i/*j}$ left'

b. *Kofi be* ***e*** *dzo*
Kofi say **3SG** leave

'Kofi$_i$ said that he$_{*i/j}$ left'

(12) a. *Oumar Anta* ***inyemɛn*** *waa be gi* [Donno Sɔ, Culy 1994a: (1)]
Oumar Anta **LOG.ACC** seen AUX said

'Oumar$_i$ said that Anta had seen him$_i$'

b. *Oumar Anta* ***won*** *waa be gi*
Oumar Anta **3SG.ACC** seen AUX said

'Oumar$_i$ said that Anta had seen him$_{*i/k}$'

SIs and LPs share many distributional and interpretive properties. Both classes of pronouns appear in the same kind of syntactic environments, namely, clauses headed by attitude verbs which appear to be hierarchically structured across languages (Culy 1994a; Deal 2017, 2020). Both classes of pronouns trigger agreement mismatches; logophoric pronouns in the languages Donno Sɔ (Dogon) or Karimojong (Nilotic), for instance, invariably trigger first-person agreement on the verb, with the same pattern being observed in indexical-shifing languages such as Aqusha Dargwa (Northeast Caucasian) or Chuvash (Turkic); last, both classes seem to be semantically analogous, being preferably interpreted *de se* across languages (Schlenker 1999, 2003; Anand 2006; Deal 2020; Bimpeh et al. 2022, 2023 i.a.).

Such similarities call for a unified explanation. However, such an account is yet to be found in the theoretical landscape of formally-oriented linguistics; in spite of early attempts like those of Schlenker 1999, 2003, more recent analyses tend to treat both phenomena as theoretically separate. Such a treatment is enforced in Anand (2006), who argues, based on work by Adesola (2006) on the logophoric system of Yoruba and that of Anand and Nevins (2004) on indexical shift in Zazaki, that the two forms are regulated by different principles, undermining their conceptual, as well as empirical, uniformity; this line of analysis was subsequently taken up by various authors (Baker 2008; Deal 2018, 2020) and remains the dominant view so far. Following an early insight by Schlenker (2003), the present work follows a different analytical thread and posits the following hypothesis: both SIs and LPs are in fact different surface realizations of similar underlying pronominal systems that differ on whether they lexicalize or not a [ACTUAL] feature. This feature acts as a restrictor on the semantic interpretation of pronominal variables, forcing

them to pick out their referent from the utterance context. Not being a person feature *per se*, [ACTUAL] can compose with various other features in the pronominal paradigm, thus allowing for different partitions that, taken together, allow us to account for the various properties of SIs or LPs pronominal systems. As a consequence, we observe that Kaplan's original intuition has to be refined, and that the proper treatment of indexicality is to be done below the word level, since [ACTUAL] is not reducible to person as a morphological category.

This article is structured as follows. §2.2 outlines the dominant theories of LPs and SIs, and present various data that these theories are at pains to accommodate. §**??** explores the distributional and semantic similarities between logophoric systems and shiftable-indexicals systems, in light of a vast sample of cross-linguistic data. §2.3 exposes a new proposal, allowing us to derive the various properties considered so far; §2.3.4 and 2.3.5 explore the theoretical consequences and empirical predictions of the account for both pronominal systems, and discuss alternative analyses further. §5.6 concludes.

## 2.2 LPs and SIs: standard accounts

In spite of their distributional as well as interpretive similarities, LPs and SIs have received very different treatment in the literature. All assume the following principle (see Anand 2006, Deal 2020 a. o.):

(13) **Separatism**
LPs are obligatory syntactically bound elements, while SIs are not.

In what follows, evidence will be provided that this assumption is too strong; questioning it will allow us to re-open the route towards a possible theoretical unification of both phenomena.

### 2.2.1 The binding theory of logophoric pronouns

In their seminal analysis of the pronominal system of Abe (Niger-Congo; Ivory Coast), Koopman and Sportiche (1989) note that the LPs in this language are sensitive to the kind of complement clause they appear into. Both can be used in sentences introduced by the complementizer *ye* to refer to the matrix subject, (14a). However, when appearing under the complementizer *kO*, the LP *n* can (but need not be) be co-referential with the matrix subject (14b), while the non-logophoric form *O* obligatory triggers disjoint reference:

(14) a. *Yapi ka api ye O / n ye sE*
Yapi tell api COMP 3SG/LOG is handsome
'Yapi$_i$ told Api that he$_{i,j}$ is handsome.'

b. *Yapi hE KO n ye sE*
Yapi say COMP LOG is handsome

'Yapi$_i$ said that he$_{i,j}$ is handsome.'

c. *Yapi hE KO O ye sE*
Yapi say COMP 3SG is handsome

'Yapi$_i$ said that he$_{*i,j}$ is handsome.'

[Abe, Koopman and Sportiche 1989: (66)]

From this, Koopman and Sportiche (1989) conclude that "logophoric effects thus seem to depend on the arbitrary syntactic property of taking a *kO*-complement", emphasizing the role of complementizers in licensing the right syntactic configuration for a logophoric interpretation of *n*, which they take to be a variable bound by the operator realized by *kO*. As Koopman and Sportiche (1989) note, such a correlation between complementizers and LPs was first noted by Clements (1975) for Ewe, in which logophoric constructions require the complementizer *be* to be licensed.

Koopman and Sportiche's attempt to define logophoricity purely in terms of syntactic binding has reached a widespread consensus in generative linguistics (Heim 2002; von Stechow 2003; Anand 2006; Baker 2008; Pearson 2015; Deal 2018 i.a.). On the semantic side, the analysis of LPs has been framed within an intensional system whereby attitude verbs are viewed as quantifiers over centered worlds, i. e. world-individual pairs conceived as tuples of type $\langle s, e \rangle$ (Lewis 1979a, Chierchia 1989 a. o.). Within such a system, LPs are considered a special kind of pronoun that unambiguously pick up the center of the world it is evaluated against, i. e. the individual that the referent takes himself to be in the world of evaluation. Its main inspiration are the treatment of the silent pronominal *PRO* in sentences such as (15a), that Chierchia (1989) analyses as in (15c), where *PRO* is bound by the individual $\lambda$-abstractor at the left edge of the attitude verb:

(15) a. John wants to learn how to dive-roll.

b. $[\lambda w_1.[w_1$ John wants $[\lambda w_2.\lambda x_3.[w_2$ PRO$_3$ to learn how to dive-roll $]]]]$

c. $[\![$ PRO to learn how to dive-roll $]\!]^{g,c} = 1$ iff $\lambda w.\lambda x.x$ learns how to dive-roll in $w$

d. $[\![$ John wants PRO to learn how to dive-roll $]\!]^{g,c} = 1$ iff $\lambda w.\forall < w', y > \in$ WANT$_{John,w}$, $y$ learns how to dive-roll in *w'*.

In words, the sentence will be true iff in all the worlds compatible with what John wants in *w*, the individual he takes himself to be in those worlds *w'* (the center of each of those worlds) leans how to dive-roll in *w'*. Intuitively, it seems possible to treat LPs in an analogous fashion: since they always denote the agent of the attitude of saying/believing (the logophoric center or 'self', in Sells (1987)'s terms), one can posit that they also

unambiguously denote the center of the embedded proposition, much like *PRO*. This line of analysis is pursued by von Stechow 2002, 2003, Heim (2002) and Pearson (2015) a. o., who assume (in different flavors) that much like control predicates, attitude verbs also introduce $\lambda$-abstractors for individuals in the left of their complements, and that LPs come endowed with a syntactic feature LOG that forces them to be bound by this abstractor. To illustrate, the Ewe sentence in (11) willl be interpreted as in (15c)-(15d):

(16) a. *Kofi be* ***yè*** *dzo* [Ewe, Clements 1975]
Kofi say **LOG** leave

'Kofi$_i$ said that he$_{i/*j}$ left'

b. $[\lambda w_1.[w_1$ Kofi said$_{[log]}$ that $[\lambda x^2_{[log]}.\lambda w_3.[w_3$ LOG$^2{}_{[log]}$ left $]]]]$

c. $[\![$ LOG left $]\!]^{g,c} = \lambda w.\lambda x.x$ left in $w$

d. $[\![$ Kofi said that LOG left $]\!]^{g,c} = \lambda w.\forall < w', y >\in$ SAY$_{Kofi,w}, y$ left in $w'$

As pointed out by von Stechow 2002, 2003 and Pearson (2015), this analysis makes a welcome prediction, that of ensuring the *de se* interpretation of the LP: since the pronoun is obligatory bound by the individual abstractor, it will unambiguously denote the center of the world-individual pair, that is, the individual that Kofi identifies himself with in his *SAY*-worlds counterparts, ruling out both non-coreferential and *de re* readings of LOG.

### 2.2.2 Not all instances of LPs are bound

However, a closer look at the typological landscape of LPs dismisses this kind of analysis as being inadequate, since many LP-systems do not enforce this kind of restrictions on the use of their pronouns.

First, as noted by Culy (1994a), assuming that LPs universally require a certain kind of complementizer to occur with, although relevant in the case of languages like Ewe, cannot derive further data from different LP systems, in which occurrences of LPs appear to be much freer: in Donno Sɔ, for instance, the logophoric form *inyemɛ* can occur in constructions involving an overt complementizer *gɔ* and the verb *tell*, as in (17a), as well as in constructions involving a different verb *say* licensing no overt complementizer, (17b); conversely, (17c) shows that the presence of *gɔ* by itself does not license logophoric marking.

(17) a. *Oumar mi suŋɔnɔ inyemɛñ diaa be gɔ min*
Oumar 1SG.POSS younger brother LOG.OBJ insulted AUX COMP 1SG.OBJ
*tagaa be*
tell.PST AUX

'Oumar$_i$ told me that my younger bother had insulted him$_i$'

b. *wo inyemɛ yogo bojɛm giaa be*
3SG LOG tomorrow go.PROG.1SG say.PST AUX

'She$_i$ said that she$_i$ is leaving tomorrow.'

c. *mi woñ waa bem gɔ igi wɔ*
1SG 3SG.OBJ see.PST 1SG.PST COMP know AUX

'She$_i$ knows that I saw her$_{i,j}$.'

[Donno Sɔ, Culy 1994a: (22)]

Such data seem to argue against a definition of the logophoric domain in terms of binding mediated by a special kind of complementizer. While syntactic restrictions might be at stake, it is unclear whether the logophoric domain should be defined in structural terms at the sentence level only (see discussions in Culy 1994a and Nikitina 2012a). Further data from Ainu (isolate, Nikitina and Bugaeva 2021) and Wan (Niger-Congo, Nikitina 2012a, 2020) illustrate the lack of syntactic restrictions on logophoric domains. In (18), for instance, the logophoric marker *-an* also precedes the clause introducing its antecedent, ruling out canonical binding:

(18) *onne-an pe ne kusu a-Ø-e-isoytak sekor sino*
be.old-LOG.S NMLZ COP because LOG.A-3.OBJ-about.APPL-talk QUOT true
*nispa Ø-hawean*
rich.man 3.S-say.SG

'I told it because LOG$_i$ was old, said a grand elder$_i$.'

[Ainu, Nikitina and Bugaeva (2021): 11a)]

In (19), the LP appears in an adjunct that precedes both the matrix clause and the referent the pronoun relates to (the hare):

(19) *à dinà é bà o kú pɔ é mì bé kòtà gé*
3SG stop TEMP LOG.SG hand reach thing DEF at then turtle say.PST

'When he (the hare) stopped in order to touch the thing, the turtle said...' (lit., 'Him$_{\text{LOG}}$ having stopped in order for LOG hand to reach the thing, then the turtle$_i$ said...')

[Wan, Nikitina (2012a): (8)]

A final point relates to embedding more broadly conceived. Although LPs usually appear in syntactic environments involving sentence-embedding predicates (generally attitude verbs, cf. §**??**), they need not be: LPs can appear in matrix contexts, and retrieve their antecedent from the global, discourse context, or even a nearby clause. This is exemplified in (20) from the seminal work on LPs by Hagège (1974): The informant introduces a

topic for the subsequent sentences (*the ancestors*) that a logophoric pronoun can pick up as referent, about 13 minutes after the antecedent was uttered:

(20) *Sàrà dús sò*
LOG disperse thus

'They (the ancestors) then dispersed/spread out.'
[Hagège 1974, cited in Dimmendaal 2001: (15)]

Another example is (21) from Wan, where the logophoric pronoun appears in a matrix clause:

(21) *bé è àà talí kɔlé é di é lɔ ságlà á gɛ! pɔ*
then 3SG 3SG.ALN stranger man DEF cow DEF eat start that here.is thing
*á laa di é tɛ á gɛ! [...] la zɛ bò* ***ba***
that 2SG.ALN cow DEF killed that here.is [...] 2SG affair leave LOG.SG
*ta á*
on NEG

"Then he (the hyena) started eating the cows of his (the hare's) stranger. [And the hare said:] Here it is! Here's what killed your cow! <Here's what killed your cow! Look into the stomach! Let us set on fire some leaves of the *mlaan* tree. We will see who killed your cow.> You should not leave the blame on **me**.' (lit., 'You should not leave the affair on me$_{Log}$.') [Wan, Nikitina (2012a): (9)]

A standard embedding configuration does not seem to obtain in these examples, since the LP *ba* appears free in an unembedded sentence, itself part of a narrative sequence consisting of six independent clauses. As Nikitina (2012a) notes, a further problem is that the sequence is not introduced by any verb of speaking, suggesting that the LP may not be selected by any speech predicate in the first place. Analogous data can be provided for Moru (Nilo-Saharan), Engenni (Niger-Congo) (Dimmendaal, 2001), Ewe (Bimpeh 2019, Bimpeh et al. 2022), Ainu (Bugaeva, 2008), among other languages. The logophoric domain thus appears to be broader than that of the embedded sentence, undermining the binding approach.[4]

Another problem for the binding theory of LPs comes from so-called 'strict' readings of logophors in alternative-sensitive environments, more specifically under ellipsis and in

[4] As noted by Isabelle Charnavel (p.c.), the proponent of the binding approach could argue that the binding relation is indirect, and that binding is mediated by a silent logophoric operator, which can in principle always be decoupled from the realization of the complementizer. If such an operator is always silent, one could in principle also posit that it is realized in matrix clauses as well, thus rendering the binding account compatible with the data outlined above. However, in the absence of morphological evidence for the existence of such an operator, I take it that the best theory is the one that is able to account for the present data without committing to such entities.

association with focus (AF) contexts (Bimpeh and Sode 2021; Bimpeh et al. 2022, 2023). More precisely, Bimpeh et al. (2023) provide evidence that LPs in the languages Yoruba, Ewe and Igbo allow strict readings in such environments, as illustrated below:

(22) *Élì lè mʉ-kpʉ-m bé yè á dè Àblá. Yàó hã̀.*
Eli COP path-see-PROG COMP LOG IRR marry Abla. Yao too.

'Eli$_i$ hopes that he$_i$ will Marry Abla. Yao$_j$ does ⟨ ... ⟩ too.'
✓ Yao hopes that Yao will marry Abla, too. (sloppy reading)
✓'Yao hopes that Eli will marry Abla, too. (strict reading)

(23) *Élì kò yé súsú bé yè dùdzí lè àwù-dódó fé hòwíwlí mè.*
Eli only FOC think COMP LOG win in-dress wear POSS contest inside

'Only Eli thinks that he won the costume contest.'
✓ No one$_i$ but Eli think they$_i$ won the costume contest. (sloppy reading)
✓ No one but Eli$_j$ think he$_j$ won the costume contest. (strict reading)
[Bimpeh et al. 2023: (13)-(9)]

As Bimpeh et al. (2023) argue, the binding theory of LPs does not predict such readings: the LP being in each case an obligatory bound variable, there is no way for it to be free in either the elided clause or in the focus alternatives:

(24) **LF of (22):** Eli$_i$ hopes [$\lambda x^2{}_{[log]}$ that LOG$^2{}_{[log]}$ will Marry Abla]. Yao$_j$ does ⟨ hope [$\lambda x^2{}_{[log]}$ that LOG$^2{}_{[log]}$ will Marry Abla ⟩ too.'

(25) **LF of (23):**

a. Only Eli$_{[F]}$ thinks [$\lambda x^2{}_{[log]}$ that LOG$^2{}_{[log]}$ won the costume contest].

b. ALT(23a): $\left\{ \begin{array}{c} \text{Koku}_{[F]} \text{ thinks } [\lambda x^2{}_{[log]} \text{ that LOG}^2{}_{[log]} \text{ won the costume contest}]. \\ \text{Kofi}_{[F]} \text{ thinks } [\lambda x^2{}_{[log]} \text{ that LOG}^2{}_{[log]} \text{ won the costume contest}]. \\ \ldots \end{array} \right\}$

From this, Bimpeh et al. (2023) conclude that the binding theory of LPs fail to account for such cases and therefore should be amended. Their proposal is discussed further in §2.3.4.

### 2.2.3 Theories of indexical shift

#### Shifting operators for indexicals

The most successful account of indexical shift so far is the so-called 'monster account' of Anand and Nevins (2004) and Anand (2006), and later expanded by Deal (2020). The

starting point of the theory are examples such as (26), from the Indo-Iranian language Zazaki:

(26) *vizeri Rojda Bill-ra va kɛ ɛz to-ra miradisa*
yesterday Rojda Bill-to say.PST COMP 1SG 2SG-to angry.be.PRS

✓ 'Yesterday Rojda$_i$ said to Bill$_j$ that he$_i$ is angry at him$_j$.'
✓ 'Yesterday Rojda$_i$ said to Bill$_j$ that I am angry at you.'
✗ 'Yesterday Rojda$_i$ said to Bill$_j$ that I am angry at him$_j$.'
✗ 'Yesterday Rojda$_i$ said to Bill$_j$ that he$_i$ is angry at you.'
[Zazaki, Anand and Nevins 2004: (13)]

The sentence in (26) is only two-way ambiguous, relative to the context in which it is interpreted: in the reported context, the two indexicals *ɛz* and *to* will refer to the reported speakers and addressee (Rojda and John), respectively, while in the utterance context, they will refer to the speaker and addressee of that context. Crucially, mixed or 'cross-contextual' readings are excluded: in other words, indexicals must 'shift together' in Zazaki. In order to capture this, Anand and Nevins 2004 propose the following generalization:

(27) **Shift Together** [Adapted from Anand 2006: 100]
All SIs within a attitude-context domain must pick up reference from the same context (where an attitude-context domain is the scope of an attitude verb up to the scope of the next c-commanded attitude verb.)

Such a constraint has been reported to hold in a large body of SI-languages, and is considered by many to be the centrally-defining feature of indexical shift (Anand 2006; Deal 2018, 2020, a.o.).

### 2.2.4 Disjointness inferences

It has long been noted that in LP languages, the use of a non-logophoric form in logophoric contexts prevents co-reference with the reported speaker: in Aghem (FAMILY), for instance, the use of the 3rd person pronoun *ù* instead of the logophoric form *é* indicates that its referent is not the reported speaker, Nsen, but some other, salient female individual:

(28) a. *Nnsɨni dzɛ enyɨa é bvʉ̀ nù* [Aghem, Butler 2009: (10-11)]
Nsen say COMP LOG fall FOC

'Nsen$_i$ said that she$_i$ fell.'

b. *Nnsɨni dzɛ enyɨa ù bvʉ nù*
Nsen say COMP 3SG fall FOC

'Nsen$_i$ said that she$_{*i/j}$ fell.'

Following Marty (2018), we will refer to this pattern as a *disjointness inference*:

(29) **Disjointness inference** [Marty 2018: fn.1]
A nominal expression $\alpha$ is interpreted as disjoint from a nominal expression $\beta$ if the interpretation of $\alpha$ does not — exhaustively or partially — co-refer with or co-vary with that of $\beta$.

A similiar pattern is observed in IS-systems: whenever IS is obligatory, the use of a 3rd person form in speech reports triggers a disjointness inference. The generalization can be stated the following way:

(30) **Disjointness inference in logophoric/shifty contexts**
In a language *L* where logophoric marking/indexical shift is obligatory in configuration *C* (e.g., under an appropriate attitude verb), embedded 3rd person proforms cannot co-refer with a participant of the reported context.

To put it another way, whenever a language *L* has a LP/SI in its pronominal system, using a 3rd person form in lieu of the expected form will trigger the inference that their referents are distinct individuals. An early observation of this can be found in Speas (1999) for Navajo (FAMILY), as illustrated in (31):

(31) a. *ndoolnish ní*
3SG.S.work 3SG.S.say

'He$_i$ says he$_{*i/j}$ will work.'

b. *ndeeshnish ní*
1SG.S.work 3SG.S.say

'He$_i$ says he$_i$ will work.'
'He says I will work'

c. *nizhdoolnish jiní*
4SG.S.work 4SG.S.say

'He$_i$ says he$_i$ will work.'

[Navajo, Speas 1999: (3)]

In (31)a above, the use of a third person agreement marker on the embedded *say* verb triggers disjoint reference; the only way to have the embedded person marker to refer to

the author of the speech report is to use first person agreement, as in (31)b, or a dedicated so-called fourth person marker, (31)c. A similar pattern can be found in Eritrea Tigrinya, as illustrated in (9) repeated here, and (32) below:

(3a) a. *Kidane kə-xɛyəd dɛliɛ ʔallɛxu ʔiłu (nɛyru)*
Kidane COMP-IMPF.leave PRF.want.1SG AUX.1SG say.3SG.M AUX.3SG.M

‘Kidane$_i$ said that he$_i$ wanted to leave.’

b. *Kidane kə-xɛyəd dɛliu ʔallo ʔiłu*
Kidane COMP-IMPF.leave PRF.want.3SG.M AUX.3SG.M say.3SG.M
*(nɛyru)*
AUX.3SG.M

‘Kidane$_i$ said that he$_{*i/j}$ wanted to leave.’

(32) a. *Sɛgɛn (ʔanɛ) ħabt-ɛy jəfɛtu-wa (ʔijɛ)*
Segen 1SG sister.POSS.1SG love.IMPF.1SG.-OBJ.3SG.F COP.1SG
*ʔiła*
say.PRF.3SG.F

‘Segen$_i$ said that she$_{i/*j}$ loves her$_{i/*j}$ sister.’

b. *Sɛgɛn (nsa) ħabt-a təfɛtu-wa (ʔija)*
Segen 3SG.F sister.POSS.3SG.F love.IMPF.3SG.F.-OBJ.3SG.F COP.3SG.F
*ʔiła*
say.PRF.3SG.F

‘Segen$_i$ said that she$_{*i/j}$ loves her$_{*i/j}$ sister.’

A corollary of this observation is that languages triggering this kind of disjointness inferences allow embedded third persons to refer to actual speakers, when the subject of the sentence is not first-person (i.e., when actual and reported speakers do not coincide). Here are examples from Athabaskan language Slave:

(33) a. *behshine rayuhdi hadi*
sled 3SG.buy.FUT 3SG.say

‘He said that I will buy a sled.’
‘He$_i$ said that he$_j$ will buy a sled.’

b. *gosho ʔeghalayuda yeniwe*
hard 3SG.work.FUT 3SG.want

'He wants me to work hard.'
'He$_i$ wants him$_j$ to work hard.'

[Slave, Rice 1986: (31), (44)]

As we will see in §2.3.5, however, the availability of this inference for IS-systems is restricted, and may fail to obtain if the language allows configurations where shifting is optional.

| Properties | Shiftable indexicals | Logophoric pronouns |
|---|---|---|
| Hierarchy of licensing predicates | ✓ | ✓ |
| Hierarchy of forms | ✓ | ✓ |
| Pronoun-agreement mismatches | ✓ | ✓ |
| *De se* readings | ✓ | ✓ |
| Disjointness inferences | ✓ | ✓ |

Table 2.1: Properties of both systems across languages.

## 2.3 Towards a unified account

We saw in the light of empirical evidence above that the definition assumed by the standard analyses of logophoricity (binding by a syntactic operator) is too restrictive, and precludes any possibility of analyzing logophoric systems on a par with indexical-shifting systems. On the route we would like to pursue, both LPs and SIs are grammatically uniform: they are both indexical-like elements unspecified with respect to the context (actual or reported) they are interpreted against. This makes sense intuitively, since both author-logophoric pronouns and 1st-person shifted indexicals each refer to the author of a context that must not be the actual context of utterance (Schlenker, 2003); what follows is a particular implementation of this idea.

### 2.3.1 The morphosemantics of person

The core of the proposal lies in the lexical entries assumed for the pronouns in the relevant systems. On the grammatical side, we assume that pronouns are endowed with dedicated set of features, *phi-features*, those being *person*, *gender* and *number*. These features are often taken to be universal across languages, playing a key role in predicting syntactic

phenomena such as agreement (Corbett, 2006). Their grammatical uniformity calls, in turn, a uniform semantics: we follow Sauerland (2008b, 2009) in assuming that $\phi$-features are uniformly interpreted as presuppositions restricting the range of possible referents the pronouns denote (see also Cooper 1979; Heim 2008). Since this piece is concerned with person features, I will therefore focus on that feature, assuming that the present proposal can be reconducted, *ceteris paribus*, to gender and number as well.[5]

Following Sauerland 2003, 2008b, McGinnis (2005), Bobaljik (2008), Harbour (2016), Sauerland and Bobaljik (2022), among many others, we take the features in (34) to be universally active across languages (where 1, 2, 3 stand for the respective persons); those features are given the partial semantics denotations in (35). In line with most current research in the semantics of person (Cooper 1983; Heim 2008; Sauerland 2008b; Stokke 2010; Sudo 2012; Charnavel 2019a, Sauerland and Bobaljik 2022 a.o.), I take person features to be interpreted as presuppositions, i.e. partial functions of type $\langle e, e\rangle$ that restrict the domain of interpretation of the expression they are associated with (the pronoun itself being treated as a variable, cf. Heim and Kratzer 1998); since 3rd person pronouns are devoid of person features, no entry is associated with them.

(34) a. 1: [PART(ICIPANT), AUTHOR]

b. 2: [PART]

c. 3: [ ]

(35) a. $[\![\text{AUTHOR}]\!]^{g,c,i} = \lambda x : s(c) \sqsubseteq x.x$

b. $[\![\text{PART}]\!]^{g,c,i} = \lambda x : s(c) \sqsubseteq x \vee a(c) \sqsubseteq x.x$

A lot hinges on the choice of this particular featural makeup of person, so we will try to motivate it in what follows. A first thing to note is that the ranking order to person features is not merely expository: person features form a scale, based on semantic markedness (Sauerland, 2008b); each feature in the scale is entailed by the features above it. As a consequence, the scale assumes that the 3rd person is an elsewhere (or default) form, being the most unmarked person category across languages (an early proponent of this approach being Benveniste 1966). Moving upwards, the 2nd person possesses a PARTICIPANT feature with a disjunctive meaning: its referent can include either the speaker (or author) of the context of utterance $c$, or the addressee of such context. Last, the 1st person has an AUTHOR feature that will uniquely identify the speaker in $c$. The inclusion relation $\sqsubseteq$ is motivated by the fact that these entries can be pluralized by combining with number features, cf. Sauerland and Bobaljik (2022). Contrary to other person inventories, such as those found in Zwicky (1977), Noyer (1997) or Harley and Ritter (2002),

[5] See in particular Sauerland 2003, 2008b, 2009 for extensive discussion and arguments in favor of the view adopted here.

no privative [+ HEARER] feature is posited for the 2nd person. This is a way to address Zwicky's 1977 observation that person inventories of the form 1 | 1+2, 2 | 3, in which the inclusive first person is conflated with second person in the morphology, are unattested across languages (see Harbour 2016: 71 sqq., as well as Sauerland and Bobaljik 2022 for discussion). Crucial for our purposes is that the meaning of the AUTHOR feature be a subset of the PARTICIPANT feature; this asymmetry derives a non-monotonic scale on which a mechanism of strengthening takes place (see next section).

Turning now to the semantics of features, two points are in order. Following the standard treatment of indexical expressions stemming from Kaplan (1977), I am assuming a double-indexing system where the interpretation function is relativized here to an assignment function $g$, an index $i$ and a context $c$. The index is standardly assumed to capture the sensitivity of expressions to modal and temporal operators, while the context parameter is needed to account for the meaning of indexical expressions. A less standard assumption of the proposed system is that, as noted by Heim (2008), the indexical meaning usually attributed to first and second person *pronouns* in standard theories stemming from Kaplan (1977) is not assumed here: in our system, the 1st and 2nd *person features* are treated as indexical partial functions, on a par with other features such as number and gender (Cooper 1983; see also Stokke 2010) for discussion. A consequence of such a treatment of person features is that their meaning aligns with the one conferred to other features, i.e., partial identity functions from indices on variables to individuals, interpreted by the following rule:

(36) **Pronouns and trace rule** [Heim and Kratzer 1998, Heim 2008]
If $\alpha$ is a pronoun or a trace, $n$ is a pronominal index, $g$ an assignment, $i$ and $c$ contexts, then

a. $\alpha_n \in dom(\llbracket \cdot \rrbracket^{g,c,i})$ iff $n \in dom(g)$;

b. If $\alpha_n \in dom(\llbracket \cdot \rrbracket^{g,c,i})$, then $\llbracket \alpha \rrbracket^{g,c,i} = g(n)$.

This, among other benefits, provides a uniform semantics for all features, treating them as presuppositions restricting the domain of individuals that the assignment function can select. The resulting semantics for pronouns in a language such as English is the following:

(37) a. $\mathrm{I}_n \in dom(\llbracket \cdot \rrbracket^{g,c,i})$ iff $\left\{ \begin{array}{c} n \in dom(g) \\ s(c) \sqsubseteq g(n) \end{array} \right\}$. If so, then $\llbracket\ \mathrm{I}_n\ \rrbracket^{g,c,i} = g(n)$.

b. $\mathrm{you}_n \in dom(\llbracket \cdot \rrbracket^{g,c,i})$ iff $\left\{ \begin{array}{c} n \in dom(g) \\ s(c) \sqsubseteq g(n) \vee a(c) \sqsubseteq g(n) \end{array} \right\}$. If so, then $\llbracket\ \mathrm{you}_n\ \rrbracket^{g,c,i} = g(n)$.

c. $\mathrm{it}_n \in dom(\llbracket \cdot \rrbracket^{g,c,i})$ iff $n \in dom(g)$. If so, then $\llbracket\ \mathrm{it}_n\ \rrbracket^{g,c,i} = g(n)$.

### 2.3.2 The featural inventory of LP/IS systems

Assuming such an inventory, how should LP and IS-systems be accounted for? In the previous section, we assumed that the two phenomena display a sufficiently similar distributional profile to be accounted for in a theoretically uniform way. The present proposal is a step towards achieving precisely this. Informally, our proposal follows early insights by Schlenker (1999, 2003, 2004b) who proposes to treat LPs as first person pronouns that are lexically specified to refer to authors of a non-actual context. We would like to pursue an analogous thread, albeit with a different formal implementation.

In the present system, indexical pronouns are not atomic entities, but the spellout of complex structures consisting of various elements. We assume, following Schlenker 2003, 2004a, an extensional system with context pronouns in the syntax (cf. Percus 2000 for a similar treatment of world pronouns), and in which attitude verbs that are able to host LPs/SIs are quantifier over contexts of type $\langle k, \langle k, t\rangle\rangle$. Not all attitude predicates, however, are context binders: in order to capture the variation regarding the licensers of shifted indexicals/logophoric pronouns discussed in §**??**, we must allow for parametric variation in the quantificational power of attitude predicates. Allowing any verb to quantify over the whole set of index parameters would obviously give us wrong results, predicting constructions involving modals, for instance, to be able to host LPs/SIs in the languages at stake, contrary to fact. Following the proposal of Schlenker (2011a), we posit accessibility restrictions directly within the lexical entries of verbs themselves (i.e., in the kind of abstractor they are able to introduce). We will therefore adopt the monstrous semantics outlined in (**??**) for attitude verbs that license either SIs/LPs in their complements:

(**??**) $[\![\text{say } c_i\ \phi]\!]^g = \lambda x.\lambda w.\forall c'$ compatible with what $x$ says in $w : [\![\phi]\!]^{g[c_i \to c']}$

However, as per the hierarchies mentioned in §**??**, a verb such as *think* in the languages Aghem and Zazaki does not allow for LPs/SIs in their complements. We should therefore assume that in those languages, *think* does not quantify over contexts, but over triples of variables containing an individual, a world and a time variable (that is, centered worlds in the sense of Lewis-Chierchia) and, therefore, unable to bind LPs/SIs (I leave out the time variable for expository purposes):

(38) $[\![\text{think } w_i\ \phi]\!]^g = \lambda x.\lambda w.\forall w'$ compatible with what $x$ thinks in $w : [\![\phi]\!]^{g[w_i \to w']}$

It is worth noting that the present system preserves important insights regarding the size of complement clauses that these verbs can take cross-linguistically. As noted by Lohninger and Wurmbrand (2020) and Wurmbrand and Lohninger (2023) (see also Krifka 2023), complement clauses across languages tend to differ in size depending on the kind of ontological argument they refer to: clauses referring to propositions (in Wurmbrand and Lohninger 2023's terminology, covering speech and epistemic contexts) tend to have

more structure cross-linguistically than clauses referring to situations or events. In their classification, *say, tell* and *believe* are paradigmatic instances of proposition-taking complements, while *ask*, *know* and *want* are exemplars of situation-taking complements, thus able to host less lexical material and being more integrated into their matrix clauses (Figure 2.1):

| | | |
|---|---|---|
| MOST INDEPENDENT | | LEAST INDEPENDENT |
| LEAST TRANSPARENT | Proposition ≫ Situation ≫ Event | MOST TRANSPARENT |
| LEAST INTEGRATED | | MOST INTEGRATED |

Figure 2.1: The Implicational Complement Hierarchy of Wurmbrand and Lohninger (2023)

If our hypothesis is correct, the hierarchy in Fig.(2.1) predicts that some attitude verbs, such as *say*, will syntactically be able to host more structure than others. Note also that the latter verbs, contrary to verbs of cognition and modals, are able to select for direct objects of the individual type; this makes sense pre-theoretically since, while all attitude verbs require a sentient agent (Anand et al., 2019), verbs such as *think* or *believe* cannot take an additional individual argument serving as the receiver of the attitude, that would typically be realized syntactically as an indirect object. If that hypothesis is correct, we should expect a correlation between the number of arguments an attitude verb can take in a given language and the type/number of SIs/LPs it is able to select for. This prediction seems to be borne out: for instance, the IS language Slave (Athabaskan; Northwest Territories, Canada) allows shifting of both first and second person under the transitive predicate *-edi* ('tell, ask'), but only shifting of first person under intransitive *hadi* ('say'):

(39) a. *hadi* 'say' (intransitive)

b. *-edi, -ededi* 'tell, ask' (transitive)

c. *yeniwe* 'want, think' (intransitive)

d. *hudeli* 'want, think' (transitive) [Slave reporting verbs (Rice 1986: (13))]

(40) *John ʔaranila yédhi*
John 2SG.go home 3SG.tell.4SG

'John told him to go home.'
(lit. 'John told him$_i$ you$_j$ go home.')

[Rice 1986: (16)]

(**??**) *Simon rásereyineht'u hadi*
John 2SG.hit.1SG 3SG.say

'Simon$_i$ said that you hit him$_i$.'

[Rice 1986: (29)]

This provides further support for our analysis, where the 'logophoric potential' of a language is the result of a complex interaction between the syntactic and semantic properties of attitude verbs and the morphosemantics of person.

### The structure of pronouns and the [ACTUAL] feature

In the present theory, pronominal indices combine with a context pronoun $c$ of type $k$ which, in turn, combine with any of the person features exposed in (34). Pronominal indices are of type $\langle k, e\rangle$, that is, individual concepts of sorts (Von Fintel and Heim, 2011). This straightforwardly allows us to derive the *de se* semantics associated with such pronouns, discussed in §**??**: pronouns here denote functions from context-worlds to individuals, and the pronominal index will only be in the domain of our assignment function $g$ if it includes a context-world variable as well. This allows us to correctly rule out *de re* co-reference, as desired. The main difference between logophoric systems and English-like systems is that, in the latter, first and second person forms consist in a person feature augmented with an ACTUAL feature, which is the main theoretical innovation of the present proposal. The ACTUAL feature is not a person feature *per se* but, as it names indicates, an indexical feature that restricts the evaluation of the person feature it attaches to to the actual context of utterance. The ACTUAL feature (of type $\langle k, k\rangle$) ensures that the referent of the variable is included or equals a participant coordinate (author or addressee) of the actual context. It takes a contextual pronoun $c_i$ and identifies it with the context of utterance, $c^*$ (which, following Schlenker 2003, we endow with an asterisk to mark its special status):

(41) **The ACTUAL feature**
$[\![ \text{ACTUAL} ]\!]^g = \lambda c : c_i = c^*.c_i$

In light of this, consider English-like systems first, in which first and second person pronouns are not shiftable. The first person pronoun in English will have the following structure, consisting of the pronoun and its numeral index, the ACTUAL feature, and the PART and AUTHOR person features. Application of ACTUAL ensures that the context variable denotes the utterance context.[6]

(42) **Structure of English first person**
$[[[[pro_5\ c^*]\ \text{ACTUAL}]\ \text{PART}]\ \text{AUTHOR}] = \text{I}$

[6] For readability, we endow context variables with alphabetical indexes $i, j, k$... and pronouns with numerical indexes. However, this is just a notational variant, and bears no consequence on the ontology of indexes assumed here - both are taken to be of the same type.

(43) a. $[\![pro_5]\!]^g = \lambda c.g(5)(c)$ pronominal index (type $\langle k, e\rangle$)

b. $[\![c_i]\!]^g = g(c_i)$ context pronoun (type $k$)

c. $[\![\text{ACTUAL}]\!]^g = \lambda c : c_i = c^*.c$ ACTUAL feature (type $\langle k, k\rangle$)

d. $[\![\text{PART}]\!]^g = \lambda c.\lambda x : s(c) \sqsubseteq x \vee a(c) \sqsubseteq x.x$ person feature (type $\langle e, e\rangle$)

e. $[\![\text{AUTHOR}]\!]^g = \lambda c.\lambda x : s(c) \sqsubseteq x.x$ person feature (type $\langle e, e\rangle$)

(44) a. $[\![pro_5]\!]^g([\![c_i]\!]^g) = g(5)(g(c_i))$

b. $[\![[pro_5\ c_i]]\!]^g([\![\text{ACTUAL}]\!]^g) = g(5)(g(c^*))$

c. $[\![[[pro_5\ c^*]\ \text{ACTUAL}]]\!]^g([\![\text{PART}]\!]^g) = g(5)(g(c^*))$ iff $\left\{ \begin{array}{c} s(c^*) \sqsubseteq g(5)(g(c^*)) \vee a(c^*) \sqsubseteq g(5)(g(c^*)) \\ \text{\# otherwise} \end{array} \right\}$.

d. $[\![[[[pro_5\ c^*]\ \text{ACTUAL}]\ \text{PART}]]\!]^g([\![\text{AUTHOR}]\!]^g) = g(5)(g(c^*))$ iff $\left\{ \begin{array}{c} s(c^*) \sqsubseteq g(5)(g(c^*)) \\ \text{\# otherwise} \end{array} \right\}$.

The final entry of the English first person is the following:

(45) $[\text{I}_5\ c^*] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 5 \in dom(g) \\ s(c^*) \sqsubseteq g(5)(g(c^*)) \end{array} \right\}$. If so, then $[\![[\text{I}_5\ c^*]]\!]^g = g(5)(g(c^*))$.

This yields a 'genuine' first person indexical, which can only be felicitously used if the value assigned by $g$ to its index and that of the contextual variable $c^*$ includes the speaker of $c^*$, the actual speaker.

### Logophoric pronouns

Logophoric systems share a common basis with English-like systems, with the important difference that in addition to 'genuine' first person forms, they also make available one (or more; see §2.3.4) additional logophoric pronoun which is devoid of the ACTUAL feature; as a consequence, its context pronoun is not required to be identified with the context of utterance, and is able to be bound by the attitude verb. A logophoric pronoun is therefore a first person that is devoid of an ACTUAL feature.

(46) **Structure of a speaker logophor**
$[[[[pro_2\ c_i]\ \text{PART}]\ \text{AUTHOR}] = \text{LOG}$

(47) a. $[\![pro_2]\!]^g = \lambda c.g(5)(c)$ pronominal index (type $\langle k, e\rangle$)

b. $[\![c_i]\!]^g = g(c_i)$ context pronoun (type $k$)

c. $[\![\text{PART}]\!]^g = \lambda c.\lambda x : s(c) \sqsubseteq x \vee a(c) \sqsubseteq x.x$ person feature (type $\langle e, e\rangle$)

d. $[\![\text{AUTHOR}]\!]^g = \lambda c.\lambda x : s(c) \sqsubseteq x.x$ person feature (type $\langle e, e\rangle$)

(48) a. $[\![pro_2]\!]^g([\![c_i]\!]^g) = g(2)(g(c_i))$

b. $[\![[pro_2\ c_i]]\!]^g([\![\text{PART}]\!]^g) = g(2)(g(c_i))$ iff $\left\{ \begin{array}{c} s(c_i) \sqsubseteq g(2)(g(c_i)) \vee a(c_i) \sqsubseteq g(2)(g(c_i)) \\ \text{\# otherwise} \end{array} \right\}$.

c. $[\![[[pro_2\ c_i]\ \text{PART}]]\!]^g([\![\text{AUTHOR}]\!]^g) = g(2)(g(c_i)))$ iff $\left\{ \begin{array}{c} s(c_i) \sqsubseteq g(2)(g(c_i)) \\ \text{\# otherwise} \end{array} \right\}$.

(49) $[\text{LOG}_2\ c_i] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 2 \in dom(g) \\ s(c_i) \sqsubseteq g(2)(g(c_i)) \end{array} \right\}$. If so, then $[\![[\text{LOG}_2\ c_i]]\!]^g = g(2)(g(c_i))$.

An advantage of this system is that features can be combined to yield complex pronominal entries: featural combination is therefore parametric, and varies across languages (see §2.3.4 and 2.3.5). As an illustration, take a language like Wan, which has speaker-denoting logophors in its lexicon. We assume that the features in (50) are active in Wan, and are interpreted as in (51):

(50) **Featural system of languages with speaker logophors**

a. $\text{I}_5 = [[[[pro_5\ c^*]\ \text{ACTUAL}]\ \text{PART}]\ \text{AUTHOR}]$

b. $\text{LOG}_4 = [[[pro_4\ c_i]\ \text{PART}]\ \text{AUTHOR}]$

c. $\text{you}_2 = [[pro_2\ c_i]\ \text{PART}]$

d. $\text{it}_7 = pro_7$

(51) a. $[\text{I}_5\ c^*] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 5 \in dom(g) \\ s(c^*) \sqsubseteq g(5)(g(c^*)) \end{array} \right\}$. If so, then $[\![[\text{I}_5\ c^*]]\!]^g = g(5)(g(c^*))$.

b. $[\text{LOG}_4\ c_i] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 4 \in dom(g) \\ s(c_i) \sqsubseteq g(4)(g(c_i)) \end{array} \right\}$. If so, then $[\![[\text{LOG}_4\ c_i]]\!]^g = g(4)(g(c_i))$.

c. $[\text{you}_2\ c_i] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 2 \in dom(g) \\ s(c_i) \sqsubseteq g(2)(g(c_i)) \vee a(c_i) \sqsubseteq g(2)(g(c_i)) \end{array} \right\}$. If so, then $[\![\text{you}_2]\!]^g = g(2)(g(c_i))$.

d. $\text{it}_7 \in dom([\![\cdot]\!]^g)$ iff $7 \in dom(g)$. If so, then $[\![\text{it}_7]\!]^g = g(7)$.

Note that these entries are organized hierarchically, both in terms of *complexity* (each structure is strictly more complex than the former) and in terms of semantic strength (they entail each other from the bottom up). This will prove important to derive the correct anaphoric patterns in §2.3.3. Wan has therefore a *bona fide* first person indexical, which always denote the actual speaker; it also has a speaker logophor with a very similar

semantics, save from the ACTUAL feature. As a consequence, its reference will not be constrained by the indexical presupposition induced by the ACTUAL feature, and the context pronoun within it will be able to be bound by the attitude verb, denoting the speaker of the reported context, as desired.

A direct consequence of our theory is that LOG forms are, at their core, first- (and/or second-)personal elements (something already insisted upon in Schlenker 1999). The first-personal nature of LPs as an hypothesis to explain their distribution and evolution is not new (Westermann 1907; Clements 1975). It is invoked notably by Faltz (1985) to explain, among other things, the fact that in the Anlo dialect of Ewe, the first person form *ye* is used both as the first-person logophor and as the first person singular genitive clitic in matrix clauses (pp. 261 *sqq*), suggesting a common first-personal origin. Such an hypothesis makes a number of predictions, most notably regarding the agreement properties of LPs, which will be discussed in §2.3.4. Note that this contrasts with what has been proposed in most accounts of the semantics of logophors, (Schlenker 1999, von Stechow 2002, 2003, and more recently Bimpeh et al. 2022, 2023), which all assume that logophoric pronouns are third person pronouns specified with a LOG feature (Bimpeh et al. 2023's account is discussed further in §2.3.4).

### Shiftable indexicals

Consider now languages with SIs. According to the present theory, they make use of the exact same set of person features as logophoric languages, with the difference that no ACTUAL feature has grammaticalized: consequently, first and second person forms are always contextually unspecified, being free to be bound either by the matrix context-binder, or to the binder introduced by the attitude verb.

(52) **Featural system of languages with shiftable indexicals**

a. $\text{I}_4 = [[[pro_4\ c_i]\ \text{PART}]\ \text{AUTHOR}]$

b. $\text{you}_2 = [[pro_2\ c_i]\ \text{PART}]$

c. $\text{it}_7 = pro_7$

(53) a. $[\text{I}_4\ c_i] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 4 \in dom(g) \\ s(c_i) \sqsubseteq g(4)(g(c_i)) \end{array} \right\}$. If so, then $[\![[\text{LOG}_4\ c_i]]\!]^g = g(4)(g(c_i))$.

b. $[\text{you}_2\ c_i] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 2 \in dom(g) \\ s(c_i) \sqsubseteq g(2)(g(c_i)) \vee a(c_i) \sqsubseteq g(2)(g(c_i)) \end{array} \right\}$. If so, then $[\![\text{you}_2]\!]^g = g(2)(g(c_i))$.

c. $\text{it}_7 \in dom([\![\cdot]\!]^g)$ iff $7 \in dom(g)$. If so, then $[\![\text{it}_7]\!]^g = g(7)$.

In the present theory, shiftable first (and second) person forms have exactly the same morphosemantic makeup than logophors: crucially, LP-systems differ from IS-systems in that in the former, the first person is the result of morphological spellout of a more complex bundle of features [ACTUAL, PART, AUTHOR], stemming from the grammaticalization/lexicalization of the ACTUAL feature, leaving the logophoric pronoun with the less complex bundle [PART, AUTHOR].

The present theory makes a number of welcome predictions regarding indexical shifting. The first is that it predicts global optionality in shifting (just like in Schlenker 2003), since every person-specified element will always be able to obtain its reference via the matrix context pronoun, or the embedded one. We take this to be a welcome result, considering that indexical shift is by and large an optional phenomenon. Second, by parametrizing which indexicals can shift in a given language and which verbs can bind context pronouns in their complements, we are able to capture the patterns of variation introduced in **??**, while preserving our main empirical insight - that LPs and SIs share a common morphological and interpretive basis.

### 2.3.3 Featural presupposition maximization

The present analysis allows us to straightforwardly capture the disjointness effects mentioned in §2.2.4 in terms of anti-presuppositions over person features, triggered by the use of a 3rd person form in shifted contexts. Laid out in informal, Gricean terms, the idea is quite simple: when reporting what someone said, a speaker *s* of a logophoric/indexical shifting language *L* is expected to use a first-person form whenever the reported speaker (the subject of the matrix clause) co-refers with the subject of the embedded clause. If the speaker uses a 3rd person form instead, then she antipresupposes that this is not the case that both forms co-refer, so their referents must be distinct individuals or distinct *centers*, i.e. world-individual pairs.

#### The *Maximize Presupposition!* principle

As first observed by Heim (1991) and in a parallel fashion by Hawkins (1991), some utterances involving presupposition triggers seem to be infelicitous in contexts where the truth of a presuppositionally stronger element is entailed, i.e. where the presuppositionally stronger element is common ground:

(54) a. #A moon is bright.

b. The moon is bright.

(55) a. #I broke all my legs running.

b. I broke both legs running.

(56) a. #Chloe believes that Bern is the capital of Switzerland.

b. Chloe knows that Bern is the capital of Switzerland.

(54a) presupposes that there is exactly one moon, which is satified in the utterance context; consequently, 54a will be perceived as odd if uttered. The same goes for 55b and 56b, which presuppose that the speaker has exactly two legs and that it is a fact that Bern is the capital of Switzerland, respectively; uttering their presuppositionally weaker counterparts 55a and 56a will trigger the inference that their stronger alternatives do not hold, much like scalar implicatures.[7] Heim (1991) convincingly argues that this kind of inferences cannot readily be analyzed as scalar implicatures, because both pairs are equally informative in the given context.[8] She proposes the pragmatic principle *Maximize Presupposition!* to account for the fact that cooperative speakers tend to prefer more informative presuppositional alternatives over their less-informative counterparts. This principle is stated in (57):

(57) **Maximize Presupposition! (standard version; to be revised)**
Do not use $\phi$ in context $C$[9] if there is a $\psi \in \text{ALT}(\phi)$ s.t.

a. the presuppositions of $\psi$ and $\phi$ are satisfied within $C$;

b. $[\![\psi]\!]^C = [\![\phi]\!]^C$, and

c. the presupposition of $\psi$ ($\psi_\pi$) asymmetrically entails the presupposition of $\phi$ ($\phi_\pi$).

Taken as a pragmatic filtering condition on utterances, the principle states that, given a presuppositional element $\phi$ that has a set of alternatives (in sense to be defined later), speakers should prefer to use any member of that set $\psi$ if it is (i) presuppositionally stronger, and (ii) true in the context of utterance. If a competent and cooperative speaker were to utter $\phi$ under those conditions, then the hearer would consistently infer that she did not utter the presuppositionally stronger $\psi$ on purpose, and that the speaker does not know whether $\psi$ is the case or not: in other words, the utterance of $\phi$ would give raise to

[7] The issue whether antipresuppositions of the form illustrated in (54)-(56) could be treated as obligatory implicatures is still widely debated (see Bade 2021 as well as Marty and Romoli 2021 for discussion).

[8] Again, this is debated, and some authors argue that antipresuppositions could arise in a Gricean fashion, through quantity implicatures (Hawkins 1991, Schlenker 2012 i.a.).

[9] In what follows, following standard usage, I use capital $C$ here to denote the stalnakerian context set (Stalnaker, 1974), that is, the set of all possible worlds compatible with the *common ground*, that is, the set of all possible propositions compatible with what the interlocutors in a conversation believe/take for granted and not subject for further discussion. This is to be contrasted with the Kaplanian context $c$ used so far.

an *antipresupposition* (Percus, 2006). It seems to be fairly uncontroversial that this inference is eventually strengthened somehow, leading the hearer to infer that the speaker does not believe $\psi$ to be true, i.e., being opinionated about the truth of $\psi$ (cf. Spector 2003; Sauerland 2004b, 2004a; Chemla 2008 i.a.).

### *MP!* and alternatives

A crucial component of the *MP!*-based approach to antipresupposition (as well as other implicature-related phenomena) is the definition of the alternative set ALT, over which the inference mechanism operates. Most of the proposals in the literature follow neo-griceans accounts such as that of Horn (1972) and Gazdar (1979) in positing scales, in which elements of a given scale are ordered with respect to one another in a monotonic fashion. On these accounts, *MP!*-based inferences can be predicted to arise in examples such as (54)-(56) because the presupposition triggers they involve are scalemates, each element to the left of the scale being presuppositionally weaker than the element to its right: ⟨*a, the*⟩, ⟨*all, both*⟩, ⟨*believe, know*⟩ are thus well-formed scales, and any utterance of the weaker element is likely to generate an AP negating the presupposition of the stronger element. However, as argued forcefully by Katzir (2007) and Rouillard and Schwarz (2017) i.a., although positing scales may appear quite natural, especially with regards to pronominal paradigms across languages, scalar approaches to alternatives give raise to considerable problems, the most prominent of which being their very nature and origin: where do they come from? In order to avoid this problem (as well as related ones), I follow Rouillard and Schwarz (2017) in adopting Katzir (2007)'s theory of structural alternatives for the presuppositional domain. In Katzir's account, complexity plays a crucial role in determining candidates for alternatives, and we will see that ruling out more complex alternatives will be crucial in deriving the data at stake. Katzir's notion of structural complexity is stated in (58):

(58) **Structural complexity (Katzir, 2007):** Let $\phi, \psi$ be parse trees. $\psi$ can be said to be at-most-as-complex as $\phi$ (noted $\psi \leq \phi$) if we can transform $\phi$ into $\psi$ by

a. deleting constituents of $\phi$,

b. contracting (i.e., merging and identifying nodes) constituents of $\phi$,

c. replacing constituents of $\phi$ with constituents of the same category from the Substitution Source (61) of the language.

This felicitously derives the fact that structurally more complex alternatives of a sentence *S* are generally not available for implicature computation; for instance, the sentence (59b) is ruled out as an alternative of (59a) by (58), and therefore asserting (59a) is not expected to trigger the implicature that ¬(59b), as desired.

(59) a. John ate some of the cake.

b. John ate some but not all of the cake.

The set of alternatives of a sentence $\phi$ is therefore the set of its structurally less complex alternatives, (60):

(60) **Structural alternatives**: $\text{ALT}(\phi) = \{ \phi' : \phi' \leq \phi \}$

The algorithm in (58) relies on an appropriately defined *substitution source* for alternatives, which, following Fox and Katzir (2011) and Breheny et al. (2018) we define as follows:

(61) **Substitution source for alternatives** [Breheny et al. 2018: (7)]
An item $\alpha$ is in the Substitution Source of a sentence $S$ in $c$ if

a. $\alpha$ is a constituent that is salient in $c$ (e.g. by virtue of having been mentioned); or

b. $\alpha$ is a subconstituent of $S$; or

c. $\alpha$ is in the lexicon.

Note that the last clause straighforwardly captures the intuition behind the idea of scales: if a language possesses two lexical elements $\langle \alpha, \beta \rangle$ and that $\beta \leq \alpha$, uttering $\alpha$ willl trigger the implicature that $\neg\beta$.[10] Last, we will make use of Katzir's version of Grice's Cooperative Principle, coupled with the definition of alternatives outlined above:

(62) **Cooperative principle (Katzir 2007's version):**
Do not use $\phi$ if there is a $\psi \in \text{ALT}(\phi)$ s.t.

a. $[\![\psi]\!] \subset [\![\phi]\!]$, and

b. $\psi$ is weakly assertable.

Where *weak assertability* is defined as follows: "A structure $\phi$ will be said to be *weakly assertable* by a speaker $S$ if $S$ believes that $\phi$ is true, relevant, and supported by evidence" (Katzir 2007: 672).[11]

### Antipresuppositions and person features

Now, if *MP!* is a general principle guiding speakers and hearers alike in the interpretation of presuppositions, and if person features are presupposition triggers, we should expect

[10] It has been argued, however, that the substitution source rather makes use of conceptual, language-invariant logical primitives instead of lexical elements in a given language (Buccola et al. 2022; Sauerland et al. 2023).

[11] The norm of assertion used here might be too strong, however (c.p. Bach and Harnish 1979; see Pagin and Marsili 2021 for discussion).

to observe *MP!*-related effects in the pronominal domain as well. This is indeed the case. Consider the following example:

(63) *Context: John is speaking to Mary.*

a. #John is happy.

b. I am happy.

(64) *Context: same.*

a. #Mary is happy.

b. You are happy. (adapted from Schlenker 2005b: (18))

While in that context, both *John* and *I* refer to the speaker, and *Mary* and *you* to the addressee, sentences involving proper names instead of indexicals are perceived as deviant. As previously argued by Schlenker 2005a, 2005b and Marty (2017), sentences (63a) and (64a) uttered in a context where John is the speaker and Mary is the addressee will be perceived as odd because in that context, indexicals *I* and *you* are favored by *MP!* over the proper name DPs if they are meant to refer to the same individual.

The same principle applies to pronouns, as (65) show:

(65) *Context: John is the speaker and g(2) = John.*
#$\text{He}_2$ is happy.

Here, the pronoun *he*, via *MP!*, triggers the antipresupposition that the referent to which the assignment function *g* maps the index *2* does not include either the speaker *s(c)* or the addressee *a(c)* (which is the meaning of PART), and that, similarly, *g(2)* does not include *s(c)* (the meaning of AUTHOR). This is illustrated in (68), where $\text{ALT}_\pi$ denotes the set of presuppositional alternatives of a given element:

(66) a. 1: [PART, AUTHOR, ACTUAL]

b. 2: [PART, ACTUAL]

c. 3: []

(67) a. $[\![\text{PART, AUTHOR, ACTUAL}]\!]^g = \lambda c.\lambda x : s(c^*) \sqsubseteq x.x$

b. $[\![\text{PART, ACTUAL}]\!]^g = \lambda c.\lambda x : s(c^*) \sqsubseteq x \vee a(c^*) \sqsubseteq x.x$

(68) a. $\text{ALT}_\pi([\![\text{he}_2\ c^*]\!]^g) = \left\{ \begin{array}{c} s(c^*) \sqsubseteq g(2)(g(c^*)), \\ s(c^*) \sqsubseteq g(2)(g(c^*)) \vee a(c^*) \sqsubseteq g(2)(g(c^*)) \end{array} \right\}$

b. $\rightsquigarrow$ the referent of $g(2)(g(c^*))$ is neither $s(c^*)$ or $a(c^*)$.

c. $\rightsquigarrow$ the referent of $g(2)(g(c^*))$ and John must be distinct individuals.

That the inferences in (68) are genuine antipresuppositions (i.e., inferences derived from the non-use of presuppositional elements in a given context) is verified by the fact that they do not project in universally-quantified sentences, as other antipresuppositions do (Sauerland, 2008a); just as in (69a), the presupposition of the plural feature associated with *his sisters* is compatible with one of the students having only one sister, in (69b) the presupposition associated with the person feature of *he* is compatible with an interpretation in which the denotation of *every assistant* includes the speaker.

(69) a. Every student$_i$ should invite his$_i$ sisters (and therefore, John$_i$ should invite his$_i$ sister). [Sauerland 2008a; (31b)]

b. Every assistant$_i$ likes when he$_i$ is done writing a chapter (including me$_i$).

### Antipresuppositions under attitudes

Recall from §**??** that, when used, LPs or SIs cannot pick up a referent distinct from the reported speaker. However, when a regular, third person pronoun is used in the same environment, a disjointness inference arises, and the third person has to be interpreted as distinct from the reported speaker. This is illustrated in the following example:

(28) a. *Nnsɨni dzɛ enyɨa é bvʉ nù* [Aghem, Butler 2009: (10-11)]
Nsen say COMP LOG fall FOC

'Nsen$_i$ said that she$_i$ fell'

b. *Nnsɨni dzɛ enyɨa ù bvʉ nù*
Nsen say COMP 3SG fall FOC

'Nsen$_i$ said that she$_{*i/j}$ fell'

In (28), we observe that a standard 3rd person form in the logophoric environment introduced by *be 'say'* is interpreted as obligatorily distinct from the matrix subject, *Nsen*. This is because the choice of (28b) over its logically stronger counterpart (28a) triggers an antipresupposition about its referent: that *Nsen* refers neither to the author nor addressee of either the utterance or the reported context. The alternatives of the third person pronouns are all these pronominal forms, the denotations of which are entailed by those of the second and first person pronouns, but not vice versa. By *MP!*, these alternatives are

excluded from the anaphoric pattern: *ù*, if used, has to denote an individual that is not a participant in the reported context.

$$(70)\quad \text{ALT}_\pi([\![\grave{\text{u}}_n\ c_i]\!]^g) = \left\{ \begin{array}{c} s(c_i) \sqsubseteq g(n)(g(c_i)), \\ s(c_i) \sqsubseteq g(n)(g(c_i)) \vee a(c_i) \sqsubseteq g(n)(g(c_i)). \end{array} \right\}$$

Since we are interested in the kind of inferences triggered in attitude reports environments, and that reports are mostly an embedded phenomenon, we will need to give an account of person presupposition projection in complex sentences. Following Heim (1992), I will consider that sentences of the form *x believes that p* have to be analyzed as context updates relativized to doxastic alternatives (Hintikka, 1969), and sentences of the form *x says that p* as updates relativized to SAY-compatible alternatives. Thus, a sentence like

(71) Nsen$_5$ said that 3SG$_5$ fell.

Will be analyzed as involving an attitude verb *say* quantifiying over *say*-alternatives of Nsen; upon asserting (**??**), the common ground *CG* will be updated with the context-worlds compatible with those in which Nsen said that she fell, provided that *Nsen* and *she* are co-referential, (72):

(72) For any common ground *CG*, *CG* + *Nsen*$_5$ *said that she*$_5$ *fell* = $\{c \in CG : \forall c' \in \text{SAY}(N, w(c)), g_c(5)$ fell in $c'\}$.

(71) in Aghem will trigger the following antipresupposition:

(73) **Antipresupposition of (71) (with epistemic step):**

a. $\rightsquigarrow CG\neg[\forall c' \in \text{SAY}(N, w(c^*))[s(c') \sqsubseteq g(5)(g(c')) \wedge a(c') \sqsubseteq g(5)(g(c'))]$.

b. $\rightsquigarrow$ it is common ground that $g(5)(g(c'))$ is not a participant in the reported context.

The antipresupposition here forces participants to derive a disjointness inference that excludes reference to participants of the reported context when a 3SGform is used; this is because, in logophoric languages such as Aghem and Wan, 2nd person pronouns do not lexicalize an ACTUAL feature, and therefore their referents need not be identified in the actual context (i.e., Aghem and Wan second persons are shiftable indexicals as defined here; see §2.3.4).

In the same fashion, we are able to account for a similar inference observed in some SI-systems. Consider our Tigrinya example (3b), repeated here:

(3b) a. *Kidane kə-xɛyəd dɛliɛ ʔallɛxu ʔiłu (nɛyru)*
Kidane COMP-IMPF.leave PRF.want.1SG AUX.1SG say.3SG.M AUX.3SG.M

‘Kidane$_i$ said that he$_i$ wanted to leave’

b. *Kidane kə-xɛyəd dɛliu ʔallo ʔiłu*
Kidane COMP-IMPF.leave PRF.want.3SG.M AUX.3SG.M say.3SG.M
*(nɛyru)*
AUX.3SG.M

‘Kidane$_i$ said that he$_{*i/j}$ wanted to leave’

Here, the use of third person excludes the reading where it denotes Kidane, the reported speaker, since a shifty first person indexical was expected instead.

(74) a. #Kidane$_3$ said that 3SG$_3$ wanted to leave.

b. $\text{ALT}_\pi(3\text{SG}_n) = \left\{ \begin{array}{c} s(c_i) \sqsubseteq g(3)(g(c_i)), \\ s(c_i) \vee s(c_i) \sqsubseteq g(3)(g(c_i)) \end{array} \right\}$

(75) **Antipresupposition of (74a) (with epistemic step):**

a. $\rightsquigarrow CG \neg[\forall c' \in \text{SAY}(\text{K}, w(c^*))[s(c') \sqsubseteq g(3)(g(c')) \vee a(c') \sqsubseteq g(3)(g(c'))]]$.

b. $\rightsquigarrow g(3)(g(c'))$ is not a participant of the reported context.

Note that this inference will go through only in contexts where a shifted reading is preferred over an unshifted (indexical) reading (that is, in the present formalism, whenever the context pronoun associated with the indexical is bound at the embedded level, by the embedding predicate), which is the case for most declarative sentences embedded under the converb *ʔiłu* in Tigrinya. However, contrary to LP-systems, the inference is not predicted to be obligatory. Further data is discussed in §2.3.5.

### *MP!* and shifty contexts

The principle of *MP!* in (57) needs to be refined, however, because we ultimately want the presuppositions of pronouns to be computed not only against the set of the *actual* context and common ground, but the set of possible contexts that the attitude verb quantifies over. Here we follow a suggestion by Stalnaker (2014) to understand the common ground not merely as a set of possible worlds, but as a set of K(aplanian)-contexts - that is, centered worlds containing time and place parameters as well. The relevant competition mechanism for antipresuppositions should be adjusted in order to refer to this augmented notion of common ground, the set of all possible K-contexts $\kappa$:

(76) ***Maximize presupposition!* (relativized to possible contexts)**
Do not use $\phi$ with respect to the current common ground $C$ and assignment $g$ if $\exists\psi \in \text{ALT}(\phi)$ such that

a. $\forall c \in C, \phi \in dom(\llbracket\cdot\rrbracket^{g,c,C})$ and $\psi \in dom(\llbracket\cdot\rrbracket^{g,c,C})$

b. $\forall c \in C, \llbracket\phi\rrbracket^{g,c,C} = \llbracket\psi\rrbracket^{g,c,C}$, and

c. $\forall c \in \kappa$, if $\psi \in dom(\llbracket\cdot\rrbracket^{g,c,C})$, then $\phi \in dom(\llbracket\cdot\rrbracket^{g,c,C})$, but not the other way around.

This revised statement of *MP!* allows us to enforce competition among alternative utterances with different presuppositional strenghts across possible contexts $\kappa$, thought of the set of possible contexts $c$: for two alternatives $\phi$ and $\psi$, using $\phi$ over $\psi$ will be infelicitous if i) both have their respective presuppositions satisfied in $C$, ii) both are denotationally equivalent, and iii) the presuppositions of $\psi$ asymettrically entails the presuppositions of $\phi$ across every possible context $c \in \kappa$.

### Feature bundles and complexity

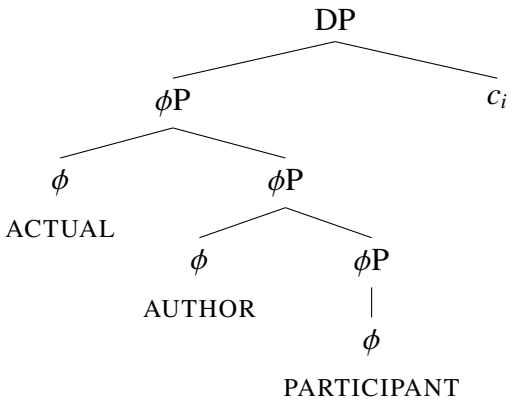
A point about the competition mechanism assumed in this system deserves to be further discussed here. Note that the structure of features in (66) raises a problem for the complexity-based algorithm of Katzir (2007): intuitively, the featural bundle of the 1st person consisting of the [PART, AUTHOR, ACTUAL] features is more complex than the bundle of the 2nd person, consisting of [PART, ACTUAL], since it involves more features. This is problematic for the present theory under the assumption that greater featural information amounts to a greater amount of structure in the syntax, that is, if we assume that features are organized in structures such as (77), in which each feature occupies a distinct node: this would suffice to rule out competition, as the algorithm in (58) repeated here makes clear: only structurally as-most-as-complex alternatives are entitled to be competitors, where 'as-most-as-complex' is defined syntactically, i.e. terminal nodes within a syntactic structure.

(58) **Structural complexity (Katzir, 2007):** Let $\phi, \psi$ be parse trees. $\psi$ can be said to be as-most-as-complex as $\phi$ (noted $\psi \underline{\leq \phi)}$ if we can transform $\phi$ into $\psi$ by

a. deleting constituents of $\phi$,

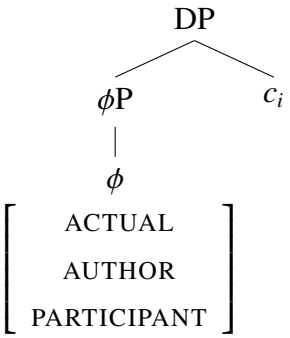
b. contracting (i.e., merging and identifying nodes) constituents of $\phi$,

c. replacing constituents of $\phi$ with constituents of the same category from the Substitution Source (61) of the language.




(77)

At this point, two options could be considered. We could modify the complexity-based algorithm for alternatives so as it makes reference not to terminal nodes within the syntax, but reference to syntactic words. This, however, seems problematic, since an appropriate notion of 'syntactic word' is still to be defined (see discussions in Haspelmath 2011 and Svenonius 2018, 2020); as a consequence, any reference to such a concept in the theory should be avoided. Another, more satisfactory strategy would be to leave the alternative-computing algorithm untouched, and assume a different syntactic structure for pronominal elements, in which multiple features can be inserted on the same head, as in (78):




(78)

Proponents of systems making use of structures such as (77) include among others Cardinaletti and Starke (1999), Wyngaerd (2018) and Terenghi (2023), as well as other proponents of the 'one feature, one head' approach in both morphology (nanosyntax, Starke 2009; Caha 2009) and syntax (cartogaphy, Rizzi 1997; Rizzi and Cinque 2016). Proponents of systems making use of structures such as (78) include approaches compatible with feature bundling such as Distributed Morphology (Halle and Marantz, 1993), which allow for multiple features to be realized on one head, spelled-out as a syntactic element. Whether the representation in (78) fares better than (77) with respect to what we know about the morphosyntactic behavior of pronouns is left for further research.

### 2.3.4 Logophoric systems: further predictions

#### 1st vs. LOG competition

As initially noted by Hyman and Comrie (1981) for Gokana, and further elaborated upon by Schlenker (2003), logophoric pronouns generally cannot take 1st person pronouns as antecedents. In other words, for a given speech report, when the reported and current speaker are one and the same individual, a logophor cannot be used.[12] We refer to this as the *1-LOG pattern:

(79) a. *mm kɔ mm dɔ*
1SG said 1SG fell

'$I_i$ said $I_i$ fell'

b. #*mm kɔ mm dɔ-ɛ*
1SG said 1SG fell-LOG

'$I_i$ said $I_i$ fell' [Gokana, Hyman and Comrie 1981: (11)]

A similar pattern can be found in Wan (Niger-Congo, Ivory Coast), Ewe[13] and Danyi Ewe (Niger-Congo, Togo), as well as Ibibio (Niger-Congo, Southern Nigeria):

(80) a. *ŋ gé doo nà ŋ gà*
1SG said QUOT 1SG.PRF PRF go

'I said that I am gone'

b. *è gé doo ɓà ŋ gà*
3SG said QUOT LOG.SG PRF go

'$He_i$ says $he_{i/*j}$ is gone' [Wan, Nikitina 2012a: (6), (25)]

(81) a. *M xɔse be m nyi sukuvi nyoe de.*
1SG believe COMP 1SG COP student good DEF

'$I_i$ believe that $I_i$ am a good student'

b. #*M xɔse be yè nyi sukuvi nyoe de.*
1SG believe COMP LOG COP student good DEF

Intended: '$I_i$ believe that $I_i$ am a good student' [Ewe, Pearson 2015: (48)]

[12] Hyman and Comrie (1981) make a less stronger claim, stating only that (79a) is preferred over (79b).
[13] The data reported in example (81) from Pearson (2015) were obtained through informants speaking different varieties of Ewe: Mina Ewe and 'pure Ewe' (cf. Pearson 2015, §3).

(82) a. *Kofí ŋa bə yi lɔ Áma*
Kofi know COMP LOG love Ama

‘Kofi$_i$ knows that he$_{i/*j}$ loves Ama’

b. #*ŋɔ ŋa bə yi lɔ Áma*
1SG know COMP LOG love Ama

Intended: ‘I$_i$ know that I$_i$ love Ama’ [Danyi Ewe, O’Neill 2015: (3a, c)]

(83) a. #*ŋ-ké bò ké ì-mà í-kót ŋwèt*
1SG-PST say COMP LOG-PST LOG-read book

Intended: ‘I$_i$ said that I$_i$ read a book’

b. #*ì-ké bò ké mmìmɔ ì-mà í-kót ŋwèt*
1SG-PST say COMP LOG.PL LOG-PST LOG-read book

Intended: ‘We$_i$ said that we$_i$ read a book’

[Ibibio, Newkirk 2017: (10), (12))]

This pattern is correctly predicted by the antipresupposition account, given the asymmetrical hierarchy of features posited in (50): in cases like (79)-(83) where the antecedent is first person and refers to the current speaker, a first person must be used in the embedded sentence, on pains of triggering the disjointness inference in (85) (in which ‘$\rightsquigarrow^{\#}$’ indicates that the resulting inference is irremediably odd in that context):

(84) a. #I$_3$ know that LOG$_3$ love Ama.

b. $\text{ALT}_{\pi}(\text{LOG}_3) = s(c^*) \sqsubseteq g(3)(g(c'))$

(85) **Antipresupposition of (84) (with epistemic step):**

a. $\rightsquigarrow^{\#} CG\neg[\forall c' \in \text{SAY}(s(c^*), w(c^*))[s(c^*) \sqsubseteq g(3)(g(c'))]]$.

b. $\rightsquigarrow^{\#} g(3)(g(c'))$ is not the actual speaker.

Since the feature set of the first person asymmetrically entails that of LOG, any utterance of LOG in a context such as that of (84) where $g(3)(g(c')) = s(c^*)$ will trigger the inference in (85) and therefore be perceived as deviant; as a consequence, LOG cannot be used here. Note that this inference and its resulting oddness is actually similar to another variety of contextually blind inferences, the mandatory implicatures discussed by Magri 2009, 2011 (see also Marty 2017):

(86) a. #Some Italians come from a warm country.

b. All italians come from a warm country. [Magri 2009: (38)]

Magri (2009) aims at accounting for the fact that sentences such as (86) sound odd and cannot seem to be rescued in any way. Presumably, this is because the utterance of (86a) triggers the inference that the stronger statement (86b) is assumed by the speaker to be false. However, this inference is in blatant contradiction with common knowledge, which assumes that all Italians come from the same warm country. A consequence of this is that the kind of inferences triggered by (86a) seem to be blind to common knowledge, and derived in an obligatory fashion, regardless of informativity requirements.[14] Similarly, in our case, we must assume that the computation of anaphoric patterns seem to be guided solely by a blind mechanism of competition between elements of distinct presuppositional strenght, and not by general requirements of informativity: if that were the case, in a context where the referents of both 1 and LOG were the same individual, we should not predict the disjointness inference to go through if LOG was used, contrary to fact.

### Second person antecedents

Another interesting typological fact that our theory can derive concerns the use of 2nd person in logophoric environments. In some languages, logophoric contexts exhibit a special case of 'person neutralization' between third and second person; as a consequence, logophoric pronouns can take second person antecedents as well as third, with singular and plural number features alike. As already discussed, first person antecedence is excluded:

(87) a. #*oò kɔ oò dɔ*
2SG said 2SG fell

'You$_i$ said you$_i$ fell'

[14] Note that, just as our *MP!* examples above, (86) represents a serious challenge for the Gricean program, which considers implicatures to be inferences triggered by concerns of informativity: an implicature can arise if a statement $\phi$ was chosen over its more informative counterpart $\psi$, deriving the implicature that $\neg\psi$. However, if $\phi$ and $\psi$ are statements of equal informativity given common knowledge, the implicature is predicted no to arise, contrary to what happens in cases exemplified with the pair above. In other terms, no Gricean theory can explain why a sentence like (86) sounds irremediably odd, regardless of the context it is uttered in. Magri 2009, 2011 accounts for this kind of oddity effects by proposing that implicatures are derived in a grammatical fashion (Chierchia 2004, 2006; Fox 2007, Fox and Katzir 2011, Chierchia et al. 2012 i.a.) by an exhaustivity operator EXH, which can be applied recursively during the derivation of logical forms. Specifically, the meaning of EXH is akin to that of *only*: it takes as input a set of propositions, the set EXCL of all excludable and contextually relevant alternatives of some sentence $\phi$, and negates that set. It has been argued that the kind of inferences observed in (86) and *MP!*-based inferences such as the ones discussed here could be reducible to the same inferential mechanism (Marty 2017, 2018, Marty and Romoli 2021; see Bade 2021 for arguments against such a reduction).

b. *oò kɔ oò dɔ-ɛ*
2SG said 2SG fell-LOG

'You$_i$ said you$_i$ fell'

[Gokana, Hyman and Comrie 1981: (10)][15]

(88) a. *là gé ɓà súglù é lɔ*
2SG said LOG.SG Manioc DEF ate

'You$_i$ said you$_i$ had eaten the manioc.'

b. *à gé mɔ kú má*
2PL said LOG.PL house EQUAT

'You$_i$ said it was your$_i$ house.' [Wan, Nikitina 2012a: (5a, b)]

(89) *ə ŋa bə yi lɔ Áma*
2SG know COMP LOG love Ama

'You$_i$ know that you$_i$ love Ama' [Danyi Ewe, O'Neill 2015: (3b)]

(90) a. *à-ké bò ké ìmɔ ì-mà í-kót ŋwèt*
2SG-PST say COMP LOG LOG-PST LOG-read book

'You$_i$ said that you$_i$ read a book'

b. *è-ké bò ké mmìmɔ ì-mà í-kót ŋwèt*
2PL-PST say COMP LOG.PL LOG-PST LOG-read book

'You$_i$ said that you$_i$ read a book' [Ibibio, Newkirk 2017: (9), (11)]

The phenomenon is actually broader, extending to various other reference-tracking systems, such as those found in Sino-Tibetan languages such as Jingpho (Zu, 2018) and Newar (Coppock and Wechsler, 2018). For instance, Newar possesses an affixal form of logophoric marking that attaches to the verb, and expresses co-reference with the reported author when used in embedded clauses. The form (glossed here as EGO, following Coppock and Wechsler 2018), can take both third (91) or second (92) person antecedents, just as the African logophoric varieties discussed above:

[15] Again, Hyman and Comrie (1981) merely indicate that (87b) is preferred to (87a).

(91) a. *Syàm-ã wã a:pwa twan-**à** dhakà: dhàl-a*
Syam-ERG 3SG.ERG much drink-PST.**EGO** COMP say-PRF

'Syam$_i$ said that he$_i$ drank too much'

b. *Syàm-ã wã a:pwa twan-**a** dhakà: dhàl-a*
Syam-ERG 3SG.ERG much drink-PST. COMP say-PRF

'Syam$_i$ said that he$_{*i/j}$ drank too much'
[Kathmandu Newar, Coppock and Wechsler 2018: (3)]

(92) *Chã: cha bwye wan-à dhakà: dhàl-a*
2SG.ERG 2SG.ABS run.away-EGO-PST COMP say:PST

'You$_i$ said that you$_i$ ran away'
[Kathmandu Newar, Coppock and Wechsler 2018: (11)]

For instance, the sentence (93a) has the following alternatives (93b); consequently, its utterance will trigger the antipresupposition in (94):

(93) a. #You$_1$ know that 2SG$_1$ love Ama.

b. $\text{ALT}_\pi(2\text{SG}_1) = \left\{ \begin{array}{c} s(c^*) \sqsubseteq g(1)(g(c')), \\ s(c') \sqsubseteq g(1)(g(c')) \end{array} \right\}$

(94) **Antipresupposition of (93a) (with epistemic step):**

a. $\rightsquigarrow^{\#} CG\neg[\forall c' \in \text{SAY}(a(c^*), w(c^*))[s(c^*) \sqsubseteq g(1)(g(c')) \wedge s(c') \sqsubseteq g(1)(g(c'))]]$.

b. $\rightsquigarrow^{\#} g(1)(g(c'))$ is not a participant in the actual context.

On the present account, the above patterns are correctly predicted: it is expected that a sentence where the author of the embedded speech event is referred to using a 2nd person pronoun will be infelicitous, regardless of what his discourse status in the actual context is; a logophor (or logorphoric affix) should be used instead because it is presuppositionally stronger - which is just what we observe. The generalization is the following: if a language $L$ realizes the AUTHOR feature on a morphologically distinctive element in the pronominal paradigm, then this element has to be used whenever co-reference with the reported speaker is intended:

(95) **Author reference obtains whenever possible**
If $L$ lexicalizes AUTHOR, then in configurations such as [2SG$_n$... *say* [2SG$_n$... $\phi$]], then $\rightsquigarrow CG\neg[\forall c' \in \text{SAY}(a(c^*), w(c^*))[s(c^*) \sqsubseteq g(n)(g(c')) \wedge s(c') \sqsubseteq g(n)(g(c'))]]$.

### Encoding of reported addressees

As mentioned in §**??**, logophoric systems differ in the way they encode reference to reported addressees. A major difference concerns the ability of second person to be 'shifty' in a similar sense than in indexical-shifting languages, that is, to be able to refer to reported addressees in addition of the actual ones. As already mentioned, the languages Wan and Aghem (Niger-Congo) allow second person pronouns to be used to refer to reported addressees:

(96) *è gé zò ɓé* ***là*** ***ɓà*** *pólì*
3SG said come then 2SG LOG.SG wash

'She$_i$ said come and wash me$_i$.' [Wan, Nikitina 2012a: (18)]

(97) a. *wìzɨn 'vʉ ndzɛ à wɨn enyɨa* ***é*** *ŋgé 'lighá* ***wò***
woman that said to him COMP LOG much like 2SG

'The woman$_i$ said to him$_j$ that she$_i$ liked him$_j$ a lot' (lit. 'The woman$_i$ said to him$_j$ that LOG$_i$ liked you$_j$ a lot)

b. *bɨghà 'vʉ n'lɛlɔ tɔm wɔ kɨmà?sɔ à wì enyɨa* ***é*** *zighà tɨn* ***wò***
guy that looked wrote hither letter to wife COMP LOG left forever 2SG

'That guy$_i$ wrote a letter to his wife$_j$ that he$_i$ had left her$_j$ forever.' (lit. 'That guy$_i$ wrote a letter to his wife$_j$ that LOG$_i$ had left you$_j$ forever.')
[Aghem, Hyman and Watters 1979: 203, 205, cited in Butler 2009: (24-25)]

Analogous patterns can be found for logophoric languages Mundang (Hagège, 1974), Engenni (Thomas, 1978), and Akoose (Hedinger, 1984) (Niger-Congo). However, in some other languages, including the already discussed Ewe and Donno Sɔ, second person marking always refer to actual addressees and cannot be used to refer to reported addressees - third person must be used in that case. This is illustrated in (98)-(99):

(98) *Be indvembe velaa uñ tembeliñ giya*
3PL LOG.PL come 2SG.OBJ found.NEG.1PL said.3PL

'They$_i$ said that they$_i$ didn't find you when they$_i$ came.'
[Culy 1994b: (6b), after Kervran and Prost 1986]

(99) *Kofi gblɔ na wo bè yè-a-dyi ga-a na wo*
Kofi speak to 3PL COMP LOG-T-seek money-D for 3PL

'Kofi$_i$ said to them$_j$ that he$_i$ would seek the money for them$_j$.'
[Nikitina 2012a: (23), after Clements 1975]

This seems to suggest that, at least in those languages, the featural makeup of pronouns is different from the Wan-Aghem LP systems. More precisely, in these the 2nd person pronoun also bears the ACTUAL feature, restricting its referent to the current speech act participants:

(100) **Featural system of languages with speaker logophors + unshiftable second persons**

a. $\text{I}_5 = [[[[pro_5\ c^*]\ \text{ACTUAL}]\ \text{PART}]\ \text{AUTHOR}]$

b. $\text{LOG}_4 = [[[pro_4\ c_i]\ \text{PART}]\ \text{AUTHOR}]$

c. $\text{you}_2 = [[[pro_2\ c^*]\ \text{ACTUAL}]\ \text{PART}]$

d. $\text{it}_7 = pro_7$

(101) a. $[\text{I}_5\ c^*] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 5 \in dom(g) \\ s(c^*) \sqsubseteq g(5)(g(c^*)) \end{array} \right\}$. If so, then $[\![[\text{I}_5\ c^*]]\!]^g = g(5)(g(c^*))$.

b. $[\text{LOG}_4\ c_i] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 4 \in dom(g) \\ s(c_i) \sqsubseteq g(4)(g(c_i)) \end{array} \right\}$. If so, then $[\![[\text{LOG}_4\ c_i]]\!]^g = g(4)(g(c_i))$.

c. $[\text{you}_2\ c^*] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 2 \in dom(g) \\ s(c^*) \sqsubseteq g(2)(g(c^*)) \vee a(c^*) \sqsubseteq g(2)(g(c^*)) \end{array} \right\}$. If so, then $[\![\text{you}_2]\!]^g = g(2)(g(c^*))$.

d. $\text{it}_7 \in dom([\![\cdot]\!]^g)$ iff $7 \in dom(g)$. If so, then $[\![\text{it}_7]\!]^g = g(7)$.

Such languages possess two 'genuine' indexical forms with different person specifications, alongside a full-fledged LOG form. This provides additional evidence for a compositional analysis of indexicals, where their person specifications are not viewed as atomic but rather, complex tuples consisting of one or two person features augmented with an ACTUAL feature.

### Logophoric marking for reported addressees

Although typologically scarce, there exists languages with LOG addressees, such as Goemai and Mupun (West Chadic, Nigeria; cf. Hellwig 2006, Frajzyngier 1985, 1993):

(102) *k'wal yin gwa goe tu ji*
talk say SG.M.LOG.2 OBLIG kill SG.M.LOG.1

'He$_i$ said he$_j$ should kill him$_i$'
(lit. 'He$_i$ said you$_j$ should kill me$_i$')

[Goemai, Hellwig 2006: 219]

(103) *n-sat n-wur nə* ***gwar*** *ji*
1SG-say PREP-3SG COMP **2SG.LOG** come

'I told him$_i$ that he$_i$ should come'
(lit. 'I told him that 2SG.LOG should come.')

[Mupun, Frajzyngier 1997: (35)]

Since both Goemai and Mupun exhibit both classes of logophoric pronouns (first and second person), we can capture the paradigm with the following person hierarchy:

(104) **Featural system of languages with speaker and addressee logophors**

a. $\text{I}_5 = [[[[pro_5\ c^*]\ \text{PART}]\ \text{AUTHOR}]\ \text{ACTUAL}]$

b. $\text{LOG.1}_4 = [[[pro_4\ c_i]\ \text{PART}]\ \text{AUTHOR}]$

c. $\text{you}_2 = [[[pro_2\ c^*]\ \text{PART}]\ \text{ACTUAL}]$

d. $\text{LOG.2}_7 = [[pro_7\ c_i]\ \text{PART}]$

e. $\text{it}_9 = pro_9$

(105) a. $[\text{I}_5\ c^*] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 5 \in dom(g) \\ s(c^*) \sqsubseteq g(5)(g(c^*)) \end{array} \right\}$. If so, then $[\![[\text{I}_5\ c^*]]\!]^g = g(5)(g(c^*))$.

b. $[\text{LOG}_4\ c_i] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 4 \in dom(g) \\ s(c_i) \sqsubseteq g(4)(g(c_i)) \end{array} \right\}$. If so, then $[\![[\text{LOG}_4\ c_i]]\!]^g = g(4)(g(c_i))$.

c. $[\text{you}_2\ c^*] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 2 \in dom(g) \\ s(c^*) \sqsubseteq g(2)(g(c^*)) \vee a(c^*) \sqsubseteq g(2)(g(c^*)) \end{array} \right\}$. If so, then $[\![\text{you}_2]\!]^g = g(2)(g(c^*))$.

d. $[\text{LOG.2}_7\ c_i] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 7 \in dom(g) \\ s(c_i) \sqsubseteq g(7)(g(c_i)) \vee a(c_i) \sqsubseteq g(7)(g(c_i)) \end{array} \right\}$. If so, then $[\![\text{LOG2}_7]\!]^g = g(7)(g(c_i))$.

e. $\text{it}_9 \in dom([\![\cdot]\!]^g)$ iff $9 \in dom(g)$. If so, then $[\![\text{it}_9]\!]^g = g(9)$.

Note that, in such a system, the second person logophoric form is the morphological spell-out of the PART feature, the most unspecified person feature: this correctly predicts that

the second person indexical (which is endowed with both a PART and ACTUAL feature) can only be used in logophoric contexts to denote actual addressees, as example (106) confirms:

(106) *n-sat* *n-wur* *nə* ***wur*** *ji*
1SG-say PREP-3SG COMP **2SG** come

'I told him that you should come.'

[Mupun, Frajzyngier 1997: (36)]

Last, one can find languages with LOG addressees, but no LOG authors; as mentioned in §**??**, this is the case of West Chadic language Pero:

(**??**) *ca* *peemu* *ta* *kayu* *laa* *mu* *mijiba*
say.PST LOG.2SG FUT drive away man DEM stranger

'[He] said that he$_{a(i)}$ is going to drive the stranger away.'
(lit. '[He] said that you$_{a(i)}$ are going to drive the stranger away.')

[Frajzyngier 1985: (23b)]

The Pero pattern can be described using the following hierarchy:

(107) **Featural system of languages with addressee logophors only**

a. $\text{I}_5 = [[[[pro_5\ c^*]\ \text{PART}]\ \text{AUTHOR}]\ \text{ACTUAL}]$

b. $\text{you}_2 = [[[pro_2\ c^*]\ \text{PART}]\ \text{ACTUAL}]$

c. $\text{LOG.2}_7 = [[pro_7\ c_i]\ \text{PART}]$

d. $\text{it}_9 = pro_9$

(108) a. $[\text{I}_5\ c^*] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 5 \in dom(g) \\ s(c^*) \sqsubseteq g(5)(g(c^*)) \end{array} \right\}$. If so, then $[\![[\text{I}_5\ c^*]]\!]^g = g(5)(g(c^*))$.

b. $[\text{you}_2\ c^*] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 2 \in dom(g) \\ s(c^*) \sqsubseteq g(2)(g(c^*)) \vee a(c^*) \sqsubseteq g(2)(g(c^*)) \end{array} \right\}$. If so, then $[\![\text{you}_2]\!]^g = g(2)(g(c^*))$.

c. $[\text{LOG.2}_7\ c_i] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 7 \in dom(g) \\ s(c_i) \sqsubseteq g(7)(g(c_i)) \vee a(c_i) \sqsubseteq g(7)(g(c_i)) \end{array} \right\}$. If so, then $[\![\text{LOG2}_7]\!]^g = g(7)(g(c_i))$.

d. $\text{it}_9 \in dom([\![\cdot]\!]^g)$ iff $9 \in dom(g)$. If so, then $[\![\text{it}_9]\!]^g = g(9)$.

We will conclude this section by noting that the last two patterns of logophoric marking illustrated here are extremely rare, to be found only in languages pertaining to the

Chadic branch (Nikitina, 2012b). This directly relates to the discussion concerning hierarchies of logophoric/shiftable elements outlined in §**??** above: morphological encoding of reported addressees seems to be severely restricted, and no language seem to use a dedicated form for logophoric addressees while allowing the first person to be contextually unspecified - in the present terms, be devoid of an ACTUAL feature (that is, being a shiftable author indexical). In other words, the following featural pattern is unattested:

(109) **An unattested featural hierarchy**

a. 1: [PART, AUTHOR]

b. 2: [PART, ACTUAL]

c. LOG.2: [PART]

d. 3: [ ]

In other words, the ACTUAL feature has to be grammaticalized on first person in order to grammaticalize further on second person.[16]

### An alternative account: Bimpeh et al. 2022, 2023

Recent work by Bimpeh et al. 2022, 2023 propose a system close to the present proposal, which essentially aims at capturing the properties of LPs discussed in §**??**. These are i) the unbound nature of logophors, and ii) their *de se* readings. Having provided evidence that LPs in Ewe, Yoruba and Igbo can systematically be unbound in ellipsis and under *only*, they aim at resolving what they call the *LogP's dilemma* in (110):

(110) **LogP's dilemma** [Bimpeh et al. 2023: (20)]
If LogPs have to be bound variables, how are strict readings possible? If they don't, how to ensure LogP's obligatory (*de se*) coreference with the attitude holder?

The proposal of Bimpeh et al. (2023) draws on a solution by Sauerland (2013) to account for a similar problem, that of strict readings of reflexive anaphors, which can exhibit the same interpretive properties in focus-sensitive contexts (see also McKillen 2016). Taking a similar approach to person features as the one adopted here, they take this common behavior of LPs and SELF-anaphors as a support that $\phi$-features can be ignored during the computation of focus alternatives (Spathas 2009; Jacobson 2012; Sauerland 2013 a.o.). They assume that LPs are complex elements composed of two different syntactic pieces: a feature LOG, and a variable *pro*. The latter is a variable over individuals concepts (of type $\langle s, e \rangle$) that can either be bound or free, while the former is a presuppositional

[16] Although the inverse pattern would also be possible, where grammaticalization of LOG.1 through loss of the ACTUAL feature would have to occur for LOG.2 form to become available in the language. More diachronic data about the languages at stake is needed at this point.

feature that enforces reference to the attitude holder (the speaker coordinate of the index, in the present system's terms), ensuring *de se* readings. In Bimpeh et al. (2023)'s system, which is fully extensional, world variables are present in the syntax and come with every individual or predicate type. A sentence such as (111) has the following truth conditions:

(111) a. $\text{Eli}_i$ thinks that $\text{LOG}_i$ won.

b. $[\![(111)a]\!] = \forall w_x \in Dox_{Eli}, x$ won in $w$.

c. $[\![\text{Eli}]\!] = \lambda w_x$. The person in $w$ named 'Eli'.

d. $[\![\text{win}]\!] = \lambda w_x.\lambda z.\ z$ wins in $w$.

e. $[\![\text{LOG}]\!]^g = \lambda f_{\langle s,e\rangle}.\lambda w_x : f(w_x) = x.x$

f. $[\![\text{LOGP}]\!]^g = [\![\text{LOG}]\!]^g([\![pro_i]\!]^g) = [\lambda w_x : [\![pro_i]\!]^g(w_x) = x.x]$

The denotation of LOG is a presuppositional function from world-center pairs to their center, i.e. that individual which the attitude holder takes himself to be in $w$. Since the 'center-mapping' function that is the presupposition of LOG can be ignored during the computation of focus alternatives, this derives strict readings of LPs in both ellipsis and *only*-contexts.

The analysis of Bimpeh et al. (2023) bears numerous similarities with the present system. It equally makes use of presuppositional entries for person, and also seeks to wire the meaning of logophors directly within the lexical entries of the pronoun. I take this to be a virtue, since it allows to straightforwardly capture the fact (rarely mentioned in the literature) that LPs can have matrix uses: in such cases, the presupposition carried by LPs is simply accommodated, deriving the semantics of standard embedded reported speech. Another similarity relates to the representation of world variables in the syntax: Bimpeh et al. (2023) assume (following Sauerland 2018) that not only world variables are syntactically represented (i.e. associated with every lexical entries involving a type $e$), but also that such worlds are actually *centers* - world-time individual pairs in the sense of Lewis (1979a). This is required, so the individual variable associated with the world type always denote the *center* of that world, and not some other inhabitant of it. Note that this is very similar to our system, where it is assumed that attitude verbs quantify over contexts represented with context variables on the pronouns; context pronouns are simply finer-grained coordinates. However, a more important difference lies in the entries assumed for LPs themselves. While, for Bimpeh et al. (2023), the LP is a variable augmented with a LOG feature, in the present system, it is a first-person element that lacks an ACTUAL feature, that is, an indexical that is contextually unspecified - closer to the original proposal by Schlenker (2003). The featural makeup of logophors is therefore different, LPs being considered first-personal elements only in the present approach.

This raises an interesting question about the ontology of features realized in logophoric

systems: is there any point of data that could be used in order to adjudicate between the two approaches? As a matter of fact, it seems that there is. As discussed in §2.3.4, some languages such as Gokana or Kana (Niger-Congo, Nigeria; Ikoro 1996) express logophoricity through affixation on the verb (without a proper logophoric pronoun). In those, third as well as second person can trigger logophoric agreement on the embedded verb:

(87) a. #*oò kɔ oò dɔ*
2SG said 2SG fell

‘You$_i$ said you$_i$ fell’

b. *oò kɔ oò dɔ-ɛ*
2SG said 2SG fell-LOG

‘You$_i$ said you$_i$ fell’

[Gokana, Hyman and Comrie 1981: (10)]

In principle, agreement requires feature matching or subsumption (Shieber 2003, Bernardi and Szabolcsi 2008; see §2.3.5 below); in order to obtain, a subset of features of the controller need to be reflected on the target of agreement. Since languages such as Gokana seems to express logophoric agreement on the target with either third- or second-person controllers, it is hard for Bimpeh et al. (2023) to motivate that an element which does not bear a LOG feature but only a 2SG feature is able to trigger logophoric agreement. Conversely, their system is at pains to explain why languages such as Donno Sɔ realize first person agreement on the verb, when the controller is a LOG form: since, in their system, the logophoric form is third person (see the discussion in Bimpeh et al. 2022), the following pattern is not straightforwardly predicted by the LOG-feature account:

(**??**) a. *Oumar inyemɛ jɛmbɔ paza* ***bolum*** *miñ tagi*
Oumar LOG sack.DEF drop left.1SG 1SG.OBJ inform.PST

‘Oumar$_i$ told me that he$_i$ had left without the sack.’

b. *Oumar ma jɛmbɔ paza* ***boli*** *miñ tagi*
Oumar 1SG.SBJV sack.DEF drop left.3SG 1SG.OBJ inform.PST

‘Oumar$_i$ told me that I had left without the sack.’

[Culy 1994b: (20)]

In the system outlined here, however, these facts follow from the inherent first-personal nature of LOG forms, which are able to trigger first-personal agreement due to their featural specification as first person.

### 2.3.5 Indexical-shifting systems: further predictions

#### Actual speaker reference in IS-systems

As already noted in §2.3.3, we do not expect our familiar disjointness inference to obligatorily arise in SI-systems as it does in LP-systems: this is due to the fact that, indexical shifting being an optional phenomenon, ambiguity in reference for SIs in such systems is expected, preventing consistent inferences about their referents. We therefore expect to find IS-systems in which the use of a 3rd person pronoun *in lieu* of an indexical does not give rise to a disjointness inference. Consider the following examples from Farsi (Iranian; Iran) and Tsez (Northeast-Caucasian; Dagestan), both languages in which indexical shift is a possibility. In those, 3rd person reference to reported speakers is allowed, as (113) and (115) illustrate:

(112) *Leila be Mina goft barat ketab xaridam*
Leila to Mina say.PST for-2SG book buy.PST-1SG

'Leila$_i$ told Mina$_j$ that I$_{i,s(c*)}$ bought a book for you$_{j,a(c*)}$'

(113) *Leila be Mina goft pro asabanie*
Leila to Mina say.PST *pro* angry-is-3SG

'Leila$_i$ told Mina$_j$ that she$_i$ is angry'

(Farsi, Anvari 2020: (18)-(57))

(114) *Irbahin-ä di ʕayibiyaw yoɬ=ƛin eƛi-x*
Ibrahim-ERG 1SG.ABS wrong/foolish be.PRS-QUOT say-PRS

'Ibrahim$_i$ says that I$_{i,s(c*)}$ am wrong'

(115) *Irbahin-ä za ʕayibiyaw yoɬ=ƛin eƛi-x*
Ibrahim-ERG DEM.ABS wrong/foolish be.PRS-QUOT say-PRS

'Ibrahim$_i$ says that he$_{i,j}$ was wrong'

(Tsez, Polinsky 2015: (27)-(58))

In those contexts, it seems that no person antipresupposition about the reported speaker can be derived from the embedded use of third person, just as it would be in English.[17]

[17] It should be mentioned that Polinsky (2015) only provides the example (115) involving a demonstrative, without providing its counterpart involving no pronoun (the way Tsez usually encodes 3rd person, see Polinsky 2015, p. 22). Since Tsez is a North-Daghestanian language, just like Northern Tabasaran (see example (138)), it might be expected that embedded clauses with silent subjects showing third person agreement on the embedded verb (and not first person) trigger a disjointness inference, just as (138) does. This requires to be investigated further.

However, further data suggests that things are actually more intricate. As noted by Anvari (2020) for Farsi, when a given context or construction enforces a shifted reading, the ambiguity pertaining to indexical reference is lifted, and the inference goes through. In Farsi, this type of construction is enforced with 2nd person indexicals, which obligatory have to shift contrary to their 1st person counterparts. This is exemplified in (116), in which the 2nd person indexical *azat* has to shift towards the reported addressee, and a 3rd person NP is used to refer to the actual speaker, Sajjad:

(116) *Sajjad to Qazal:*
*Leila be Mina goft Sajjad* ***azat*** *asabaniye*
Leila to Mina say.PST Sajjad from.2SG angry.be.3SG

✓ 'Leila$_i$ told Mina$_j$ that Sajjad is angry at her$_j$'
✗ 'Leila$_i$ told Mina$_j$ that Sajjad is angry at Qazal'
(Farsi, Anvari 2020: (42))

As Anvari (2020) notes, although Farsi is an optional shifting language, the configuration above forces indexical shift to obtain, as the infelicitous, non-shifted parse of the same sentence indicates. What is interesting here is the fact that the utterance speaker, Sajjad, can be referred to using a 3rd person NP, *Sajjad*, which is otherwise prohibited in matrix sentences: a speaker cannot normally refer to herself using a 3rd person element. Anvari (2020) accounts for this by positing a dedicated pragmatic constraint, the *ban against illeism*, which prevents a speaker to refer to herself using 3rd person. Under the shifty operator theory adopted by Anvari (2020), the *shift together* constraint laid out in §2.2.3 applies, and therefore any 1SG element has to be interpreted as shifted as well, referring to the embedded speaker, Leila, and not to Sajjad. Therefore, the ban against illesim is lifted at the embedded level, and a 3SG element can be inserted in order to refer to the utterance speaker, thus salvaging the intended interpretation of (116). However, as previously mentioned, if the inference cannot go through because the construction is ambiguous between a shifted and an indexical reading, as in (112) (or when the sentence does not feature any indexicals whatsoever), then a 3SG element cannot refer to the utterance speaker, just as it would be in simple clauses. This is exemplified further in (117)-(118):

(117) *Sajjad to Qazal:*
#*Leila be Mina goft Sajjad* ***azash*** *asabaniye*
Leila to Mina say.PST Sajjad from.3SG angry.be.3SG

*Intended:* 'Leila$_i$ told Mina$_j$ that Sajjad is angry at her$_j$'
(Farsi, Anvari 2020: (45))

(118) *Leila be Mina goft barat ketab xaride*
Leila to Mina told for.2SG book bought.3SG

✗ 'Leila$_i$ told Mina$_j$ that she$_i$ bought her$_j$ a book.'
✓ 'Leila$_i$ told Mina$_j$ that she$_k$ bought her$_j$ a book.'
✓ 'Leila$_i$ told Mina$_j$ that she$_{i,k}$ bought you a book.'

(Farsi, Anvari 2020: (55))

The above sentence only has two readings available, depending on whether a shifty interpretation is selected for indexicals. When shifted, the 2SG element *barat* shifts towards the reported addressee, Mina. If so, then the use of a 3SG element triggers a disjointness inference at the embedded level, and *xaride* cannot refer to the embedded speaker, Leila. On the other hand, whenever a non-shifted parse is preferred, then *barat* refers to the utterance addressee and the use of the 3SG element triggers a disjointness inference that only obtains at the matrix level, excluding reference to the actual speaker and addressee; the 3SG element is therefore free to refer back to Leila or some other individual. Again, this pattern can be double-checked in a configuration where shifting cannot obtain at all, e.g. under predicates such as *fekr-kardan* 'think':

(119) *Sajjad to Qazal:*
#*Leila fek-kard Sajjad asabaniye*
Leila think.PST Sajjad angry.be.3SG

'Leila thought that Sajjad was angry'

(Farsi, Anvari 2020: (47))

In (119), the predicate *fek-kard* 'thinks' does not license indexical shift; it is thus expected that the use of 3rd person NP *Sajjad* to refer to the utterance speaker will trigger our familiar disjointness inference and, as a result, will sound odd in that context.

Anvari (2020) establishes the following generalization:

(120) **Indexical shift feeds the Ban Against Illeism (BAI)**
In shifting configurations (e.g., with 2nd person indexicals embedded under *say*), (120b) blocks (120a):

a. *[ A to B ]: *x* told *y* that [ 👻 [... 3SG$_x$... 2SG$_y$... ]]

b. [ A to B ]: *x* told *y* that [ 👻 [... 1SG$_x$... 2SG$_y$... ]]

The reasoning is as follows: both the BAI and insertion of a 👻 can therefore be thought of as constraints applying in a certain order, much like in an OT-style model (cf. Smolensky and Legendre 2006; Hendriks and De Hoop 2001). The BAI, taken as a highly-ranked constraint, is enforced and prevents speaker reference using third person NPs. Whenever

👻 is inserted, as in (118), reference to the reported speaker is made possible by shifting of the 1st person, i.e. shifting here bleeds BAI, thus blocking structures such as (120a).

The present theory allows us to account for blocking of parses such as (120a) with our *MP!* principle coupled with Katzir's complexity algorithm, without appealing to a dedicated mechanism such as the BAI: whenever a shifted parse containing a 👻 is selected, reference to the reported speaker using a 3rd person NP will be excluded, since a stronger presuppositional pronoun compatible with the same index was available and should have been used instead. However, our theory still needs to explain why sentences such as (113) repeated here do not generate this kind of inference:

(113) *Leila be Mina goft pro asabanie*
Leila to Mina say.PST *pro* angry-is-3SG

'Leila$_i$ told Mina$_j$ that she$_i$ is angry'

[Farsi, Anvari 2020: (57)]

As Anvari (2020) makes clear, this sentence does not generate a disjointness inference at the embedded level, since the third person marker *asabanie* can refer to the reported speaker, Leila.

In line with Anvari's conclusions about the Farsi data, a way to account for the absence of disjointness inferences in ambiguous cases such as (113) would be to assume that competition is disrupted when two different LFs have the same surface form, preventing speakers and hearers alike to derive inferences: as a consequence, competition and blocking can only be observed in structures that enforce the parse of 👻, ruling out competitors without the operator.[18] In order to implement this idea within the present framework, we could assume a constraint that would rule out competition for a dedicated LF if the latter is ambiguous between two different binding configurations. As a consequence, the alternatives of (113) could be either (121c) or (121e), depending on which binding configuration (121b) or (121d) the sentence is computed:

(121) a. Leila told Mina that she$_7$ is angry.

b. $\lambda c_3^*$ [Leila [said $\lambda c_7$ [that [3SG $c_7$ ][[is ][angry ]]]]]

c. $\text{ALT}(121) = \left\{ \begin{array}{l} \lambda c_3^*\ [\text{Leila}\ [\text{said}\ \lambda c_7\ [\text{that}\ [\text{2SG}\ c_7\ ][[\text{is}\ ][\text{angry}\ ]]]]], \\ \lambda c_3^*\ [\text{Leila}\ [\text{said}\ \lambda c_7\ [\text{that}\ [\text{1SG}\ c_7\ ][[\text{is}\ ][\text{angry}\ ]]]] \end{array} \right\}$

d. $\lambda c_3^*$ [Leila [said $\lambda c_7$ [that [3SG $c_3$ ][[is ][angry ]]]]]

e. $\text{ALT}(121) = \left\{ \begin{array}{l} \lambda c_3^*\ [\text{Leila}\ [\text{said}\ \lambda c_7\ [\text{that}\ [\text{2SG}\ c_3\ ][[\text{is}\ ][\text{angry}\ ]]]]], \\ \lambda c_3^*\ [\text{Leila}\ [\text{said}\ \lambda c_7\ [\text{that}\ [\text{1SG}\ c_3\ ][[\text{is}\ ][\text{angry}\ ]]]] \end{array} \right\}$

[18] See Sudo (2018) for an analogous proposal regarding the distribution of *come* vs *go* in attitude reports.

In sum, these data argue that there are at least two kinds of languages: those in which disjointness inferences in complex sentences are systematic (Tigrinya, Navajo), and those in which such inferences are merely optional, observed only in specific contexts in which shifted readings are favored (Farsi, Tsez). Variation of this type is actually expected in the present framework: disjointness effects being inferences, they are predicted to be defeasible in cases in which pronominal reference is ambiguous. We therefore should expect to find contexts that systematically disrupt them in a consistent fashion. For instance, Marty (2018) observes that sentences such as 122a in English are infelicitous in standard contexts, where the identity of Sue is known among participants of the conversation:

(122) *Context: Sue had to comment on her essay for a class.*

a. #She$_1$ criticized Sue$_i$'s work.

b. She$_i$ criticized her$_i$ work.

c. $\rightsquigarrow$ #Sue didn't criticize her own work. [Marty 2018: (15)]

According to Marty, 122a is infelicitous in that context because the use of the proper name *Sue* instead of its structurally simpler, pronominal alternative *she* triggers the antipresupposition in 122c (a scalar implicature in Marty's framework) that the referents of both nominal expressions are distinct, which conflicts with the Common Ground. This is because both 122 and its structurally simpler alternative 122b are contextually equivalent (mutually entail each other) in that context. However, this inference disappears in contexts such as (123), in which identity of the referent of *she* is still under discussion (i.e., not part of the CG), and binding principle B is obviated:

(123) *Context: the students had to comment their own essay for a class and file a written report. Sue's work has been reviewed, but the paper bears no name.*

a. A: Who wrote that report?

b. B: I don't know... She$_i$ criticized Sue$_i$'s work, so it must be Sue.

c. $\not\rightsquigarrow$ Sue didn't criticize her own work.

In (123), contextual equivalence does not obtain between alternatives, and therefore no inference is predicted to arise. Marty (2018) argues that contexts such as (122) give rise to *strong disjointness effects*, while cases such as (123) are *weak disjointness* scenarios. We could, in fact, argue that the variation in disjointness patterns explored above stem from a similar dichotomy between what is taken to be the most relevant configuration in default embedded contexts for the languages at stake. This, however, does not prevent this distinction to be grammaticalized, and vary across structures accordingly: for instance, since Farsi does not allow the predicate *think* to bind context pronouns to shift indexicals, any use of a third-person pronominal element under that predicate will trigger a strong

disjointness inference at the matrix level only, as opposed to what happens under *say/tell* in that language, which allows indexicals to shift and therefore, disjointness inferences to arise at the embedded level. It remains to be further investigated whether change in the body of information available in the CG about the identity of referents might influence speakers/hearers in the kind of inference they derive when a given sentence is uttered.

Last, note that such variation is made possible only because ambiguity in reference for indexicals is hard-wired within the pronominal system of SI-languages: in LP-systems, which have grammaticalized the distinction between shiftable and non-shiftable elements, no such ambiguity persists, and disjointness inferences systematically go through.

### Person neutralization in IS-systems

We saw in §2.3.4 above that an advantage of the present theory was that is was able to explain why LPs were able to take both third person, as well as second person, antecedents, but not first: the logophoric form (pronoun or affix) would trigger an inference at the embedded level that its referent is not the actual speaker, making it fully accessible for other AUTHOR-specified antecedents, regardless of their person specifications. Interestingly, a similar generalization obtains in SI-systems. In the language Golin (Chimbu, Papua New Guinea), a shifty first person is used to refer to the reported author when referred to with a second person pronoun in the matrix clause:

(124) *i [maul wo-y-a di] pri-n-g-e*
2 hole motion-1SG-DIST perceive-2-AS-PROX

'You$_i$ think you$_i$ dug the hole.'

(125) *i [yal ire na si-m-u-a] di-n-g-e*
2 man TOP.PROX 1SG strike-3-REP-DIST say-2-AS-PROX

'You$_i$ say someone hit you$_i$.'

[Golin, Loughnane 2005: (35)-(36)]

Again, the present theory straightforwardly accounts for these examples: since the actual addressee is co-referential with the reported speaker, a shifty first person form must be used; using the second person would infelicitously lead to the inference that both are disjoint in reference, contrary to fact.

### (Un)shifty second person

As mentioned in §**??**, languages differ as to which kind of indexicals can shift in the scope of attitude verbs. We also saw that, within the present system, indexicality is not a primitive notion, but the spellout of complex elements consisting of a person feature

coupled with the feature ACTUAL; as a consequence, ACTUAL can combine in various ways within the person system. We already sketched in §2.3.4 a small typology of the possible combinations found in logophoric systems. The question we ask now is: do IS-system exhibit similar patterns of feature combination? The tentative answer is positive. In the languages Adioukrou (Kwa; Ivory Coast) and Obolo (Niger-Congo; Cameroon and Nigeria), second person pronouns might be shifted towards the reported addressee, while first person pronouns can only have an indexical meaning. This translates in the present system with the fact that only 1SG pronouns, but not 2SG ones, are specified with an ACTUAL feature in Adioukrou and Obolo, mirroring the Pero data in §2.3.4.

(126) *li dad wɛl nɛnɛ* **ɔny** *ùsr ir el*
3SG.F say.PST 3PL DEM **2SG** build.IMP 3SG.OBJ house

‘She$_i$ said to them$_j$ you$_j$ build her$_i$ a house.’
(lit. ‘She$_i$ said to them$_j$ you$_j$ build me$_i$ a house.)

[Hill 1995: (8)]

(127) *ògwú úgâ ókêkitó ító íkíbé gwúñ kàñ ɔmɔ ìkâtùmú ìnyí*
DEM mother be crying.PST cry say child 3SG.POSS 3SG tell.PST.NEG give
*òwù yê íbé òwù kàgɔɔk ífît yì*
2SG INTR say 2SG follow.NEG play play

‘The mother$_i$ was crying and said: "My$_i$ child$_j$, did I$_i$ not tell you$_j$ not to join this dance group"?’
(lit. ‘The mother$_i$ was crying and said her$_i$ child$_j$, did she$_i$ not tell you$_j$ not to join this dance group?’)

(128) *ògwú énêrìèeñ òbê, òwù ‘nga kàñ ‘mgbɔ kèyí ìrè ‘mbùbàn,*
DEM man say.PST 2SG mother 3SG.POSS time DEM be curse
*tap nyî ɔmɔ*
put.IMP give.IMP 3SG

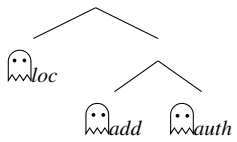
‘The man$_i$ said "Mother$_j$, this time (even if) you$_j$ curse me$_i$..."’
(lit. ‘The man$_i$ said his$_i$ mother$_j$, this time (even if) you$_j$ curse him$_i$...’)

[Aaron 1992: (22)-(23)]

Interestingly, such a pattern is not predicted by current operator-based approaches to indexical shift. The system of Deal (2020), for instance, aims at accounting for the variation observed in IS-systems above by expanding the typology of 👻 so as they come into different varieties, depending on the kind of context parameter they can shift. She adopts a ‘cartographic’ approach where each operator appear in a dedicated position within the

functional sequence, which ultimately explains generalizations such as the hierarchy (**??**) mentioned in §**??**:

(129)




Lexical bundling is allowed between two adjacent operators within the hierarchy, but not between non-adjacent classes of 👻 within the sequence. For instance, the entire sequence can be bundled together to form the primitive 👻 that shifts all indexicals within its scope, (130a); similarly, 👻$_{add}$ and 👻$_{auth}$ can be bundled together to yield a 👻 that only shifts person indexicals, (130b). However, the system is designed so as to rule out any operator that would shift only the *addressee* while leaving the *author* coordinate untouched, as in (130c):

(130) a. $[\![\text{👻}\ \alpha]\!]^{g,c,i} = [\![\alpha]\!]^{g,i,i}$ (attested in Matses)

b. $[\![\text{👻}_{pers}\ \alpha]\!]^{g,c,i} = [\![\alpha]\!]^{g,<\mathbf{s(i)},\mathbf{a(i)},l(c),t(c)>,i}$ (attested in Uyghur)

c. $*[\![\text{👻}_{add}\ \alpha]\!]^{g,c,i} = [\![\alpha]\!]^{g,<s(c),\mathbf{a(i)},l(c),t(c)>,i}$ (unattested?)

d. $[\![\text{👻}_{auth}\ \alpha]\!]^{g,c,i} = [\![\alpha]\!]^{g,<\mathbf{s(i)},a(c),l(c),t(c)>,i}$ (attested in Slave)

However, the Adioukrou and Obolo data outlined above would precisely require an operator of this kind to account for the shifting of 2SG without the shifting of 1SG. By contrast, our system predicts that such a featural combination *is* possible, through re-ranking of the ACTUAL feature, exactly as in languages like Ewe:

(131) **Featural system of languages with unshifty first person + shifty second person**

a. $\text{I}_5 = [[[[pro_5\ c^*]\ \text{PART}]\ \text{AUTHOR}]\ \text{ACTUAL}]$

b. $\text{you}_7 = [[pro_7\ c_i]\ \text{PART}]$

c. $\text{it}_9 = pro_9$

(132) a. $[\text{I}_5\ c^*] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 5 \in dom(g) \\ s(c^*) \sqsubseteq g(5)(g(c^*)) \end{array} \right\}$. If so, then $[\![[\text{I}_5\ c^*]]\!]^g = g(5)(g(c^*))$.

b. $[\text{you}_7\ c_i] \in dom([\![\cdot]\!]^g)$ iff $\left\{ \begin{array}{c} 7 \in dom(g) \\ s(c_i) \sqsubseteq g(7)(g(c_i)) \vee a(c_i) \sqsubseteq g(7)(g(c_i)) \end{array} \right\}$. If so, then $[\![\text{LOG2}_7]\!]^g = g(7)(g(c_i))$.

c. $\text{it}_9 \in dom([\![\cdot]\!]^g)$ iff $9 \in dom(g)$. If so, then $[\![\text{it}_9]\!]^g = g(9)$.

**Shifty agreement and person neutralization in IS-systems**

As already illustrated in §**??**, some IS-systems allow for shifty agreement only, while other allow for both shifted indexicals and shifted agreeement in attitude complements:

(**??**) *Raman taan Sudha-vae virumb-ir-een-nnu so-nn-aan.*
Raman REFL.NOM.SG Sudha-ACC love-PRS-**1SG**-COMP say-PST-3SG.M

'Raman$_i$ said that he$_{i,*j}$ is in love with Sudha'

[Tamil, Sundaresan 2018: (13)]

(**??**) *Raju [tanu parigett-ææ-nu ani] cepp-ææ-Du.*
Raju 3SG run-PST-1SG COMP say-PST-3SG.M

'Raju$_i$ said that he$_i$ ran.'

[Telugu, Messick 2023: (10b)]

As hinted at in §**??** above, I will actually argue that cases of 'first person logophoricity' mentioned by Von Roncador (1992) and Curnow 2002b, 2002a such as (**??**) and (**??**), in which LPs trigger first-person agreement on the embedded verb, can be given a similar treatment within the present framework.

(**??**) *àbu papà tolim ɛbè àlózì iŋèz morotó*
AUX father say COMP 1SG.go.NPST 3SG Moroto

'Father$_i$ said that he$_i$ was going to Moroto.'

[Karimojong, Curnow 2002b: (18)]

(**??**) a. *Oumar inyemɛ jɛmbɔ paza* ***bolum*** *miñ tagi*
Oumar LOG sack.DEF drop left.1SG 1SG.OBJ inform.PST

'Oumar$_i$ told me that he$_i$ had left without the sack.'

b. *Oumar ma jɛmbɔ paza* ***boli*** *miñ tagi*
Oumar 1SG.SBJV sack.DEF drop left.3SG 1SG.OBJ inform.PST

'Oumar$_i$ told me that I had left without the sack.'

[Culy 1994b: (20)]

In the examples at stake here, the mismatch occurs at the level of person features - a feature that is not expressed on the controller is expressed on the target, indicating that agreement has taken place. At least two different patterns can be identified in these examples:

- Patterns in which the agreement controller is a dedicated pronominal element with a logophoric interpretation triggering first person agreement on the embedded verb (e.g. Tamil *taan*, Telugu *tanu*, Donno Sɔ *inyemɛ*;
- Patterns in which the agreement controller is a matrix NP not specified for person, as in the Karimojong example (**??**).

For the first class of languages, the solution that I am proposing is rather straightforward: logophoric elements such as *tanu* or *inyemɛ* are, in the present framework, first-personal elements that are morphosyntactically specified with an AUTHOR person feature, and as a consequence, are able to trigger first person agreement on the embedded verb.

For the second class of languages, in which no first-personal pronominal element enters into the agreement relation, I would like to suggest that this is an instance of hybrid or 'split' agreement found for other $\phi$-features elsewhere in the literature (Wechsler and Zlatić 2000; Corbett 2006; Sauerland 2009; Wechsler 2011; Smith 2015; see also Messick 2017, 2023). Such agreement patterns, where the features of the target fail to match those of the controller, are illustrated in (133) and (134) below:

(133) *moj brat tam toza zy-l-i*
my.SG.M brother.SG there also live-PST-PL

'My brother and his family also lived there.'
[Russian; Talitsk dialect, Corbett 2006: 155]

(134) The committee are drawing up a proposal right now.
[British English, Smith 2015: 107]

(135) a. *Ja sam otisla na posao*
I am gone.F.SG to work

'I have gone to work' (said by a woman).

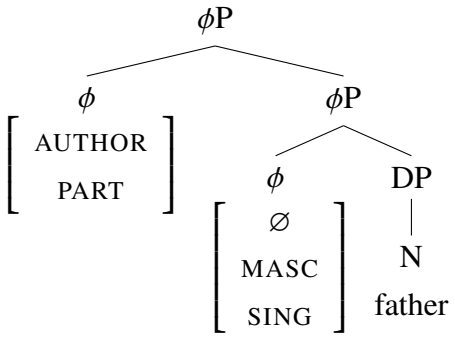
b. *Ja sam otisao na posao*
I am gone.M.SG to work

'I have gone to work' (said by a man).
[Serbo-Croatian, Messick 2023: (46)]

In (133), the singular noun *brat* triggers plural agreement on the verb, denoting the set of entities associated with the NP ('associative agreement'). Analogously, in (134), the singular noun *committee* triggers plural agreement as well. Last, in (135), an analogous mismatch is observed between the gender features of the controller (unexpressed in the first person) and the target. This kind of mismatch is known to occur with all classes

of $\phi$-features (cf. Corbett 2006: 155 *sqq.*). Assuming, following Sauerland (2009), that the $\phi$-features person, gender and number are syntactically represented by $\phi$-heads and interpreted semantically as presuppositions (as argued in §2.3.1 above), and that features on nouns are licensed via agreement with $\phi$-heads, we can think of the latter mismatches to be due to the fact that, in examples such as (**??**), the agreement controller (the matrix NP *papà* '*father*') projects two different *phi*-heads with each different sets of features, as in the following (where the symbol '∅' indicates that the NP has no inherent person specification):

(136)




In such cases, the presuppositions encoded by the features on the closest $\phi$-head (i.e., the inherent features of the noun) are left uninterpreted, and the presuppositional restrictions come about higher in the derivation, upon interpretation of the second $\phi$-head. This happens in cases when there is a conflict between the referential values of the interpreted noun (in that case, that of being the author of a speech context) and the morphosyntactic values encoded in the noun phrase: when this configuration obtains, semantic agreement can therefore 'override' standard syntactic agreement. Following i.a. Wechsler and Zlatić (2000) and Wechsler (2011), we could say that such cases of semantic agreement are thus instances of failure of syntactic agreement. This makes an additional prediction: in such configurations, we could therefore expect that, as a result of this failure, default agreement can obtain. This seems to be borne out in some languages of the Caucasus: for instance, the IS-language Aqusha Dargwa has a shifty first person pronoun that can optionally trigger first person agreement on the embedded verb. The shifted interpretation is available only in cases where first person marking is realized; if it isn't, the sentence can only have an unshifted interpretation.

(137) a. *ʔlis hanbikib [nu q'an* ***iub-ra*** *ili]*
Ali think.PST.3SG 1SG late became.**1** COMP

✓'Ali$_i$ thought that he$_i$ was late'
✓'Ali$_i$ thought that I was late'

b. *ʔlis hanbikib [nu q'an* ***iub*** *ili]*
Ali think.PST.3SG 1SG late became.**3** COMP

✗'Ali$_i$ thought that he$_i$ was late'
✓'Ali$_i$ thought that I was late'
(Aqusha Dargwa, adapted from Ganenkov 2021: (10-11))

Aqusha Dargwa being an optional-shifting language, the sentence in (137a) is ambiguous between an utterance-level reading (where the embedded 1SG pronoun and agreement marker both refer to the actual speaker) and a shifted reading (where they refer to the author of the report, Ali). Crucially, sentence (137b), where the embedded subject is 1SG but the verb is inflected for third person, lacks the shifted interpretation. Analogous data can be found for the Northeast Caucasian language Tabasaran:

(138) a. *rasul-di izu derben-di-s aG-idi-za k'udi p-nu.*
Rasul-OBL.ERG 1SG.ABS Derbent-OBL-DAT go-FUT-1SG COMP say-AOR

✓ 'Rasul$_i$ said that he$_i$ would go to Derbent'
✗ 'Rasul said that I would go to Derbent'

b. *rasul-di izu derben-di-s aG-idi k'udi p-nu.*
Rasul-OBL.ERG 1SG.ABS Derbent-OBL-DAT go-FUT COMP say-AOR

✗ 'Rasul$_i$ said that he$_i$ would go to Derbent'
✓ 'Rasul said that I would go to Derbent'
[Northern Tabasaran, Ganenkov and Bogomolova 2021: (70)]

It therefore seems possible to analyze 137b and 138b as instances of default agreement on the verb.

Much remains to be said about this class of examples, and a fully worked-out formal implementation of these agreement patterns is outside the scope of this work (see i.a. Sundaresan 2012, Messick 2017, 2023 and Ganenkov 2021 for some attempts). For instance, agreement as a grammatical relation is usually taken to be sentence-bound, not being able to obtain between clauses/full CPs; however, it has long been noted that long-distance agreement is a pervasive phenomenon in natural languages (Polinsky 2015; Bhatt and Keine 2017). Recent work on cross-clausal syntactic dependencies such as prolepsis, long-distance agreement and hyperraising (Wurmbrand 2018; Lohninger et al. 2022) suggest that such phenomena could be given a uniform account; at least superficially, it seems that configurations such as those outlined above fall under the scope of the definition of the domain of cross-clausal dependencies given by Lohninger et al. (2022):

(139) **The domain of cross-clausal dependencies**
Configurations in which

a. A matrix A-element (argument (position), case assigner, agreement head) is in

b. An obligatory dependency (Agree, movement, binding, predication) with another element (operator, argument (position), obligatorily bound pronoun, gap), and is

c. Situated in an embedded finite clause. [Lohninger et al. 2022: (2)]

We take this to be a promising direction of research in any attempt to give a systematic account of cases of shifty agreement.

## 2.4 The pragmatics of shifted reference

### 2.4.1 Deriving *shift together*

At this point, our system is able to give a unified account of both logophoric and shiftable-indexicals systems, on the basis that the pronominal elements at stake share a common featural basis cross-lingusitically, namely the AUTHOR feature, lacking an ACTUAL specification which is necessary to qualify as an indexical in Kaplan's sense. A welcome prediction is that the widespread optionality of indexical shift, whereby sentences involving SIs are systematically ambiguous between a shifted and an unshifted (indexical) reading, is straightforwardly predicted: pro-forms lacking featural specification with an ACTUAL feature will be freely interpretable with respect to any context, provided that the semantics of the embedded verb (or contextual information, for matrix indexical shift) provides an adequate set of contextual parameters for the indexical to be evaluated against. However, by the same move, our system fails at deriving what has become the signature pattern of indexical shift across languages: the constraint *shift together* posited by Anand and Nevins (2004), which is enforced in a large number of IS-languages.

However, as widespread as it may be, the shift-together constraint is not attested in every IS-systems. In many languages, mixed readings as the ones ruled out in (26) are commonly observed:

(140) *Raani tanu naa teacher-ni kalus-taa-nu ani cepp-in-di*
Rani 3SG 1SG.POSS teacher-ACC meet-FUT-1SG COMP say-PST-F.SG

'Rani$_i$ said she$_i$ will meet my$_{*i,spk}$ teacher'

[Telugu, Messick (2016): (17)]

(141) *Kemal va mı va e neveş-a çıçıre*
Kemal say.PST.3SG 1SG.OBL say.PST.3SG 1SG.DIR sick-1SG why

✓'Why did Kemal$_i$ say that he$_i$ thought that he$_i$ is sick?'
✓'Why did Kemal$_i$ say that I thought that I am sick?'
✓'Why did Kemal$_i$ say that he$_i$ thought that I am sick?'
✗'Why did Kemal$_i$ say that I thought that he$_i$ is sick?'
[Mutki Zazaki, Akkuş (2019): (80)]

(142) *Raman taan kannadi-lae enn-ae paar-tt-een-nnu*
Raman.NOM ANAPH.NOM mirror-LOC 1SG-ACC see-PST-1SG-COMP
*ottund-aan.*
admit.PST-3SG.M

✓ 'Raman$_i$ admitted that he$_{i,*j}$ had seen me$_{spk}$ in the mirror'
✗ 'Raman$_i$ admitted that he$_{i,*j}$ had seen him$_{i,*j}$ in the mirror'
[Tamil, Sundaresan (2018): (17)]

(143) a. *Boris says to Sonya:*
*(ep) san-ba ӗçl-e-p*
I 2SG-INS work-NPST-1SG

'I will work with you.'

b. *Sonya reports to Macha:*
*boris man-ba ӗçl-e-p te-ze kala-rj-ə*
boris 1SG-INS work-NPST-1SG say-COMP say-PST-3SG

'Boris$_i$ said that he$_i$ will work with me$_{s(c)}$.'
[Poshkart Chuvash, Knyazev 2022: (22)]

Other examples of shift together violations are attested in Mishar Tatar (Podobryaev, 2014), Kazan Tatar (personal fieldwork), Kurdish (Akkuş, 2019), Kurmanji (Koev, 2013), among other languages. All in all, this seems to suggest that *shift together* is not a systematic rule of shifty languages, but rather a violable constraint, subject to linguistic variation. As a consequence, it seems possible to recast Anand and Nevins's insightful constraint in terms of a pragmatic preference that speakers and hearers alike enforce to derive the appropriate meaning of sentences containing potentially ambiguous indexical elements.

Such a constraint could take the form in (144):

(144) **Context homogeneity**
Interpret contexts as homogeneous whenever possible.

The pragmatic constraint in (144) describes a preference for speakers and hearers alike to interpret indexical expressions against a similar set of coordinates whenever possible (i.e., modulo morphosyntactic constraints) and stick to it throughout the whole interpretive procedure. Such a constraint could of course be overridden in certain discourse configurations, when some contexts fail to provide the adequate parameter needed for the evaluation of a given indexical element, in cases when no appropriate antecedents are present for some 'shifty' readings to obtain. Crucial here is data from Turkish, which similarly allows for *shift together* violations of the sort mentioned here. Since no appropriate addressee in introduced in (145a), shifted reading of *you* is impossible; however, it becomes available in (145b), when Ayse (the reported addressee) is mentioned in the matrix clause:

(145) a. *Tunç* ***pro*** ***sen-i*** *nere-ye* *götür-eceğ-im* *de-miş?*
Tunç ***pro*** **2SG-ACC** take-FUT-1SG say-DUB-3SG

'Where did Tunç$_i$ say that **he$_i$/I** would take **you**$_{Add(c),*Add(i)}$.'

b. *Tunç* ***Ayşe'ye*** *pro* ***sen-i*** *nere-ye* *götür-eceğ-**im*** *de-miş?*
Tunç **Ayşe-DAT** *pro* **2SG-ACC** take-FUT-**1SG** say-DUB-3SG

'Where did Tunç$_i$ say to Ayşe$_j$ that **he$_i$ / I** would take **her$_j$ / you**?'
[Turkish, Özyıldız (2012): (22-23)]

As noted by Özyıldız (2012), linguistic mention is a way to unlock the shifted reading here, but it is not the only way: discourse salience is another way to allow shifting of 2SG in that case. The same pattern obtains in Tigrinya, where mentioning Kebede in the matrix clause allow for shifting of *kingze-xa* (146b); if not, 2SG gets indexical reference, and shift together is violated, (146a).

(146) a. *Solomon* *ʔanɛ* *ab* *srah* *kingze-xa* *ʔɨj-ə* *ʔɨl-u*
Solomon 1SG.NOM at work help-OBL.2SG COP.PRS-1SG say.PST-3SG.M

'Solomon$_i$ said that he$_{S\,pk,i}$ will help you$_{Add,*\,j}$ at work.'

b. *Solomon* ***n-Kebede*** *ʔanɛ* *ab* *srah* *kingze-xa* *ʔɨj-ə*
Solomon **to-Kebede** 1SG.NOM at work help-OBL.2SG COP.PRS-1SG
*ʔɨl-u*
say.PST-3SG.M

'Solomon$_i$ said that he$_{S\,pk,i}$ will help you$_{Add,j}$ at work.'
[Tigrinya, personal fieldwork]

The above data therefore suggests that the availability of appropriate discourse referents is key in predicting the behavior of indexicals in such configurations: when no such referents

are available in a given context to properly 'anchor' the indexical, it will automatically fall back on the only context accessible for interpretation, that of the utterance - thus violating *shift together*. Assuming that indexical reference must obtain whenever possible (on pains of oddness or uninterpretability), the principle in (144) predicts this.

More generally, (144) relates to a broader preference for speakers to maintain a unified perspective during the course of interpretation of context-sensitive elements (see Potts 2007; Harris 2021 i.a.). In a recent set of experimental studies about the interpretation of perspective in items such as (147), Harris (2021) observes that participants prefer to interpret sentences such as 147b as conveying not the default discourse perspective (which is the speaker's/narrator's), but that of the protagonist, Mary - i.e. parenthetical reports such as 147b elicited more extended shift responses than Standard reports 147a did.

(147) *Report sentence*

a. *standard report*
Mary said that there was a storm today.

b. *Parenthetical report*
There was a storm today, said Mary.

(148) *Target sentence*
Clouds (had | have) completely covered the sky.

(149) *Interpretation question*
Was it Mary who said the second sentence, or someone else?

a. It was Mary (*Extended shift response*)

b. It was someone else, like a narrator (*Speaker response*)

Harris (2021) proposes to account for this by positing two discourse-level pragmatics constraints that force speakers and hearers to maintain the default perspective unless shifting is required due to interpretive problems:

(150) **Speaker as Perspectival Center (SPC)**
Take the speaker as the perspectival center, all else being equal.

(151) **No Shift Principle (NSP)**
Don't shift perspectives unless required, e.g., evidence of incompatible viewpoint.
[Harris 2021: (31)-(32)]

The constraint outlined in (144) could be viewed as a specific instance of these two constraints that regulates the interpretation of indexical elements in shifty languages.

### 2.4.2 Shifty alternatives and competition

In shifty languages such as Mishar Tatar (Turkic; Russia) and Turkish, shifting occurs only when there is no overt external argument to the embedded verb, which is inflected with shifty first-person marking. When an overt first person indexical element is present in the same configuration, shifting is impossible. This is illustrated in (152)-(153):[19]

(152) *Alsu* ***pro / min*** *kaja kit-te-m* *diep* *at'-tɤ*
Alsu ***pro* / 1SG.NOM** where go.out-PST-1SG COMP say-PST.3SG

'Which place did Alsu$_i$ say $\mathbf{I}_{S\,pk,i}$ / $\mathbf{I}_{S\,pk,*i}$ went?'

[Podobryaev 2014: (202)-(203)]

(153) *Seda* *pro / ben* *sınıf-ta* *kal-dı-m* *san-ıyor*
Seda.NOM ***pro* / 1SG.NOM** class.LOC flunk-1SG-PST believe.PRS

'Seda$_i$ believes that $\mathrm{I}_{S\,pk,i}$ / $\mathrm{I}_{S\,pk,*i}$ flunked' [Şener and Şener 2011: (11)/(15)]

Interestingly, those languages also exhibit violations of *shift together*; (154) involves two first person indexicals, shifted and unshifted, respectively, while (155a) licenses a reading where the silent 1st person is shifted and 2nd is not.

(154) *Alsu* ***pro*** *ber kajčan da miŋga bag-m-a-s-mɤn* *diep*
Alsu ***pro*** one when nPCL 1SG.DAT look.at-NEG-ST-POT-1SG COMP
*bel-ä*
know.ST-IMPF

'Alsu$_i$ knows that $\mathbf{I}_i$ would never look at $\mathbf{me}_{S\,pk}$'

[Mishar Tatar, Podobryaev 2014: (210)]

(155) a. *boris man-a san-ba ëɕl-e-p* *te-ze* *kala-rj-ə*
boris I.OBJ 2SG-INS work-NPST-1SG say-COMP say-PST-3SG

'Boris$_i$ told me that I / he$_i$ will work with you$_{a(c)}$.'

b. *boris man-a ep san-ba ëɕl-e-p* *te-ze* *kala-rj-ə*
boris I.OBJ I 2SG-INS work-NPST-1SG say-COMP say-PST-3SG

'Boris$_i$ told me that I / *he$_i$ will work with you$_{a(c)}$.'

[Poshkart Chuvash, Knyazev 2022: (28)]

[19] Turkish has received quite some attention on the matter compared to other languages. Şener and Şener (2011) argue that the first person pronoun *ben* cannot shift in Turkish, contrary to its silent counterpart. Özyıldız (2012), Akkuş (2019), Oguz et al. (2020) and Erdogan (2022) argue that it can.

Similar patterns can be observed in Amharic (Schlenker 2003, Anand 2006), Kurmanji (Koev, 2013), Kazan Tatar (personal fieldwork), Mutki Zazaki and Muş Kurdish (Akkuş, 2019), Tamil (Sundaresan 2012, 2018) and Telugu (Messick, 2022), among other languages. The generalization we can make out of these examples is the following:

(156) **Competition between shitable elements**
In a shifting language $L$, if $L$ has silent proforms, these will be more prone to shift than overt ones.

Following Chomsky (1981), Montalbetti (1984), Levinson 1987b, 1991, Mayol (2010), Ahn (2019) and Sichel and Wiltschko (2021) among many others, we can assume that anaphora is regulated by general economy principles, involving competition between forms operating through markedness contraints: roughly put, the use of a more marked form in a given anaphoric dependency will trigger disjoint reference. Following Katzir (2007), we could assume that markedness can in the case of nominal expressions be reduced to complexity: an element $\beta$ is more marked than $\alpha$ if $\alpha < \beta$.[20] We can therefore represent the set of structural alternatives of a given nominal expression $\beta$ as follows:

(157) $\text{ALT}(\beta) = \{ \alpha : \alpha < \beta \}$

We also assume, following Williams (1977), that anaphoric reference obtains whenever possible (i.e. is preferred over other, non-coreferential patterns). This is instantiated by (158) below:[21]

(158) ***Don't Overlook Anaphoric Possibilities!*** [Williams 1997: (82)]
Opportunities to anaphorize text must be seized.

Katzir's notion of structural complexity as markedness coupled with (158) allows us to ensure that the structurally simplest nominal expression has to be used in anaphoric dependencies.[22] We can now reformulate our generalization in (156) in more precise terms:

(159) **Competition between anaphoric forms**
Let $\alpha$ and $\beta$ be anaphoric expressions in a given language. If $\text{NP}_i$ is the most accessible element matching $\alpha$ and $\beta$ in semantically-interpreted features, and if $\alpha \in \text{ALT}(\beta)$, then $[\![\beta_n]\!]^g = g(n)$ and $n \neq i$.

[20] Note that this is not a biconditional statement, for other properties than complexity might be involved into markedness dependencies between elements; for instance, language-internal distribution, acquisition time, processing costs, etc. See Haspelmath (2006) for a critical discussion of the concept.

[21] Analogously, one could use the *continuing* principle found in centering theory (Grosz et al. 1983, 1995), or the OT reformulation of this rule found in Beaver (2004).

[22] Of course, *Maximize Presupposition!* as defined in 2.3.3 is still enforced: presuppositionally stronger elements such as reflexives will be used whenever possible in anaphoric patterns, in spite of being structurally more complex. On the interpretation of reflexives, see Sauerland (2013) and McKillen (2016).

In order to see how this works, consider the language Mishar Tatar, which allows shifting of null elements (triggering first person agreement on the verb), but disallows shifting with overt ones. The relevant anaphoric alternative set for such a language can be assumed to be the following, where *pro* designates any kind of pronoun (cp. Ariel 1988):

(160) $\varnothing < \underline{pro}$

Consider now a sentence like (152). The discourse referent introduced by the DP *Alsu* qualifies as the author/speaker of a reporting context; so does the actual speaker of the sentence. Recall from §2.3.5 that, since Mishar Tatar is an indexical-shifting language, the first personal pronoun in that language does not carry an ACTUAL feature, only an AUTHOR feature, and can therefore denote either the actual speaker or the reported speaker:

(161) $\mathrm{I}_5 \in dom([\![\cdot]\!]^{g,c^*,i})$ iff $\left\{ \begin{array}{c} 5 \in dom(g) \\ s(c_i) \sqsubseteq g(5)(g(c_i)) \end{array} \right\}$. If so, then $[\![\mathrm{I}_5]\!]^{g,c^*,i} = g(5)(g(c_i))$.

Since both the null element and the first person in reporting contexts both trigger first-person agreement on the embedded verb, I therefore assume that the silent element is also endowed with a similar first-person feature in the syntax, but that this featural content undergoes deletion at PF (cp. similar analyses of 'monstrous agreeement' in Telugu by Messick 2023; cf. also Simpson et al. 2013 and the discussion in §2.3.5). Accordingly, the null element can be diven a similar entry as its overt, first-person counterpart:

(162) $\varnothing_5 \in dom([\![\cdot]\!]^{g,c^*,i})$ iff $\left\{ \begin{array}{c} 5 \in dom(g) \\ s(c_i) \sqsubseteq g(5)(g(c_i)) \end{array} \right\}$. If so, then $[\![\varnothing_5]\!]^{g,c^*,i} = g(5)(g(c_i))$.

The two elements are therefore semantically equivalent, singling out the same entity, by *MP!*: the speaker of $c_i$. However, the economy principle in (159), coupled with our anaphoric preference principle (158), dictates that the null form must be used in order to refer the reported speaker, which is the most salient linguistic entity. As a consequence, the referent of first person *min* in (152) can only be the actual speaker, being the only other entity both semantically compatible with the first person feature of the pronoun and available in the discourse. This derives the correct pattern for shifty *pro*-drop languages such as Mishar Tatar and Turkish.

## 2.5 Conclusion

The present chapter aimed at offering an unified account of both shiftable indexicals and logophoric pronouns in which in both systems, author- and addresse-referring forms (with the various person feature combinations they can bear) lack a further morphosemantic piece of information, the feature ACTUAL, which is required to properly anchor their

referents within the discourse context. In their structure, both kinds of pronouns are morphosyntactically endowed with a context variable *c* that can be bound at the embedded or matrix levels; binding at the utterance level by the matrix context abstractor is enforced when indexicals are specified with an ACTUAL feature. The theory allows us to derive a wide range of cross-linguistic similarities between the two classes of expressions, related to both their meaning and disribution - ranging from their sensitivity to reported speech/attitude environments to their *de se* readings. The theory has far-reaching typological, as well as theoretical, consequences, providing evidence that indexical expressions should not be treated as atomic but rather, complex elements composed of multiple morphosemantic features - a conclusion independently reached by various researchers (see i.a. Nikitina 2012a, 2012b; Deal 2021). This new conception of indexicality also sheds light on the semantics and pragmatics of anaphora, recasting first and second person elements within the broader class of anaphoric forms.

## 2.6 Appendices

| Language | Family | 1 shifts | 2 shifts | HERE shifts | NOW shifts | Source |
|---|---|---|---|---|---|---|
| Aqusha Dargwa | Northeast Caucasian | ✓ | ✓ | ? | ? | Ganenkov (2021) |
| Amharic | Semitic | ✓ | ✓ | ? | ? | Schlenker 1999, 2003 |
| Buryat | Mongolic | ✓ | ✓ | ? | ? | Wurmbrand (2018), Bondarenko (2022) |
| Poshkart Chuvash | Turkic | AGR | ✗ | ✗ | ✗ | Knyazev (2022) |
| Farsi | Iranian | ✓ | ✓ | ✓ | ✓ | Anvari (2020) |
| Japanese | Japonic | ✓ | ✓ | ? | ? | Sudo (2012) |
| Korean | Koreanic | ✓ | ✓ | ✓ | ✓ | Park (2014) |
| Kurmanji | Iranian | ✓ | ✓ | ? | ? | Koev (2013) |
| Matses | Panoan | ✓ | ✓ | ✓ | ✓ | Ludwig et al. (2010), Munro et al. (2012) |
| Navajo | Athabaskan | ✓ | ✓ | ✗ | ✗ | Speas (1999) |
| Nez Perce | Sahaptian | ✓ | ✓ | ✓ | ✓ | Deal 2013, 2017, 2020 |
| Northern Tabasaran | Northeast Caucasian | ✓ | ✓ | ? | ? | Ganenkov and Bogomolova (2021) |
| Slave | Athabaskan | ✓ | ✓ | ? | ? | Rice (1986) |
| Tamil | Dravidian | AGR | ? | ? | ? | Sundaresan 2011, 2012 |
| Mishar Tatar | Turkic | AGR | AGR | ? | ? | Podobryaev (2014) |
| Kazan Tatar | Turkic | ✓ | ✓ | ? | ? | Personal fieldwork, Stockwell (2018) |
| Telugu | Dravidian | AGR | ? | ? | ? | Messick 2017, 2022, 2023 |
| Ethiopia Tigrinya | Semitic | ✓ | ✓ | ? | ? | Spadine (2020) |
| Eritrea Tigrinya | Semitic | ✓ | ✓ | ? | ? | Personal fieldwork |
| Turkish | Turkic | ✓/AGR | ✓ | ✓ | ✓ | Şener and Şener (2011), Özyıldız (2012), Akkuş (2019), Oguz et al. (2020), Erdoğan (2022) |
| Tsez | Northeast Caucasian | ✓ | ✓ | ✗ | ✗ | Polinsky (2015) |
| Tsova-Tush | Northeast Caucasian | ✓ | ✓ | ✓ | ✓ | Hauk (2020) |
| Uyghur | Turkic | ✓ | ✓ | ✗ | ✗ | Sudo (2012), Shklovsky and Sudo (2014) |
| Zazaki | Iranian | ✓ | ✓ | ✓ | ✓ | Anand and Nevins (2004), Anand (2006) |

Table 2.2: Shifty indexical classes across languages. AGR indicates that the language has shifty agreement (see §**??**), but no shifty pro-forms.

# Chapter 3

# Indexicals under role shift in Sign Language of the Netherlands: experimental insights

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## Overview

In order to report signed utterances, thoughts and other attitudes, sign languages make use of a dedicated construction known as *attitude role shift*, in which the signer embodies the author of the report while making use of a dedicated set of non-manual markers to 'flag' the content of their report. When used in role shift constructions, first (IX-1) and second (IX-2) personal pronouns can *shift* their usual meaning to refer to the author and the addressee of the report. This article focuses on the behavior of such pronouns in Sign Language of the Netherlands (NGT). Starting from the observation that in vairous sign languages, indexicals do not behave uniformly under role shift, we designed an experiment aimed at testing the interpretation of IX-1 and IX-2 under role shift. Our results show an important interpretive difference between first and second person indexicals that cannot readily be accounted for by prominent accounts of RS in the theoretical literature (RS as a context-shifting operator, as developed in Quer 2005, 2011 and Schlenker 2017a, 2017b; RS as (mixed) quotation, Davidson 2015; Maier 2018; Hübl et al. 2019). We suggest that our results provide evidence for an analysis of the first person form IX-1 as a logophoric pronoun in NGT, building on recent works on logophoricity and indexicals in spoken languages (Bimpeh et al. 2023; Blunier 2023), shedding new light on the typology and interpretation of person features across modalities.

## 3.1 Introduction

Sign language pronouns have been a matter of active research within the field of formal sign language linguistics, giving rise to at least two important debates: the first/non-first debate, which concerns the grammatical status of person features in sign languages, with Meier (1990) and many subsequent others arguing for a two-way distinction of person, as opposed to a standard three-person system commonly assumed in spoken languages; and the *loci* debate, which concerns the grammatical role of abstract points in space with which third person pointing signs are associated in order to resolve anaphora (Lillo-Martin and Klima 1990; Schlenker 2013; Schlenker 2014; Kuhn 2016; Ahn 2019). Yet another field of active research is the construction known as *role shift* (henceforth: RS), pervasive across sign languages, and used in order to report speech and thoughts in a quotative manner from an agent's perspective (Lillo-Martin 1995; Quer 2005; Lillo-Martin 2012; Schlenker 2017a, 2017b). RS constructions are of special interest regarding the study of pronominal forms, since the meaning of indexical pronouns IX-1 and IX-2 under role shift can undergo a change in reference, being used to refer to the reported speaker and addressee instead of the actual ones, respectively. The theoretical status of RS itself has been vigorously debated in the literature, with some arguing that is should be analyzed as a form of unembedded direct discourse, akin to quotation in spoken languages (Lee et al. 1997; Davidson 2015; Maier 2018), while others viewing it as a genuine embedded form, more similar to spoken language indirect speech constructions (Lillo-Martin 1995, Quer 2005, Schlenker 2017a, 2017b). Among the arguments laid out by the 'indirect view' camp is the fact that RS makes use of a dedicated set of non-manual markers (RS-NMMs) visibly scoping over the reported material, thus providing evidence for a somewhat grammaticalized form of embedding marker (Lillo-Martin, 1995). This is exemplified in Figure 3.1 for American Sign Language, where the signer leans her body towards the ipsilateral side, tilts her head, and shifts her eyegaze to the opposite direction, exemplifying three RS-NMMs that have been observed for most SLs investigated so far (Lillo-Martin, 2012).[1]

Note that the second person indexical IX-2 has shifted reference in that example, re-

[1] Here is a list of glossing conventions for sign languages used in this paper:

- $\text{IX}_1$, $\text{IX}_2$: first and second person indexicals;
- $\text{IX}_a$: third person pronoun associated with locus *a*, the region in the signing space where the associated discourse referent has been located;
- $\underline{\quad}^{\text{rs}}$: a role shift construction. The horizontal line indicates the scope of the role-shift non-manual markers;
- $\underline{\quad}^{\text{eg-r/l, h-r/l, b-r/l}}$: a role shift construction, with the precise marking of non-manual markers (eyegaze shift, head tilt, body lean) and their direction (right/left);
- $\underline{\quad}^{\text{t}}$: a topicalized constituent.


Figure 3.1: RS-NMMs: eye gaze shift, body lean and head tilt in American Sign Language (from Lillo-Martin 2012: 369.)

ferring to the reported addressee and not the current one. This behavior in attitudinal constructions aligns with what has been observed in spoken languages such as Amharic (Schlenker, 2003) or Zazaki (Anand and Nevins 2004; Anand 2006), where shifting of indexicals systematically occurs in speech reports. A popular line of inquiry (see Anand 2006; Deal 2020) assumes that shifting in those languages is the result of embedding under a context-shifting operator (which we note 👻) introduced by the attitude verb, which modify the context parameters indexicals obtain their reference from, as standardly assumed in semantic theorizing since Kaplan (1977). Consequently, it has been proposed that a similar operator can be found in sign languages, and that RS-NMMs are an overt manifestation of it (Quer 2005; Herrmann and Steinbach 2012; Schlenker 2017a, 2017b), rendering visible what is left covert in spoken language - a common trait of languages making use of the visual-gestural modality (Schlenker, 2018). We call this the 'Overt Operator Hypothesis', or OOH for short.

Taking this hypothesis as a starting point, this work aims at providing further data from yet another sign language, Sign Language of the Netherlands (*Nederlandse Gebarentaal*, NGT) in order to see whether analogous patterns hold in NGT and, if yes, what kind of theory regarding the status of RS and indexical reference could these patterns support or disprove. We first ran a corpus search through the NGT corpus (Crasborn and Zwitserlood, 2008), which confirmed some of the data observed in DGS and RSL. We then ran an experiment in order to test further the predictions made by the OOH in NGT. Overall, the experiment results suggest that the OOH is too strong indeed: indexicals can shift without RS-NMMs, and remain unshifted when in their scope. However, our results reveal an unexpected asymmetry betweeen first and second person indexicals in NGT with respect to their shifting properties: while shifting of second person seems to be highly sensitive to the presence/absence of RS-NMMs (as the OOH would predict), this is crucially not the case for the first person, which reveals a completely different profile: some signers shift it across the board regardless of RS-NMMs being involved, while others never do, even under the appropriate RS-NMMs.

The rest of this article is structured as follows: §3.2 provides some background on the phenomenon of role shift in sign languages; in §3.2.1, we discuss sign language data

that are *a priori* problematic for existing analyses of the phenomenon. §3.3 presents the experiment we designed to tests these results further, and in §3.4, we provide an analysis of the results, which reveal a significant asymmetry regarding the interpretive of first vs second person indexicals in NGT. We propose that this difference is due to the featural makeup of first person forms in NGT, which has the semantics of a logophoric pronoun. It results in the first person feature being left unspecified with respect to which context (actual or reported), leading to systematic ambiguities under RS for some signers, who resort to alternative strategies when reference to the reported/actual speaker is needed in a report. A competition analysis along the lines provided by Ahn (2019) for ASL loci, extended to first and second person forms, is offered. §3.8 explores an alternative way to account for the results using Davidson's 2015 and Maier's (2017, 2018) quotational theory of role shift, which ultimately proves unsatisfying. §5.6 concludes in discussing some potential issues regarding the data presented, as well as providing insights for further research on the matter.

## 3.2 Role shift as context-shift

The most popular account of RS in semantic and syntactic literature is the context-shifting operator theory (Quer 2005; Schlenker 2017a, 2017b), which brings sign language role shift on a par with the phenomenon of indexical shift found in some spoken languages (Schlenker 2003, Deal 2020). Indexical shift refers to the phenomenon where first and second person indexicals (and sometimes, location and temporal indexicals) can be used in attitude report constructions to refer to participants of the reported event. This is illustrated in (**??**) for the Semitic language Amharic, and in (10) for the Iranian language Zazaki:

(163) *jon jəgna nə-ññ yɨ-l-all*
John hero COP-1SG.S 3SG.M.S-say-AUX.3SG.M.S

'John$_i$ says that he$_i$ is a hero'

[Amharic, Schlenker 1999: (12)]

(164) *Hɛsen-i mɨ-ra va kɛ ɛz dɛwletia*
Hesen-OBL 1SG-OBL say COMP 1SG.NOM rich.be.PRS

'Hesen$_i$ tells me$_{S\,pk}$ that he$_{i,S\,pk}$ is rich'

[Zazaki, Anand and Nevins 2004: (4)]

In (163), the first person marker *ññ* does not refer to the utterance speaker, but to the reported speaker, *John*. Something similar occurs in (164), where the nominative first person *ɛz* embedded under *va* '*say*' can either refer to *Hesen* or the utterance speaker.

This phenomenon has been reported for a wide variety of languages pertaining to different families, ranging from Semitic (Amharic, Tigrinya) to Athabaskan (Slave) and Turkic (Uyghur, Chuvash). Languages with shifted indexicals are widespread cross-linguistically and considerably differ as to which indexicals can shift, and under which conditions (see Deal 2020 for an in-depth study and review of the phenomenon). First, languages differ as to which elements undergo shifting: some allow for 1st person shifting only (Slave, Rice 1986), others allow 1st and 2nd person to shift (Uyghur, Sudo 2012, Shklovsky and Sudo 2014), and some allow for all indexicals to shift without restrictions (Matses, Ludwig et al. 2010; Munro et al. 2012). Variation can also be observed regarding the kind of verb under which indexicals are allowed to shift: most indexical-shifting (henceforth, IS) languages allow shifting under the scope of *say*, with only a small subset of those allowing shifting under other predicates, such as *believe* and *know*. Finally, languages vary as to whether indexical shift is obligatory, as in Uyghur (Shklovsky and Sudo, 2014) or Navajo (Speas, 1999), or optional, as in Zazaki (Anand and Nevins 2004; Anand 2006).

A widespread generalization about indexical shift is that, in a given intensional domain, indexicals must *shift together*, i.e. inherit their value from one context only. In order to capture this, Anand (2006) proposes the following generalization:

(165) **Shift Together** [Adapted from Anand 2006: 100]
All shiftable indexicals within a attitude-context domain must pick up reference from the same context (where an attitude-context domain is the scope of an attitude verb up to the scope of the next c-commanded attitude verb.)

The *Shift Together* constraint aims at explaining data like (10) and (26), where multiple indexicals seem to retrieve their value from one single shifted context:

(166) *vizeri* *Rojda* *Bill-ra* *va* *kɛ* *ɛz* *to-ra* *miradisa*
yesterday Rojda Bill-to say.PST COMP 1SG 2SG-to angry.be.PRS

✓ 'Yesterday Rojda$_i$ said to Bill$_j$ that he$_i$ is angry at him$_j$.'
✓ 'Yesterday Rojda$_i$ said to Bill$_j$ that I am angry at you.'
✗ 'Yesterday Rojda$_i$ said to Bill$_j$ that I am angry at him$_j$.'
✗ 'Yesterday Rojda$_i$ said to Bill$_j$ that he$_i$ is angry at you.'
[Zazaki, Anand and Nevins 2004: (13)]

The sentence in (26) is only two-ways ambiguous, relatively to the context in which it is interpreted: if it is the reported context, the two indexicals *ɛz* and *to* will refer to the reported speakers and addressee (Rojda and John), respectively, while if it is the utterance context, they will refer to the speaker and addressee of that context. Crucially, mixed or 'cross-contextual' readings are excluded: indexicals have to shift together. Such a constraint has been reported to hold in a large body of SI-languages[2], and is considered

[2] See Deal 2020 for an overview, as well as Deal 2020: Appendix A for discussion.

by many to be the centrally-defining feature of indexical shift (Anand 2006; Deal 2018, 2020, a.o.). In order to capture this, Anand and Nevins (2004) suggested that the shifting of indexicals may be induced by the presence of a 'monstrous' operator 👻 in the embedded clause.[3] The semantics of this operator is straightforward: it rewrites the Kaplanian context coordinates of a contex-sensitive expression $\alpha$ - a tuple of parameters consisting of an author (or speaker) $s$, an addressee $ad$, a world $w$, a time $t$ and a location $l$ - with the values of the *index*, or circumstances of evaluation, consisting of a similar set of coordinates (c.p. Zimmermann 1991, Von Stechow and Zimmermann 2005):

(167) $[\![ \text{👻}\ \alpha ]\!]^{g,c,i} = [\![ \alpha ]\!]^{g,i,i}$

Depending on the language, the operator is generally taken to be introduced by attitude verbs such as *say*, which then allows the first (and second) person in embedded clauses to refer to the reported speaker and addressee, respectively:

(168) a. $[\![ \text{👻 I} ]\!]^{g,c,i} = [\![ \text{I} ]\!]^{g,i,i} = \textit{speaker(i)}$

b. $[\![ \text{👻 You} ]\!]^{g,c,i} = [\![ \text{You} ]\!]^{g,i,i} = \textit{addressee(i)}$

(169) $[\![$ Rojda said to Bill that 👻 I am angry at you $]\!]^{g,c,i} = 1$ iff $\forall i'$ compatible with what Rojda said in $i$, then the speaker in $i'$ is angry at the addressee in $i'$.

Once 👻 is inserted, all indexicals within its scope will thus inherit the value of the embedded context; this captures the shift-together effect alluded to above. In optional shifting languages like Zazaki, the monster needs not be inserted; hence, in those, an indexical or 'unshifted' reading is always available.

The context-shifting operator theory has been adapted to sign languages by Quer (2005) and Schlenker (2017a, 2017b). More precisely, Schlenker (2017a) proposes to treat RS-NMMs as an overt spell-out of Anand context-shifting operator 👻, notated RS-OP, for which the following semantics can be provided:

(170) $[\![ \text{RS-OP } \phi ]\!]^{g,c,i} = [\![ \overset{\text{RS}_i}{\overline{\phi}} ]\!]^{g,c,i} = [\![\phi]\!]^{g,i,i}$

The RS-OP is thus a kind of 👻 that rewrites the utterance context with the reported context/index. A derivation for a simple RS construction is provided in (171):

(171) $[\![ \text{JOHN}_j \text{ SAY } \overset{\text{RS}_i}{\overline{\text{IX}_j \text{ WILL LEAVE}}} ]\!]^{g,c,i} = 1$ iff
$\forall i'$ compatible with what John said in $i$, $[\![ \overset{\text{RS}_i}{\overline{\text{IX}_1 \text{ WILL LEAVE}}} ]\!]^{g,c,i'} = 1$ iff
$\forall i'$ compatible with what John said in $i$, $[\![ \text{IX}_1 \text{ WILL LEAVE} ]\!]^{g,i',i'} = 1$ iff

[3] Anand and Nevins (2004) and Anand (2006) write $OP_\forall$ for the context-shifting operator; the 👻-notation is from Sudo (2012).

$\forall i'$ compatible with what John said in $i$, $[\![ \text{WILL LEAVE} ]\!]^{g,i',i'}$ $([\![ \text{IX}_1 ]\!])^{g,i',i'} = 1$ iff
$\forall i'$ compatible with what John said in $i$, $auth(i')$ will leave in $i'$

In words, the construction JOHN SAY $\overline{\text{IX}_1 \text{ WILL LEAVE}}^{\text{RS}_i}$ will be true if and only if John is the author/signer of the reported context *i'* and said that he will leave in *i'*. RS-OP thus achieves the same result as its spoken language counterpart, context-shifting, through the use of dedicated non-manuals markers: it is just another example of the visual modality providing a direct window into the formal apparatus of the language faculty, as emphasized by Schlenker (2018).[4]

### 3.2.1 Unexpected shiftiness in sign languages

The standard analysis of role shift outlined above assumes a version of what we called in the introduction the *Overt Operator Hypothesis*, or OOH:

(172) **Overt operator hypothesis (OOH)**
In sign languages, role shift non-manual markers (RS-NMMs) are the overt spell-out of a context-shifting operator 👻.

The OOH is appealing as an analytical move, for at least two reasons. Conceptually, it brings sign languages closer to spoken languages, assuming that the two differ only in modality, but not in the core grammatical and semantic mechanisms at their disposal. The other reason is empirical: an analysis positing a context-shifting operator such as (170) is able to straightforwardly derive the *shift together* constraint, since every indexical within its scope will receive a shifted meaning.

However, cross-linguistic studies have shown that this might be too strong a claim. As first noted by Quer (2005) for Catalan Sign Language (LSC), some indexicals fail to shift even when they are under the scope of RS-NMMs. An example is (173), where the location indexical HERE retains its indexical meaning:

(173) $\overline{\text{IX}_a \text{ MADRID}_m \text{ MOMENT}}^{t}$ JOAN$_i$ $\overline{\text{THINK IX}_{1i} \text{ STUDY FINISH HERE}_b}^{\text{RS}_i}$
'When he was in Madrid, Joan thought he would finish his study here (in Barcelona).'
[Quer 2005: (6)]

In the above example, the first person indexical IX-1 is shifted towards *JOAN*, the reported speaker, while the locative indexical HERE denotes the actual place of utterance, Barcelona; this was taken by Quer (2005) as a counterexample to the *shift together* constraint proposed by Anand and Nevins (2004) for indexical shift in spoken languages.

[4] Although Schlenker (2017a) does not specifically discuss non-manual markers, it is clear that he takes them as the overt realization of RS-OP / 👻: he writes (p. 4) that role shift "[...] *in all cases involves at least body shift and eye gaze shift* (and possibly other non-manuals as well)" (emphasis in the original).

Similar data about the indexical HERE were found in Russian Sign Language (RSL, Kimmelman and Khristoforova 2018) and German Sign Language (DGS, Hübl 2013), as demonstrated in (174) and (175).

(174) IX-$3_a$ WOMAN PAST ST.PETERSBURG TELL$_b$ MAN IX-$3_b$ $\overline{\text{IX-1 WORK HERE}}^{\text{eg-r,h-r,b-r}}$
'A woman$_i$ when she was in St. Petersburg$_k$ told a man: "I$_i$ work here$_{k/m}$".'
[Kimmelman and Khristoforova 2018: (9)]

(175) PAST M-A-R-I-E HANNOVER IX$_l$ SAY $\overline{\text{HERE IX-1 LIKE LIVE}}^{\text{rs}}$
'When Marie was in Hannover she said that she would like to live in Göttingen.'
[Hübl 2013: (4)]

In (174), HERE can either refer to the actual place of utterance, Moscow (m), or to that of the attitude holder (the woman), St Petersburg. No such optionality is allowed in (175), which mirrors the LSC data in (173) above, where HERE unambiguously denotes the actual location, Göttingen. Hübl (2013) provides further evidence that a similar pattern can be found for the temporal indexical TODAY in DGS, (176):

(176) PAST WEDNESDAY M-A-R-I-E IX$_{3a}$ T-I-M$_{3b}$ BOTH EAT IX$_l$ $_1\overline{\text{INFORM}_2\ \text{IX}_1\ \text{LIKE TODAY DANCE}}^{\text{rs}}$
'On Wednesday, Marie and Tim ate together and she said that she would like to go dancing today.' [Hübl 2013: (5)]

While analogous data about other indexicals is scarce, it may be the case that some sign languages might similarly allow pronominal indexicals (most notably IX-1 and IX-2) not to shift while being scoped above by RS-NMMs; this is observed indeed in DGS, where Hübl et al. (2019) report that the second person form IX-2 can denote the actual addressee under RS:

(177) a. *Felicia says:*
IX$_1$ DREAM ANNA IX$_3$ LOTTO WIN
'I have dreamed that Anna won the lottery.'

b. *Tim reports to Anna:*
FELICIA $_3$INFORM$_1$ $\overline{\text{IX}_1\ \text{DREAM IX}_2\ \text{LOTTO WIN}}^{\text{rs}}$
'Felicia$_i$ told me$_T$, she$_i$ dreamed that you$_A$ won the lottery.'
[Hübl et al. 2019: (28)]

These results, where two different perspectives are mixed within one single clause, cannot be readily accounted for by the OOH: assuming, alongside Quer (2005) or Schlenker (2017a), that the operator is introduced at the topmost level of the embedded clause (and that consequently, RS-NMMs take scope over it), we do not expect to find indexicals that

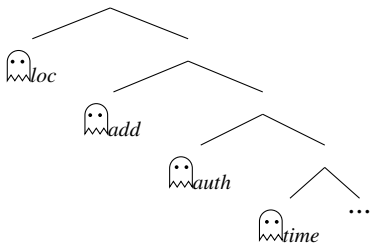
could escape RS-OP and still be evaluated against the actual context, just as HERE does in the above examples. It could be the case that, in (173)-(175), what actually happens is that HERE moves out of the scope of RS-OP at LF; but that would simply reconduct the problem one step further, since no motivation for movement of this kind has been independently provided in sign languages.

A second solution would be to assume that the languages above simply do not have the right kind of operator to shift locative indexicals. Deal (2020) provides extended evidence that shifty operators in spoken languages come in different varieties, based on what kind of indexicals are allowed to shift within a given language. For instance, while Matses (Panoan, Peru and Brazil) seems to allow shifting for all of its indexicals (Ludwig et al. 2010; Munro et al. 2012), it is not the case of Uyghur (Turkic; Xinjiang region, China), which only seem to shift person indexicals (Sudo 2012; Shklovsky and Sudo 2014).[5] Other languages are even more restrictive, allowing only for first person indexicals to shift - this seems to be the case of Slave (Athabaskan; Northwest Territories, Canada), as argued by Deal 2020 after Rice 1986). In order to account for this kind of variation, Deal (2020) proposes that shifty indexicals do in fact form an implicational hierarchy throughout languages, (178): if a given language allows a given class of indexicals to shift, it must also allow shifting of any class further on the left.

(178) **Implicational hierarchy of indexical classes** [Deal 2020: (101)]
Time > 1st > 2nd > Locative

In order to capture this variation, Deal (2020) proposes to expand the typology of 👻 so as they come into different varieties, depending on the kind of context parameter they can shift. She adopts a 'cartographic' approach where each operator appear in a dedicated position within the functional sequence, which ultimately explains the implicational hierarchy in (178):

(179)




Lexical bundling is allowed between two adjacent operators within the hierarchy, but not between non-adjacent classes of 👻 within the sequence. For instance, the entire sequence can be bundled together to form our primitive 👻 that shifts all indexicals within its scope,

[5] As pointed out by Yasu Sudo (p.c.), this generalization from Deal (2020) is actually too hasty: Shklovsky and Sudo (2014) actually only reported data about shifting of person and pointed out that some locatives, which seem to be a kind of demonstratives, do not shift. This does not necessarily imply that only person indexicals shift in Uyghur.

(130a); similarly, 👻$_{add}$ and 👻$_{auth}$ can be bundled together to yield a 👻 that only shifts person indexicals, (130b):

(180) a. $[\![👻\ \alpha]\!]^{g,c,i} = [\![\alpha]\!]^{g,i,i}$ (attested in Matses)

b. $[\![👻_{pers}\ \alpha]\!]^{g,c,i} = [\![\alpha]\!]^{g,<\mathbf{s(i)},\mathbf{a(i)},l(c),t(c)>,i}$ (attested in Uyghur)

c. $[\![👻_{auth}\ \alpha]\!]^{g,c,i} = [\![\alpha]\!]^{g,<\mathbf{s(i)},a(c),l(c),t(c)>,i}$ (attested in Slave)

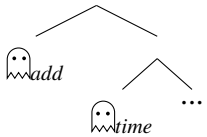
Adopting a finer-grained typology of 👻, such as the one outlined above, could explain why locative indexicals systematically fail to shift in LSC, RSL and DGS: those languages do not make use of 👻$_{loc}$, but only of 👻$_{pers}$, as in Uyghur; similarly, assuming that 👻$_{auth}$ is active in NGT explains the data of Hübl et al. (2019), in which 1st person is shifted, but not 2nd person:

(177) a. *Felicia says:*
IX$_1$ DREAM ANNA IX$_3$ LOTTO WIN
'I have dreamed that Anna won the lottery.'

b. *Tim reports to Anna:*
FELICIA $_3$INFORM$_1$ $\overline{\text{IX}_1\ \text{DREAM IX}_2\ \text{LOTTO WIN}}^{\text{rs}}$
'Felicia$_i$ told me$_T$, she$_i$ dreamed that you$_A$ won the lottery.'
[Hübl et al. 2019: (28)]

Since the kind of operator available in the language is eventually a matter of syntactic structure and not of the lexicon, a 👻 may only be present in the structure if those lower in the sequence are also realized. This excludes, for instance, a language that allows a structure to contain a 👻 that shifts only the addressee parameter, without also containing 👻$_{Auth}$, as defined in (130c):

(181) *




(182) $*[\![👻_{add}\ \alpha]\!]^{g,c,i} = [\![\alpha]\!]^{g,<s(c),\mathbf{a(i)},l(c),t(c)>,i}$ (unattested?)

We take issue with that claim, and will argue (§3.7) that NGT might dispose of 👻$_{Add}$ in its lexicon.

Another problem for the OOH is that shifted readings of indexicals are also attested in the absence of RS-NMMs, something unexpected if the latter are the overt realization of 👻: whenever absent, shifted readings should not obtain at all. The data from Hong-Kong Sign Language (HKSL) and Russian Sign Language (RSL) outlined above, however, provide examples of shifty person in the absence of RS-NMMs. This is what happens in

(183)-(184), where the 1st person singular IX-1 and the first person dual *WE-TWO* are interpreted as shifted:

(183) MOM SAY-2 $IX_1$ BUSY
✓ 'Mom said that she is busy.'
✓ 'Mom said that I am busy.'

(184) CONNIE SAY-2 WE-TWO FRIEND
✓ 'Connie$_i$ said that [she and her addressee] are friends.'
✓ 'Connie said that [you and I] are friends.' [Gan 2021: (8b)-(10b)]

It therefore seems that the OOH makes too strong a prediction: it is possible to find shifted indexicals without the presence of RS-NMMs and, conversely, to find unshifted indexicals under the scope of RS-NMMs. What is more, even a finer-grained version of the OOH that adopts the cartographic approach to monsters from Deal (2020) is unable to explain the kind of person shift observed in the NGT data that we expose in the next section.

## 3.3 Experiment

In order to investigate further the behavior of indexicals under RS, we designed an experiment to test whether RS-NMMs were required for a shifted meaning to obtain, with NGT as our target language. The experiment was carried out in two phases differing in the targeted conditions. Each phase utilized two methods: (i) felicity judgment task and (ii) identification task. Phase I involved 13 native deaf NGT signers(26 - 58 y.o; 5 males) coming from central and southern regions of the Netherlands (Amsterdam, Utrecht, Voorburg, Zoetermeer). More detailed information on the sociolinguistic characteristics of the participants can be found on the OSF platform. Ten participants out of the same group also participated in Phase II.

### 3.3.1 Procedure

Eleven participants took part in the experiment on-site, while the other two participated on-line via Zoom. All participants received instructions and information about the sharing of the personal information in NGT via videos recorded from native NGT research assistants. Both on-site ad online participants completed the experiment by filling in an online questionnaire a website, specifically created using jsPsych library (de Leeuw 2015).

First, participants received information on data sharing and general instructions, which were provided in NGT via a video recorded by a native NGT research assistant. Then, four main characters—T., M., C., and J.—were introduced along with their sign names. In an introductory video, character T. narrates that the four characters are friends who

attended a party together the day before. This preamble is necessary to establish a context in which J., T., M., and C. are likely to gossip among each other about what was said to whom during the party, thus creating a pragmatic environment where pronouns used in reported and direct speech could potentially have ambiguous references.

Subsequently, more specific instructions were given, followed by a training phase that involved the interpretation of locative pointing to ensure participants understood the instructions. The correct response to the stimuli in the training phase served as an exclusion criterion, and all participants successfully completed the training, demonstrating their understanding of the instructions.

During the main experimental phase, participants were presented with randomized target stimuli interspersed with control baseline stimuli. An incorrect response to a control baseline stimulus would lead to the exclusion of the respective participants. Fortunately, no participants provided incorrect responses to the control baseline stimuli

### 3.3.2 Stimuli

All stimuli were recorded by two pairs of research assistants, each comprising a deaf native NGT signer (representing T. and M.) signing the stimulus, and an NGT second language learner who assumes the role of the addressee for the signed sentence (representing C. and J.). Depending on the testing condition (explained in detail below), the stimulus includes either a video featuring both the context sentence (T. signs a simple sentence to C., as in (185a) and a video with the target sentence (M. reports to J. what T. signed to C., as in (185b), or solely the target sentence without context.[6]

(185) a. IX-1 LOVE CYCLING — T to C
'I love cycling.'

b. YESTERDAY T. C. MEET. T. SAY IX-1 LOVE CYCLING (RS-NMM) — M to J
'T. said I love cycling.' *video*

During the experiment, participants had the option to watch the videos as many times as they desired. However, once participants proceeded to the next stimulus by pushing the button, the system prevented them from returning to change their answers.

For each stimulus in the experiment, two tasks were presented consecutively: the felicity judgment task followed by the identification task, as described below.

#### Felicity judgements

First, each stimulus was presented for the felicity judgment task. In conditions with no context sentence, participants were asked to assess the sentence's acceptability using a

[6] For each stimulus, we provide a link to the video example. Note, however, that the text contained on the respective web-pages is in Dutch as it is in the original experiment.

5-point Likert scale. It was explained to the participant that a rating of "1" indicated that the sentence was entirely unacceptable, while a rating of "5" indicated that the participant would sign the sentence exactly as presented in the video.

When a context video was included, participants were prompted to determine whether the target sentence effectively conveyed the content of the context sentence. This evaluation was also conducted using the 5-point scale.

#### Identification task

After completing the felicity judgment task, the same stimulus was immediately presented for the identification task. Participants still had access to both the context video (if present) and the target video. Additionally, a GIF file depicting the pronoun used in the target stimulus was provided, as illustrated in a website screenshot in Figure 3.2. The task involved selecting an appropriate referent for the respective pronoun from a list of characters — T., C., M., and J. – by clicking on the corresponding sign name GIF. An option labeled 'None of the above' ('Geen daarvan' in Dutch) was included in case none of the characters could serve as a referent for the pronoun. Participants were permitted to select multiple characters if they found the reference of the pronoun to be ambiguous. The order of presentation for the GIFs in the character list was randomized for each stimulus.


Figure 3.2: The screenshot of the interpretation task. The text at the center of the image can be translated from Dutch as 'You can mark more than one option if you find it necessary.'

### 3.3.3 Testing conditions

The experiment encompassed three groups of conditions: (i) targeting the interpretation of different indexical pronouns (IX-1, IX-2, or both in one sentence), (ii) examining the

effects of the presence of RS-NMMs and (iii) examining the effect of the context. To comprehensively explore potential interactions, all possible combinations of the values of these three conditions were included in the experiment, thereby forming a *Latin cube*.

**Condition I: person value of the indexical pronoun**

This condition aims to investigate the impact of the person features of the indexical element on whether or not its interpretation aligns with the local context of the speech report. This investigation is conducted both independently and in interaction with Conditions II and III. For each value of this condition, three lexically distinct but grammatically analogous items were prepared. The values include:

- One indexical pronoun IX-1 appears in the subject position within the report (as in (185)); its reference is potentially ambiguous, referring either to the actual signer M. or the reported signer T.
- One indexical pronoun IX-2 appears in the subject position within the report (as in (186)); its reference is potentially ambiguous, referring either to the actual addressee J. or the reported addressee C.
- Two indexical pronouns appear in the report: IX-1 in the subject position (referring to either T. or M.) and IX-2 in the object position (referring to either C. or J.), as in (187).
- Another condition mirrors the previous one, involving both IX-1 and IX-2 in the subject and object positions, respectively. However, the original quote (context) does not contain IX-2; instead, it features the sign name of the actual addressee, J. See example (188).

(186) a. IX-2 SIGN VERY.WELL — T to C
'You sign very well!'

b. YESTERDAY T. C. MEET. T. SAY IX-2 SIGN VERY.WELL — M to J
'T. said You sign very well!' *video*

(187) a. IX-1 MISS IX-2 — T to C
'I miss you.'

b. YESTERDAY T. C. MEET. T. SAY IX-1 MISS IX-2 — M to J
'T. said I miss you.' *video*

(188) a. IX-1 SIGN BETTER THAN J. T to C
'I sign better than J.!'

b. T. SAY IX-1 SIGN BETTER THAN IX-2 M to J
'T. said I sign better than You!' *video*

### Condition II: RS-NMMs

This condition was designed to investigate the impact of RS-NMMs. In half of the stimuli (examples (185)-(189)), no RS-NMMs were present. This absence indicated that the signer's body, eye gaze, and head were oriented toward the actual addressee. The remaining half of the stimuli featured RS-NMMs.[7] In these cases (as in (189)), the signer's head, body, and eye gaze were directed away from the actual addressee, towards the right side of the actual signer.

It is important to note that the deaf research assistant portraying signer M. was instructed to perform RS-NMMs naturally, as they would in an actual conversation. To maintain conciseness, we will illustrate the RS-NMM counterpart of (185) as (189). However, it's crucial to highlight that this specific condition was tested for all values of Condition I.

(189) a. $\text{IX}_1$ LOVE CYCLING T to C
'I love cycling.'

b. YESTERDAY T. C. MEET.$\overset{\text{RS}}{\overline{\text{T. SAY IX-1 LOVE CYCLING}}}$ M to J
'Yesterday T. and C. met. T. said I love cycling.' *videos*

### Condition III: Influence of context

This condition explores whether presence vs absence of context had an impact on the results. Each combination of values from Conditions I and II was presented twice: once with the original quote recorded from T. and C. preceding the target report, and once without the quote. Unlike the previous conditions, this condition was not randomized. Consequently, participants first viewed all stimuli without the quote and then, in the second part of the experiment, viewed all stimuli with the quote.

The absence of randomization and the precedence of the reports without context provide an opportunity to examine whether indexical pronouns could receive an unshifted interpretation in the absence of contextual pressure. Contexts would usually favor a shifted interpretation. Introducing the original quote later in the experiment posed the risk of

[7] The scope of RS-NMMs was determined by the deaf research assistants according to their own intuition. However, this aligns with our observation in the corpus, where RS-NMMs, if present, also start on the speech predicate and scope over the entire construction.

participants becoming biased toward a shifted interpretation regardless of the values of the other conditions.

### 3.3.4 Results

The experiment results unveiled an unexpectedly high level of variation across participants. While this variation is not random, it enables the identification of consistent behavioral patterns within three distinct participant groups (Groups 1: 6 participants; Group 2: 3 participants; Group 3: 4 participants). In the upcoming sections, the results will be presented separately for these three groups. It is important to note that the grouping is based on a post-hoc examination of the results rather than formal cluster analysis.

An additional unexpected observation in the results is the distinct behavior exhibited by indexicals IX-1 and IX-2 concerning the RS-NMMs condition. We will begin by discussing stimuli involving IX-1, as illustrated in 190.

(190) a. IX-1 LOVE CYCLING T to C
'I love cycling.'

b. YESTERDAY T. C. MEET. T. RS-NMM: SAY IX-1 LOVE CYCLING M to J
'T. said I love cycling.' *video*

The identification task results for IX-1 are graphically depicted in Figure 3.3, averaging across Groups 1-3.[8] The various colors illustrate the proportions of shifted, non-shifted, and ambiguous interpretations of the first-person indexical. These interpretations are linked to the reported signer T. (light green), the actual signer M. (dark green), or an ambiguity between the two (violet), respectively. Columns within each Group represent different values of the RS-NMM condition.

The results in Figure 3.3 reveal that the interpretation of IX-1 remained unaffected by RS-NMMs for all participants. However, there are notable differences among participants in how they interpret IX-1. Specifically, Groups 1 and 2 consistently interpret IX-1 as shifted, i.e., referring to the reported signer T. Participants in Group 3, however, interpret IX-1 as non-shifted (referring to the actual signer M.) or as ambiguous between the two interpretations, as reflected by the fact that they selected both options.

Felicity scores, as shown in Figure 3.4, further underscore these group distinctions. While RS-NMMs, again, did not impact felicity scores for all participants, Group 3 signers assessed stimuli as infelicitous when the context stimulus (original quote) was present. Recall that the original quote invariably implied a shifted interpretation of IX-1 (T. consistently refers to themselves), which aligns with the interpretation of signers in Groups 1 and 2. These participants consistently interpret IX-1 as shifted, even in the absence

[8] Results for individual participants can be found on OSF platform

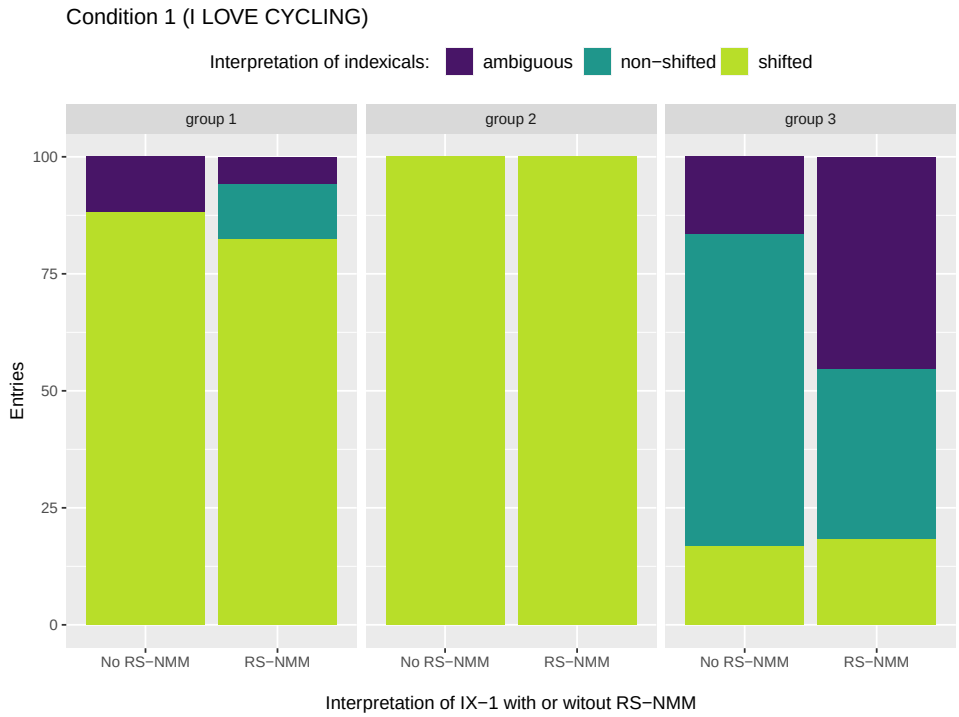



Figure 3.3: Interpretation task results for stimuli involving IX-1 grouped by different patterns of interpretation (Groups) and different values of the RS-NMM condition

of context and therefore the semantics of the context matches their expectations. However, signers in Group 3 interpret IX-1 as non-shifted, hence conflicting with what context sentence suggests leading to low felicity scores for the respective stimuli.

We now turn to the interpretation of IX-2, where the picture is drastically different. Let's examine the proportions of shifted interpretations (interpreted as the reported addressee C.), non-shifted interpretations (interpreted as the actual addressee J.), and ambiguous interpretations of IX-2, as illustrated in Figure X:"

Comparing Figures 3.3 and 3.5, one can observe that Group 2 consistently adhered to a shifted interpretation of indexicals, with no influence from RS-NMMs. However, Groups 1 and 3, even though they displayed different preferences in interpreting IX-1, now both demonstrate sensitivity to the presence of RS-NMMs. Therefore, when RS-NMMs are present, participants from Groups 1 and 3 also tend to choose a shifted interpretation for IX-2. On the other hand, without RS-NMMs, these participants lean towards a non-shifted or ambiguous interpretation.

In summary, while RS-NMMs did not affect the interpretation of IX-1, even though the interpretation itself varied across groups, for IX-2, the presence of RS-NMMs enforced a shifted interpretation for two out of three groups of signers. Similarly, the felicity scores provided for stimuli involving IX-2 reflect the same effects. As shown in Figure 3.6, signers from Groups 1 and 3 assign low felicity scores to stimuli with IX-2 when RS-NMMs are absent but context is present, thus promoting a shifted interpretation. In this case, participants in Groups 1 and 3 encounter conflicting cues, leading to low felicity

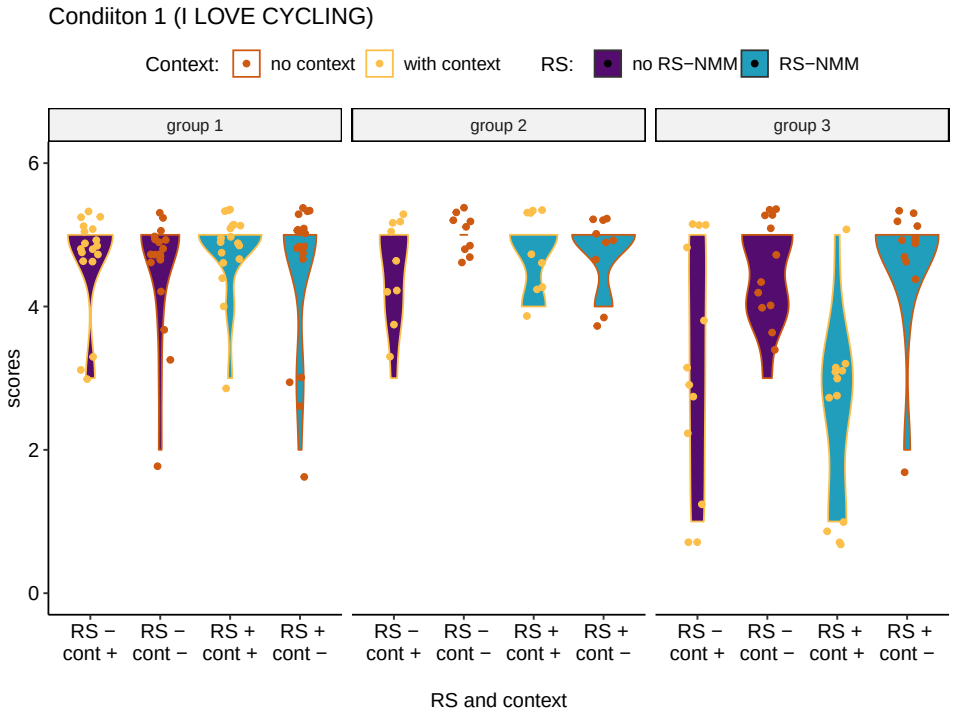



Figure 3.4: Felicity judgement results for the stimuli involving IX-1 grouped by different patterns of interpretation (Groups) (different windows) and different values of the RS-NMM and context conditions (different filling an contour colors, respectively).

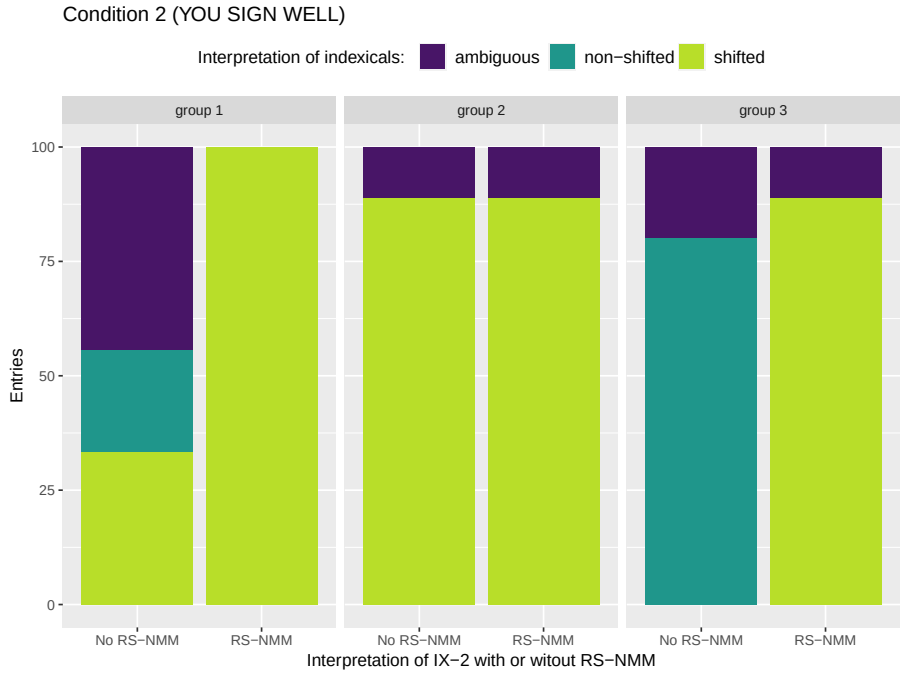



Figure 3.5: Interpretation task results for the stimuli involving IX-2 grouped by different patterns of interpretation (Groups) and different values of the RS-NMM condition

scores.

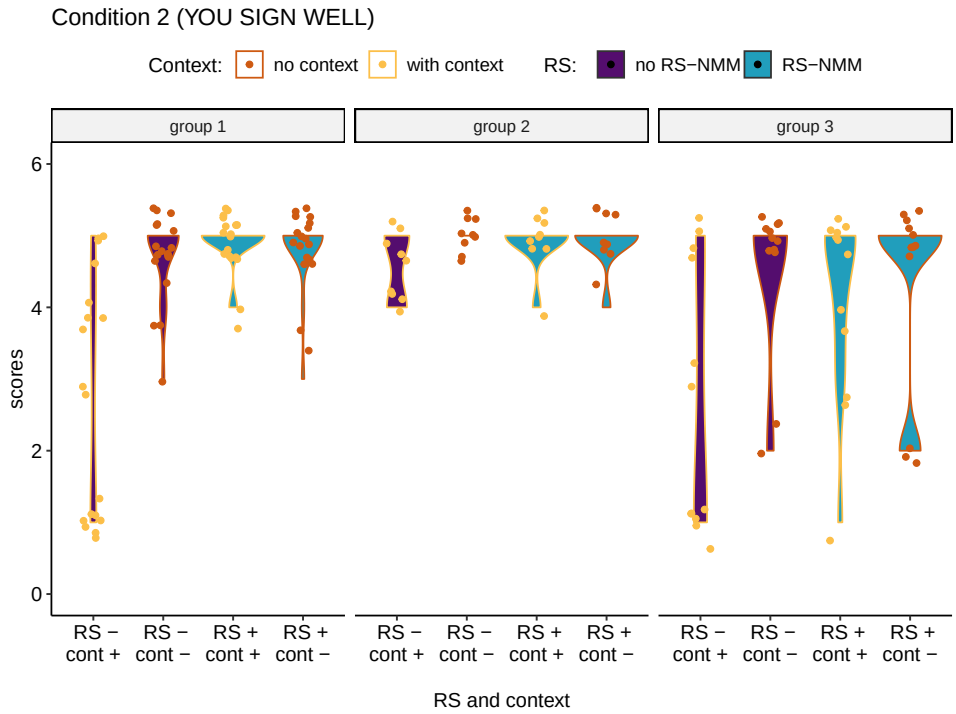



Figure 3.6: Felicity judgement results for the stimuli involving IX-2 grouped by different patterns of interpretation (Groups) (different windows) and different values of the RS-NMM and context conditions (different filling an contour colors, respectively).

The difference in context sensitivity between IX-1 and IX-2 straightforwardly predicts that signers in Group 1 and 3 will violate Shift Together Constraint, when both IX-1 and IX-2 since these signers are sensitive to RS-NMMs when interpreting the former but not the latter. As illustrated in Figure 3.7, this is indeed the case.

Figure 3.3.4 demonstrates that, despite being within a single clause, the distinct interpretations of IX-1 and IX-2 remain intact, mirroring the results for the respective pronouns in isolation. In Figure 3.7, we can observe the proportions of examples where this divergent interpretive behavior of indexicals in different groups leads to mixed indexicality, i.e. one indexical is interpreted in the global context and the other in the local context of the report.

### 3.3.5 Discussion

The results of the experiment raise two important questions:

1. Assuming that the OOH is too strong, what is the status of RS-NMMs in role shift production?

2. How is the difference between the behavior of 1st vs. 2nd person to be accounted for?

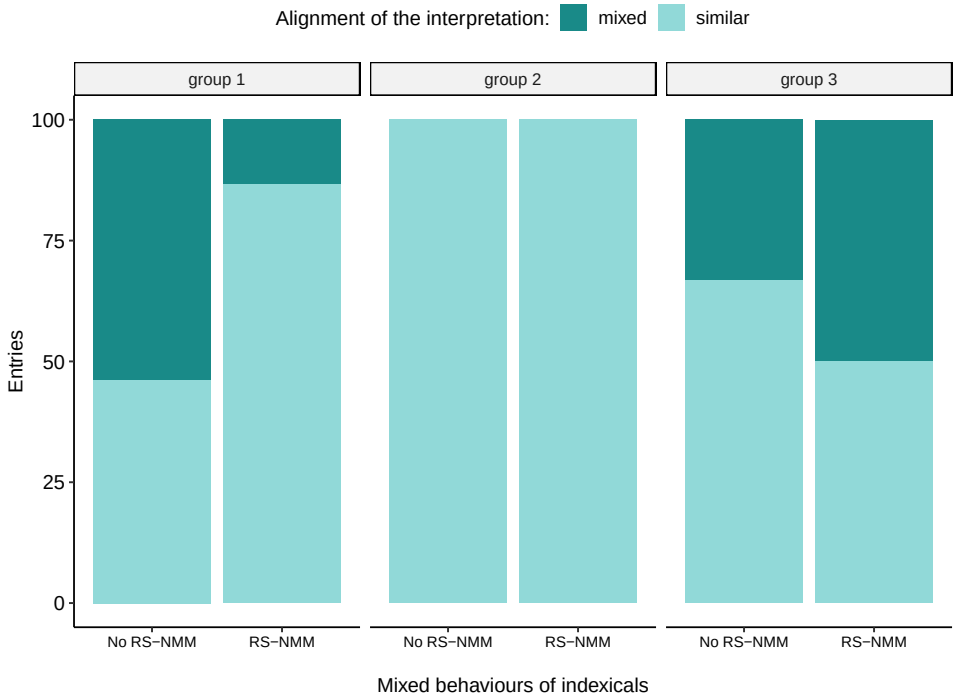



Figure 3.7: Proportions of mixed indexicality (one indexical in the report is shifted, one is not).

As we have seen, our results confirm that a strong version of the OOH cannot be maintained for 1st person: indeed, while 2nd person seems well-behaved in that respect and could fully be captured by the OOH, 1st person seems to be drastically insensitive to RS-NMMs across items and conditions. The results for the stimuli involving 1st and 2nd person indexicals within the same clause speak in favor of a discrepancy that seems to be inherent to the lexical specifications of 1st vs. 2nd, and not to some other factor related to the production of RS-NMMs themselves, for instance. All in all, the results seem to confirm that RS-NMMs are neither necessary nor sufficient for shifting of 1st person, an hypothesis that was already suggested in earlier work by Kimmelman and Khristoforova (2018) about RSL.

On a more theoretical level, our results are also at odds with the version of the shifty operator theory of Deal (2020) discussed in §3.2: according to her hypothesis, no language could allow shifting of the 2nd person without also allowing shifting of the 1st person: shifty languages make use of either person-shifting operators such as $\text{👻}_{pers}$, or author-shifting operators such as $\text{👻}_{auth}$, but according to Deal (2020), there is no evidence of a language making use of an 2nd-person-only shifting operator, as defined in (130c) repeated here.

(180) a. $[\![\text{👻}\ \alpha]\!]^{g,c,i} = [\![\alpha]\!]^{g,i,i}$ (attested in Matses)

b. $[\![\text{👻}_{pers}\ \alpha]\!]^{g,c,i} = [\![\alpha]\!]^{g,<\mathbf{s(i)},\ \mathbf{a(i)},l(c),t(c)>,i}$ (attested in Uyghur)

c. $[\![\text{👻}_{auth}\ \alpha]\!]^{g,c,i} = [\![\alpha]\!]^{g,<\mathbf{s(i)},a(c),l(c),t(c)>,i}$ (attested in Slave)

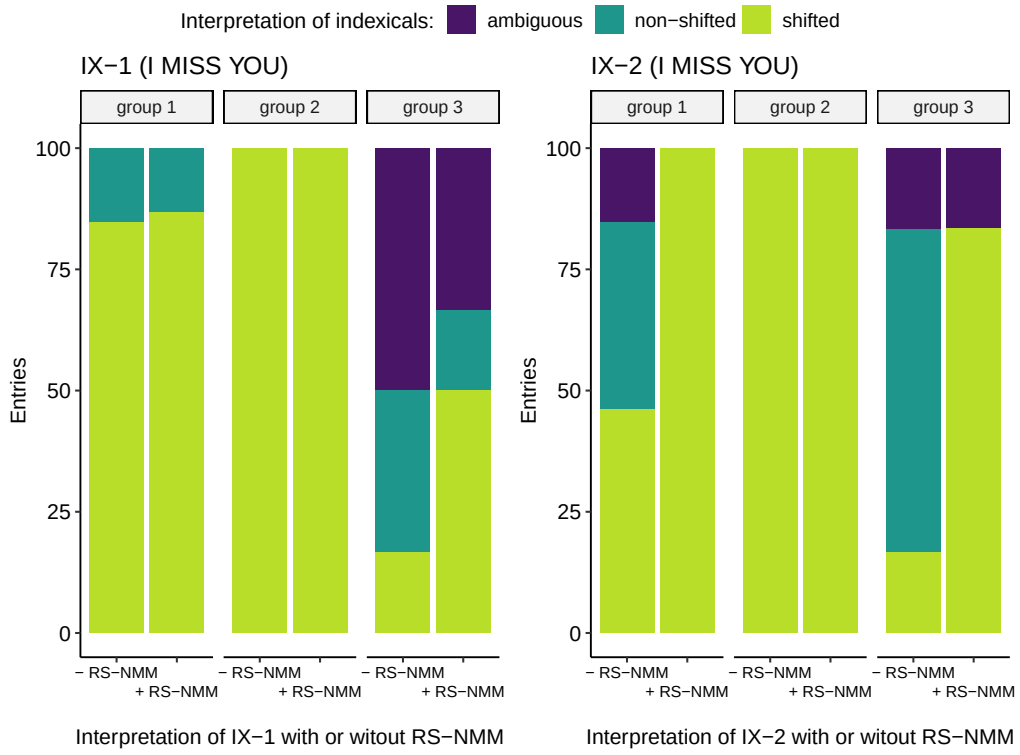



Figure 3.8: The results of the interpretation task for IX-1 + IX-2

(130c) $*[\![\text{ghost}_{add}\ \alpha]\!]^{g,c,i} = [\![\alpha]\!]^{g,<s(c),\mathbf{a(i)},l(c),t(c)>,i}$ (unattested?)

We argue, given the experimental evidence discussed above, that the OOH should be maintained, but that the typology of 👻 be modified in order to incorporate $\text{👻}_{add}$ readily available in NGT. This explains the behavior of the 2nd person pronoun under RS, which consistently shifts whenever under RS-NMMs. On the other hand, we will explore a different analytical path in order to explain the behavior of $\text{IX}_1$, and argue that it should better be analyzed as a syncretic first-personal logophoric element, similar to those found in some African languages (Hagège, 1974). This is what we dedicate the remainder of this paper to.

## 3.4 Person features in sign languages

Pronominal systems of sign languages make use of an abstract signing space, consisting in the area facing the signer, divided into the *ipsilateral* and *contralateral* regions (regions of space located to the side of the dominant signing hand and the non-dominant signing hand, respectively). First-person pronouns are usually signed with the index touching the signer's chest, while 2nd person is signed in the opposite direction, towards the addressee; depending on the addressee's position (e.g., if the addressee is standing next to the signer), the sign could be directed towards this position. Third person pronouns can be signed anywhere else in the signing space; when anaphoric, that space is usually a *locus* that

has previously been assigned to a discourse entity, allowing signers to track reference in space.

This overview is by and large too simple, and pronominal reference in sign language is arguably a much more complicated matter in at least two respects. First, while some scholars maintained a standard tripartite system in the analysis of sign language pronouns (Berenz 1996, 2002, Alibasic and Wilbur 2006, Meurant 2008, Veiga Busto 2022 i.a.), others - starting with Meier 1990 - argued that SLs only used a bipartite system, distinguishing first person vs. non-first, without a second-third distinction (Engberg-Pedersen 1993; McBurney 2002; Lillo-Martin and Meier 2011). Second, most of current formal research on sign language pronouns has focused primarily on third person pronouns and their potentially associated *loci*, leading to a heated debate about the formal role of those in the grammar of sign languages (Lillo-Martin and Klima 1990, Neidle et al. 2000, Schlenker et al. 2013, Schlenker 2014, Kuhn 2016, Koulidobrova and Lillo-Martin 2016, Ahn 2019 i.a.).

There was, however, no single attempt that we know of that aimed at offering a general account of person features, regardless of their type (indexical vs. non-indexical), as it is in general offered for spoken languages (Zwicky 1977; Harley and Ritter 2002; McGinnis 2005; Bobaljik 2008; Ackema and Neeleman 2013, 2018, 2019; Harbour 2016; Sauerland and Bobaljik 2022). In what follows, we will try to make a case in suggesting that the puzzling NGT data can be felicitously accounted for once integrated within a comprehensive theory of person features, and the way such features interact with role shift constructions in sign languages.

### 3.4.1 First vs. second person reference

Meier (1990) famously argued that sign languages realize a first vs. non-first distinction, *in lieu* of a tripartite distinction such as the one commonly observed in spoken languages. His arguments build on different morphological and syntactic properties of first person forms across SLs, such as the fact that only first person pronouns may have different realizations in terms of location (e.g., in Japanese Sign Language, where first person is signed on the nose rather that the chest, ref) or in terms of shape (as in LIBRAS, the Brazilian Sign Language, where a distinctive B-handshape must be used for possessives when inflected for the first person, ref). Another argument put forth by Meier (1990) involves the interpretation of first person reference under role shift, which always get shifted reference, while other forms behave differently: "in direct quotation, a first person point contacting the center of the signer's chest is interpreted as referring to the quoted signer, not to the actual signer. Non-first forms always pick out the referent pointed to." (Lillo-Martin and Meier 2011; 101). This, however, proves to be wrong, as non-first person forms (including *loci*-indexed proforms) may equally shift under RS.

Meier's claim has been challenged since, with many claiming that second person is equally grammaticalized in sign languages. In her in depth-study of the LIBRAS pronominal system, Berenz (1996) argues that pronominal reference in SLs makes use of a complex system involving not only dedicated handshapes (such as the pointing index), but a complex system involving non-manual as well as spatial cues, constructed using the body of the signer as referent. As Berenz (2002, 207-208) puts it, "First and second person pronouns are, respectively, the proximal and distal members of an opposition within the plane at the vertical axis of the signer's body (the midline). Deviations from these forms can be accounted for on the basis of additional meanings not directly relevant to the semantic notion of person, or exigencies of particular communicative situations which distort articulation in predictable ways". Each person is thus phonologically realized using an 'articulatory array' consisting in both a sign's handshape, but also the eyegaze, chest and body of the signer, conceptualized around the midline of the signer's body. According to Berenz, second person is thus grammatically encoded in sign languages, being definable in terms of a set of spatial coordinates realized as a pointing hanshape facing away from the signer's body, and aligned with the eyegaze of the signer - the eyegaze being one of the four coordinates that the model takes into account. A relevant case for assessing the role of eyegaze in determining the addressee's grammatical status in the person system is precisely that of role shift, where the signer shifts his body position towards the locus of the reported signer (if given any; otherwise, this position will simply be any given point in the signing space that deviates from the central line); as Berenz (2002, 211) notes, "the default position for a hypothetical addressee is directly opposite the signer in the role of reported sender", providing evidence that second person is grammaticalized somehow in the linguistic system, allowing its value to shift from actual to reported context, and not relying purely on deixis, as Meier (1990) argues. Similar arguments from role shift have been put forth by Alibasic and Wilbur (2006) for Croatian Sign Language (HZJ), and by Meurant (2008) for Sign Language of Southern Belgium (LSB), although the relation between eye gaze and person marking was not confirmed for American Sign Language (Thompson et al., 2013).

### 3.4.2 The person inventory of NGT

In what follows, we will therefore follow Berenz 1996, 2002 and the aforementioned authors in assuming that NGT, alongside LIBRAS, ASL, HZJ, LSB and LSC also grammatically encodes addressee reference within its pronominal system using a complex of both manual and non-manual morpho-phonological features, thus allowing a tripartite opposition between first, second and third person, akin to that posited for spoken languages.

Following Sauerland (2003), McGinnis (2005), Bobaljik (2008), Sauerland (2008b), Harbour (2016), Sauerland and Bobaljik (2022), among many others, we take person

features in (34) to be universally active across languages (where 1, 2, 3 stand for the respective persons):

(191) a. 1: [PART(ICIPANT), AUTHOR]

b. 2: [PART]

c. 3: [ ]

In line with most current research in the semantics of person (Cooper 1983; Heim 2008; Sauerland 2008b; Stokke 2010; Charnavel 2019a, Sauerland and Bobaljik 2022 a.o.), we take person features to be interpreted as presuppositions, i.e. partial functions of type ⟨e,e⟩ that restrict the domain of interpretation of the expression they are associated with (the pronoun itself being treated as a variable, cf. Heim and Kratzer 1998); since 3rd person pronouns are devoid of person features, no entry is associated with them.

(192) a. $[\![\text{AUTHOR}]\!]^{g,c,i} = \lambda x : s(c) \sqsubseteq x.x$

b. $[\![\text{PART}]\!]^{g,c,i} = \lambda x : s(c) \sqsubseteq x \vee a(c) \sqsubseteq x.x$

As assumed in e.g. Heim and Kratzer (1998), pronouns are functions from indices on variables to individuals: we analyze indexicals as standard pronouns being restricted by context-dependent presuppositions (Heim 2008; Charnavel 2019b).

(193) a. $[\![\ \text{IX-}1_n\ ]\!]^{g,c,i} = \begin{cases} g(n) \text{ if } s(c) \sqsubseteq g(n) \\ \text{undefined otherwise} \end{cases}$

b. $[\![\ \text{IX-}2_n\ ]\!]^{g,c,i} = \begin{cases} g(n) \text{ if } s(c) \sqsubseteq g(n) \vee a(c) \sqsubseteq g(n) \\ \text{undefined otherwise} \end{cases}$

c. $[\![\ \text{IX}_n\ ]\!]^{g,c,i} = g(n)$[9]

Following Sauerland (2008b) and Sauerland and Bobaljik (2022) i.a., a mechanism of presupposition maximization (Heim, 1991)[10] applies in order to ensure that the most specified form is used whenever possible: if, for instance, a person endowed with a part feature is used, this triggers a negating inference over the stronger/more specific form AUTHOR, disallowing exclusive first person reference and correctly singling out the addressee as referent.

[9] Importantly, this entry concerns only the pronominal use of the pointing gesture IX without its locus component (i.e. this entry is different from that of $\text{IX}_{loc}$); in this we follow Ahn (2019), who analyzes the LOC component associated with the locus as a modifier.

[10] Sauerland and Bobaljik (2022) use a version of the exhaustification operator (Fox and Hackl 2006; Chierchia et al. 2012) applied to predicates alongside a presuppositionalizing morpheme realizing the $\delta$-operator of Beaver and Krahmer (2001). This essentially achieves the same result as Heim's *Maximize Presupposition!* principle adopted here.

## 3.5 A logophoric analysis of *IX-1*

Going back to the results of our experiment, the question is the following: how can we explain the systematic interpretative differences observed between IX-1 and IX-2 in the experiment results? Recall that, among our participants, one group (Group 1) systematically assigned a shifted reading to the 1st person, even in the absence of RS-NMMs, while another group (Group 3) showed the opposite pattern, consistently assigning to first person forms an unshifted meaning even when under the same RS-NMMs.

The reason for this, we argue, lies in the lexical properties of IX-1 compared to its second person counterpart: in NGT (as in probably other sign languages), IX-1 is actually ambiguous between a genuine indexical and a logophoric pronoun, similar to those found in West-African languages. This hypothesis was first outlined in Lillo-Martin (1995), where it was motivated by an analysis of role shift as syntactically subordinate . Although our proposal is similar, we do not make any claims with respect to the syntactic status of the constructions discussed here. However, a number of distributional as well as interpretive similarities can be invoked to support this claim. For instance, as reported by Curnow (2002b) and Deal (2018) i.a., a number of languages exhibit 'first-person logophoricity', whereby first person can be used in reported speech constructions to refer to the author of the reported speech act. This is illustrated in (12) for the language Donno Sɔ(Niger-Congo, Mali):

(194) a. *Oumar inyemɛ jɛmbɔ paza bolum miñ tagi*
Oumar LOG sack.DEF drop left.1SG 1SG.OBJ inform.PST

'Oumar$_i$ told me that he$_i$ had left without the sack.'

b. *Oumar ma jɛmbɔ paza boli miñ tagi*
Oumar 1SG.SBJV sack.DEF drop left.3SG 1SG.OBJ inform.PST

'Oumar$_i$ told me that he$_i$ had left without the sack.'

[Donno Sɔ, Culy 1994b: (20)]

In (12), the embedded verb *bolum* is inflected for the first person, in spite of the agreement controller being the logophoric form *inyemɛ*, which does not carry first person features under standard assumptions. This type of mismatch can also occur if the system does not have a specific logophoric pronoun, but where third person subjects trigger first person agreement in the embedded clause, as in the language Karimojong (Nilotic):

(195) *àbu papà tolim ɛbè àlózì iŋèz morotó*
AUX father say COMP 1SG.go.NPST 3SG Moroto

'Father$_i$ said that he$_i$ was going to Moroto.'

[Karimojong, Curnow 2002b: (18)]

Here, the third person pronoun *iŋèz* triggers first person agreement on the embedded verb, the sentence being used in order to express co-reference between the matrix and embedded subjects (the father). Yet another relevant example comes from Aqusha Dargwa, a language spoken in the Caucasus, which uses 1st person agreement on the verb as a logophoric marker:

(196) a. *ʔlis hanbikib [nu q'an* ***iub-ra*** *ili]*
Ali think.PST.3SG 1SG late became.**1** COMP

✓'Ali$_i$ thought that he$_i$ was late'
✓'Ali$_i$ thought that I was late'

b. *ʔlis hanbikib [nu q'an* ***iub*** *ili]*
Ali think.PST.3SG 1SG late became.**3** COMP

✗'Ali$_i$ thought that he$_i$ was late'
✓'Ali$_i$ thought that I was late'

[Aqusha Dargwa, adapted from Ganenkov 2021: (10-11)]

The sentence in (137a) is ambiguous between an indexical reading (where the embedded 1SG pronoun and agreement marker both refer to the actual speaker) and a shifted reading (where they refer to the author of the report, Ali), mirroring the Karimojong data. Crucially, sentence (137b), where the embedded subject is 1SG but the verb is inflected for third person, lacks the shifted interpretation. What these examples illustrate is that, in those languages, the logophoric marker shares some morphosyntactic and semantic properties with a genuine first person form, triggering similar agreement patterns in reported speech environments.

A number of sign language data actually suggest that similar patterns can be found in the visual modality. For instance, Barberà and Quer (2013) show that in LSC, generic and impersonal subjects have the ability to trigger role shift:

(197) MOMENT FUTURE TOCA PERSON OLD, OFTEN EXPLAIN +++ $\overline{\text{IX}_1 \text{ PAST LIST } 1\text{-}4_{bim}}^{\text{RS}}$
'When one gets old, one often tell stories about the past.'

(198) PERSON+++ SAME $\overline{\text{MISTAKE}}^{\text{RS}}$ LIST $1\text{-}4_{bim}$ ADMIT NEVER. ALWAYS FRIEND $\text{IX}_{3-pl-a}$ AUTHOR $\overline{{}_3\text{WARN}_1}^{\text{RS}}$ LIST $1\text{-}4_{bim}$ $\overline{\text{YES RIGHT}}^{\text{RS}}$
'One never admits one's own mistakes. It's always friends who tell you about them.' [Barberà and Quer 2013: (19-20)]

The ability of quantifiers and impersonal subjects, which are not specified with an AUTHOR feature, to trigger both role shift and first person agreement is quite puzzling, and can be taken to mirror the logophoric language data introduced above.

Yet another argument comes from ellipsis structures and the availability for the first person IX-1 to give rise to so-called 'strict-sloppy' ambiguities under role shift. As argued by Cecchetto et al. (2015), a restriction seems to arise in Italian Sign Language (LIS) in configurations involving role-shifted indexicals in ellipsis constructions: when the antecedent contains a role-shifted indexical, it cannot be interpreted 'strictly' in the ellipsis site, contrary to its third person counterpart (similar data are provided for ASL by Lillo-Martin 1995). This restriction is illustrated in (199a) and (199b).

(199) a. GIANNI$_a$ SAY IX$_{3a}$ MARIA KISS. PIERO SAME.
'Gianni$_a$ said that he$_a$ kissed Maria. Piero$_b$ ⟨said that he$_{a/b}$ kissed Maria⟩, too.' (strict, sloppy)

b. GIANNI$_a$ SAY $\overline{\text{IX}_{1a}\ \text{MARIA KISS}}^{\text{RS}_a}$. PIERO SAME.
'Gianni$_a$ said that he$_a$ kissed Maria. Piero$_b$ ⟨said that he$_{*a/b}$ kissed Maria⟩, too.' (sloppy only)

[LIS, adapted from Cecchetto et al. (2015): 229]

The absence of strict reading in sentences like (199b) leads Cecchetto et al. (2015) to posit a copy of 👻 within the ellipsis site: since the silent indexical in (199b) can only be interpreted as referring to the external argument of the elided verb SAY, i.e., *Piero*, the lack of the other reading follows from the presence of an elided context-shifting operator in the elided clause, henceforth blocking a strict interpretation. However, as demonstrated by Blunier and Zorzi (2020), no such blocking is attested in LSC, where both sentences license strict and sloppy interpretations.

(200) a. SECRETARY$_a$ SAY IX$_{3a}$ JOSEP$_b$ $_{3a}$PRESENT-GIVE$_{3b}$, IX$_{3c}$ GIORGIA$_c$ TOO.

b. SECRETARY$_a$ SAY $\overline{\text{IX}_{1a}\ \text{JOSEP}_b\ {}_{1a}\text{PRESENT-GIVE}_{3b}}^{\text{RS}_a}$, IX$_{3c}$ GIORGIA$_c$ TOO.
'The secretary$_a$ said that she'll give a present to Josep, Giorgia$_c$ ⟨said that she$_{a/c}$ will give a present to Josep⟩, too.' (strict, sloppy)

[Blunier and Zorzi 2020: (7-8)]

The only factor crucial in predicting strict-sloppy alternations in these examples are contextual, leading Blunier and Zorzi (2020) to assume that implicit Questions Under Discussion (QUDs; Roberts 1996) are ultimately relevant for ellipsis computation here. What is of importance in the above examples, however, is that the first person remains somewhat 'uninterpreted' under ellipsis, a phenomenon well-established for person features (and $\phi$-features more generally) in both spoken and sign languages.[11]

Again, logophoric pronouns seem to share essentially the same properties: as Bimpeh et al. (2023) show for Ewe, logophors are subject to the same strict/sloppy alternations as

[11] In fact, the phenomenon seems to be more general, allowing features to remain uninterpreted under focus-sensitive operators such as *only* and other presupposition triggers (Heim 2008; Jacobson 2012; Sudo 2012; Sauerland 2013; Bassi 2019).

their sign language first person counterparts in both ellipsis and other alternative-sensitive contexts such as structures involving the focus operator *only*:

(201) *Élì lè mʉ-kpʉ-m bé yè á dè Àblá. Yàó hã.*
Eli COP path-see-PROG COMP LOG IRR marry Abla. Yao too.

'Eli$_i$ hopes that he$_i$ will Marry Abla. Yao$_j$ does ⟨ ... ⟩ too.'
✓ Yao hopes that Yao will marry Abla, too. (sloppy reading)
✓'Yao hopes that Eli will marry Abla, too. (strict reading)

(202) *Élì kò yé súsú bé yè dùdzí lè àwù-dódó fé hòwíwlí mè.*
Eli only FOC think COMP LOG win in-dress wear POSS contest inside

'Only Eli thinks that he won the costume contest.'
✓ No one$_i$ but Eli think they$_i$ won the costume contest. (sloppy reading)
✓ No one but Eli$_j$ think he$_j$ won the costume contest. (strict reading)
[Bimpeh et al. 2023: (13)-(9)]

Bimpeh et al. (2023) provide further evidence for similar patterns in the languages Igbo and Yoruba (Niger-Congo, Nigeria). Last, a crucial property shared by both role-shifted indexicals and logophoric pronouns is their ability to be read *de se* (Schlenker 1999, 2003; Anand 2006; Schlenker 2017a, 2017b; Bimpeh et al. 2022, 2023). This is illustrated for ASL and Ewe in the following examples:

(203) *Context: We showed John lots of videos of people's hands signing — including videos of John signing. When we show him the video of his hands, John doesn't recognize himself, and says: 'He signs well.'*

a. IX$_a$ JOHN THINK IX$_a$ SIGN GOOD
'John$_i$ thinks that he$_i$ signs well.' (Judgments: 6, true)

b. IX$_a$ JOHN THINK $\overline{\text{IX}_a \text{ SIGN GOOD}}^{\text{RS}}$
'John$_i$ thinks that he$_i$ signs well.' (Judgments: 2, false)

[Adapted from Schlenker 2017a: (16-18)]

(204) *Context: an Asian woman was declared missing from a party touring the Eldgjá volcanic region in south Iceland after getting off the party's bus to freshen up. She only hopped off the bus briefly, but had also changed her clothes - and her fellow travelers did not recognize her when she climbed back on again to continue the party's journey. When the details of the missing person were issued, the woman*

*reportedly didn't recognize her own description [woman with a pink sweater] and unwittingly joined the search party for herself.*

a. *Asia nyɔnu la xɔese be é bú*
Asian woman DEF believe.3SG COMP 3SG be

'The asian woman$_i$ believes that she$_i$ is lost'

b. #*Asia nyɔnu la xɔese be yè bú*
Asian woman DEF believe.3SG COMP LOG be

'The asian woman$_i$ believes that she$_i$ is lost'

[Ewe, Bimpeh 2019: (15-16)]

### 3.5.1 Logophoricity: a featural approach

The above examples suggest that both logophoric and indexical pronominal forms in these languages share a common interpretive core. In order to account for this similarity, The present work (chap. 2) proposes an analysis of logophoric systems such as the ones of Ewe and Karimojong based on the idea that logophoric pronouns are essentially first personal elements lacking an ACTUAL feature, allowing them to remain underspecified with respect to the context in which they are interpreted. We assume, following Schlenker (2003), that attitude verbs are quantifiers over contexts that are able to bind contextual variables on first and second pronouns: they thus always come endowed with a context variable $c$ of type $k$. Under this approach, logophoric pronouns are first person pronouns that obtain their reference from a speech or thought context distinct from the context of utterance via binding of this variable $c$ by an attitude verb, such as *say*; following Schlenker (2003), attitude verbs are conceived as quantifiers over contexts.

(205) $[\![\text{say } c_i\ \phi]\!]^g = \lambda x.\lambda w.\forall c'$ compatible with what $x$ says in $w : [\![\phi]\!]^{g[c_i \to c']}$

Pronominal systems that express logophoric pronouns are endowed with the set of features in (206), and are interpreted as in the lexical entries in (207) (in which the utterance context is marked in the metalanguage with the diacritic $^*$):

(206) **Featural system of languages with speaker logophors**

a. $\text{I}_5 = [[[[pro_5\ c^*]\ \text{PART}]\ \text{AUTHOR}]\ \text{ACTUAL}]$

b. $\text{LOG}_4 = [[[pro_4\ c_i]\ \text{PART}]\ \text{AUTHOR}]$

c. $\text{you}_2 = [[pro_2\ c_i]\ \text{PART}]$

d. $\text{it}_7 = pro_7$

(207) a. $[\![ \text{I}_5\ c^* ]\!]^{g,c^*} = \begin{cases} g(5_{c_i}) \text{ if } s(c^*) \sqsubseteq g(5_{c_i}) \\ \text{undefined otherwise} \end{cases}$

b. $[\![ \text{LOG}_4\ c_i ]\!]^{g,c^*} = \begin{cases} g(4_{c_i}) \text{ if } s(c_i) \sqsubseteq g(4_{c_i}) \\ \text{undefined otherwise} \end{cases}$

c. $[\![ \text{you}_2\ c_i ]\!]^{g,c^*} = \begin{cases} g(2_{c_i}) \text{ if } s(c_i) \sqsubseteq g(2_{c_i}) \vee a(c_i) \sqsubseteq g(2_{c_i}) \\ \text{undefined otherwise} \end{cases}$

$[\![ \text{it}_7 ]\!]^{g,c^*} = g(7)$

Such pronominal systems differ from English-like systems in the way they realize the ACTUAL feature. ACTUAL is not a person feature *per se* but, as it names indicates, a kind of contextual feature (of type $< k,k >$) that restricts evaluation of the person feature it attaches to to the actual context of utterance:

(208) $[\![ \text{ACTUAL} ]\!]^{g,c^*} = \lambda c_i : c_i = c^*.c_i$

The ACTUAL feature is therefore to be thought of as the primitive of indexicality, as defined in Kaplan (1977); it ensures that the referent of the variable is included or equals a participant coordinate (author or addressee) of the actual context. While the ACTUAL and AUTHOR features can be syncretic, as in English, they can also be distributed over distinct pronominal forms in logophoric languages, which possess a logophoric pronoun in addition of a first person form; this is a case of person split, as independently attested in the person domain for other features (e.g., number; see Bobaljik 2008, Ackema and Neeleman 2013 i.a.).

A consequence of this 'featural view' of indexicality is that, in some systems, ACTUAL may not be realized in the pronominal paradigm. In that case, the first person is only specified with an AUTHOR feature, and can be interpreted as both the speaker/author of both index and context - that is, these forms are shiftable indexicals. This is the case of systems such as that of Aqusha Dargwa:

(209) **Pronominal system of shifting indexicals languages**

a. $\text{I}_4 = [[[pro_4\ c_i]\ \text{PART}]\ \text{AUTHOR}]$

b. $\text{you}_2 = [[pro_2\ c_i]\ \text{PART}]$

c. $\text{it}_7 = pro_7$

(210) a. $[\![ \text{I}_4\ c_i ]\!]^{g,c^*} = \begin{cases} g(4_{c_i}) \text{ if } s(c_i) \sqsubseteq g(4_{c_i}) \\ \text{undefined otherwise} \end{cases}$

b. $[\![ \text{you}_2\ c_i ]\!]^{g,c^*} = \begin{cases} g(2_{c_i}) \text{ if } s(c_i) \sqsubseteq g(2_{c_i}) \vee a(c_i) \sqsubseteq g(2_{c_i}) \\ \text{undefined otherwise} \end{cases}$

$$[\![ \text{it}_7 ]\!]^{g,c^*} = g(7)$$

The main difference between such pronominal systems and both English-like and logophoric systems is that, in the latter, first and second person forms consist in a person feature augmented with an ACTUAL feature. An important component of the system is that context-shifting is brought about by binding of the context variable in the pronoun by the attitude verb; such binding, however, is only optional, since the variable could in principle be assigned the default value of $c^*$, the value assigned to the utterance context: if the context pronoun $c_i$ is unbound, it is identified with the context variable $c^*$, resulting in an unshifted reading; if $c_i$ is bound at the embedded level, the context pronoun is bound by the binder introduced by *say*, and the shifted reading obtains. This derives optional shiftiness across shifty systems, accounting for the dominant tendency found in the typology of these languages (cf. Sundaresan 2018, Deal 2020).

Getting back to our data, the behavior of the IX-1 in NGT as observed in the experiment results suggests that it should be given a similar semantics as that of the first person in indexical-shifting languages such as Aqusha Dargwa: namely, a variable presuppositionally restricted with a person feature AUTHOR compatible with both the author of the actual context (the current signer) and the author of the index (the author of the reported speech act).

(211) **The NGT logophor**

a. $[\![[\text{IX-}1_4\ c_i]]\!]^{g,c^*} = \begin{cases} g(4_{c_i}) \text{ if } s(c_i) \sqsubseteq g(4_{c_i}) \\ \text{undefined otherwise} \end{cases}$

b. $[\![\text{TOBIAS}_4 \text{ SAY } \overline{[\text{IX-}1_4\ c_i] \text{ LOVE CYCLING}}^{\text{RS}_i}]\!]^{g,c^*} = 1$ iff
✓ $\forall c'$ compatible with what Tobias said in $c^*$, $g(4_{c_i})$ loves cycling in $c'$
✓ $\forall c'$ compatible with what Tobias said in $c^*$, $g(4_{c^*})$ loves cycling in $c'$.

This defines a semantics of IX-1 that is ambiguous between two different referents in complex constructions involving attitude predicates: IX-1 can denote either the actual signer (identification with matrix $c^*$), or the reported signer (cases in which $c_i$ is bound by the local binder introduced by the attitude predicate).

## 3.6 Alternatives and competition in pronominal anaphora

This, however, does not explain why some participants chose to systematically use the first person IX-1 to denote the reported speaker (shifted interpretation), while others systematically used it to denote the actual speaker (unshifted interpretation); it merely explains why both groups can use it to denote different referents, locating the referential ambiguity of IX-1 within its featural makeup. Is there a way to account for these referential

strategies?

Importantly, in informal follow-up elicitation sessions, we asked participants to provide us with constructions that would convey the meaning they did not allow for when interpreting IX-1 in the experiment conditions - namely, the unshifted reading for participants of Group 1, and the shifted reading for Group 3. Participants of group 1 indicated a preference for identifying the actual signer with a proper name (either fingerspelling a name or producing a sign corresponding to the actual signer's name); participants of group 3 indicated preferring to use either the reflexive form SELF (signed with the thumb moving up and away from the signer's chest), or to not use any pronoun. In both cases, we take this as indicating that both groups considered the use of IX-1 in role shift constructions to be ambiguous, and processed the experimental materials in considering not only the target items, but also their formal alternatives (Katzir, 2007).

### 3.6.1 A competition-based analysis of ASL anaphoric expressions

It is widely recognized in the psycholinguistic literature that participants often compute alternatives alongside the standard meaning of items and sentences, even in the absence of any alternative-triggering elements (Kim et al. 2015; Doyle et al. 2019; Grubic and Wierzba 2019; see also references in Repp and Spalek 2021). Alternatives can be generated on the fly, related to expectations participants have about properties or goals of a situation being described, for instance (cf. the *situation-driven alternatives hypothesis* of Kim et al. 2015).

We would like to suggest that this was the strategy used by our participants: facing the initial ambiguity caused by the presence of IX-1 under role shift, they evaluated the items alongside their formal alternatives (Katzir, 2007). The absence of shifted/unshifted readings for IX-1, alongside its insensitivity to RS-NMMs (as opposed to the consistent interpretations of IX-2 within the same set of items), can readily be explained if one adopts a competition-based account of anaphoric expressions in NGT, such as the one adopted in Ahn 2019, 2020 for ASL. In her in-depth study on ASL anaphora, Ahn shows that, contrary to what was widely assumed in the theoretical literature, the third person pronoun IX-LOC (i.e. the third person pronoun IX-3 pointing to a previously established locus in space) is not systematically used to refer back to discourse entities sharing the same locus. In fact, ASL signers seem to resort to other anaphoric devices such as bare nouns, null pronouns, or the pronoun IX-NEUT (the third person pronoun as realized towards an arbitrary locus, usually along the central line) whenever possible. For instance, in a context where a single discourse referent is introduced, signers do not make use of overt loci, preferring to use IX-NEUT or a null form to refer back to the NP BOY, as in (212). However, use of loci becomes natural whenever more than one discourse referent are introduced, (213b); using a bare noun without locus is equally possible (213a), with

the null form or IX-NEUT being considered degraded.

(212) BOY ENTER CLUB. { ∅, IX-NEUT } DANCE.
'A boy$_i$ entered a club. He$_i$ danced.'

(213) a. BOY ENTER CLUB. SEE GIRL READ. { $^{?}$∅, $^{?}$IX$_{neut}$, BOY } DANCE.

b. BOY IX$_a$ ENTER CLUB. SEE GIRL IX$_b$ READ. IX$_a$ DANCE.
'A boy$_i$ entered a club. He$_i$ saw a girl$_j$ reading. He$_i$ danced.'
[Ahn 2020: (7-8)]

As Ahn argues, if loci were analyzed as overt indices (Lillo-Martin and Klima 1990; Schlenker 2011b; Schlenker et al. 2013; Steinbach and Onea 2016), it would be hard to explain the seemingly optional use of loci in such examples, since it is standardly assumed that every variable corresponding to a given discourse referent comes with an index, and co-indexation is necessary for anaphora resolution (Heim and Kratzer, 1998). From this, Ahn (2019, 2020) argues that IX-LOC is not a pronoun in itself, but a complex expression involving a pronoun IX and a modifier, bringing its meaning close to that of a demonstrative in spoken languages. Ahn (2019) further assumes that anaphora is regulated by a competition mechanism that adjudicates between pro-forms of different strength (cf. Chomsky 1981; Montalbetti 1984; Mayol 2010; Sichel and Wiltschko 2021). More specifically, the competition principle she assumes chooses the weakest pronominal form in the pronominal scale of a given language that can successfully resolve the intended referent, i.e. a nominal expression satisfying the same predicate within an intensional domain, given a domain $D$ and an assignment $g$. This principle is stated in (215).[12]

(215) **Don't overdeterminate!** [Adapted from Ahn 2019: (90)]
Let $\beta$ and $\alpha$ be anaphoric expressions within a given language. Block $\beta$ if
$\exists\alpha : \alpha \in ALT(\beta) \wedge \forall P_{\langle e,t\rangle}\lambda w P_w([\![\beta]\!]^{D,g}) \subseteq \lambda w P_w([\![\alpha]\!]^{D,g})$

The strength of pronominal expressions is a function of their semantic content: more complex expressions will have more semantic content and, as a consequence, will entail less complex elements in their alternative set. This set will differ from language to language:

[12] As Ahn (2019) acknowledges, this principle is just a special case of a less-specific economy principle such as that of Meyer (2015) applied to anaphoric expressions:

(214) **Efficiency** (Meyer 2015; (6))
An LF $\phi$ is ruled out if there is a distinct competitor $\psi$ such that
a. $\psi < \phi$
b. $[\![\psi]\!] \equiv [\![\phi]\!]$

Where '<' stands for structurally strictly simpler in Katzir's 2007 sense. For similar proposals about definite descriptions and names, see Schlenker 2005a, 2005b.

for instance, Italian makes use of the following set in (216a), with the corresponding lexical entries in (216b-e):

(216) **Italian anaphoric expressions** [Adapted from Ahn 2019: (85)]

a. $\{ \varnothing < \text{Pronoun} < \text{N} < \text{Demonstrative} \}$

b. $[\![\varnothing]\!] = \iota x : \text{entity}(x)$

c. $[\![\text{Pro}]\!] = \iota x : \text{entity}(x) \wedge \phi(x)$

d. $[\![\text{N}]\!] = \iota x : \text{entity}(x) \wedge \phi(x) \wedge P(x)$

e. $[\![\text{Dem}]\!] = \iota x : \text{entity}(x) \wedge \phi(x) \wedge P(x) \wedge R(x)$

The null pro-form $\varnothing$ is the lowest element in the scale, consisting only of a non-empty referential property *entity* applying to the variable it denotes. The *pronoun* is richer, endowed with a semantically-interpreted set of $\phi$-features such as gender, number and person; the *N* consists in a bare noun, and includes a property *P* which corresponds to its lexical content. Finally, the *Dem* category additionally consists of a property *R* that includes extra-linguistic or exophoric gestures and modifier-like content (see Ahn 2019, p.128 sqq.; see also Ahn 2022). The principle in (215) ensures that the lowest expression in the scale has to be used for anaphora whenever possible; for Italian, this corresponds to the null form. However, languages express different anaphoric typologies depending on the range of anaphoric expressions they lexicalize. For instance, languages that can use anaphoric bare nouns, such as Korean or Russian, lexicalize different scales with less pronominal expressions. Korean, for instance, does not have morphologically simple pronouns, and uses only bare nouns or nouns with the adnominal demonstrative form *ku*:

(217) **Korean anaphoric expressions** [Adapted from Ahn 2019: (83)]

a. $\{ \text{N} < ku\ \text{N} \}$

b. $[\![\text{N}]\!] = \iota x : \text{entity}(x) \wedge \phi(x) \wedge P(x)$

c. $[\![ku_R\ \text{N}]\!] = \iota x : \text{entity}(x) \wedge \phi(x) \wedge P(x) \wedge R(x)$

As a consequence, Korean can use bare nominal expressions anaphorically, where *ku N* expressions being used in exophoric or contrastive contexts only.

The argument carries over to sign languages. ASL, for instance, makes use of the following anaphoric expressions:

(218) **ASL anaphoric expressions** [Adapted from Ahn 2019: (346)]

a. $\{ \varnothing < \text{IX-NEUT} < \text{N} < \text{IX-LOC} \}$

b. $[\![\varnothing]\!] = \iota x : \text{entity}(x)$

c. $[\![\text{IX-NEUT}]\!] = \iota x : \text{entity}(x) \wedge \phi(x)$

d. $[\![\text{N}]\!] = \iota x : \text{entity}(x) \wedge \phi(x) \wedge P(x)$

e. $[\![\text{IX-LOC}]\!] = \iota x : \text{entity}(x) \wedge \phi(x) \wedge P(x) \wedge R(x)$

This scale (alongside the economy principle in (215)) correctly predicts that null forms or *IX* (associated with any feature or to the neutral point in space, which corresponds to the absence of person in our paradigm) will be used whenever possible, with *ix-loc* being only licensed in contrastive environments, similar to overt pronouns in languages making use of null forms (Montalbetti 1984; Mayol 2010). This correctly predicts their distribution in examples (212)-(213b).

### 3.6.2 Anaphoric competition under role shift in NGT

In what follows, we borrow from Ahn (2019) the idea that pronominal reference is regulated by a competition principle, albeit with a different implementation, using Katzir's theory of structural complexity for alternatives, (58):

(219) **Structural complexity** [Katzir 2007]
Let $\phi$, $\psi$ be parse trees. $\psi$ can be said to be at-most-as-complex as $\phi$ (noted $\psi \leq \phi$) if we can transform $\phi$ into $\psi$ by

a. deleting constituents of $\phi$,

b. contracting (i.e., merging and identifying nodes) constituents of $\phi$,

c. replacing constituents of $\phi$ with constituents of the same category from the lexicon of the language.

We will therefore represent the set of structural alternatives of a given nominal expression $\beta$ as follows:

(220) $\text{ALT}(\beta) = \{\ \alpha : \alpha \leq \beta\ \}$

In NGT, the set of alternatives for a given expression would therefore be as follows:

(221) **Anaphoric alternatives in NGT**
$\varnothing \leq \text{SELF} \leq \text{IX-}\phi \leq \text{N} \leq \text{IX-LOC} \leq \text{NAME/N-A-M-E}$

Where IX-$\phi$ corresponds to the pronominal element augmented with person/number features, and NAME/N-A-M-E to the handshape used to refer to a signer's name or to the fingerspelt version of that name. Under role shift, these alternatives will be evaluated depending on which referent the anaphoric expression is meant to refer. As we saw, the first person IX-1 can be attributed the following values, depending on whether the context pronoun it carries is bound by the embedded verb (giving rise to shifted meaning) or free (unshifted meaning):

(222) $[\![\text{IX-1}_4\ c_i]\!]^{g,c^*} = \begin{cases} g(4) \text{ if } s(c_i) \sqsubseteq g(4) \\ \text{undefined otherwise} \end{cases}$

Since under this definition, the first person in NGT is ambiguous, it is therefore expected that signers will choose another referential expression from the scale in (221) in order to pick up the adequate discourse referent; if the context pronoun $c_i$ is bound by the embedded predicate and refers to $s(c_i)$, then either the null pronominal $\varnothing_4$ or the anaphor $\text{SELF}_4$ should be used under the assignment $g = 4$:

(223) $\text{ALT}(\text{IX-1}_4) = \left\{ \begin{array}{c} \varnothing_4 \\ \text{SELF}_4 \end{array} \right\}$

Since both $\varnothing$ and SELF are (i) structurally less complex (they do not bear $\phi$-features) and (ii) are both compatible with the semantic features of their potential referent (the reported speaker), using the more complex form IX-1 under assignment $g(4)$ will trigger a disjointness inference that $g(4) \neq s(c_i)$, leading to the only other interpretation possible compatible with the features of IX-1, which is the actual speaker, $s(c^*)$. This accounts for the reasoning pattern adopted by Group 3 participants, who systematically assigned an unshifted meaning to IX-1 under RS. On the other hand, participants from Group 1 seem to have chosen another route, driven by the upper scale of the alternatives presented in (220): having systematically chosen the interpretation of IX-1 where the context pronoun $c$ is bound at the embedded level (i.e., with the value $c_i$, denoting the reported context, they do not consider it a suitable anaphoric expression to refer to the actual signer; as a consequence, only a referential NP in the form of a proper name NAME or a fingerspelt version of it (N-A-M-E can be used in such cases, and IX-1 can anaphorically refer to the subject of the matrix clause (the reported signer).

To sum up, participants of Group 1, who systematically assigned a shifted meaning to IX-1; even in the absence of RS-NMMs, readily allow bare nouns such as proper names to refer to the actual signer: this is strategy 1. Participants of Group 3, who systematically denied a shifted interpretation to IX-1, applied a similar strategy, simply starting lower in the anaphoric scale: in order to refer to the attitude holder, they confirmed that both the null form or SELF could have been used. Interestingly, our results echo similar observations made by Engberg-Pedersen (1995) about the use of IX-1 under RS in Danish Sign Language (DSL). Focusing on the various uses of pronominal forms in reported speech, she observes that her signers are reluctant to use third person forms under role shift to refer to themselves, as it would be expected if first person was consistently shifted across the entire report being made. As a consequence, they prefer using unshifted first person to refer to themselves, even when under RS-NMMs:

(224) $\overline{\text{IX}_1\ {}_i\text{LOOK}_a\ \text{MOTHER. SEE IX}_a\ \text{MOTHER IX}_1\ \text{CRY. IX}_a\ \text{WHY IX}_a\ \text{CRY?}}^{\text{RS}_a}$
$\overline{\text{MOTHER EXPLAIN YES REASON THREE IX}_1\ {}_1\text{GO TO}_b\ \text{NYBORG.}}^{\text{rs}_a}$
$\overline{\textbf{IX}_1\ \text{MOTHER FATHER }\textbf{TWO IX}_a\ \text{HOME}_a\ \text{AGAIN. }\textbf{IX}_1\ \text{NOT. }\textbf{IX}_1\ \text{STAY}_b\ \text{NYBORG IX}_b\text{.}}^{\text{rs}_a}$
MOTHER CRY. $\text{IX}_a$

‘I looked at my mother and saw that she was crying. Why was she crying? My mother$_i$ told me$_j$: "Well, the reason is that when the three of us$_{i,j}$ get to Nyborg, me$_j$, my mom$_i$ and my dad, the two of them$_i$ will go home again. But I$_j$ won’t. I$_j$ shall stay in Nyborg. That’s why my mum is crying".’

[Adapted from Engberg-Pedersen 1995: (7)]

In that example, the first person IX-1 is unshifted throughout role shift, which reports the mother’s perspective; the mother (alongside with the dad) is referred to using the third person plural *TWO IX$_a$*, indexed at the mother’s locus. This patterns with the strategy adopted by Group 3. Other relevant examples are (225) and (226):

(225) $\text{IX}_a\text{NOTIFY}_1$ WANT DRIVE CAR. WANT DRIVE CAR. $\textbf{IX}_1$ KNOW-WELL$_{rep}$. $\textbf{IX}_1$. NO NO. SMALL. NO NO. ETCETERA

‘He$_i$ said to me$_j$, "$\mathbf{I}_i$ want to drive the car, $\mathbf{I}_i$ want to drive the car. $\mathbf{I}_i$ know all about it". "No no", $\mathbf{I}_j$ said, "you$_i$ are too small. No no."’

(226) MOTHER $^{\text{NODDING}}$ ENOUGH **ANNEGRETHE** $_{neut}\text{EXPLAIN}_1$ $\textbf{IX}_1$ $_{neu}\text{GO-TO}_1$ ENOUGH

‘My$_i$ mother$_j$ nodded and said: "Never mind. It’s not necessary. Annegrethe$_i$ will explain it to me$_j$ when she$_i$ comes. It’s not necessary".’

[Adapted from Engberg-Pedersen 1995: (6)-(10)]

These two examples illustrate further the two strategies observed in NGT signers. In (225), which does not feature any RS-NMMs, the speaker uses a null element to refer back to her son, before using a shifted first person pronoun, as our Group 3 signers. The second occurrence of IX-1, on the other side, is unshifted, and refers to the actual signer. The first person is therefore fully ambiguous in reference. In (226), the signer illustrates Group 1 strategy: she uses a shifted first person exclusively to refer back to the reported signer (the mother), while using her own name *ANNEGRETHE* to refer to herself. It therefore suggests that Danish Sign Language signers, as NGT signers, make use of both referring strategies when it comes to the use of IX-1 in reported speech situations.

Last, it is worth noting that analogous patterns are found in spoken languages. For instance, in indexical-shifting languages such as Mishar Tatar (Turkic; Russia) and Turkish, shifting occurs only when there is no overt external argument to the embedded verb,

which is inflected with shifty first-person marking. When an overt first person indexical element is present in the same configuration, shifting is impossible. This is illustrated in (152)-(228):

(227) *Alsu* ***pro / min*** *kaja kit-te-m diep at'-tɤ*
Alsu ***pro* / 1SG.NOM** where go.out-PST-1SG COMP say-PST.3SG

'Which place did Alsu$_i$ say $\mathbf{I}_{S\,pk,i}$ / $\mathbf{I}_{S\,pk,*i}$ went?'
[Mishar Tatar (Turkic), Podobryaev 2014: (202)-(203)]

(228) *Seda pro / ben sınıf-ta kal-dı-m san-ıyor*
Seda.NOM ***pro* / 1SG.NOM** class.LOC flunk-1SG-PST believe.PRS

'Seda$_i$ believes that $I_{S\,pk,i}$ / $I_{S\,pk,*i}$ flunked'
[Turkish (Turkic), Şener and Şener 2011: (11)/(15)]

Similar patterns can be observed in Amharic (Semitic; Schlenker 2003, Anand 2006), Kurmanji (Indo-Iranian; Koev 2013), Kazan Tatar (Turkic; D.B., personal fieldwork), Mutki Zazaki and Muş Kurdish (Turkic; Akkuş 2019), Tamil (Dravidian; Sundaresan 2012, 2018) and Telugu (Dravidian; Messick 2022), among other languages. Overall, this suggests that in those languages, a similar scale-based anaphoric strategy is used for shifty reference: the use of a structurally more complex form prevent co-reference with the most accessible referent, just as in NGT.

## 3.7 Monstrous operators in sign languages

To sum up, the NGT results presented here argue for an important interpretative difference between first and second person indexicals under role shift: while the second person IX-2 consistently shifts under RS-NMMs (as the OOH would predict), this is not the case for the first person pronoun IX-1, which shows a mixed pattern across participant clusters: some participants always shift IX-1, even in the absence of RS-NMMs - a fact unpredicted by the OOH - while others never shift it, even when under RS-NMMs. We accounted for this discrepancy in two analytical steps. We first argued that the source of the ambiguity between IX-1 and IX-2 lies in the featural specification of the first person, which acts as a logophor in NGT; it is a complex entity consisting of a variable and a context pronoun $c_i$ which can either be bound at the embedded level by an attitude verb (giving rise to a logophoric/shifted interpretation) or left free, receiving the utterance context value $c^*$. Since, in NGT, it is syncretic with a first person form (as in spoken languages such as Amharic or Karimojong, which possess a similar person system), its interpretation in

embedded environments, where anaphoric pronominal reference is expected, is ambiguous between an indexical interpretation and a shifted interpretation, where it refers to the attitude holder.

The interpretive split between our two groups of signers concerning the first person form IX-1 signal that two interpretive strategies are at play in order to successfully resolve this ambiguity: competition between equivalent anaphoric forms (i.e., elements able to uniquely identify the intended referent), both strategies being regulated by an economy principle such as that of Meyer (2013) that lead signers to choose the structurally simpler pronominal element compatible with the semantic features of its intended referent (in our case, being an author in a context of signing/reporting). Turning now to the second person IX-2, we observe that its interpretation was constant across conditions and participants, essentially as the OOH would predict: whenever RS-NMMs take scope over IX-2 elements, the addressee parameter is shifted towards the reported addressee. However, this is not quite so for the first person: as we tried to demonstrate, IX-1 is insensitive to the 👻, being able to receive both shifted and unshifted interpretations irrespective of whether it is embedded under RS-NMMs or not. From this, we conclude that the OOH is essentially correct for NGT, and that a kind of 👻, realized through RS-NMMs, is available in the language: the second person form IX-2 is a genuine indexical in NGT, that gets shifted by the monstrous operator in attitudinal environments.

However, the kind of 👻 needed to account for the present data is incompatible with the hierarchy of operators proposed by Deal (2020) outlined in §3.2.1, since this particular implementation of context-shifting operators explicitly rules out an operator $👻_{add}$, as defined in (130c) repeated here, that could only shift the *addressee* context parameter, while leaving the *author* parameter untouched:

(130c) $[\![👻_{add}\ \alpha]\!]^{g,c,i} = [\![\alpha]\!]^{g,<s(c),\mathbf{a(i)},l(c),t(c)>,i}$ (attested in NGT)

However, this is precisely what seems to be needed in account for the data presented here, with respect to the results produced with Group 3, which systematically denied a shifted interpretation to IX-1 while in the same time allowing IX-2 to shift under RS.

The question we might want to ask now is the following: is there any independent cross-linguistic evidence for such an operator across languages? The typology suggests a positive answer. Although rare, some languages allow shifting of second but not of first person elements in reported speech constructions. This is the case for Adioukrou, a Kwa language spoken in Ivory Coast, and Obolo, a Cross-River language spoken in Nigeria and Cameroon, both pertaining to the Niger-Congo family:

(229) *li* *dad* *wɛl* *nɛnɛ* **ɔny** *ùsr* *ir* *el*
3SG.F say.PST 3PL DEM **2SG** build.IMP 3SG.OBJ house

‘She$_i$ said to them$_j$ you$_j$ build her$_i$ a house.’
(lit. ‘She$_i$ said to them$_j$ you$_j$ build me$_i$ a house.)
[Adioukrou (Niger-Congo), Hill 1995: (8)]

(230) *ògwú úgâ* *ókêkitó* *ító* *íkíbé* *gwúñ* *kàñ* *ɔmɔ* *ìkâtùmú* *ìnyí*
DEM mother be crying.PST cry say child 3SG.POSS 3SG tell.PST.NEG give
*òwù yê* *íbé* *òwù* *kàgɔɔk* *ífît* *yì*
2SG INTR say 2SG follow.NEG play play

‘The mother$_i$ was crying and said: "My$_i$ child$_j$, did I$_i$ not tell you$_j$ not to join this dance group"?’
(lit. ‘The mother$_i$ was crying and said her$_i$ child$_j$, did she$_i$ not tell you$_j$ not to join this dance group?’)

(231) *ògwú énêrìèeñ òbê,* *òwù ‘nga* *kàñ* *‘mgbɔ* *kèyí* *ìrè* *‘mbùbàn,*
DEM man say.PST 2SG mother 3SG.POSS time DEM be curse
*tap* *nyî* *ɔmɔ*
put.IMP give.IMP 3SG

‘The man$_i$ said "Mother$_j$, this time (even if) you$_j$ curse me$_i$..."’
(lit. ‘The man$_i$ said his$_i$ mother$_j$, this time (even if) you$_j$ curse him$_i$...’)
[Obolo (Niger-Congo), Aaron 1992: (22)-(23)]

Although this type of person specification when it comes to speech reporting is rare (probably due to the referential ambiguities it give raises to), one might expect that it would tend to be more widespread in languages in the visual-gestural modality, which make use of reported speech strategies such as role shift. In such languages, anaphora resolution is facilitated by a conspiracy of factors (direction of pointing sign, markedness with respect to default position of the body, eyegaze direction, etc.) that are typically nonexistent in spoken languages, leaving less room for ambiguity when it comes to the range of possible referents of pronominal forms.

## 3.8 An alternative account: unquotation of pronouns

So far, our theory has been assuming that semantically, RS is a kind of intensional construction (much like English direct discourse) and that syntactically, the complement clause marked by RS-NMMs is embedded by the matrix attitude predicate, in line with much of the formal literature on the topic (Lillo-Martin 1995; Zucchi 2004; Quer 2005;

Schlenker 2017b). However, this claim has not gone unchallenged, with some viewing RS as a kind of unembedded, appositive-like construction, sharing many properties with direct discourse in spoken languages (Lee et al. 1997; Davidson 2015; Maier 2016, 2018; Hübl et al. 2019 i.a.). According to these theories, RS is to be viewed as a special kind of quotation – a *demonstration*, by which the signer selectively depicts some of the external properties of the reported content she is conveying at the same time. The most worked out account in this tradition is the demonstration theory of Davidson (2015), and extended in Maier (2016) and Maier (2018).

On the demonstration theory, RS is conceived as a form of demonstration in Clark and Gerrig's sense (Clark and Gerrig, 1990), which denotes a kind of depiction which encompasses a broad range of linguistic and paralinguistic actions such as quotations, but also mimickry, co-speech gestures, facial expressions, etc. In Davidson's analysis, both action and attitude RS involve the same demonstration component, which can be used in order to depict utterances or events from the various perspectives introduced by the RS-NMMs. Davidson makes several arguments in favor of her claim, a number of them having to do with the very nature of what is considered direct discourse/quotation in spoken and written languages such as English. While discussing these in detail would lead us too far afield, let us briefly mention some of her account's virtues, as well as some of its weaknesses. Davidson (2015) links RS structures to oral forms such as English *be like* construction, which she argues select for the same kind of complement, a demonstration:

(232) a. My cat was like: "feed me."

b. Bob saw the spider and was like: "I can't kill it!"

[Davidson 2015: (21-23)]

Davidson (2015) forcefully argues that RS can be considered a demonstration of this kind, since RS constructions can come in many varieties with very different properties. Since this piece is concerned about reported utterances, we primarily have been focusing on one kind of RS construction - *attitude role shift* - which is fully intensional, being used to report utterances, thoughts and other attitudes; but RS can also simply depicts actions that are attributed to whomever is the subject of the sentence, using the same set of RS-NMMs and the same iconic features. In (233), the b. variant exemplifies this kind of *action role shift*, where RS-NMMs indicate that the watching event is taking place from Mary's first personal perspective:

(233) a. $\text{MARY}_a\ {}_a\text{WATCH}_b$
'Mary was watching it.'

b. $\text{MARY}_a\ \overline{{}_1\text{WATCH}_b}^{\text{RS}_a}$
'Mary was watching it.' [Davidson 2015: (59)]

Action RS, as well as Attitude RS, can therefore be thought as involving the same demonstration component, albeit an intensional one for the second. Davidson (2015) uses event semantics in order to derive the meaning of RS-NMMs, which equates that of *be like* constructions in English: in her system, both are viewed as arguments of the *demonstration* type, which acts as a modifier, specifying the iconic properties of the argument it modifies.

(234) a. $[\![ \text{ be like } ]\!] = \lambda e.\lambda d.\text{demonstration}(d, e)$

b. $[\![ \text{ RS-NMMs } ]\!] = \lambda e.\lambda d.\text{demonstration}(d, e)$

Maier (2018) augments Davidson's analysis in introducing a mechanism of unquotation, by which some elements of the reported content can be suspended from the demonstration they partake in. This is required in order to deal with examples very similar to our own data such as (235), where IX-1 is interpreted as shifted in its first occurrence, and unshifted in the second.

(235) a. *Martine to friend:*
IX$_1$ BETTER SIGN THAN MACHA
'I sign better than Macha.'

b. *Macha reports:*
MARTINE $\overline{\text{IX}_1 \text{ BETTER SIGN THAN IX}_1}^{\text{rs}}$
'Martine$_i$ said that she$_i$ signs better than me$_m$.'

[NGT, Maier 2016: (30)]

Here, the second IX-1 is somehow *unquoted*, and therefore being interpreted as referring to the actual signer, Macha. Maier (2018) provides the following semantics for (235):

(236) a. MARTINE $\overline{\text{IX}_1 \text{ BETTER SIGN THAN IX}_1}^{\text{rs}}$
≈ 'Martine$_i$ said "I am a better signer than [me]".'

b. $\exists e.\exists e' \sqsubset [\text{agent}(e, \text{Martine}) \wedge \text{form}(e, \ulcorner \text{IX}_1 \text{ BETTER SIGN THAN} \urcorner) \frown \text{form}(e')) \wedge$
$\text{referent}(e') = \text{Macha} \wedge \text{demonstration}(d, e)]$

[Maier 2018: (13-14)]

The same semantics is given to unshifted occurrences of IX-2 in examples such as (177), where the second person is similarly 'unquoted', as argued by Hübl et al. (2019):

(177) a. *Felicia says:*
IX$_1$ DREAM ANNA IX$_3$ LOTTO WIN
'I have dreamed that Anna won the lottery.'

b. *Tim reports to Anna:*
FELICIA $_3$INFORM$_1$ $\overline{\text{IX}_1 \text{ DREAM IX}_2 \text{ LOTTO WIN}}^{\text{rs}}$

'Felicia$_i$ told me$_T$, she$_i$ dreamed that you$_A$ won the lottery.'
[Hübl et al. 2019: (28)]

Allowing such an operation of unquotation to take place in our semantics might considerably lead to overgeneration, since in principle every constituent could be unquoted. To prevent this, Maier (2017) proposes that the actual semantics of quoted strings are the result of the application of two pragmatic principles working in opposing directions: the first one, 'attraction', denotes a preference for using indexicals to refer to actual speech act participants. The second one, *verbatim*, enjoins the author of the report to be as faithful as possible to the original form of what she is reporting.

(237) a. **Attraction principe** [Maier 2017: (23)-(24)]
When talking about the most salient speech act participants, use indexicals to refer to them directly.

b. **Verbatim**
In direct discourse, faithfully reproduce the linguistic form of the reported utterance.

The conspiracy of these two constraints accounts for the fact that the indexicals in examples (235) from NGT and (177) from DGS seem to systematically escape quoted constituents.

Two remarks are in order. First, note that the unquotation theory falls short in accounting for the results of the experiment presented here: if a similar principle of attraction was at play within our shifted examples, we certainly would not expect the second person indexical under RS to be shifted in the first place, especially in examples where the original report mentions something about J., which is a participant (the addressee)in the reporting context: by *attraction*, the second person indexical IX-2 should be used in order to refer to J., contrary to fact: interpretations in which IX-2 received an unshifted meaning under RS-NMMs were rejected across the board by participants from all groups (Figures 3.5-3.3.4). When it comes to IX-1, the theory also fails to predict the observed patterns: As a matter of fact, results of Group 1 of NGT signers (as well as some DSL signers, as illustrated by examples (224)-(226) from Engberg-Pedersen 1995 in §3.6 above) is precisely the exact opposite of what *attraction* predicts, since these signers systematically never use first person forms to refer to themselves; *attraction* should, however, allow for such a strategy.

Another, more serious concern for the unquotation theory comes from the systematic sensitivity of person (first vs. second) with respect to the shifty potential of RS-NMMs. As defined by Maier (2017), the attraction principle should allow for the systematic unquotation of every class of indexicals: however, our results show that only IX-1 can escape the shifting requirements of RS-NMMs. By contrast, our theory straightforwardly

predicts this difference, by positing that the two elements are of different nature: while IX-2 is a *bona fide* indexical, being able to be shifted by the 👻 introduced by RS-NMMs, IX-1 is closer to a logophoric first person form, which interpretation is ambiguous, depending on the value of the context variable $c_i$ it contains, which can be bound or left free.

All in all, while the unquotation theory deserves to be tested further in different spoken and signed languages, we therefore conclude that an account such as the one defended in §3.4 fares better with respect to the data presented here, while being more conservative with standard accounts of indexical shift in both spoken and sign languages.

## 3.9 Conclusion

Starting from the observation that considerable variation exists regarding the shifting of indexicals in various sign languages such as LSC, DGS, RSL and NGT, and that some indexicals in these languages behave differently with respect to role-shift non-manuals markers (RS-NMMs), we aimed at testing the hypothesis that context-shifting was induced by the presence of a monster operator 👻 in RS constructions, spelled-out as (a subset of) RS-NMMs, using NGT as target language. Our experiment tested the behavior of two pronouns, the first and second person indexicals IX-1 and IX-2. The results showed a systematic discrepancy regarding their interpretation in RS constructions: while the second person IX-2 was systematically shifted when under RS-NMMs, this was not the case for the first person IX-1, which was either i) systematically shifted (Group 1 and 2) or systematically unshifted (Group 3). In order to account for this interpretive asymmetry, we propose to consider IX-2 as a *bona fide* indexical that can be shifted by a dedicated operator $👻_{add}$ introduced by the attitude verb in RS constructions, thus preserving the insight that RS-NMMs are the visual-gestural counterpart of a similar class of operators found in spoken languages. On the other hand, following an early insight by Lillo-Martin (1995), we propose to analyze the first person IX-1 as a logophoric pronoun as defined in the present work, that is, a complex pronominal structure containing a context variable (cp. Schlenker 2003) that can be either bound by the attitude verb (delivering a shifted interpretation) or left free (delivering an unshifted interpretation). This accounts for the fact that the interpretation of IX-1 seems unsensitive to RS-NMMs (it is not affected by the operator), and that it is ambiguous, leaving it open for signers to interpret it as referring to the reported speaker (Groups 1 and 2) or the actual speaker (Group 3). We then provided an account of both of these interpretive strategies based on the idea that pronominal forms compete in anaphoric dependencies (Ahn 2019; Sichel and Wiltschko 2021) on the basis of their structural complexity (Katzir, 2007). All in all, the results of this study as well as our analysis aims at shedding light on the multimodal, highly complex mechanisms of participant reference in RS constructions, while providing a uniform account of the

distribution and interpretation of person features in both signed and spoken languages.

# Chapter 4

# Quotation in the wild. Faithfulness and opacity in speech reports

## Overview

A widespread assumption in linguistics is that speech reports can be straightforwardly divided into two types: direct and indirect, and that the former can be identified with quotation. A popular account of quotation in the philosophical tradition identifies quotation with metalinguistic reference (Frege 1892; Tarski 1933; Quine 1940 and many subsequent works), and direct discourse complements are analyzed as involving a similar referential mechanism: naming of an expression, instead of using it. This conception of direct speech has been applied to the study of reported speech in natural languages (Schlenker 2003; Anand 2006), suggesting that reported speech constructions can be easily categorized as falling into one category or the other. I argue here that this conception is mistaken: direct speech should *not* be reduced to quotation as metalinguistic reference, since its cross-linguistic typology fails to exhibit the properties traditionally associated with the latter. This has major consequences for our understanding and semantic modeling of reported speech in natural languages which, I argue, is ultimately more complex than what the traditional model suggest. I offer a new account of the division between direct/indirect speech reports as manner implicatures in a neo-Gricean model inspired by recent theories of scalar implicatures (Katzir, 2007), which ultimately proves superior to previous accounts of direct speech, as well as quotation in general.

## 4.1 Introduction. Quoting and reporting

> When I was initiated into the mysteries of logic and semantics, quotation was usually introduced as a somewhat shady device, and the introduction was accompanied by a stern sermon on the sin of confusing the use and mention of expressions.
>
> (Davidson, 1979, p.79)

Most of the work on quotation in linguistics as its roots in logic and philosophy, starting with Frege (1892) and including foundational works such as those of Tarski (1933) and Quine (1940). In his 1931 paper 'The concept of truth in formalized languages', Polish philosopher Alfred Tarski discusses quotation in the following terms:

> Quotation-mark names [names enclosed by quotation marks, D.B.] may be treated like single words of a language, and thus like syntactically simple expressions. The single constituents of these names - the quotation marks and the expressions standing between them - fulfill the same function as the letters and complexes of successive letters in single words. Hence they can possess no independent meaning. Every quotation-mark name is then a constant individual name of a definite expression (the expression enclosed by the quotation marks) and in fact a name of the same nature as the proper name of a man. For example, the name "p" denotes one of the letters of the alphabet.
>
> [Tarski 1933: 159-160]

Here, quotation is defined as a singular term, that is, a function from a symbol (here, a letter, or a group of letters) enclosed by quotation marks, to the *name* of that symbol. This view is relayed by Quine (1940), who writes in his *Mathematical Logic*:

> [...] from the standpoint of logical analysis each whole quotation must be regarded as a single word or sign, whose parts count for no more than serifs or syllables. A quotation is not a *description*, but a *hieroglyph*; it designates its object not by describing it in terms of other objects, but by picturing it. The meaning of the whole does not depend upon the meaning of the constituent words. [Quine 1940: 26]

This is the *locus classicus* of the so-called 'proper name theory' of quotation; whatever is enclosed by quotation marks does not refer, but *names* what it contains, thus achieving metalinguistic reference. According to this family of theories, quotation is mention rather than use.

But is it all there is to it? We can do many things using quotation. We can use it to turn language on itself, to borrow Davidson's evocative slogan, that is, use it to refer to various elements that language is made of:

(238) a. In French, *chien* has five letters and is pronounced [ʃjɛ̃].

b. *Muscles* rhymes with *Brussels*.

This is so-called *pure* quotation, which the proper name theory above captures rather elegantly. But we can do a lot of other, different things using quotation. We can use it to flag an expression because we don't fully adhere to its meaning, or because we want our addressee to treat it in a non-standard way:

(239) This remarkable piece of 'art' consists of a large canvas covered with mud and old bus transfers. [Predelli 2003: (5)]

We can use it in order to report what someone has previously said or uttered in any kind of fashion:

(240) We saw *Interstellar* yesterday and John told me: "I feel like I've been patronized for over two hours".

And sometimes, we can just use it for free (Figure 4.1). In spite of this plethora of uses with very different purposes and contents[1], we use the term *quotation* uniformly to refer to all of the phenomena exemplified above, giving the impression that whatever this term stands for forms a unity of some sort, be it theoretical or empirical. The question we would like to address here is the following: is this move warranted by any kind of empirical evidence? Subsuming (238)-(240) under the concept of quotation as defined by Tarski and Quine amounts to affirming that they all share the same linguistic properties. In what follows, focusing mostly on constructions involving direct speech reports such as (240), we will argue that this move is both conceptually and empirically inadequate: speech reports systematically differ from quotation as standardly defined in the philosophical tradition, which inspired most of the work on speech reports in formal linguistics over the past fifty years.


Figure 4.1: A billboard out of Tulsa, OK, United States. From the blog Unnecessary Quotes.

This paper is structured as follows. We begin by situating direct speech constructions into the broader typological landscape of reporting devices (§4.2), and argue that it is both

[1] Note that examples (238)-(240) all use a different quotation-marking symbol: in the theory developed here, *italics*, '', and " " are merely graphical devices commonly used to achieve a quotational effect in the written modality that all have counterparts in natural language (cf. §4.2).

functionally and structurally very different from varieties of quotation as metalinguistic reference such as (238) by examining two constructions commonly found in natural language, mixed quotation (§4.2.1) and sign language role shift (§4.2.3). In §4.3, we turn to the phenomenon of indexical shift and show (§4.3.2) that traditional arguments made in favor of treating indexical shift as pertaining to indirect speech are utlimately unsound, since they crucially depend on the conception of quotation as metalinguistic reference criticized in §4.2. We present the alternative quotational analysis of Maier (2007a) and argue that it, too, suffers from insuperable problems (§4.3.3). We then set out to present a different account of quotation (§4.2.2), the demonstration theory of Davidson (2015) and Maier (2017), which proves flexible enough to derive the mixed quotation data. In §4.4, we show how this semantics for quotation, augmented with an implicature-based account of direct/indirect speech structures can account for the problematic indexical shift data (§4.4.3). §5.6 concludes, and highlights some potentials issues to be addressed in future research on the topic.

## 4.2 Direct speech as metalinguistic reference?

Traditionally, direct speech as a category (DS) is opposed to indirect speech (IS), and is often described as sharing essentially the same properties as quotation defined above. The following characterization, from an English grammar, is fairly standard: "Direct reported speech purports to give the actual wording of the original, whereas indirect reported speech gives only its content." (Huddleston and Pullum, 2002, 1023). As forcefully noted by Partee (1973) in her analysis of direct speech reports, many of the properties of DS seem to overlap with those ascribed to pure quotation. She writes:

> The immediate semantic conclusion to be explicated is that this is not the *meaning* of the quoted sentence that is contributing to the meaning of the whole, but rather its surface form. [Partee 1973: 411]

It worth emphasizing that the above paragraph realizes a significant theoretical move, whereby Partee identifies direct speech constructions with pure quotation in the Tarskian/Quinean sense, thus assigning direct speech reports a number of the latter properties, among them that of instantiating a kind of metalinguistic reference. Partee's judgment, it turns out, has been very fortunate in subsequent formal analyses of speech reports. A telling example is Oshima (2006):

> Direct reports describe a relation between an agent (reported speaker) and a linguistic object, while indirect reports describe a relation between an agent and a semantic object (i.e. a proposition). In a direct report, the quote (sequence of linguistic expressions, sounds, etc.) is an indecomposable unit – a single expression that denotes a linguistic representation (or in certain cases, a stretch of non-linguistic representation). A direct quote is totally opaque; it is "mentioned" rather than used. On the other hand, in an indirect report, the syntactic/semantic parts of the quote contribute to the syntactic structure and meaning of the whole sentence in the same way as they would in a matrix (non-quote) environment. [Oshima 2006: 9-10].

I will thereon refer to this stance as the *conflation thesis*, or *CT* for short:

(251) **Conflation thesis**
Direct speech is pure quotation.

The Conflation Thesis has many advantages: it allows to draw a clear-cut line between the two modes of reporting discourse (direct vs. indirect), while assimilating the former to quotation which, thanks to logicians and philosophers, we already have a satisfactory of: direct speech is nothing more (or less) than quotation as metalinguistic reference. Below

is a (tentative) list of the properties traditionally ascribed to DS and IS, with the distribution of these properties summarized in table 4.2. The Conflation Thesis straightforwardly accounts for their distribution, chief among them opacity: since direct speech constructions involve linguistic objects, and that these objects are nothing but names of expressions rather than expressions themselves, they are, per (253) above, opaque structures. Importantly, all other relevant properties fall out from this fact: since opaque structures are by definition indecomposable units, this entails that they are, syntactically and semantically, independent objects (*integration*). Being a name, the content of direct speech structures is bound to exactly match the form of the original utterance it is naming (*faithfulness*); being opaque, it prevents any perspectival adjustment of context-sensitive expressions from the perspective of the reporting speaker (*shiftiness*). As such, the opacity principle serves as the backbone of both our theories of quotation and direct speech.

- **Opacity.** DS is syntactically and semantically opaque, while in IS, grammatical and semantic dependencies are allowed between the reported speech structure and the introducing/matrix structure;

- **Integration.** DS is typically less integrated into its introducing/matrix clause, and therefore syntactically less dependent, while IS is more integrated, and less independent;

- **Faithfulness.** DS reproduces the reported speaker's words, exactly as they were uttered - it is therefore faithful in both form and content. IS only conveys the content of what was initially expressed;

- **Shiftiness.** In DS, context-dependent or context-sensitive expressions, such as indexicals, demonstratives, evaluative adjectives, epithets, and tenses are evaluated from the reported speaker's perspective, while in IS, they are assimilated to the reporting speaker's perspective.

The *opacity* property directly stems as a corollary from the proper name theory of quotation and its descendants: the expression being quoted being merely the *sign* of an expression, it cannot be treated as being compositional, since its subparts cannot be taken to refer to anything. This is illustrated by Quine (1960), who notes that the sentence in (252a) does not entail (252b) by virtue of being enclosed by quotation marks:

(252) a. "Tully was a Roman"

b. "Cicero was a Roman"

Since the terms *Tully* and *Cicero* in the above sentences fail to refer, they cannot be substituted *salva veritate*, in spite of their unquoted extensions being denotationally equivalent. Similarly, referential opacity prevents us to quantify into the expression enclosed by quotation marks, as illustrated by a telling passage of *Word and Object*:

> Rephrased for quantification and other variable- binding operations, this says that no variable inside an opaque construction is bound by an operator outside. You cannot quantify into an opaque construction. When '$x$' stands inside an opaque construction and '$(x)$' or '$(\exists x)$' stands outside, the attitude to take is simply that that occurrence of '$x$' is then not bound by that occurrence of the quantifier. An example is the last occurrence of '$x$' in:
>
> (1) $(\exists x)$($x$ is writing '$9 > x$').
>
> This sentence is true when and only when someone is writing '$9 > x$'. Change '$x$' to '$y$' in its first two occurrences in (1), and the result is still true when and only when someone is writing '$9 > x$'. Change the last '$x$' to '$y$', and the case is otherwise. The final '$x$' of (1) does not refer back to '$(\exists x)$', is not bound by '$(\exists x)$', but does quite other work: it contributes to the quotational name of a three-character open sentence containing specifically the twenty-fourth letter of the alphabet. [Quine 1960: 151]

Referential opacity is therefore one of the cornerstones of the proper name theory of quotation. A straightforward formulation of this principle is provided by Anand (2006):

(253) **Grammatical opacity** [Anand 2006: 81]
Quotations form a closed domain with respect to syntactic and semantic operators.

The *integration* property is the syntactic corollary of *opacity*; in most of the world's languages, speech reports are conveyed with complex clause types, usually involving embedding attitude verbs such as *say*, *ask* or *tell*, which select for finite clauses as their arguments. Since, for this kind of selection to happen, syntactic information must be visible from the outside by the predicate that selects for the complement clause (Adger, 2003), the *opacity* principle prevents any form of syntactic dependency to be enforced between a quoted complement and the reporting predicate: as a consequence, DS-complements are expected to be syntactically independent, as opposed to IS-complements. The *faithfulness* property ensures that the form of a DS-report has not been modified and matches that of the event it stands for, further modification being again ruled out by *opacity*. Last, the *shiftiness* property can also be viewed as a consequence of *opacity*, since indexicals and other context-dependent expressions enclosed within a DS-complement, being trapped in opaque structures, cannot be evaluated by the Kaplanian context parameter $c$. These properties will be further discussed in §4.2.2 and §4.3, respectively.

### 4.2.1 Using and mentioning

Adopting the Conflation Thesis allows us to draw a clear-cut line between structures involving direct speech constructions and those involving indirect ones: the latter can be

used to convey linguistic content, while the fomer merely mentions the form of some previous utterance.

A closer look at the empirical landscape of speech reports suggests, however, that things might be more intricate. As noted by Davidson (1979) and by a number of subsequent researchers, it appears that, at least in some cases, mention and use are not mutually exclusive. This is the case of examples (248) and (254) below:

(254) a. Quine says that quotation 'has a certain anomalous feature'. [Davidson 1979: 28]

b. Captain Davis said that he did not intend to 'go soft on these bomb-throwing hippies'. [Partee 1973: (6)]

In cases such as (248), it appears that the reported speaker's words are both used and mentioned at the same time (Maier 2007a, 2014b; Cappelen and Lepore 1997, 2003; Recanati 2001, 2008, i.a.). Without going into the various analyses proposed to account for the phenomenon of mixed quotation (see Cappelen et al. 2020, Maier 2020 and references therein), it is however worth noting for our purposes that the examples above fail to exhibit all the relevant properties of DS outlined in Table 4.2. First, it appears that mixed quotations cannot be considered opaque structures. As pointed out by Cappelen and Lepore (1997) i.a., treating quoted expressions as names of linguistic objects instead of these objects themselves won't do here, since upon uttering any of the sentences in (248), it seems rather obvious that the speaker is not reporting the name of an expression, but the expression itself. The proper name theory would in fact incorrectly predict that, semantically, uttering the sentences in (254) amounts to uttering (255):

(255) a. Quine says that quotation 'Orlovsky'.

b. Captain Davis said that he did not intend to 'Orlovsky'.

Since whatever is enclosed by quotation marks is just the name of an expression, then it follows that the tokens in (255) have exactly the same truth-value as their (254) counterparts. But this is false, for there are obvious reasons to say that (255) are unfelicitous reports in any sense of the term. It therefore seems that whatever the quoted constituent is, it cannot be fully opaque; in order to be felicitously used as a report, the quoted clause has to bear some semantic resemblance with the content it stands for. Of course, there are different moves that the CT theorist could adopt to salvage opacity while maintaining that the quoted material is interpreted as a token demonstrating its content, as in the demonstrative theory of Davidson (1979); this account, however, brings about different problems of its own (see i.a. the discussion in Cappelen and Lepore 2007). Mixed quotation also does seem to allow for both grammatical and semantic dependencies with its hosting clause, as examples (256a)-(256c) show:

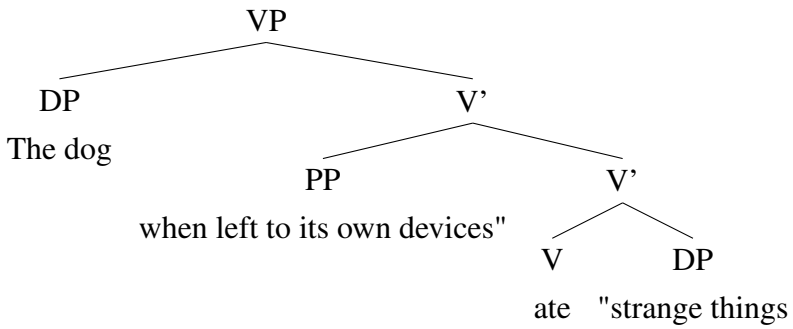
(256) a. She allowed as how her dog ate ‘strange things, when left to its own devices’.
[Abbott 2005: (13b)]

b. Their$_{i+j}$ accord on this issue, he$_i$ said, has proved ‘quite a surprise to both of us$_{j+k}$’.
[Cumming 2005: (6)]

c. The dean asked that a student ‘accompany every professor’.
[Cumming 2005: (11)]

(256a) illustrates an extreme case of grammatical dependency, since the quoted material, if treated as syntactically independent from the hosting clause, cannot be analyzed as any known syntactic constituent, as the syntactic representation in (257) illustrates:

(257)




The verb *ate* forms a verb phrase with the DP *strange things* as its direct object, being in turn modified by the adjunct PP *when left to its own devices*; this, however, requires treating the quoted material has syntactically decomposable, something that opacity does not allow for. As it stands, (256a) additionally instantiates a particular strong violation of *integration*. Turning now to (256b), the issue here is that the first person indexical *us* co-refers with the 3rd person singular matrix subject *he* in the parenthetical introducing clause, thus violating both *opacity* and *shiftiness*. Last, in (256c), the sentence allows for an inverse scope reading $\forall > \exists$ (i.e. meaning that there was a different accompanying student for each professor), thereby requiring movement of the quantifier *every professor* out of the quoted verb phrase.

An important conclusion to be drawn from these examples is that in the study of speech reports, one should dissociate the issue of syntactic/semantic integration (i.e., complementation or hypotaxis) with the notion of indirect speech construction. As examples (256a)-(256c) show, mixed quotation can be fully embedded, and still exhibit some of the properties traditionally ascribed to direct discourse (Sauerland et al., 2020); as argued by de Vries (2008), quoted constituents can occupy any syntactic positions within the clause, exemplifying various degrees of embedding:

(258) a. *Met ‘Ga toch fietsen!’ bedoelde hij dat je onzin uitkraamde.*
with go rather cycling meant he that you nonsense out-bore

‘With “Get on your bike!” he meant that you were talking nonsense.’

b. *Het 'Op uw plaatsen... klaar... af!' galmde door het stadion.*
the on your marks ready go resounded throughout the stadium
[Dutch, de Vries 2008: (26)-(31b)]

In (258a), the quoted constituent is integrated within a Prepositional Phrase, and in (258b) is part of a Noun Phrase. de Vries (2008) provides evidence from Dutch and English that quotes can occupy any argument position, akin to a nominal category: quotes can be subjects, objects, predicate nouns (as in (258b)), or complements of larger phrases (as in (258a)). Quoted constituents thus exhibit a great degree of syntactic flexibility, providing evidence of genuine subordinated quotations; as a matter of fact, there seems to be no limit to the extent to which mixed quotes can be syntactically integrated to their host (see also Maier 2007a, 2007b), a point highlighted by Bonami and Godard (2008), who remark that mixed quotations "are syntactically quite uninteresting: from a syntactic point of view, hybrid quotations are plain constituents that get the same distribution they would have if used rather than mentioned" (p.5). All in all, these observations suggest that quotation should be analyzed as a phenomenon pertaining to linguistic use rather than form (cf. §4.4).

Depending on the stance one is willing to take about mixed quotation, however, the examples laid out in this section may fail to convince that there is something to be concerned with for the linguist at all. Is mixed quotation a linguistic phenomenon, or something merely confined to the written register? This is, for instance, the stance of Partee (1973), who discards examples involving mixed quotation as not being part of the corpus of natural language expressions: "My only justification for this exclusion (since intractability is not a justification) is the admittedly prejudiced belief that such sentences do not occur in ordinary spoken language" (p. 411). This, we think, is a prejudiced belief indeed, for there are various reasons to object such a dismissal. Recent studies on subclausal quotation in spoken language seem to attest that mixed quotation of the kind discussed above *is* part of our language inventory after all. For instance, work by Potts (2005) suggests that mixed quotation is systematically signaled in naturally occurring examples of spoken English by a dedicated prosodic contour, characterized by a rise-fall-rise intonation, (259):

(259) H* L H% H*L H% H* L H% H*L H%
They made phone calls to three 'prominent Indian government officials'.
[Potts 2005: (22)]

Potts hypothesis seems confirmed by a series of recent corpus and experimental studies in various languages (Kasimir 2008; Schlechtweg and Härtl 2020; Sturman 2022). For instance, Sturman (2022) reports that subclausal quotations are systematically accompanied by what she calls an Emphatic Juncture (EJ), a prosodic marker analyzed as a specialized type of Intonational Phrase boundary in the sense of Pierrehumbert and Hirschberg

(1990). The EJ is realized before the quoted constituent, and is characterized by a plateau in the boundary tone, followed by an obligatory pause and a pitch range reset. This is illustrated with the mixed quotation in (260), from an US radio broadcast; Figure 4.2 illustrates the pitch track of the sentence.

(260) L+H* !H* !H*!H+L% H* H- !H* L-L%
In what some folks call a <*pause*> silver tsunami.
[Adapted from Sturman 2022: (20)]

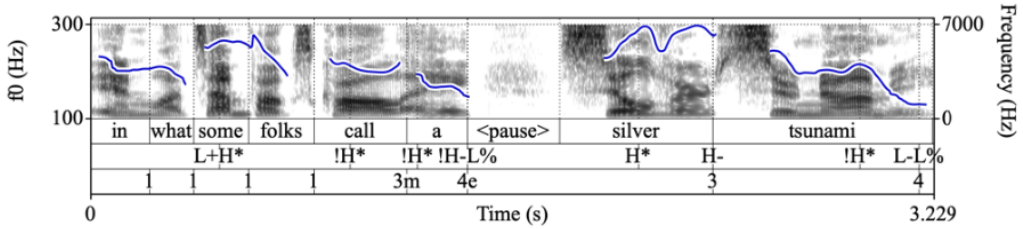



Figure 4.2: Pitch track of (260), from Sturman 2022 (p. 20). Note that the EJ (signaled here by a !H-L% pitch range and a pause) interrupts a very local syntactic relationship (between a Determiner and a Noun Phrase).

While prosodic realization of the sort described in (260) is a way to signal the presence of a quote, it is by no means the only one. In Western culture, speakers often make use of paralinguistic signals called *air quotes* (sometimes *fingerdance quotes*), which consists of a co-speech gesture articulated with one or two hands repeatedly closing and opening the middle and index fingers while uttering the intended quoted expression. Air quotes achieves the same effect than quotational prosodic marking, triggering a dedicated inference about the quoted expression's denotation, which is often interpreted as the speaker's distancing himself or being ironic about the use of the expression at stake (Staratschek 2022; cf. discussion in §4.4).[2] We take these studies to provide strong empirical support in favor of the linguistic reality and theoretical relevance of mixed quotation in natural language, *pace* Partee (1973). As they stand, these studies also argue indirectly against the Conflation Thesis: assuming that mixed quotation is a genuine linguistic phenomenon, and that mixed quotation can be felicitously taken as a speech reporting device, the data above suggest that any identification of forms of direct speech reports to pure quotation, along the lines defended by the Tarskian/Quinean approach, is misguided.

### 4.2.2 (Un)faithfulness in speech reports

As reported in Table 4.2 above, *faithfulness*, just as *opacity*, is taken by many to be a central feature of direct speech (DS) vs indirect speech (IS). Again, the Conflation Thesis straightforwardly derives this fact: if DS involves nothing more than mentioning, the expression it names should be by definition a reproduction of some previous expression and,

[2] Speakers seem to share strong intuitions about the meaning of air quotes, as exemplified here.

as a consequence, identical in form. By contrast, IS flags proper linguistic use, and the terms it contains are generally assumed to be modifiable at will, as long as their meaning is co-extensional – that is, as long as they convey the same propositional content as the original utterance. As a consequence, faithfulness to the form of the original expression is not expected. Natural language data suggests, however, that things might not be as clear-cut as this picture suggests. It appears that in a vast majority of cases, instances of DS fail to reproduce exactly the expression they contain, sometimes deviating to a significant extent from the original material. Conversely, it has been reported that at least some degree of faithfulness is expected in IS constructions.

As stated in Table 4.2, the *faithfulness* principle entails the existence of an utterance that could be reproduced by a subsequent speech report. Since utterances are events that require sentient agents, identification of an individual (the author of the report) is also expected under this view. However, there are cases where no such source is straightforwardly identified, as in (261a), or simply assumed by the reporting author, (261b)-(261c); sometimes the source is explicitly denied authorship of the quoted expression, as in (261d); in yet some other cases, the reporting author explicitly states that the reported expression was never uttered, (261e):

(261) a. Many people have come up to me and said, ‘Ed, why don’t you run for the Senate?’

b. I think she thought I was a career woman, who would be only too glad, or would say ‘oh well he’s got to go into a hospital,’ you know

c. ‘They [people at the United Nations] made me very cranky with their evasions,’ Archer recalls. ‘They’d say, "The information is for member states only." And I’d reply, "As far as I know, the United States is a member state." Then they’d say, "We can’t afford the Xeroxing."’

[Clark and Gerrig 1990: (10)-(12)]

d. *Hitler hat niemals ‘jedem Deutschen sein Auto’ versprochen.*
Hitler have.3SG never each.DAT German.DAT his.N car promise.PRF

‘Hitler never promised "each German his own car"’.

e. *Niemand sagte, dass es ihm eine 'grosse Ehre*
Nobody say.PST COMP 3SG.N 3SG.M.DAT INDF.F big.F honor
*und ein grosses Vergnügen' war, am Symposium 'Fokus,*
and INDF.N big.N pleasure be.PST, to symposium focus
*Alternativen und Vergleich' teilzunehmen.*
alternative and comparison to.participate

'Nobody said that it was a "big honor and a big pleasure" to participate in the symposium "Focus, Alternatives and Comparison"'.
[Zimmermann 2007: 50]

This is arguably a problem for the CT theorist, for which DS reports always involve reference to names of existing expressions that, as such, must be identifiable and traceable in some form.

### Unfaithfulness in indirect speech

While it appears that *faithfulness* might fail to hold for DS constructions, it also seems to be enforced in some fashion in IS reports. As argued by Brasoveanu and Farkas (2007), English *say* notably differs from *believe* in that its complements are subject to a constraint they dub *faithfulness to meaning dimensions*; in short, *say*-complements must somehow preserve the form of the original assertion they are built upon. This requirement spans over multiple dimensions of meaning, from at-issue entailments (262) to presuppositions (264) and implicatures (265):

(262) *Context: John teaches Semantics 1. Susan is a student of John's.*

a. *John*: Everybody in the class understood the notion of presupposition.

b. #John said that Susan understood the notion of presupposition.[3]

c. John believes that Susan understood the notion of presupposition.

(264) a. *Sam*: Mary stopped smoking.

b. #Sam said that Mary used to smoke.

c. Sam believes that Mary used to smoke.

[3] Note that this judgment is subtle, and might very well change in other contexts, such as the following (Yasutada Sudo, p.c.):

(262) *Context: I'm at a fun-fair with my 4-year-old daughter. She's interested in a ride, but I'm not sure if she's old enough for it, so I ask the operator and he says: "This is for kids who are 7 or older.". So I tell my daughter:*
He said you are not old enough for this.

(265) a. *Mary*: Peter ate some of the cake.

b. #Mary said that Peter did not eat the whole cake.

c. Mary believes that Peter did not eat the whole cake.

[Brasoveanu and Farkas 2007: (17), (20), (25)]

John's report in (262b) is infelicitous; while John's initial utterance contextually entails that Susan understood the notion of presupposition as everybody else, (262b) cannot be used as a report of the more informative (262a). Similarly, (264b) and (265b) are unacceptable as speech reports, unlike their *believe*-counterparts, because they fail to preserve the non-at-issue (presupposed and implicated) content of the initial utterance. This is not to say, however, that IS patterns with DS entirely: for instance, (407b, c) are felicitous reports of Sam's utterance in (407a), in spite of the fact that the anaphoric presuppositions introduced by the pronouns *him* and *her* are not preserved in (407b, c), being either resolved within the report construction (407b) or being swapped by other, presupposition-triggering expressions such as *x's deskmate* or *x's neighbor* (407c):

(266) a. *Sam*: John and Mary came to the party and he invited her to dance.

b. *Sue*: Sam said that, at the party, John invited Mary to dance.

c. *Sue*: Sam said that, at the party, my deskmate invited my neighbor to dance. (where all the participants in Sue's conversation know that Sue's deskmate is John and Sue's neighbor is Mary). [Brasoveanu and Farkas 2007: (28)]

We can therefore observe that there seems to be an important difference in the way presuppositions behave in indirect speech reports: while contentful presuppositions (i.e., presuppositions associated with lexical items such as *stop* in (264)) must be preserved in the report, anaphoric presuppositions such as the ones associated with e.g. pronouns, as in (407), need not be. This leads Brasoveanu and Farkas (2007) to conclude that the difference between IS and DS structures is not merely one related to a form-preserving constraint such as *faithfulness*, but rather, to a sensitivity linked to the kind of presupposition involved - contentful (or lexical) vs anaphoric – that are independently known to have different projection and accommodation behaviors (Van der Sandt 1992; Zeevat 2002; Beaver and Zeevat 2007). What seems to matter here is more a matter of *perspective* about the content conveyed by the reporting clause: while, in *believe*-complements, the perspective seems to be that of the reported speaker, in *say*-complements, the perspective has to be that of the reporting speaker (or that of the discourse participants more generally), as the examples above demonstrate.[4] Brasoveanu and Farkas (2007) explain

[4] This seems to be corroborated by experimental evidence. A study by Köder et al. (2015) investigating processing times of pronouns in both IS and DS complements in Dutch found that, in referent selection tasks, participants (native speakers of Dutch, $n$=116) found it harder to process pronouns in DS constructions, with significantly longer decision times and more mistakes than for IS constructions. This extra

the differences above by assuming that *say* reports, but not *believe* ones, involve reference to an actual speech act that has been witnessed in some way or another by the reporting agent, and that *say*-reports constructions involve reference to such acts, not merely to the propositions they convey; as a consequence, contrary to *say* reports, only belief reports "are concerned with *what* is the expressed and not with *how* this content is expressed" (p. 10). Following Gunlogson (2004) and Farkas and Bruce (2010), Brasoveanu and Farkas (2007) elaborate on this distinction and propose an account of IS reports as reference to speech events specified with both linguistic form and content (Anand and Hacquard 2008, 2014; cf. §4.2.2). While a detailed rendering of their analysis would take us too far afield, it is important for our purposes to note that, although Brasoveanu and Farkas (2007) do not discuss DS/quotation, their observations actually brings IS much closer to DS than standard theories on reported speech structures do. As such, these observations do not directly speak against the Conflation Thesis, but assess the more general divide-and-conquer strategy put forth by the Conflation Thesis theorist: to some extent, it seems that *faithfulness* along various dimensions of meaning also applies to IS constructions as well, calling in question the relevance of opposing the two modes of report as being defined by binary features, with DS instantiating all the properties in Table 4.2 and IS, their negation.

### From names to demonstrations

We saw that DS can felicitously report utterances that are inaccurate, accommodated to some extent, attributed to the wrong speaker and, sometimes, inactual or inexistent. As such, this constitutes a major argument against the *faithfulness* principle; since *faithfulness* in reporting requires a verbatim reproduction of a previous sentence (alongside with the identification of its author), the principle is refuted by examples involving inactual or falsely attributed utterances. However, intuitively, we still want DS to *report* something - the question being now, how do we characterize the content of a report, if not reproduction of an existing utterance? A possible solution would be to assume, following Clark and Gerrig (1990), that DS (and quotation more generally) are *linguistic depictions* or *demonstrations* of a speech event. Demonstrations are both selective and partial events: as Clark and Gerrig (1990) put it, they depict rather than describe, and the speaker does so by selecting one or more aspects (but crucially, not every single one) of the linguistic event she is aiming at depicting. This aspect can be the form of the utterance itself, alongside its prosody, the accent the speaker used, and the gestures and facial expressions associated with it, such as frowns, giggles, and so on. This accounts for the inherent flexibility exhibited by quoted complements, as illustrated in the following examples:

processing cost can be explained by assuming that DS constructions involve a more cognitively demanding task of perspective shifting. For similar experiments and results in English, see i.a. Kaiser (2015) and Harris (2021).

(267) a. And so the kid would say, 'Blah blah blah? [tentative voice with rising intonation]' and his father would say, 'Blah blah blah [in a strong blustery voice],' and they would go on and on like that.

b. The car engine went [brmbrm], and we were off.

c. I got out of the car, and I just [demonstration of turning around and bumping his head on an invisible telephone pole].

d. 'Held in a sorter castle. Just like a horror film, wonnit?' she said to Basil. 'Suits of armour and stuffed animals' heads and everyfink.' (David Lodge, *Nice Work*)

e. 'You must leave all your wet things to be dried.' 'O! *Entre frères*! In any boat-house in ENGLAND we should find the same' (I cordially hope they might.) '*En Angleterre, vous employez des sliding-seats, n'est-ce pas*?' 'We are all employed in commerce during the day; but in the evening, *voyez-vous, nous sommes sérieux*.' (R. L. Stevenson, *An Inland Voyage*)

[Clark and Gerrig 1990: (24), (28a), (31a), (37), (38)]

According to Clark and Gerrig (1990), demonstrations are always selective: whatever feature of quotation that is selected to be depicted by the reporting speaker obeys Grice's maxims of quantity (*Make your contribution as informative as is required*) and manner (*be perspicuous*): "to mark an aspect is to imply that it has a recognizable purpose and, therefore, isn't incidental." (Clark and Gerrig, 1990, p. 774). Since the reporting speaker is not trying to reproduce some linguistic utterance, but to selectively depict some aspects of it, the demonstration will still prove to be successful if the hearers are able to identify the selected aspect as a central feature of the reported event, even if the demonstration differs significantly from the original event being reported. As a matter of fact, the demonstration does not presupposes the existence of an original report, but merely that the hearer can felicitously recognize that such a report could have been produced by its potential author. As such, the demonstration theory sidesteps the problems of existing utterances and authoring sources mentioned above, as well as other problems associated with the *faithfulness* constraint. For this reason, the theory is able to account why, in most cases, most speakers fail to reproduce utterances faithfully, even when they are explicitly asked to (cf. Clark and Gerrig 1990, (65)).

### 4.2.3 Iconicity and role shift in sign languages

In most sign languages, reported speech is achieved through a construction known as *role shift* (henceforth RS, Lillo-Martin 1995; Quer 2005; Lillo-Martin 2012; Schlenker 2017a, 2017b).[5] RS makes use of a dedicated set of non-manual markers (RS-NMMs) visibly

[5] Here is a list of glossing conventions for sign languages used in this paper:

scoping over the reported material, thus providing evidence for a somewhat grammaticalized form of embedding marker (Lillo-Martin, 1995). This is exemplified in Figure 3.1, where the signer leans her body towards the ipsilateral side (the side of the dominant signing hand), tilts her head, and shifts her eyegaze to the opposite direction, exemplifying the three most common RS-NMMs that have been observed for most SLs investigated so far (Lillo-Martin, 2012).


Figure 4.3: RS-NMMs: eye gaze shift, body lean and head tilt in American Sign Language (from Lillo-Martin 2012: 369.)

RS constructions are of special interest, since its share many of the core properties of both reported speech structures traditionally described in spoken languages. However, the theoretical status of RS and the kind of reporting construction that it realizes has been vigorously debated in the literature, with some arguing that is should be analyzed as a form of DS (Lee et al. 1997; Davidson 2015; Maier 2018), while others viewing it as a genuine embedded form, more similar to spoken language IS constructions (Lillo-Martin 1995, Quer 2005, Schlenker 2017a, 2017b). So far, the debate is still open, since the available data - mostly from American Sign Language (ASL, Lillo-Martin 1995; Lee et al. 1997; Davidson 2015; Schlenker 2017a, 2017b), French Sign Language (LSF, Meurant 2008; Schlenker 2017a, 2017b), German Sign Language (DGS, Herrmann and Steinbach 2012; Hübl 2013; Hübl et al. 2019) and Sign Language of the Netherlands (NGT; see chap. 3), among others - is ultimately unconclusive: RS seems to possess properties of both kinds of constructions, making it into a category of its own. For instance, the meaning of indexical pronouns $IX_1$ and $IX_2$ under role shift undergo a change in meaning, being used to refer to the reported speaker and addressee instead of the actual ones, respectively - just as they would in spoken language quotation (*shiftiness*); however, which expressions are

- $\text{IX}_1$, $\text{IX}_2$: first and second person indexicals;
- $\text{IX}_a$: third person pronoun associated with locus $a$, the region in the signing space where the associated discourse referent has been located;
- $\underline{\quad}^{\text{rs}}$: a role shift construction. The horizontal line indicates the scope of the role-shift non-manual markers;
- $\underline{\quad}^{\text{eg-r/l, h-r/l, b-r/l}}$: a role shift construction, with the precise marking of non-manual markers (eyegaze shift, head tilt, body lean) and their direction (right/left);
- $\underline{\quad}^{\text{t}}$: a topicalized constituent.

subject to this constraint seems to vary across languages (cf. Quer 2005, **?** for Catalan Sign Language; Hübl 2013, Hübl et al. 2019 for DGS). Likewise, the status of *opacity* and *integration* is still largely debated, as mentioned. The only consensus that seems to emerge from the literature regards *faithfulness*, with both parties agreeing on the fact that RS constructions have to be maximally iconic, i.e. depicting as faithfully as possible the form of the original report alongside its paralinguistic components (e.g., facial expressions) (Davidson 2015; Schlenker 2017b). Canonical properties of RS are summarized in table (4.3).

The shifting of reference for indexicals observed in RS constructions aligns with what has been observed in spoken languages like Amharic (Schlenker, 2003) or Zazaki (Anand and Nevins 2004; Anand 2006), where shifting of indexicals systematically occurs in speech reports (see §4.3). A popular line of inquiry (see Anand 2006; Deal 2020) assumes that shifting in those languages is the result of a context-shifting operator introduced by the attitude verb, which modify the context parameters indexicals obtain their reference from, as standardly assumed in semantic theorizing since Kaplan (1977). Consequently, it has been proposed that a similar operator can be found in sign languages, and that RS-NMMs are an overt manifestation of it (Quer 2005; Herrmann and Steinbach 2012; Schlenker 2017a, 2017b), rendering visible what is left covert in spoken language – a common trait of languages making use of the visual-gestural modality (Schlenker, 2018). This line of inquiry is motivated by further tests aiming at diagnosing the embedded status of RS constructions (cf. §4.3.2 below). For instance, since due to *opacity*, *wh*-extraction is generally taken to be prohibited in DS constructions, Schlenker (2017a) argues that ASL examples such as (268) rules out the possibility of RS being quotation. However, the same constructions in LSF are judged ungrammatical, (269):

(268) *Context: The speaker is in NYC; the listener was recently in LA with John.*
BEFORE $\text{IX}_a$ JOHN IN LA WHO $\text{IX}_a$ SAY $\overline{\text{I WILL LIVE WITH}}^{\text{RS}}$ WHO?
'While John was in LA, who did he say he would live with there?'
[Schlenker 2017a: (7)]

(269) a. PIERRE SAY $\overline{\text{IX}_1 \text{ LIKE MARIE}}^{\text{RS}}$
'Pierre$_i$ said that he$_i$ likes Marie.'

b. *PIERRE SAY $\overline{\text{IX}_1 \text{ LIKE}}^{\text{RS}}$ WHO?
*intended:* 'Who did Pierre say that he likes?'

c. *PIERRE SAY WHO $\overline{\text{IX}_1 \text{ LIKE}}^{\text{RS}}$ WHO?
*intended:* 'Who did Pierre say that he likes?' [Schlenker 2017a: (23)]

However, the interpretation of these examples is subject to caution. Lee et al. (1997), for instance, argue that the limited possibility of *wh*-movement to the right edge of RS

constructions is precisely what argues against their status as independent clauses (see also Loos 2018 for similar conclusions about clause structure and size in DGS and NGT). Assuming the RS construction to be a single clause, we expect the *wh*-element referring to the subject of the verb SAY to be able to move to the end of the clause, as in (270b); however, this is not possible (270e).

(270) a. $\overline{\text{WHO BUY BOOK?}}^{\text{wh}}$
'Who bought the book?'

b. $\overline{t_i \text{ BUY BOOK WHO}_i\text{?}}^{\text{wh}}$
'Who bought the book?'

c. $\overline{t_i \text{ EXPECT MARY PASS TEST WHO}_i\text{?}}^{\text{wh}}$
'Who expected Mary to pass the test?'

d. MARY SAY $\overline{t_i \text{ BUY BOOK WHO}_i\text{?}}^{\text{RS, WH}}$
'Mary said who bought the book?'

e. $*\overline{t_i \text{ SAY } \overline{\text{MARY BUY BOOK}}^{\text{RS}} \text{ WHO}_i\text{?}}^{\text{wh}}$
*Intended:* 'Who Mary said bought the book?' [Lee et al. 1997: 34]

This seems to indicate that RS constructions are unembedded clauses, exhibiting a relatively high degree of syntactic independence. Another argument put forth by Lee et al. (1997) concerns the placement of adjuncts. RS constructions tolerate sentence-final adverbs after the reporting verb SAY, as in (271c), which would be predicted to be ungrammatical, were RS a genuinely embedded construction; it would allow the adverb YESTERDAY to occur at the end of the embedded sentence, contrary to fact.

(271) a. JOHN BUY BOOK YESTERDAY
'John bought a book yesterday.'

b. JOHN SAY $\overline{\text{MARY BUY BOOK YESTERDAY}}^{\text{RS}}$
'John said Mary bought a book yesterday.'

c. JOHN SAY YESTERDAY $\overline{\text{MARY BUY BOOK}}^{\text{RS}}$
'John said yesterday Mary bought a book.'

d. *JOHN SAY $\overline{\text{MARY BUY BOOK}}^{\text{RS}}$ YESTERDAY
*Intended:* 'John said Mary bought a book yesterday.'

e. *JOHN SAY YESTERDAY MARY BUY BOOK
*Intended:* 'John said yesterday Mary bought a book.'

[Lee et al. 1997: 30-31]

Another relevant property that characterizes RS constructions is their iconicity requirement. Schlenker (2017b) reports that, for both ASL and LSF, paralinguistic material (such as facial expressions, non-sign gestures, postures, etc.) that occur under role shift has to be attributed to the agent of the reported speech act. In the following example (from a series of video elicitations), the paralinguistic facial expression of the signer's happy face (glossed as ☺) occurring during the reported construction was attributed to the original signer when no RS was used. By contrast, under RS, the 'happy face' expression was attributed either to both the original signer and the reported agent, the German swimmer (4 trials), or to the German swimmer only (1 trial). As Schlenker notes (p. 14), the last sentence with both the facial marker ☺and RS-NMMs is a bit degraded (score 4 out of 7), presumably so because the sentence was pragmatically odd - the German swimmer being angry and displaying a happy face at the same time:

(272) $\text{IX}_2$ SEE $\text{IX}_a$ SWIMMER GERMAN$_a$ ARROGANT. YESTERDAY $\text{IX}_a$ FURIOUS.
'You see that arrogant German swimmer? Yesterday he was furious.'

a. $\text{IX}_a$ SAY $\text{IX}_a$ WILL LEAVE.
'He$_i$ said he$_i$ would leave.' [*mean score: 7*]

b. $\overset{\text{☺}}{\overline{\text{IX}_a \text{ SAY } \text{IX}_a \text{ WILL LEAVE.}}}$
'He$_i$ said he$_i$ would leave.' [*mean score: 7*]
$\rightsquigarrow$ *the happy face is the original signer's (5 trials)*

c. $\text{IX}_a$ SAY $\overset{\text{RS}_a}{\overline{\text{IX}_1 \text{ WILL LEAVE.}}}$
'He$_i$ said he$_i$ would leave.' [*mean score: 7*]

d. $\overset{\text{☺}}{\overline{\text{IX}_a \text{ SAY } \overset{\text{RS}_a}{\overline{\text{IX}_1 \text{ WILL LEAVE.}}}}}$
'He$_i$ said he$_i$ would leave.' [*mean score: 4*]
$\rightsquigarrow$ *the happy face is both the original signer's and the German swimmer's (4 trials) or the German swimmer's only (1 trial)*

[LSF, Schlenker 2017b: (18)-(19)]

The main difference between non-RS and RS reports is that the latter are 'maximally iconic' or 'maximally quotational', in the sense that both grammatical and non-grammatical material appearing in them must be attributed to the agent of reported discourse; this requirement does not hold for non-RS structures. As Schlenker (2017b) himself acknowledges, theories that treat RS as a form of indirect discourse form, such as the context-shift theory outlined above, cannot straightforwardly account for this fact (Schlenker 2017b proposes an additional constraint on RS as a form of semantic enrichment; see pp. 34 *sqq*). A DS account of role shift, however, fares better in this respect, since *faithfulness* requirements immediately captures the data in (272a)-(272d).

Turning now to *shiftiness*, it has been observed that most sign languages allow a 'shifting of perspectives' under RS. As first noted by Quer (2005) for Catalan Sign Language (LSC), some indexicals fail to shift even when they are under the scope of role-shift non-manual markers. An example is (173), where the location indexical HERE retains its indexical meaning:

(273) $\overline{\text{IX}_a\ \text{MADRID}_m\ \text{MOMENT}}^{t}\ \text{JOAN}_i\ \overline{\text{THINK IX}_{1i}\ \text{STUDY FINISH HERE}_b}^{\text{RS}_i}$
'When he was in Madrid, Joan thought he would finish his study here (in Barcelona).'
[Quer 2005: (6)]

In the above example, the first person indexical $\text{IX}_1$ is shifted towards JOAN, the reported speaker, while the locative indexical HERE denotes the actual place of utterance, Barcelona. Similar data about the indexical HERE were found in Russian Sign Language (RSL, Kimmelman and Khristoforova 2018) and DGS (Hübl 2013, Hübl et al. 2019), as demonstrated in (174) and (175):

(274) $\text{IX-3}_a$ WOMAN PAST ST.PETERSBURG $\text{TELL}_b$ MAN $\text{IX-3}_b\ \overline{\text{IX-1 WORK HERE}}^{\text{eg-r,h-r,b-r}}$
'A woman$_i$ when she was in St. Petersburg$_k$ told a man: "I$_i$ work here$_{k/m}$".'
[Kimmelman and Khristoforova 2018: (9)]

(275) PAST M-A-R-I-E HANNOVER $\text{IX}_l$ SAY $\overline{\text{HERE IX-1 LIKE LIVE}}^{\text{rs}}$
'When Marie was in Hannover she said that she would like to live in Göttingen.'
[Hübl 2013: (4)]

In (174), HERE can either refer to the actual place of utterance, Moscow, or to that of the attitude holder (the woman), St Petersburg. No such optionality is allowed in (175), which mirrors the LSC data in (173) above, where HERE unambiguously denotes the actual location, Göttingen. Hübl (2013) provides further evidence that a similar pattern can be found for the temporal indexical TODAY in DGS, (176):

(276) PAST WEDNESDAY M-A-R-I-E $\text{IX}_{3a}$ T-I-$\text{M}_{3b}$ BOTH EAT $\text{IX}_l$ $_1\overline{\text{INFORM}_2\ \text{IX}_1\ \text{LIKE TODAY DANCE}}^{\text{rs}}$
'On Wednesday, Marie and Tim ate together and she said that she would like to go dancing on Thursday.' [Hübl 2013: (5)]

While analogous data about other indexicals are scarce, it may be the case that some sign languages might similarly allow pronominal indexicals $\text{IX}_1$ and $\text{IX}_2$ not to shift while being scoped above by role-shift non-manual markers; this is observed indeed in DGS, where Hübl et al. (2019) report that the second person form $\text{IX}_2$ can denote the actual addressee under RS:

(277) a. *Felicia says:*
IX$_1$ DREAM ANNA IX$_3$ LOTTO WIN
'I have dreamed that Anna won the lottery.'

b. *Tim reports to Anna:*
FELICIA $_3$INFORM$_1$ $\overline{\text{IX}_1 \text{ DREAM IX}_2 \text{ LOTTO WIN}}^{\text{rs}}$
'Felicia$_i$ told me$_T$, she$_i$ dreamed that you$_A$ won the lottery.'
[Hübl et al. 2019: (28)]

It therefore appears that *shiftiness* only partially obtains in RS constructions: some indexicals are evaluated within the reported context introduced by RS, while some others are evaluated against the original context of utterance. This seems to vary alongside two dimensions, which are i) the type of indexical expression used, and ii) the language. However, the precise nature of this variation is unknown, and an explanation of its *raison d'être* is still lacking.[6]

Taken together, the examples in this section show that RS constructions seem to exhibit properties traditionally ascribed to both DS and IS constructions: like DS, RS structures fail to exhibit signs of *integration*, and seem to behave just like DS with respect to *opacity* (although ultimately unconclusive in the case of ASL) and *faithfulness*; just like in IS, however, some indexicals can remain anchored to the actual context of utterance even when under role-shift non-manual markers, therefore displaying variation in *shiftiness*.

### 4.2.4 An event-based semantics for speech reports

Davidson (2015) is a recent proposal to integrate Clark and Gerrig's demonstration theory into a compositional semantics framework. She proposes to incorporate a new type of linguistic object, $d$, into a Neo-Davidsonian event-based semantics.[7] In Davidson's proposal, demonstrations are treated as special kind of events, namely, events that have a communicative purpose and stand for other events. As such, demonstrations can be of various types, ranging from linguistic utterances to gestures of different sorts. She defines a new predicate, *demonstration* (henceforth: DEM) that takes two arguments, an event $e$ of type $v$ and a demonstration $d$ of type $d$:

(278) $[\![\text{DEM}]\!] = \lambda d.\lambda e.$ demonstration-of $(d, e)$

Following insights from Landman and Morzycki (2003), Davidson (2015) assumes that DEM is lexicalized in English by various kinds of lexical elements, such as the predicate *be like*, (279):

[6] Proposals to account for the variation in terms of iconicity requirements have been made by Hübl (2013) and Davidson (2015). However, recent data from NGT suggest that this interpretive variation could have a morphological source (see also chap. 3).
[7] Cf. the analogous proposal of Potts (2007), who makes use of an utterance type $u$.

(279) a. John was like *I'm happy*.

b. $[\![(279a)]\!] = \exists e.AG(e, J) \wedge \text{DEM}(d_1, e)$ [Davidson 2015: (29)]

A similar analysis applies for non-linguistic demonstrations, as (280), where the two predicates combine via intersective predicate modification:

(280) a. Bob was eating like [gobbling gesture with hands and face]

b. $[\![(280a)]\!] = \exists e.AG(e, B) \wedge eating(e) \wedge \text{DEM}(d_1, e)$ [Davidson 2015: (33)]

In other words, demonstrations can either be arguments of modifiers of events, depending in which kind of structure they are inserted. Another example of demonstration-as-modifier constructions is given in (281), where the demonstration combines with the event argument introduced by *say*:

(281) a. John said *I'm happy*

b. $[\![(281a)]\!] = \exists e.AG(e, B) \wedge saying(e) \wedge \text{DEM}(d_1, e)$ [Davidson 2015: (31)]

Some predicates are more restrictive regarding the kind of demonstration they can take as arguments. *say* events, for instance, are more restrictive than events introduced by *be like* constructions in that they only take linguistic demonstrations as arguments. This restriction stems from the lexical semantics of *say*, combined with world knowledge: knowledge of the meaning of *say* plus its conditions of use prevent speakers to use it for introducing demonstrations that do not involve utterances.[8] An immediate consequence of this treatment is that it immediately captures the *faithfulness* constraint of DS: proper demonstrations of saying events tend to be faithful to the words initially used in the original utterance precisely because they aim at depicting it - we can refer to this property as the *iconicity* of demonstrations (something also enforced in sign language reports using role shift, cf. §4.2.3).

Davidson's demonstration-as-events analysis has been extended further by Maier (2017, 2018), who extends the present account to mixed quotation cases. Following Hacquard (2010) and Anand and Hacquard 2008, 2014, Maier (2017) assumes that some events are 'contentful' in that they have propositional content (cf. also Kratzer 2006, Moulton

[8] Rudin (2023) adopts Davidson's analysis and makes this restriction fully explicit by positing the lexical entry for *say* in (282a), as well as the meaning postulate in (282b):

(282) a. $[\![\text{say}]\!] = \lambda e.\text{SAY}(e)$

b. $\forall e(\text{SAY}(e) \leftrightarrow \forall u(\text{DEM}(e, u) \rightarrow \text{VOCAL}(u)))$

Where the extension of *say* is defined as the set of saying events, and VOCAL as the set of all performances with a vocal component. To adapt Rudin's proposal to sign languages, one could simply modify the latter for it to refer to the set of all *externalized conventional gestures*, for instance.

2009). A typicality of *say*- and other attitudinal-like events is that they both have a content and a form; while indirect discourse targets the former, direct discourse typically aims at rendering the latter. In order to capture this, Maier (2017) makes use of two different functions, CONTENT and FORM. CONTENT is a function from contentful eventualities to propositions, while FORM is a function from such eventualities to their form.

(283) a. $[\![\text{CONTENT}]\!] = \lambda e.\lambda p.$ content-of $(p, e)$

b. $[\![\text{Mary}_i \text{ said she}_i \text{ would never forgive me}]\!]^{g,c} = \exists e[say(e) \wedge AG(e, M) \wedge \text{CONTENT}(e) = \lambda w.g(i)$ will never forgive $s(c)$ in $w]$

(284) a. $[\![\text{FORM}]\!] = \lambda e.\lambda u.$ form-of $(u, e)$

b. $[\![\text{Mary}_i \text{ said 'I}_i \text{ will never forgive you'}]\!]^{g,c} = \exists e[say(e) \wedge AG(e, M) \wedge \text{FORM}(e) =$ ⌜ I will never forgive you ⌝$]$

Maier's analysis is therefore a genuine mix between the mixed quotation analysis of Potts (2007) and the demonstration analysis of Clark and Gerrig (1990) and Davidson (2015), since it also allows integration of pure quotation within the logical form of sentences.

The demonstration analysis can straightforwardly be extended to role shift constructions. Following Maier 2017, 2018, a way to do this is by assuming that role shift non-manual markers (i.e. eyegaze shift, body lean and head tilt) that take scope over the reported construction spell out the quotative operator FORM in (284), which takes an event $e$ and an utterance $u$ as arguments, while the paralinguistic marking :-) is analyzed as a form of demonstration, which is pragmatically licensed by the DEM function:

(285) a. $[\![\text{FORM}]\!] = [\![\text{RS-NMMS}]\!] = \lambda e.\lambda u.$ form-of $(u, e)$

b. $[\![\text{DEM}]\!] = \lambda d.\lambda e.$ demonstration-of $(d, e)$

c. $\overline{[\![\text{IX}_a \text{ SAY } \overline{\text{IX}_1 \text{ WILL LEAVE.}}^{\text{RS}_a}]\!]^{g,c,i}}^{\text{☺}} =$
$\exists e[say(e) \wedge AG(e, \text{IX}_a) \wedge \text{FORM}(e) =$ ⌜ I will leave ⌝ $\wedge \text{DEM}(\text{☺}, e)]$

An analysis of RS in these terms captures *faithfulness* requirements; RS-NMMs require a previous signed utterance $u$ (or the possibility for some designed signer to produce such utterance, cf. discussion in 4.2.2 above), and signers are expected to match its form as adequately as possible in order for their hearers to identify it as such, therefore licensing maximal iconicity effects. It also accounts for *opacity*, since whatever is enclosed within the expression $u$ cannot be modified/moved/extracted (not being able to partake in grammatical dependencies), accounting for the data in (268)-(270). However, the *shiftiness*-related data from examples (173)-(**??**) is still problematic. In order to account for it, Maier 2017 proposes an unquotation mechanism where some expressions enclosed within

the quotation are able to escape quotational marking, and be regularly interpreted via the CONTENT function. Our example in (173) would therefore be interpreted as follows, where the square brackets [ ] signal unquotation:

(173) a. $\overline{\text{IX}_a\ \text{MADRID}_m\ \text{MOMENT}}^{t}\ \text{JOAN}_i\ \overline{\text{THINK IX}_{1i}\ \text{STUDY FINISH}\ [\text{HERE}_b]}^{\text{RS}_i}$

b. $[\![(173)]\!]^{g,c,i} = \exists e[say(e) \wedge AG(e, J) \wedge \exists e' \sqsubset e[\text{FORM}(e) = \ulcorner \text{THINK IX}_{1i}\ \text{STUDY FINISH} \urcorner \cap \text{FORM}(e') \wedge \text{CONTENT}(e') = l(c)]]$

Here, the reported saying event $e$ is relativized to the sub-event $e$' of reporting, which also has both a form and a content: its form is the sign HERE in LSC, which has the indexical denotation $l(c)$, the location of the context of utterance, Barcelona. The sign $\cap$ is used to denote concatenation, which in this case, is concatenation of signs within the sequence THINK $\text{IX}_{1i}$ STUDY FINISH [$\text{HERE}_b$].

While this can felicitously account for the mixed behavior of indexicals in our examples, allowing such a mechanism to occur freely would massively overgenerate, since in principle, any expression could be unquoted (note that this mirrors the problem of mixed quotation discussed in §4.2.1 that mixed quotation does not appear to be restricted syntactically). In order to prevent this, Maier (2017) proposes two additional pragmatic principles that aim at accounting for the observed restrictions. The first is the *verbatim* constraint, which is basically our *faithfulness* property as stated in §4.2 above; Maier turns it into a pragmatic principle that enforces speakers to faithfully reproduce the form of the initial speech act:

(286) **Verbatim** [Maier 2017: (24)]
In direct discourse, faithfully reproduce the linguistic form of the reported utterance.

The second constraint is specifically aimed at accounting for the fact that some indexicals seem to systematically escape quotations:

(287) **Attraction** [Maier 2017: (23)]
When talking about the most salient speech act participants, use indexicals to refer to them directly.

However, while both *attraction* and *verbatim* can account for examples such as (173), it fails at accounting for examples such as (174) or (175), where locative indexicals are indeed unquoted, but person indexicals refer to the agent of the reported utterance; similarly, it cannot explain why, in sentences containing multiple person indexicals such as (277), the first person indexical $\text{IX}_1$ is quoted, while the second person form $\text{IX}_2$ gets unquoted.

## 4.3 A case study: indexical reference in reported speech

The data above have shown that most of DS constructions used in natural language fail to exhibit the crucial properties ascribed to them by the Conflation Thesis theorist. Let us however assume for the sake of the argument that the Conflation Thesis is right and assume with Partee (1973) that mixed quotation and related phenomena are of no relevance when it comes the study of speech reports, and that direct speech *is* quotation *qua* metalinguistic reference (I will simply use the term *quotation* to refer to pure quotation in that sense from now on). Could there be any linguistically relevant phenomenon that could provide us with an argument in favor/against the Conflation Thesis? It so happens that there is: the phenomenon of indexical shift (Schlenker 1999, 2003; Anand 2006; Deal 2013, 2017, 2020 i.a.).

### 4.3.1 Indexical shift: background

Consider the following sentences from English, from a now famous example by Kaplan (1977):

(288) a. #Otto$_i$ said that I$_i$ am a fool.

b. Otto$_i$ said that he$_i$ was a fool. [Kaplan 1977: 511]

The distinction here is obvious: while *I* in (288a) refers to the speaker of the original speech act, the occurrence of *I* in (288b) refers to the utterance speaker, and will always do so: as Kaplan puts it,

> There *is* a way to control an indexical, to keep it from taking primary scope, and even to refer it to another context (this amounts to changing its character). Use quotation marks. If we *mention* the indexical rather than *use* it, we can, of course, operate directly on it. (Kaplan 1977: 510-511, italics his)

Kaplan's allusion to quotation in terms of mention rather than use is significant here, for it is directly borrowed from the philosophical conception of quotation discussed above: Kaplan, as his predecessors, draws a significant line between indirect and direct discourse/quotation, the former involving using an expression and the latter merely mentioning it, i.e., referring to its name. This is what explains the rigidity of indexicals: without inserting quotation marks, there is no possible anaphoric reading of the indexical in (288b), since outside of quotation, *I* always rigidly refers to the speaker. Kaplan captures this in a two-dimensional semantic framework, in which indexical meanings are interpreted through a dedicated sequence of parameters, called the *context* - a function from contexts (as a body of coordinates formally representing the conversation) to contents (or meanings). This is what Kaplan dubs a *character*:

(289) a. $[\![\text{I}]\!]^{g,c,i}$ = the speaker in $c$

b. $[\![\text{you}]\!]^{g,c,i}$ = the addressee in $c$

c. $[\![\text{here}]\!]^{g,c,i}$ = the location of $c$

d. $[\![\text{now}]\!]^{g,c,i}$ = the time of $c$

In English, there are no operators that could operate on character, *save quotation*: this is the famous *ban against monsters*. Here is the relevant passage from his *Logic of demonstratives*: "Operators like 'in some contexts it is true that', which attempt to meddle with character, I call *monsters*. I call that none can be expressed in English (without sneaking in a quotation device)." (Kaplan, 1977, 511). Note importantly here that, contrary to what is commonly assumed (notably in Schlenker 2003 i.a.), Kaplan's ban against monsters is confined to English: it does *not* prevent any monsters from existing in some other (natural or formal) language. It so just appears that English has none, except quotation marks.[9]

Now, the ban on monsters may be operative in English, but there might very well be languages in which this is not the case - languages in which first and second person pronouns, as well as temporal and locative adverbials could be used in attitude reports to refer to the original participants of the event being reported. It seems that Amharic (Semitic; Ethiopia) and Zazaki (Iranian; Turkey) are such languages:

(290) *jon jəgna nə-ññ yɨ-l-all*
John hero COP-1SG.S 3SG.M.S-say-AUX.3SG.M.S

'John$_i$ says that he$_i$ is a hero'

[Amharic, Schlenker 1999: (12)]

(291) *Hɛsen-i mɨ-ra va kɛ ɛz dɛwletia*
Hesen-OBL 1SG-OBL say COMP 1SG.NOM rich.be.PRS

'Hesen$_i$ tells me$_{s(c)}$ that he$_{i/s(c)}$ is rich.'

[Zazaki, Anand and Nevins 2004: (4)]

In (290), the first person marker *ññ* does not refer to the utterance speaker, but to the reported speaker, *John*. Something similar occurs in (291), where the nominative first person *ɛz* embedded under *va* '*say*' can either refer to *Hesen* or the utterance speaker. This phenomenon, known as indexical shift (henceforth, IS), has been reported for a wide variety of languages pertaining to different families, ranging from Semitic (Amharic, Tigrinya) to Athabaskan (Slave) and Turkic (Uyghur, Chuvash).[10] Languages with shifted

[9] On Kaplan's notion of *monster* and its role within semantic theory and debates about context-sensitivity, cf. notably Rabern and Ball (2017).

[10] See Deal (2020) and Chapter 2 for comprehensive typologies of indexical shift.

indexicals are widespread cross-linguistically and considerably differ as to which indexicals can shift, and under which conditions. First, languages differ as to which elements undergo shifting: some allow for 1st person shifting only (Slave, Rice 1986), others allow 1st and 2nd person to shift (Uyghur, Sudo 2012, Shklovsky and Sudo 2014), and some allow for all indexicals to shift without restrictions (Matses, Ludwig et al. 2010; Munro et al. 2012). Variation can also be observed regarding the kind of verb under which indexicals are allowed to shift: most IS-languages allow shifting under the scope of *say*, with only a small subset of those allowing shifting under other predicates, such as *believe* and *know*. Finally, languages vary as to whether indexical shift is obligatory, as in Uyghur (Shklovsky and Sudo, 2014) or Navajo (Speas, 1999), or optional, as in Zazaki (Anand and Nevins 2004; Anand 2006).

### 4.3.2 Indexical shift as an indirect speech phenomenon

In order to capture this, Anand and Nevins (2004) suggested that the shifting of indexicals may be induced by the presence of a 'monstrous' operator 👻 in the embedded clause.[11] The semantics of this operator are straightforward: it rewrites the kaplanian context coordinates of a contex-sensitive expression $\alpha$ - a tuple of parameters consisting of an author (or speaker) $s$, an addressee $ad$, a world $w$, a time $t$ and a location $l$ - with the values of the *index*, or circumstances of evaluation, consisting of a similar set of coordinates (c.p. Zimmermann 1991, Von Stechow and Zimmermann 2005):

(292) $[\![ \text{👻}\, \alpha ]\!]^{g,c,i} = [\![ \alpha ]\!]^{g,i,i}$

Depending on the language, the operator is generally taken to be introduced by attitude verbs such as *say*, which then allows the first (and second) person in embedded clauses to refer to the reported speaker and addressee, respectively:

(293) a. $[\![ \text{👻 I} ]\!]^{g,c,i} = [\![ \text{I} ]\!]^{g,i,i} = \textit{speaker(i)}$

b. $[\![ \text{👻 You} ]\!]^{g,c,i} = [\![ \text{You} ]\!]^{g,i,i} = \textit{addressee(i)}$

(294) $[\![$ Yesterday Rojda said to Bill that 👻 I am angry at you $]\!]^{g,c,i} = 1$ iff $\forall i'$ compatible with what Rojda said in $i$, then the speaker in $i'$ is angry at the addressee in $i'$.

Once the 👻 is inserted, all indexicals within its scope will thus inherit the value of the embedded context. In optional shifting languages like Zazaki, the monster needs not be inserted; hence, in those, an indexical or 'unshifted' reading is always available.

[11] Anand and Nevins (2004) and Anand (2006) write $OP_{\forall}$ for the context-shifting operator; the 👻-notation is from Sudo (2012).

### *Opacity* arguments

As suggested in §4.2.1, a consequence of understanding quotation as metalinguistic reference is that quoted expressions are referentially opaque. This is illustrated by a telling passage of *Word and Object*:

> Rephrased for quantification and other variable- binding operations, this says that no variable inside an opaque construction is bound by an operator outside. You cannot quantify into an opaque construction. When '$x$' stands inside an opaque construction and '$(x)$' or '$(\exists x)$' stands outside, the attitude to take is simply that that occurrence of '$x$' is then not bound by that occurrence of the quantifier. An example is the last occurrence of '$x$' in:
>
> (1) $(\exists x)$($x$ is writing '$9 > x$').
>
> This sentence is true when and only when someone is writing '$9 > x$'. Change '$x$' to '$y$' in its first two occurrences in (1), and the result is still true when and only when someone is writing '$9 > x$'. Change the last '$x$' to '$y$', and the case is otherwise. The final '$x$' of (1) does not refer back to '$(\exists x)$', is not bound by '$(\exists x)$', but does quite other work: it contributes to the quotational name of a three-character open sentence containing specifically the twenty-fourth letter of the alphabet. [Quine 1960: 151]

Referential opacity is therefore one of the cornerstones of the proper name theory of quotation.

The question is therefore the following: how general is this principle? As the discussion above shows, the mere existence of indexical shift as an empirically interesting phenomenon distinct from quotation is the fact that indexicals in these constructions are not mentioned, but used; in other words, following the CT theorists, that indexicals here are not part of direct speech constructions, but genuinely syntactically and semantically embedded, just as they would be in English indirect discourse. Therefore, the indexical shift theorist must first endeavor to prove that these indexicals are not quoted. In order to to this, one has to demonstrate that the constructions at stake violate at least one of the properties listed in Table 4.2 above. A relevant example of such a strategy is that of Schlenker (1999), who argues that the following Amharic sentences are not instances of quotation (glosses as per the original examples):

(295)

| *mən* | *amTa* | *ðndaläNN* | *alsäamahumm* |
|---|---|---|---|
| what | bring.IMP.2SG | that-he-said-to-me | I-didn't-hear |

'I didn't hear what he told me to bring.'

[Amharic, Schlenker 1999: (13a)]

(296) *mIr namd yð-bar-e xðma an-sðma-xw*
what bring.IMP.2SG yd.say.to-me that NEG.listen.I

'I didn't hear what he told me to bring.'

[Chaha, Schlenker 1999: (13b)]

Schlenker (1999) argues that (295) cannot involve quotation, because

> If the embedded clause had been quoted, the original discourse should have been of the form: 'bring what!'. However this is not the correct reading, as the translation shows (in fact, such a direct discourse would presumably be meaningless). Rather, the report means that he told me 'Bring X!', and I didn't hear what X was. The fact that there is an indirect question shows that the embedded clause is not quoted.

In other words, the question reported in (295) takes wide scope and targets the reported imperative command embedded under the reporting verb *an-sðma-xw*, '*listen*' (note that in English, *listen* does not allow any embedding in the indirect mode). Schlenker (1999)'s argument involves a slighly modified version of the opacity principle in (253), which he states as follows:

(297) Quotation can never be affected by grammatical processes. In particular, overt or covert extraction out of a quotation is impossible. [Schlenker 1999: 33]

The principle in (297) is in fact a corollary of *opacity*, ruling out any grammatical and semantic dependencies from matrix to embedded clauses. Since extraction of *wh*-words is ruled out in French and English (as in (298) and (299)), and that the sentences in (295) and (296) are fully grammatical with a wide scope reading of the *wh*-element, then per (297) these must be indirect, rather than direct, reports.

(298) a. What did John say he liked *t*?

b. #What did John say: 'I like *t*'?

(299) a. Qu'est-ce que Jean a dit qu'il aimait?

b. #Qu'est-ce que Jean a dit: 'j'aime'? (Schlenker 1999: (14-15))

Let us spell out Schlenker's argument in detail:

(300) **The argument from opacity**

a. P1: Direct speech report constructions (DS) are instances of (metalinguistic) quotation. (Conflation thesis)

b. P2: Quotations form a closed domain with respect to syntactic and semantic operators. (Opacity principle)

c. P3: Quotations can never be affected by grammatical processes. (Corollary of Opacity, (297))

d. P4: Extraction out of (298)-(299) is impossible. (Empirical evidence)

e. P5: Extraction out of (295)-(296) is possible. (Empirical evidence)

f. ∴ (295)-(296) are not instances of DS.

However, a problem with this argument arises when we look at languages other than English, such as Italian, which seems to allow *wh*-extraction out of indirect questions (Rizzi 1982; Cinque 1990): hence, the sentence (301a) is clearly unacceptable in English, while its Italian counterpart (301b) is fully grammatical:

(301) a. *To whom did you wonder what they gave?

b. *A chi ti chiedevi che cosa avessero dato?*
To whom you ask.2SG.IMP what thing have.2PL.PST given
'To whom did you wonder what they gave?'
[Cinque 1990]

Another example of felicitous extraction out of embedded clauses can be found in Japanese: in (302), the *wh*-element is successfully raised out the embedded imperative complement *koi*, '*come (to my house)*'.[12]

(302) *Taro-wa [yatui-no uti-ni* ***nanzi****-ni ko-i] to it-ta no*
Taro-TOP 3SG-GEN house-DAT **what.time**-DAT come-IMP QUOT say-PST *wh ka?*
Q
'What time did Taro$_i$ say come to his$_i$ house *t* ?'
[Oshima 2006: (16b)]

[12] Note that (302) involves the complementizer *to*, which is usually taken to be a characteristic of indirect speech structures (a corollary of *integration*). I will not have much to say about the grammatical role of complementizers here, except that they do not seem to be neither necessary nor sufficient for clausal embedding; as a consequence, their presence or absence in reported speech structures cannot be used to tell apart direct vs. indirect speech constructions. On the syntactic role and evolution of complementizers, cf. i.a. Ransom (1988); Weiß (2020).

This example clearly exemplifies features of what Kuno (1973) calls 'semi-direct speech' in Japanese, which involve elements from both indirect and reported speech. It is direct, in that it involves an embedded imperative, but indirect in that the pronoun *he* is used to refer to Taro (instead of the first person indexical, thus complying to *shiftiness*). As they stand, we take these examples to considerably weaken the argument in (300); since extraction *does* seem possible out of a variety of embedded environments, ranging from indirect questions in Italian to semi-direct speech report constructions in Japanese, why should extraction be prohibited for structures such as (295) and (296) above? Surely, these examples cannot be used to rule out the possibility of these sentences to be direct speech altogether, and therefore cannot be taken as empirical evidence in support of P4. What we can say about them is that some languages are more prone to allow extraction from embedded material than others, which seems reasonable in light of the indexical shift data:

(303) *Piyaa-o [kɛ Rojda va kɛ mɨ paci kerdɛ] Ali biyo*
Person COMP Rojda say.PST COMP I.OBL kiss did Ali be.PST

'Ali was the person$_i$ that Rojda$_j$ said I$_{j,s(c)}$ kissed $t_i$'.
[Anand and Nevins 2004: (12)]

This test for quotation - the *extraction* test - has been repeatedly used by researchers to tell apart direct from indirect speech, i.e., enforcing P4 in the argument above. Deal (2013), for instance, provides the following example for *wh*-extraction in Nez Perce (Sahaptian; Oregon, US):

(304) *Isii-ne Angel hi-i-caa-qa [cewcewin'is-ki 'e-muu-ce]*
Who-ACC Angel.NOM 3.SBJV-say-IMP-REC.PST phone-with 1SG

'Who$_i$ did Angel$_i$ say I$_i$ am calling *t*?'

(305) *kii hii-wes 'iniit yox ke Jack hi-hi-ce*
This-NOM 3.SBJV-be.PRS house.NOM RP.NOM COMP Jack 3.SBJV-say-IMPERF
*['iin hani-ya]*
1SG.NOM make.PST

'This is the house that Jack$_i$ says he$_i$ built'
(lit. 'This is the house that Jack$_i$ says I$_i$ build')
[Deal 2013: (3)-(4)]

The extraction test seems to have since become a *locus classicus* in the literature on indexical shift, and has been invoked to rule out quotational analyses of shifted indexicals in various languages by i.a. Sudo (2012), Özyıldız (2012), Polinsky (2015), Akkuş (2019), Spadine (2020), to cite but a few.

Another argument in favor of P2 and P3 of the argument above is the NPI (for *Negative Polarity Item*) test, pioneered by Anand (2006), who argues, on the basis of *opacity*, that NPI licensing should be impossible outside a quoted clause, conceived as a domain where semantic dependencies are disallowed. Again, the argument here proceeds along familiar lines: since (306a) is ungrammatical in English, and that (306b) is grammatical in Zazaki, therefore, per *opacity* and P3 above, (306b) cannot be an instance of quotation:

(306) a. *Hesen didn't say 'I like anyone'. [Anand 2006: (235)]

b. *Rojda ne va kɛ mɨ kes paci kɛrd*
Rojda NEG say.PST COMP 1SG NPI kiss do.PST

'Rojda$_i$ didn't say that she$_i$ kissed anyone.'
[Anand and Nevins 2004: (9)]

### *Faithfulness* arguments

As discussed above, among the various properties the CT theorists is committed to regarding DS structures is *opacity*, but also *faithfulness*. A working definition of *faithfulness* can be found in Anand (2006):

(307) **Faithful Reporting** (Anand 2006: 87)
Quotations must faithfully report the exact words the person used.

Anand (2006) exemplifies this constraint with the following example:

(308) *John says, 'Mary kicked the bucket at 5.00 am'.*

a. John said that Mary died last night.

b. #John said, 'Mary died last night.' [Anand 2006: (248)]

(308b) is inappropriate because, as a direct speech report, it fails to reproduce the exact words John used to describe the dying event of Mary; (308a), on the other side, is perfectly fine, IS being not subject to such a constraint. Importantly, according to Anand (2006), constructions involving shifted indexicals cannot be DS constructions *de jure*, because they fail to obey (307). He provides the following example for Zazaki:

(309) *Rojda va kE braya ml dewletia*
Rojda say.PRF COMP brother 1SG rich.be

'Rojda$_i$ said her$_i$ brother was rich.'
[Anand 2006: (249)]

Importantly, the sentence is acceptable as a report of the following utterances from Rojda:

(310) *Rojda*:

a. 'Hesen is very rich.'

b. 'My brother is very rich.'

Since the report in (309) is felicitous even in a context where Rojda did not use the words *my brother*, Anand (2006) takes it as evidence that (309) does not obey *faithfulness*, and therefore, cannot be taken as a species of DS.

However, we saw in §4.2.2 above that (307), as it is formulated here, is theoretically moot; as it stands, *faithfulness* can merely be used to indicate an inference made by hearers about what they consider to be the most plausible source or material used in a reporting construction, and cannot be taken as entailing the existence of a previous speech event which content is reproduced exactly. It therefore would be a mistake to use (307) as a diagnosing tool for DS constructions, as Anand (2006) would have it.[13]

**Yet another argument: *de re* readings in shifty complements**

A final argument being regularly put forth to demonstrate that speech reports constructions involving shifted indexicals are embedded-indirect complements instead of quotations is the fact that shifty readings of indexicals are compatible with other elements read *de re*. This is exemplified in (311) for Navajo (Athabaskan, United States) and Japanese:

(311) *Context: Kii does not know that Hastiin Begay is a singer. He says to me: 'I went to meet Mr. Begay in Farmington'. Later, at a ceremony at which Hastiin Begay is singing, I say to you:*

| *Kii* | *hataałii* | *Tóta'di* | *bidééh* | *niséyá* | *ní* |
|---|---|---|---|---|---|
| Kii | singer | Farmington-at | 3SG-go.toward | PRF.1SG.S.go | 3SG.S.say |

'Kii$_i$ said I$_i$ went to meet the singer in Farmington.'

[Speas 1999: (12b)]

(312) *20-nen-mae John-wa [ima-no daitooryoo-ga watashi-to shinyuu-da*
20-year-ago John-TOP now-GEN president-NOM me-with best-friend-is
*to] itta.*
COMP say.PST

'John$_i$ said 20 years ago that the current president is best friends with me$_{i,s(c)}$.'

[Sudo 2012: (695b)]

[13] "Here I will not be concerned with the source of FAITHFUL REPORTING, merely that it exists (either as a feeling of deviance or truth-conditional violation); my concern is using it as a diagnostic." (Anand, 2006, 87).

In the above examples, shifted reading of indexicals appear in constructions involving descriptions read *de re*. This speaks again these involving quotation, nominal expressions enclosed in quotation are only compatible with *de dicto* readings: substitution of one of the quoted terms with some other, extensionally equivalent term is not be tolerated in quoted complements. This is due both to *faithfulness* and *opacity*: *faithfulness* essentially requires that the author of the report assents to the description used in the report, which is clearly cannot the case in the examples above: Kii, the author, of (311) does not know that Hastin Begay is a singer, and therefore, in Kii's belief worlds, Begay and the ceremony singer are two distinct individuals. A faithful report of Kii's words cannot therefore felicitously identify the two guises under which Hastin Begay is to be know. Both reports also violate *opacity*; this essentially relates to Quine (1956)'s treatment of propositional attitudes and the distinction between *relational* and *notional* senses:

(313) a. Ralph believes that someone is a spy.

b. $\exists x.spy'(x) \wedge believe'(R, spy'(x))$ [relational, *de re*]

c. $Believe'(R, p)[p = \exists x.spy'(x)]$ [notional, *de dicto*]

Under Quine's view, *de re* readings require the existential quantifier to bind a variable within the propositional attitude complement, which is disallowed in opaque constructions such as quotation.[14]

### 4.3.3 A mixed quotation analysis of shifted indexicals

In a early attempt to derive the indexical shift data, Maier 2007a proposes to analyze cases such as (**??**) and (10) above as instances of mixed quotation. Extending the presuppositional account of mixed quotation of Geurts and Maier (2003), he assumes that the form of reports in these languages is akin to (314):

(314) John said that 'I am a hero'.

In order to capture this, Maier (2007a) borrows from Potts (2007) the idea that quotations involve reference to linguistic objects of type $u$ and whose meaning is pragmatically retrieved via contextually-induced clues. He defines the predicate *say* with the following entry:

(315) $[\![\text{say}(x, \ulcorner\alpha\urcorner, P)]\!] = 1$ iff $x$ utters $\alpha$ to express $[\![P]\!]$

[14] Again, it is Partee (1973) who would later spell this out the most forcefully: "And I see quotation as a paradigm example of a construction which is *always* opaque: the quoted sentence always has a *de dicto* interpretation (if that term can be used for whole sentences; it certainly can be used at least for each NP within a quoted sentence) (p. 415)."

The interpretation of $\ulcorner\alpha\urcorner$ here is deferred to the pragmatics, where different contexts of mentioning can license different identifications with the possible semantic content of $\alpha$. As an example, the sentence (316a) will be interpreted here as (316b):

(316) a. Bush said that the terrorists had 'misunderestimated me'.

b. Bush said that the terrorists had $\delta$[the property Bush pronounced as 'misunderstimated me"][15]

c. $[\![(316b)]\!] = 1$ iff Bush uttered 'misunderestimated me' to express a property and said that the terrorists have that property.

This is what happens, essentially, in our shifted indexical example (314):

(317) $[\![(314)]\!] = 1$ iff John uttered 'I am a hero' to express $P$ and said that he has $P$ [where $[\![P]\!] = \lambda x.\text{hero}(x)$]

It is possible to recast this analysis within the demonstration/event-based semantics outlined in §4.2.2, which will ultimately prove necessary to derive further indexical shift examples:

(318) a. John said that 'I am a hero'.

b. $[\![(314)]\!]^{g,c,i} = \exists e[say(e) \wedge AG(e, J) \wedge [\textsc{form}(e) = \ulcorner \text{I am a hero} \urcorner]$

We can also capture the examples involving extraction, such as (303) (note that, since shifting is optional here, the sentence can also be given a non-quotational parse where *mɨ* refers to the utterance speaker):

(303) *Piyaa-o [kɛ Rojda va kɛ mɨ paci kerdɛ] Ali biyo*
Person COMP Rojda say.PST COMP I.OBL kiss did Ali be.PST

'Ali was the person$_i$ that Rojda$_j$ said I$_{j,s(c)}$ kissed $t_i$'.
[Anand and Nevins 2004: (12)]

(319) $[\![(303)]\!]^{g,c,i} = \exists e[say(e) \wedge AG(e, R) \wedge \exists e' \sqsubset e[\textsc{form}(e) = \ulcorner \text{I kissed} \urcorner \cap \textsc{form}(e') \wedge \textsc{content}(e') = Ali]]$

A similar analysis can be given for sentences in (311) and (312), which involve DPs containing a shifted indexical that are nevertheless read *de re*, i.e. from the perspective of the utterance speaker (cp. role shift examples such as (173) in §4.2.3):

[15] Where $\delta$ stands for Beaver and Krahmer (2001)'s presuppositional operator.

(311) *Context: Kii does not know that Hastiin Begay is a singer. He says to me: 'I went to meet Mr. Begay in Farmington'. Later, at a ceremony at which Hastiin Begay is singing, I say to you:*

| *Kii* | *hataałii* | *Tóta'di* | *bidééh* | *niséyá* | *ní* |
|---|---|---|---|---|---|
| Kii | singer | Farmington-at | 3SG-go.toward | PRF.1SG.S.go | 3SG.S.say |

'Kii$_i$ said I$_i$ went to meet the singer in Farmington.'

[Speas 1999: (12b)]

(320) $[\![(311)]\!]^{g,c,i} = \exists e[say(e) \wedge AG(e,K) \wedge \exists e' \sqsubset e[\textsc{form}(e) = \ulcorner \text{I went to meet} \urcorner \cap \textsc{form}(e') \wedge \textsc{content}(e') = \iota x.singer'(x)]]$

This captures the correct readings for examples involving *de re* shifted indexicals. Finally, note that the MQ account presented here has a non-negligible advantage over competing theories in that it straightforwardly explains the fact that shifted indexicals exhibit a clear preference for speech reports environments cross-linguistically, with only a minority of languages allowing indexicals to shift in the scope of other attitude predicates (see Deal 2020; Blunier 2023 and references therein), a fact that follows from the quotational nature of the phenomenon. However, MQ as it stands also faces a considerable number of problems, to which we now turn.

**Problems for the mixed quotation account**

As noted by Anand (2006) and Deal (2020), and as Maier (2016) himself acknowledges, the mixed quotation account (MQ) of shifted indexicals faces a number of problems. A major issue relates to the fact that, as a pragmatic phenomenon, the mixed quotation theory fails to be restrictive enough to capture robust cross-linguistic restrictions about indexical shifting ,chief among them the *shift together* constraint initially proposed by Anand and Nevins (2004) to account for data such as the following, from the Iranian language Zazaki (Turkey):

(321)

| *vɨzeri* | *Rojda* | *Bill-ra* | *va* | *kɛ* | *ɛz* | *to-ra* | *miradisa* |
|---|---|---|---|---|---|---|---|
| yesterday | Rojda | Bill-to | say.PST | COMP | 1SG | 2SG-to | angry.be.PRS |

✓ 'Yesterday Rojda$_i$ said to Bill$_j$ that he$_i$ is angry at him$_j$.'
✓ 'Yesterday Rojda$_i$ said to Bill$_j$ that I am angry at you.'
✗ 'Yesterday Rojda$_i$ said to Bill$_j$ that I am angry at him$_j$.'
✗ 'Yesterday Rojda$_i$ said to Bill$_j$ that he$_i$ is angry at you.'

[Zazaki, Anand and Nevins 2004: (13)]

The sentence in (10) is only two-ways ambiguous, relatively to the context in which it is interpreted: in the reported context, the two indexicals *ɛz* and *to* will refer to the reported speakers and addressee (Rojda and John), respectively, while in the utterance context, they will refer to the speaker and addressee of that context. Crucially, while theoretically possible, mixed or 'cross-contextual' readings are excluded: indexicals have to shift together. Such a constraint has been reported to hold in a large body of languages exhibiting indexical shift, and is considered by many to be the centrally-defining feature of the phenomenon (Anand 2006; Deal 2018, 2020, a.o.). Anand (2006) states this constraint as follows:

(322) **Shift Together** [Adapted from Anand 2006: 100]
All SIs within a attitude-context domain must pick up reference from the same context (where an attitude-context domain is the scope of an attitude verb up to the scope of the next c-commanded attitude verb.)

As it stands, *shift together* is a problem for Maier's analysis, since in his account, nothing prevents quotation of an indexical in a given sentence while leaving other clausemate indexicals unquoted. This point is emphasized by Deal (2020), who provides the following examples from Nez Perce:

(323) a. *Lori hi-neki-se ['ee wees qetu kuhet **'ip-nim-x]***
Lori.NOM 3.SBJV-think-IMPERF 2SG.CLF be.PRS more tall **3SG-OBL-to**

'Lori$_i$ thinks that you$_{a(c)}$ are taller than her$_i$.'

b. *Lori hi-neki-se ['ee wees qetu kuhet **'iin-nim-x]***
Lori.NOM 3.SBJV-think-IMPERF 2SG.CLF be.PRS more tall **1SG-OBL-to**

'Lori$_i$ thinks that you$_{a(c)}$ are taller than me$_{*i/s(c)}$.'
[Nez Perce, Deal 2020: (27)-(28)]

Deal (2020) argues that partial quotation is ruled out here, because the sentence in 323b does not allow for a mixed reading, in which the first person would be shifty with the second person element remaining unshifty.

Another problem for MQ is that syntactic restrictions to shiftiness seems at play in most languages. For instance, the Athabaskan language Slave (Northwest Territories, Canada) seems to allow indexical shifting with verbs that do not select for an overt complementizer; verbs that require an overt complementizer disallow it. In (324a), the verb *sedeyidi* allows indexical shift, while the verb *kodihsho* in (324b), which selects for the complementizer *gú*, disallows it. The same is illustrated in (325a)-(325b), where adding a complementizer *ni* or *gú* to the indexical-shifting verb *hadi* results in ungrammaticality:

(324) a. *Rosie ʔerákieʔie wishi sedeyidi.*
Rosie parka 1SG.made 3SG.told.1SG

‘Rosie$_i$ told me that she$_i$ made a parka.’

b. *John ʔerákieʔie wishi gú kodihsho.*
Rosie parka 1SG.made COMP 3SG.know

‘John knows that I made a parka.’

[Slave, Rice 1986: (2)-(1)]

(325) a. *John hidowedziné k’e deshita duhla hadi.*
John tomorrow on bush 3SG.will.go 3SG.say

‘John$_i$ says he$_i$ is going to the bush tomorrow.’

b. **betá [yahʔóné ʔawohdie ni/gú] hadi.*
3SG.father over there 1SG.will.go COMP

*Intended:* ‘His dad$_i$ said that he$_i$ is going there.’

[Slave, Rice 1986: (27)-(94)]

This is strong evidence that indexical shift is sensitive to syntactic information, preferring complementizer-less environments (cf. also Baker 2008; Sundaresan 2018).

Another relevant example here is the case of Uyghur (Turkic; Xinjiang Uyghur Autonomous Region, Western China), which exhibit two different kinds of complementation strategies with attitude verbs: complementation with finite clauses (326a), and with nominalized clauses, (326b):

(326) a. *Ahmet [profesor ket-ti] di-di.*
Ahmet professor.NOM leave-PST.3 say-PST.3

‘Ahmet said that the professor left.’

b. *Ahmet [profesor-ning kit-ken-lik-i-ni] di-di.]*
Ahmet professor-GEN leave-REL-NMLZ-3-ACC say-PST.3

‘Ahmet said that the professor left.’

[Uyghur, Shklovsky and Sudo 2014: (2)]

While the embedded clause in (326a) is fully tensed, this is not the case in (326b), which behaves as a noun and is fully case-marked - here, with accusative case selected by the verb *de ‘say’*. Contrary to its nominalized counterpart, the embedded clause in (326a) can be used as a matrix sentence:

(327) a. *profesor ket-ti.*
professor.NOM leave-PST.3

'The professor left.'

b. **profesor-ning kit-ken-lik-i-ni.*
professor-GEN leave-REL-NMLZ-3-ACC

*(intended)* 'the professor left.'

[Uyghur, Shklovsky and Sudo 2014: (3)]

As observed by Shklovsky and Sudo (2014), both kinds of complement clauses differ in behavior regarding the interpretation of indexicals; while finite clauses allow for shifting (328a), nominalized clauses do not (328b). As the example illustrates, shifting here is not optional: indexicals must shift in complement clauses and are fully unambiguous, disallowing unshifted readings entirely (cp. the Zazaki example in (10)):

(328) a. *Ahmet [**men** ket-**tim**] di-di.*
Ahmet 1SG leave-PST.1SG say-PST.3

✓ 'Ahmet$_i$ said that he$_i$ left.'
✗ 'Ahmet$_i$ said that I left.'

b. *Ahmet [**mening** kit-ken-lik-**im**-ni] di-di.]*
Ahmet 1SG.GEN leave-REL-NMLZ-1SG-ACC say-PST.3

✗ 'Ahmet$_i$ said that he$_i$ left.'
✓ 'Ahmet$_i$ said that I left.'

[Uyghur, Shklovsky and Sudo 2014: (4)]

Analogous data is observed for second person indexicals, (329a)-(329b):

(329) a. *Tursun Muhemmet-ke [xet jaz-ding] di-di.*
Tursun Muhemmet-DAT letter write-PST.2SG say-PST.3

✓ 'Tursun told Muhemmet$_i$ that he$_i$ wrote a letter.'
✗ 'Tursun told Muhemmet that you wrote a letter.'

b. *Tursun Muhemmet-ke [xet jaz-ghan-lik-ing-ni] di-di.*
Tursun Muhemmet-DAT letter write-REL-NMLZ-2SG-ACC say-PST.3

✗ 'Tursun told Muhemmet$_i$ that he$_i$ wrote a letter.'
✓ 'Tursun told Muhemmet that you wrote a letter.'

[Uyghur, Shklovsky and Sudo 2014: (5)]

Analogous data has been observed in other Turkic languages; below are examples from Turkish and Mishar Tatar (Russia).

(330) a. *Seda [sınıf-ta kal-dı-m] san-ıyor*
Seda.NOM class.LOC flunk-1SG-PST believe.PRS

✓ 'Seda believes that I flunked.'
✓ 'Seda$_i$ believes that she$_i$ flunked.'

b. *Seda [sınıf-ta kal-dığ-ım-ı] san-ıyor*
Seda.NOM class.LOC flunk-NMLZ-1SG-POSS-ACC believe.PRS

✓ 'Seda believes that I flunked.'
✗ 'Seda$_i$ believes that she$_i$ flunked.'

[Turkish, Şener and Şener 2011: (10)-(11)]

(331) a. *Alsu [min säxär-gä kit-te-m diep] at'-tɤ*
Alsu 1SG.NOM city-DAT go.out-PST-1SG COMP say-PST

✓ 'Alsu$_i$ said that she$_i$ went to the city.'
✗ 'Alsu said that I went to the city.'

b. *Marat Alsu-ga [(minem) kil-gän-em-ne] at'-tɤ*
Marat Alsu-DAT 1SG.GEN come-NMLZ-1SG-ACC tell-PST

✗ 'Marat$_i$ told Alsu that he$_i$ came.'
✓ 'Marat told Alsu that I came.'

[Mishar Tatar, Podobryaev 2014: (201)-(219a)]

Note that Turkish and Mishar Tatar being optional shifting languages, the finite clauses in (330a) and (331a) are able to express both indexical (unshifted) and shifted readings.

As a matter of fact, as suggested by Shklovsky and Sudo (2014) and Wurmbrand (2018), the phenomenon seems even more general, having to do not only with complement clause type, but case marking more generally: whenever indexical pronouns are marked with accusative case (or part of a DP marked with accusative case), shifting does not obtain. This is illustrated below for Uyghur and Buryat (Mongolic, Eastern Russia and Mongolia), respectively:

(332) a. *Ahmet [**men** ket-**tim**] di-di.*
Ahmet 1SG.NOM leave-PST.1SG say-PST.3

✓ 'Ahmet$_i$ said that he$_i$ left.'
✗ 'Ahmet$_i$ said that I left.'

b. *Ahmet [**meni** ket-**ti**] di-di.*
Ahmet 1SG.ACC leave-PST.3SG say-PST.3

✗ 'Ahmet$_i$ said that he$_i$ left.'
✓ 'Ahmet$_i$ said that I left.'

(333) a. *Ahmet* ***[sen*** *ket-**ting]*** *di-di.*
Ahmet 2SG.NOM leave-PST.2SG say-PST.3

✓ 'Ahmet$_i$ said that he (Ahmet's addressee) left.'
✗ 'Ahmet$_i$ said that you left.'

b. *Ahmet* ***[seni*** *ket-**ti]*** *di-di.*
Ahmet 2SG.ACC leave-PST.3SG say-PST.3

✗ 'Ahmet$_i$ said that he (Ahmet's addressee) left.'
✓ 'Ahmet$_i$ said that you left.'
[Uyghur, Shklovsky and Sudo 2014: (12)-(13)]

(334) a. *Sajənə bi tɛrgə ɛmdəl-ɛ-b gɛzə mɛd-ɛ.*
Sajana 1SG.NOM cart break-PST-1SG COMP know-PST

✓ 'Sajana$_i$ found out that she$_i$ broke the cart.'
✓ 'Sajana$_i$ found out that I broke the cart.'

b. *Sajənə naməjə tɛrgə ɛmdəl-ɛ gɛzə mɛd-ɛ.*
Sajana 1SG.ACC cart break-PST.3SG COMP know-PST

✗ 'Sajana$_i$ found out that she$_i$ broke the cart.'
✓ 'Sajana$_i$ found out that I broke the cart.'
[Buryat, Bondarenko 2017: (83)-(82)]

The same applies for possessive DPs, (335):

(335) a. *Badmə ba:bɛ-mni jab-a gɛzə mɛdənə.*
Badma.NOM father.NOM-1SG go-PST COMP know-PRS

✓ 'Badma$_i$ knows that his$_i$ father has left.'
✓ 'Badma knows that my father has left.'

b. *Badmə ba:bɛ-**jɛ**-mni jab-a gɛzə mɛdənə.*
Badma.NOM father-**ACC**-1SG go-PST COMP know-PRS

✗ 'Badma$_i$ knows that his$_i$ father has left.'
✓ 'Badma knows that my father has left.'
[Buryat, Wurmbrand 2018: (20)]

Note that, interestingly, the embedded verb in (332b), (333b) and (334b) is **not** inflected for first- or second-person when the subject is accusative, contrary to what happens with nominative subjects (332a), (333a) and (334a); this will be of significance, as we discuss below.

All in all, these data suggest that, as emphasized by Wurmbrand (2018), the syntactic domain and case-licensing properties of the clause play a crucial role in licens-

ing/preventing shifting to occur; as it stands, the MQ theory cannot account for this kind of restriction. To summarize, the available indexical shift data exhibit patterns that seem (i) syntactic and (ii) language-dependent, something that any theory should provide an explanation for.

## 4.4 An implicature-based account of quotation

> *Es darf also ein in Anführungszeichen stehendes Wortbild nicht in der gewöhnlichen Bedeutung genommen werden.*
>
> Gottlob Frege, *Uber Sinn und Bedeutung* (1892)

The aim of this section is to develop an account of quotation and mixed quotation structures in terms of manner implicatures. For Grice (1975), manner implicatures arise due to the observance/flouting of the Maxim of Manner, (336):

(336) **Maxim of Manner** [Grice 1975]

a. Avoid ambiguity.

b. Avoid obscurity.

c. Be brief or succinct.

d. Be orderly.

The Maxim of Manner relates not to what was said (as the other three maxims), but to how it was said; a classical example of a manner-based implicature triggered by the third submaxim *Be brief* is given in (337), where utterance of the unecessarily prolix (337b) over its simpler counterpart (337a) leads the hearer to conclude that Miss X's performance was a disaster:

(337) a. Miss X sang *Home Sweet Home*.

b. Miss X produced a series of sounds that corresponded closely with the score of *Home Sweet Home*.
⇝ Miss X's performance suffered from some hideous defect.

As elaborated by Horn (1972, 1984) and Levinson (1987a, 2000) i.a., the conception of manner implicatures outlined above crucially relies on the notion of *markedness*. As a principle, *markedness* has been invoked in linguistics since the early works of the Prague School (Jakobson, 1939) and used fruitfully in various subfields including phonology (Anderson 1969; Kiparsky 1985), morphology (Halle and Marantz, 1993), syntax (Legendre et al., 2001), semantics and pragmatics (Hendriks and De Hoop 2001; Blutner and

Zeevat 2003), as well as language change and grammaticalization (Bybee, 2011). As tentatively suggested by Levinson (2000) (see also Rett 2020), a form $\alpha$ is considered more marked than an analogous, semantically-equivalent form $\beta$ if

(338) a. $\alpha$ is less complex than $\beta$;

b. $\alpha$ is more frequent than $\beta$;

c. $\alpha$ is processed more quickly than $\beta$.

This notion of markedness has been invoked to explain, among other things, cases of lexical blocking in morphology ((339), McCawley 1978) as well as the interpretation of lexical vs. periphrastic causatives ((340), Katz 1970):

(339) a. ALT(*pale black*) = { *grey* }

b. *pale red*

c. **pale black*

(340) a. ALT(*cause to die*) = { *kill* }

b. Black Bart caused the sheriff to die.
$\rightsquigarrow$ Black Bart did not murder the sheriff in a typical manner.

Markedness can therefore be seen as something that feeds the computation of manner implicatures, just as informativity feed the computation of quantity/scalar implicatures. In the neo-Gricean framework of Levinson (2000), manner implicatures are derived by the M-Principle, which subsumes the original Maxims of Manner into one single heuristics:

(341) **Levinson's M-principle** [Levinson 2000: 136]

a. *Speaker's maxim*: Indicate an abnormal, nonstereotypical situation by using marked expressions that contrast with those you would use to describe the corresponding normal, stereotypical situation.

b. *Recipient's corollary*: What is said in an abnormal way indicates an abnormal situation, or marked messages indicate marked situations, specifically: where *S* has said 'p' containing marked expression *M*, and there is an unmarked alternate expression *U* with the same denotation *D* which the speaker might have employed in the same sentence-frame instead, then where *U* would have I(nformativity)-implicated the stereotypical or more specific subset *d* of *D*, the marked expression *M* will implicate the complement of the denotation *d*, namely $^{d}$ of *D*.

A central observation made by Levinson (2000) is that manner implicatures are somehow 'parasitic' on quantity implicatures; consider the following example:

(342) a. John turned the switch and the motor started.
⇝ John caused the starting.

b. John turned the switch and almost immediately thereafter the motor started.
⇝ The two events were coincidental. [Levinson 2000: (71)]

Here, the use of the more marked, prolix version of the sentence containing *almost immediately thereafter* triggers a manner-based inference that somehow blocks the quantity implicature associated with its unmarked alternative, which in Levinson's terms corresponds to the stereotypical interpretation of (342a). Here is another example, where the two alternatives are not sentences but elements of the lexicon; uttering (343b) over its less-marked counterpart book triggers the manner-implicature that John was reading a massive/weighty book:

(343) a. John was reading a book.
⇝ The book was of standard weight and size.

b. John was reading a tome.
⇝ John was reading a massive/weighty volume. [Levinson 2000: 138]

In this case, the manner inference targets the ordinary, more common conceptual representation of *book* and suggests that the denotation of *tome* was not equivalent to that of *book*, and in that context, the meaning of *tome* denotes what *book* would not ordinarily denote, i.e, massive and weighty books. A simple way to describe the implicature occurring after each utterance of both (342b) and (343b) would be to say that, in each case, the resulting inference is that the sentence/expression and its unmarked alternative are not denotationally equivalent, and that the meaning of an marked expression $\beta$ is the set difference of its meaning and that of its unmarked counterpart $\alpha$, which we note with $\beta \backslash \alpha$. We could write that concisely as follows:

(344) **Manner implicature**
For any expressions $\alpha, \beta$ s.t. $\alpha \in \textsc{Alt}(\beta)$, uttering $\beta$ will trigger the inference that $[\![\beta]\!] = [\![\beta]\!] \backslash [\![\alpha]\!]$ in context $c$.

This captures Levinson's insight behind the idea of 'complement of a denotation' for an expression in (341): "just as the use of an item from a contrast set suggests that the contrastive items would be inappropriate, or the use of a minimal expression invokes a maximal interpretation, so the use of a marked expression signals an opposing interpretation to the one that would have been induced by the use of an unmarked expression" (p. 136).

### 4.4.1 A structurally-based account of markedness

Manner implicatures, just like quantity-based implicatures such as scalar inferences, represent a form of alternative-based reasoning: during the course of interpretation, speakers and hearers alike derive inferences on linguistic material not only on the basis of what was said, but also on the basis of what could have been said. A central notion in this process is that of *alternative*. A fruitful theory of alternatives is the complexity-based model of Katzir (Katzir 2007, 2014; Fox and Katzir 2011; Trinh and Haida 2015; Breheny et al. 2018). Katzir's theory was initially motivated by the so-called *symmetry* problem posed by scalar implicatures: when an implicature such as the one in (59a) is computed, it is done so by negating non-weaker alternatives such as (345b); however, the alternative *John ate some but not all of the cake* is also a non-weaker alternative of (59a), but it does not seem to be taken into account when speakers compute the implicature triggered by (59a).

(345) a. John ate some of the cake.
$\rightsquigarrow$ John did not eat all of the cake.

b. $\textsc{Alt}([\![59a]\!]) = \left\{ \begin{array}{c} \text{John ate most of the cake,} \\ \text{John ate all of the cake,} \\ \sout{\text{John ate some but not all of the cake}} \end{array} \right\}$

The question here is how to ensure that the non-weaker, more complex alternative *John ate some but not all of the cake* does not get ruled out by the implicature-computing algorithm. Following Katzir (2007), Fox and Katzir (2011) and Breheny et al. (2018) we define the substitution source for alternatives as follows:

(346) **Substitution source for alternatives** [Breheny et al. 2018: (7)]
An item $\alpha$ is in the Substitution Source of a sentence $S$ in $c$ if

a. $\alpha$ is a constituent that is salient in $c$ (e.g. by virtue of having been mentioned); or

b. $\alpha$ is a subconstituent of $S$; or

c. $\alpha$ is in the lexicon.

Note that the last clause straighforwardly captures the intuition behind the idea of scales on which most Neo-Griceans accounts are based (Horn 1972, 1984; Levinson 2000): if a language possesses two lexical elements $\langle \alpha, \beta \rangle$ and that $\beta \underline{<} \alpha$, uttering $\alpha$ willl trigger the implicature that $\neg\beta$.[16]

[16] It has been argued, however, that the substitution source rather makes use of conceptual, language-invariant logical primitives instead of lexical elements in a given language (Buccola et al. 2022; Sauerland et al. 2023).

The set of alternatives of a sentence $\phi$ is therefore the set of its structurally less complex alternatives, (60):

(347) **Structural alternatives**: $\text{ALT}(\phi) = \{\ \phi' : \phi' \leq \phi\ \}$

This felicitously derives the fact that structurally more complex alternatives of a sentence *S* are generally not available for implicature computation; for instance, the sentence *John ate some but not all of the cake* is ruled out as an alternative of (59a) by (58), and therefore asserting (59a) is not expected to trigger the implicature that ¬*John ate some but not all of the cake*, as desired.

Last, we will make use of Katzir's version of Grice's Cooperative Principle, coupled with the definition of alternatives outlined above:

(348) **Cooperative principle (Katzir 2007's version):**
Do not use $\phi$ if there is a $\psi \in \text{ALT}(\phi)$ s.t.

a. $[\![\psi]\!] \subset [\![\phi]\!]$, and

b. $\psi$ is weakly assertable.[17]

While Katzir's account was initially designed to capture instances of quantity-based implicatures (i.e., relating to informativity constraints), his account can be extended to manner-based implicatures. As he himself notes (pp. 680 *sqq*), his definition of the Cooperative Principle (as stated in (62)) will not directly force speakers to select the most appropriate structure; it is merely a filter (in the spirit of neo-Gricean accounts) that acts on the output of structures, not a purely Gricean conversational maxim. However, a Gricean version of (62) can be defined in order to incorporate the insights of something analogous to the Maxim of Manner. In order to do so, Katzir (2007) redefines the principle so it makes use of both notions of structural complexity (58) and entailment, instead of entailment alone (as in (62a)). This is done with the relation *at-least-as-good-as*, notated $\precsim$, which the Gricean version of the Cooperative Principle in (350b) makes use of:

(349) $\precsim = \{(\psi, \phi) \mid \psi \leq \phi \wedge [\![\psi]\!] \subseteq [\![\phi]\!]\}$

(350) **Cooperative principle (Gricean)** [Katzir 2007: (24)]
Do not use $\phi$ if there is a $\psi \in \text{ALT}(\phi)$ s.t.

a. $\psi \precsim \phi$, and

b. $\psi$ is weakly assertable.

[17] Where *weak assertability* is defined as follows: "A structure $\phi$ will be said to be *weakly assertable* by a speaker *S* if *S* believes that $\phi$ is true, relevant, and supported by evidence" (Katzir 2007: 672). The norm of assertion used here might be too strong, however (c.p. Bach and Harnish 1979; see Pagin and Marsili 2021 for discussion).

The major difference between (62) and (350) here is that they make distinct predictions in cases where $\phi$ and $\psi$ have the same denotations, that is, when $[\![\phi]\!] = [\![\psi]\!]$ (or when their denotations overlap, cf. Levinson's M-Principle in (341) above): in such cases, (62) will tolerate assertion of $\phi$, while the Gricean principle in (350) will not: it will enforce the use of $\psi$ over $\phi$ whenever possible, which is what we expect in cases where two expressions of equivalent denotations but different complexity compete (as in (339) and (340) above). If a speaker nevertheless chooses to utter *phi* in such a context, then the hearer will likely derive the manner-based implicature that the speaker intends to convey something different than the mere denotation of $\phi$ by using it; in our definition, the complement set of the denotations of $\phi$ and $\phi$, $[\![\phi]\!] \setminus [\![\psi]\!]$.

### 4.4.2 Quotation as manner implicature

It has been suggested that quotation, too, is an alternative-sensitive phenomenon. As first suggested by Klockow (1978), one can consider the quotational marking of an expression (be it quotation marks, air quotes, or the quotative prosodic contour described in §4.2 above) to signal a deviation from a linguistic norm broadly conceived. This conception of quote-marking has been elaborated further by a number of researchers (Meibauer 2007; Gutzmann and Stei 2011; Finkbeiner 2015; Härtl 2018; Schlechtweg and Härtl 2020 i.a.). Gutzmann and Stei (2011) for instance argue that in a sentence such as (351), the function of quotation marks is to signal that the speaker/writer intends the expression *theory* to be interpreted in a non-standard way:

(351) Peter's new 'theory' is difficult to understand.

The argument here goes as follows: since the speaker/writer is using '*theory*' instead of the less-marked *theory* (without any quotative marking), the speaker/writer probably intends his addressee to understand '*theory*' in a non-standard - or, as Gutzmann and Stei 2011 put it echoing Levinson, non-stereotypical - way, i.e. meaning something different than what the word *theory* means. The final output of this inference (i.e. the actual implicature consisting in whatever the speaker intended the hearer to understand through her use of '*theory*' instead of *theory*) is context-dependent, making the derivation of such quotative inferences a two-stage process (cf. Gutzmann and Stei 2011, p. 8 *sqq*; see also Rett 2020). In a similar fashion, Härtl (2018) argues that the German expression *sogennant* ('*so-called*') followed by a DP with quotative prosodic marking triggers an analogous inference, which can be understood as a Gricean manner-based implicature.

With that in place, we are now ready to provide an alternative-based analysis of quotation-related inferences (which we will call 'quotative inferences', QIs). Recall from last section that, for an element $\beta$ to be more marked than another, alternative element $\alpha$, they have to be in one of the following relations:

(338) a. $\alpha$ is less complex than $\beta$;

b. $\alpha$ is more frequent than $\beta$;

c. $\alpha$ is processed more quickly than $\beta$.

We argue that Katzir's algorithm in (58) subsumes all three conditions above: since, if $\alpha$ is less complex than $\beta$, it is expected (under the conditions stated by the Cooperative Principle in (350)) that i) $\alpha$ will be used more frequently, and ii) it will be processed more quickly, given what we now about complexity and processing.

What remains to be spelled-out, however, is the precise sense in which a quoted expression can be said more marked than its unquoted alternative. Let us start with a language such as English: assuming, alongside i.a. Potts (2005), Härtl (2018) and Sturman (2022), that quoted expressions are always signaled by an additional prosodic marking in that language, we can posit that, since a quoted element is composed of an expression $\alpha$ and quote-marking ('$\alpha$'), it is structurally more complex than its non-quoted counterpart $\alpha$:

(352) **Quoted constituents are structurally more complex**
$\alpha \precsim$ '$\alpha$'

We therefore expect the use of a quoted constituent to trigger a markedness-based implicature. Following Gutzmann and Stei (2011) and Härtl (2018), we suggest that different kinds of quotation give raise to different inferences that all have in common one feature: that the quoted expression differs in meaning from its unmarked, non-quoted counterpart - or perhaps, that the quoted expression has to correspond to the non-stereotypical (i.e., the less likely conceptual representation of a given predicate, cf. Kao et al. 2014) meaning of the quoteless expression. This is exemplified in (353) below, where each kind of quotation triggers a common, minimal inference as well as a secondary, contextually-driven inference:

(353) a. The doctor diagnosed a so-called 'sepsis'. [metalinguistic quotation, Härtl 2018: (11)]
$\rightsquigarrow$ ⟦'sepsis'⟧ ≠ ⟦sepsis⟧
$\rightsquigarrow$ '*sepsis*' refers to the conventionalized name of a kind of blood poisoning, *sepsis*.

b. Bill was 'elegant' tonight. [scare quotation]
$\rightsquigarrow$ ⟦'elegant'⟧ ≠ ⟦elegant⟧
$\rightsquigarrow$ among all the properties the speaker was willing to assign to Bill tonight, the property *elegant* is the less likely.

We follow here Gutzmann and Stei (2011) in arguing that the inference triggered by quote-marking is *minimal*, in that it merely triggers a (relatively weak) manner implicature that the quoted expression and its quoteless alternative differ in meaning; as such, in most contexts, they indicate the need to trigger further inferences that depend on ii) the surrounding linguistic context, ii) the common ground, and iii) the speaker's intentions. We can characterize this minimal inference the following way:

(354) **Minimal quotative inference**
For any expressions $\alpha$, uttering '$\alpha$' will trigger the inference that $[\![\text{`}\alpha\text{'}]\!] \neq [\![\alpha]\!]$ in context $c$.

What about instances of quotation *qua* speech reports? If we are on the right track, we should expect a quoted report to trigger a manner implicature of the sort discussed in the examples above (i.e., that the quoted sentence and its quoteless alternative minimally differ in meaning), augmented with a second inference that is peculiar to reporting contexts. Intuitively, a report such as (355a) suggests that Bill used this exact sentence to talk about himself, while the sentence in (355b) does not convey this; it is taken to be a statement that Bill made about the current speaker.

(355) a. Bill$_i$ said 'I$_i$ am elegant tonight'.
$\rightsquigarrow$ Bill uttered the sentence *I am elegant tonight*.

b. Bill$_i$ said I$_{s(c)}$ am elegant tonight.
$\not\rightsquigarrow$ Bill uttered the sentence *I am elegant tonight*.

In other words, the inference brought about by (355a) is some kind of *faithfulness* implicature. This kind of inference is secondary, and obtains in speech reports contexts only.

Note that, as discussed above, this inference depends on the alternatives available for a given expression and are therefore relativized to the various constructions that a language disposes of to convey something. For instance, in English, speech reports may involve syntactic constructions with a complementizer. Since complementizers are optional, in the absence of distinctive prosodic marking, presence vs absence of a complementizer can suffice to license the quotative inference. Consider the following English example:

(356) a. Sue$_i$ said that I$_{*i,s(c)}$ am cool.

b. Sue$_i$ said I$_{i,s(c)}$ am cool.

We observe that the presence/absence of the complementizer has a decisive impact on interpretation, notably of the referent of the indexical *I*; without it (and without any quote-marking device), the sentence in (356b) is ambiguous between a shifted vs an unshifted interpretation. What we would like to suggest is that, in such a context, uttering (356a) triggers a manner-based implicature alongside the following lines:

1. Upon the utterance of (356a), speakers and hearers alike know that there exists a sentence *S* that is part of the set of formal alternatives to (356a) that has fewer structure and therefore, could have been used, (357):

(357) $\textsc{Alt}(356a) = \left\{ \text{ Sue said I am cool. } \right\}$

2. Under the assumption that $[\![356b]\!] = [\![356a]\!]$, using (356b) triggers a manner-based implicature that the speaker is trying to convey something different that what (356a) means;

3. Since (356b) is about speech reporting, a faithfulness inference is licensed: the hearer can infer that Sue used the words *I am cool*.

4. Therefore, the hearer can infer from the use of (356a) that *I* refers to the reporting speaker, not Sue.

Note that this captures the intuition behind independent pragmatic principles designed to capture faithfulness, such as the *verbatim* constraint of Maier (2017) or the *faithful reporting!* of Anand (2006). In our terms, *faithfulness* is rather the result of an inference, defined as a manner implicature, which is itself the result of two requirements - one of informativity and one of parsimony, that are assumed to be enforced when a speaker *s* utters a sentence *S*. In the context of speech reports, the result of this inference is typically that of the ascription of the reported content to the relevant source - typically, either the reporting speaker or the reported speaker.

### 4.4.3 A markedness-based account of shifted indexicality

In what follows, we would like to apply an analogous reasoning to the indexical shift examples reported in §4.3.3. Recall that, in those, shifted indexicals seems to be restricted to i) sentences without complementizers; ii) finite clauses (vs nominalized clauses), and iii) nominative-marked forms vs. accusative-marked ones.

We will start by assessing the complementizer-related data. Note first that preference for complementizer-less environments is in itself a hallmark of DS constructions, as opposed to IS, as discussed in §4.2; assuming that constructions in (324a) and (325a) are DS structures would straightforwardly account for the shifting data, in a way much similar to examples (356b)-(356a) above. Recall that, in Slave, some predicates select for complementizer structures, while some other don't:

(358) a. *John hidowedziné k'e deshita duhla hadi.*
John tomorrow on bush 3SG.will.go 3SG.say

'John$_i$ says he$_i$ is going to the bush tomorrow.'

b. **betá [yah?óné ?awohdie ni/gú] hadi.*
3SG.father over there 1SG.will.go COMP

*Intended:* 'His dad$_i$ said that he$_i$ is going there.'

[Slave, Rice 1986: (27)-(94)]

A way to account for the restricted interpretation of the indexical in these examples would be to state that since, in Slave, complementizer selection is syntactically encoded by verbs and is not optional, alternatives compete at the lexical level in that language. For instance, the verb *yidi* '*tell*' is the complementizer-taking counterpart of *hadi*, 'say, tell'. As a consequence, shifted interpretations will not obtain when comp-taking verbs are used, since the shifted/quotational interpretation is restricted to complementizer-less environments:

(359) *Mary deno [judeni duyá ni] ?ekáhedeyidí.*
Mary REFL.mother where **3SG.will.go** COMP 3SG.say

'Mary$_i$ told her Mom where she$_i$ is going.'

[Slave, Rice 1986: (89)]

(360) $\text{ALT}(\textit{yidi}\ \textit{*(}\text{COMP}\textit{)}) = \left\{ \textit{hadi (}\text{*COMP}\textit{)} \right\}$

We can apply the same alternative-based reasoning to our examples involving finite vs nominalized clauses (examples (326a)-(331b)), as in (328) repeated here:

(328) a. *Ahmet* ***[men*** *ket-****tim****]* *di-di.*
Ahmet 1SG leave-PST.1SG say-PST.3

✓ 'Ahmet$_i$ said that he$_i$ left.'
✗ 'Ahmet$_i$ said that I left.'

b. *Ahmet* ***[mening*** *kit-ken-lik-****im****-ni]* *di-di.]*
Ahmet 1SG.GEN leave-REL-NMLZ-1SG-ACC say-PST.3

✗ 'Ahmet$_i$ said that he$_i$ left.'
✓ 'Ahmet$_i$ said that I left.'

[Uyghur, Shklovsky and Sudo 2014: (4)]

What is of relevance here is that, whenever a clause is finite, indexical shift obtains. Interestingly, when it comes to complex clauses such as those of interest here, finiteness is correlated with syntactic independence; as put forth by Lohninger and Wurmbrand (2020)

and Wurmbrand and Lohninger (2023), clauses referring to propositions (in Wurmbrand and Lohninger 2023's terminology, covering speech and epistemic contexts, such as those licensing indexical shift) tend to have more structure cross-linguistically than clauses referring to situations or events. In their classification, *say, tell* and *believe* are paradigmatic instances of proposition-taking complements, while *ask*, *know* and *want* are exemplars of situation-taking complements, thus able to host less lexical material and being more integrated into their matrix clauses (Figure 2.1):

| | | |
|---|---|---|
| MOST INDEPENDENT | | LEAST INDEPENDENT |
| LEAST TRANSPARENT | Proposition ≫ Situation ≫ Event | MOST TRANSPARENT |
| LEAST INTEGRATED | | MOST INTEGRATED |

Figure 4.4: The Implicational Complement Hierarchy of Wurmbrand and Lohninger (2023)

Thus, according to Wurmbrand and Lohninger (2023), speech reports fall into the most independent clausal category, which can explain why such constructions are able to license so-called 'root clause phenomena', i.e. syntactic restrictions typically observed in matrix clauses only (Hooper and Thompson 1973; Heycock 2006), such as verb-second order in Germanic languages (Wiklund et al. 2009; Djärv et al. 2017) or adverb placement (Cinque, 1999). As a matter of fact, as observed by Sundaresan (2018), indexical shift seems to also be a root clause phenomenon, occurring in complex constructions such as embedded imperatives (as in Korean, Pak et al. 2008b, 2008a or Slovenian, Stegovec and Kaufmann 2015) which are typically considered to be non-embeddable; again, this data speaks for the fact that IS-speech structures in fact *are* quotations of some sort, showing a great degree of independence relatively to their matrix hosts, just as DS constructions in English.

We illustrate now how a version of our markedness-based account could explain the finiteness restrictions in languages such as Uyghur, Turkish and Tatar. We assume here that finite clauses compete with their nominalized counterparts in those languages. If the nominalized sentence (328b) is more complex than its finite counterpart (in that case, contains more structure), uttering (328b) over its simpler alternative (328a) will trigger the markedness implicature that (328b) does not have the same meaning as (328a); since it occurs in a speech reports context, the additional associated inference is that the referent of the first person form *mening* is not Ahmet, but some other speaker:

(361) a. $\textsc{Alt}(\textit{Ahmet [mening kit-ken-lik-im-ni] di-di}) = \left\{ \textit{Ahmet [men ket-tim] di-di} \right\}$

b. (328a) $\lesssim$ (328b)

c. $(328b) \rightsquigarrow [\![(328a)]\!] \neq [\![(328b)]\!]$

d. $\rightsquigarrow$ The utterance is not about Ahmet, but about the actual speaker.

This is confirmed by the additional observation that, while the content of the embedded clause in (328a) could be used as a matrix sentence, i.e. without any modification; this is not true for (328b), for which a similar quotational parse is odd, since the embedded clause cannot be used as such by any speaker in unembedded contexts:

(362) a. $[\![$*Ahmet [men ket-tim] di-di*$]\!] = \exists e.AG(e,A) \wedge say(e) \wedge \text{FORM}(e) = \ulcorner$*men ket-tim di-di*$\urcorner$

b. $\rightsquigarrow$ Ahmet uttered *men ket-tim di-di*.

c. $\approx$ Ahmet uttered *I*.NOM *left*.

(363) a. $[\![$*Ahmet [mening kit-ken-lik-im-ni] di-di*$]\!] = \exists e.AG(e,A) \wedge say(e) \wedge \text{FORM}(e) = \ulcorner$**mening kit-ken-lik-im-ni*$\urcorner$

b. $\rightsquigarrow$ #Ahmet uttered **mening kit-ken-lik-im-ni*.

c. $\approx$ #Ahmet uttered **I*.ACC *left*.

The complete resulting inference is therefore something akin to (364):

(364) a. (328*b*) $\rightsquigarrow [\![$(328*a*)$]\!] \neq [\![$(328*b*)$]\!]$

b. (328*b*) $\rightsquigarrow$ A. did not utter *mening kit-ken-lik-im-ni*.

c. (328*b*) $\rightsquigarrow$ *mening* does not refer to A.

Last, a similar alternative-based reasoning is able to derive the nominative vs. accusative constraint on shifting exemplified in (332a)-(334b). Recall that, whenever the subject of a speech report construction is accusative-marked, shifting is prevented, as in (334) repeated here:

(334) a. *Sajənə bi tɛrgə ɛmdəl-ɛ-b gɛzə mɛd-ɛ.*
Sajana 1SG.NOM cart break-PST-1SG COMP know-PST

✓ 'Sajana$_i$ found out that she$_i$ broke the cart.'
✓ 'Sajana$_i$ found out that I broke the cart.'

b. *Sajənə naməjə tɛrgə ɛmdəl-ɛ gɛzə mɛd-ɛ.*
Sajana 1SG.ACC cart break-PST.3SG COMP know-PST

✗ 'Sajana$_i$ found out that she$_i$ broke the cart.'
✓ 'Sajana$_i$ found out that I broke the cart.'

[Buryat, Bondarenko 2017: (83)-(82)]

Let us assume, following i.a. Primus (1999), Grimshaw (2001), Woolford 2001, 2003 and Bobaljik (2008), that case-marking obeys a logic of markedness, where nominative case represents the least marked option within grammatical case systems:

(365) **Universal Case Markedness Hierarchy** [Woolford 2003: (12)]
NOM < ACC < DAT/OBL,
Where '<' stands for 'less marked than'

According to this scale, elements on the left on the scale are less marked than higher-ranked elements across languages, and the grammar will privilege less-marked forms whenever possible. In our examples, we see that both nominative- and accusative-marked indexicals all occupy subjects positions, therefore fulfilling the same grammatical role; we therefore expect the preference encoded in (365) to apply here, as well. As a matter of fact, the scale in (365) can be dispensed with, assuming that markedness translates at the morphosyntactic level by greater structural complexity - and therefore captured by the structural complexity definition of alternatives in (58) - which seems to be accurate, cf. Table (4.4).

For the Buryat case in (334), we therefore predict a similar inference to arise as in the Uyghur case above, except that the relevant alternatives will be located at the morphological level, opposing two different pronominal forms:

(366) a. $\textsc{Alt}(\textit{naməjə}) = \left\{ \textit{ bi } \right\}$

b. $\textit{bi} \precsim \textit{naməjə}$

c. $[\![(334a)]\!] \precsim [\![(334b)]\!]$

d. $(334b) \rightsquigarrow [\![(334b)]\!] \neq [\![(334a)]\!]$

e. $\rightsquigarrow$ A. did not utter *naməjə*.

f. $\rightsquigarrow$ *naməjə* does not refer to A.

(367) a. $[\![\textit{Sajənə [bi tɛrgə ɛmdəl-ɛ-b] gɛzə mɛd-ɛ}]\!] =$
$\exists e.AG(e,S) \wedge say(e) \wedge \textsc{form}(e) = \ulcorner \textit{bi tɛrgə ɛmdəl-ɛ-b} \urcorner$

b. $\rightsquigarrow$ Sajana uttered *bi tɛrgə ɛmdəl-ɛ-b*.

c. $\approx$ Sajana uttered *I*.NOM *broke the cart*.

(368) a. $[\![\textit{Sajənə [naməjə tɛrgə ɛmdəl-ɛ] gɛzə mɛd-ɛ}]\!] =$
$\exists e.AG(e,S) \wedge say(e) \wedge \textsc{form}(e) = \ulcorner \textit{*naməjə tɛrgə ɛmdəl-ɛ} \urcorner$

b. $\rightsquigarrow$ #Sajana uttered **naməjə tɛrgə ɛmdəl-ɛ*.

c. $\approx$ #Sajana uttered **I*.ACC *broke the cart*.

Assuming that speakers and hearers alike derive quotative inferences of the kind outlined above can therefore explain why indexical shift, as emphasized by Sundaresan (2018) i.a., is confined to embedded root contexts only; such contexts structurally compete with

other environments (such as nominalized or accusative-marked complements) which, as the result of manner-based inferences, systematically prevent their content to be parsed as quoted, precluding indexicals to be read as such, i.e., with a shifted meaning.

## 4.5 Conclusion

In this article, we tried to argue for a new definition of quotation, fit for the formal study of natural languages. This led us to argue that defining the category known as direct discourse as quotation *qua* metalinguistic reference yielded an inadequate picture of the typology of speech report constructions across languages, which potentially has a detrimental effect on their study; establishing dichotomies on the basis of well-studied languages such as English and re-conducting them to less studied languages with different typological properties leads to spurious distinctions or generalizations. We then set out to demonstrate that an adequate theory of the semantics/pragmatics of quotation, understood in a more liberal, less theory-laden manner, could explain natural language data related to the interpretation of indexicality in speech reports. This led us to argue that quotation, just like association with focus and scalar implicatures, can be understood as an alternative-based phenomenon, systematically triggering inferences (subsumed here under the broader category of manner implicatures), and that these inferences were able to explain a wide range of interpretive restrictions observed in speech reports constructions in various languages. All in all, this contribution is a first step towards a more precise taxonomy of what we dubbed quotative inferences, a taxonomy that needs to be further refined and expended by the systematic study of various quotation types and the environments they occur in.

| Name, function | Examples | | Main references |
|---|---|---|---|
| **Pure quotation** Metalinguistic reference | (246) | a. Maria Callas was known as *La Divina*.<br>b. *D'amor sull'ali rosee* is an famous aria sung by Leonora in Giuseppe Verdi's *Il Trovatore*. | Frege (1892); Tarski (1933); Quine 1940, 1960 |
| **Direct speech** Speech reports | (247) | Renata Tebaldi said: "I have one thing that Callas doesn't have: a heart". | Partee (1973); Banfield (1973); Coulmas (1986); Oshima (2006); Evans (2013) |
| **Mixed quotation** Speech reports | (248) | Someone wrote in the *New York Herald Tribune* that "Miss Freni is - well, 'irresistible' will do for a start". | Davidson (1979), Cappelen and Lepore (1997), Geurts and Maier (2003), Recanati (2008), Maier (2014b) |
| **Scare quotes** ? | (249) | a. What you call *music* is nothing but noise.<br>b. *Dr. Evil*: In twelve hours I will destroy Washington DC with this giant 'laser'. (from *Austin Powers, Man of Mystery*) | Predelli (2003), Wiślicki (2023) |
| **Greengrocer's/ emphatic/ noncitational quotes** ? | (250) | a. We are "closed".<br>b. Please use other "door". | Abbott (2005) |

Table 4.1: Kinds of quotation. Interrogation marks signal that the function/felicity conditions of use of the associated type are yet to be precisely identified and/or defined.

| Property | Direct speech | Indirect speech |
|---|---|---|
| **Opacity** | Syntactically and semantically opaque | Syntactic and semantic dependencies allowed |
| **Integration** | Syntactically independent | Syntactically dependent |
| **Faithfulness** | Reproduces the original speaker's material | Assimilates the original speaker's material to the reporting speaker's perspective |
| **Shiftiness** | Context-sensitive expressions anchored to the original speaker | Context-sensitive expressions anchored to the reporting speaker |

Table 4.2: Properties of reported speech structures. This table is partly inspired by the typologies found in Banfield (1982), Coulmas (1986), Li (1986), Oshima (2006), Evans (2013), and Maier (2014a).

| Property | Direct speech | Indirect speech | Role shift |
|---|---|---|---|
| **Opacity** | Syntactically and semantically opaque | Syntactic and semantic dependencies allowed | Debated (Davidson 2015; Schlenker 2017a, 2017b) |
| **Integration** | Syntactically independent | Syntactically dependent | Debated (Lillo-Martin 1995; Lee et al. 1997) |
| **Faithfulness** | Reproduces the original speaker's material | Assimilates the original speaker's material to the reporting speaker's perspective | Has to be maximally iconic (Davidson 2015; Schlenker 2017b) |
| **Shiftiness** | Context-sensitive expressions anchored to the original speaker | Context-sensitive expressions anchored to the reporting speaker | Allows mixing of perspectives (Quer 2005; Hübl 2013; Maier 2018; Hübl et al. 2019) |

Table 4.3: Properties of role shift constructions across sign languages.

| | 1SG.NOM | 1SG.ACC | 2SG.NOM | 2SG.ACC | DP.POSS.NOM | DP.POSS.ACC |
|---|---|---|---|---|---|---|
| Uyghur | *men* | *men**i*** | *sen* | *sen**i*** | - | - |
| Buryat | *bi* | ***naməjə*** | - | - | *ba:bɛ* | *ba:bɛ-**jɛ*** |

Table 4.4: Comparative table of case-marking on person indexicals in Uyghur and Buryat.

# Chapter 5

# Elided indexicals

## Overview

Indexical expressions raise interesting issues when involved in ellipsis phenomena, some of which having to do with their unexpected interpretations in 'participant-switching' configurations (Sag and Hankamer 1984, Bevington 1998, Chung 2000). In a recent account, Charnavel (2019b) proposes that in some situations, indexicals can be interpreted as e-type pronouns involving relational descriptions such as *x is the interlocutor of y* in context *c*. Crucially, such e-type uses are restricted by pragmatic constraints. I develop here an extension of Charnavel's account, which tries to formalize the pragmatic restrictions on which these readings are dependent. Central to the availability indexical e-type readings, I argue, is that ellipsis sites are congruent answers of a similar question under discussion (QUD) as their antecedents (Roberts 1996, Büring 2003) and are about the same topic (Lambrecht, 1996).

## 5.1 Introduction

The standard account of context-sensitive expressions such as *I, you, here, now - indexicals* in the terminology of Kaplan (1977) - states that these expressions must be interpreted in the actual context of utterance. However, it seems that this interpretive requirement is relaxed under ellipsis, as the following examples show:

(369) A. I love you. [Chung 2000: (8)]

B. I do ⟨ love $\left\{ \begin{array}{c} \text{you} \\ \text{myself} \end{array} \right\}$ ⟩ too.[1]

[1] Elided material is indicated between ⟨ angled brackets ⟩.

(370) A. I'll negotiate with you. [Chung 2000: (7)]

B. Okay, I will ⟨ negotiate with $\left\{ \begin{array}{c} \text{you} \\ \#\text{myself} \end{array} \right\}$ ⟩ too.

(371) A. You pushed me first! [Chung 2000: (6)]

B. No, you did ⟨ push $\left\{ \begin{array}{c} \text{me} \\ \#\text{you} \end{array} \right\}$ ⟩ too.

In (370) and (371), the elided VP can only be taken to mean *negotiate with you* and *push me*, while in (369), the sentence is ambiguous between a 'strict' reading, where the indexical reference remains constant across clauses, and a 'supersloppy' reading (a term coined by Charnavel (2019b), in reference to Dahl (1973)), where the referent of *you* changes from speaker A to speaker B. The problem is not confined to ellipsis cases that occur across clauses, and extends to participant-switching cases such as (372) more generally:

(372) I wanted to dance with you but you didn't ⟨ want to dance with me ⟩.

Such readings are hard to accommodate under any existing theories of ellipsis, be it the standard account inspired by Sag (1976) and Williams (1977), involving an ellipsis-specific mechanism of structure copying from an antecedent (Sag 1976, Williams 1977), or a purely semantic identity account relying on focus-matching with an antecedent (Merchant, 2001). I will therefore argue that an alternative, 'referentialist' account of VP-ellipsis as discourse reference (Hardt 1993, Kehler 2000, Poppels 2022, a.m.o.; see §5.3.2), couched in the Question Under Discussion framework (Roberts 1996; Büring 2003), can account for the data in (369), as well as additional examples of VP-ellipsis of the same kind.

This article is organized as follows. §5.2 introduces the problem regarding indexical expressions in elliptical sentences, and discusses the most worked-out account of it to date, the e-type approach of Charnavel (2019b), alongside some of its remaining issues. §5.3 lays out an alternative, discourse-based model of ellipsis, and §5.4 applies it to the data at stake. §5.5 discusses the role of the additive particle *too* in licensing the attested readings. §5.6 concludes.

## 5.2 Indexicals under ellipsis

### 5.2.1 The problem

The data introduced in (369) and (370) echoes a famous puzzle introduced by Dahl (1973) and Williams (1977) for sentences like (373), which are ambiguous between two readings:

a *strict reading*, in which the referent of the elided pronoun refers to John's dog, and a *sloppy reading*, in which the elided pronoun refers to Bill's dog.[2]

(373) $\text{John}_i$ walks $\text{his}_i$ dog and $\text{Bill}_j$ does ⟨ walk $\left\{ \begin{array}{c} \text{his}_j \text{ (\textit{sloppy})} \\ \text{his}_i \text{ (\textit{strict})} \end{array} \right\}$ ⟩ too.

At least since Sag (1976) and Williams (1977), most formal analyses of ellipsis assume that the different readings of (373) above are produced by two underlyingly distinct logical forms at the ellipsis site: one involving a free variable co-referring with *John* in (374a.), and the other involving a variable bound by the closest $\lambda$-abstractor in the antecedent clause, whose argument is *Bill* (374b.):

(374) $\text{John}_i$ walks $\text{his}_i$ dog and

a. $\text{Bill}_j$ does ⟨ walk $\text{his}_i$ dog ⟩ too.

b. $\text{Bill}_j$ $\lambda x$ does ⟨ walk $x_j$ dog ⟩ too.

However, according to the standard picture of indexicals laid out in Kaplan (1977), the meaning of first and second person pronouns are insensitive to the binding configuration exemplified in (374), because their semantic value crucially does not rely on the assignment function. Being directly-referential devices, indexicals are systematically interpreted outside propositional operators and quantifiers, and, as such, are generally assumed not to be bindable.[3] This leaves us with the following lexical entries for pronouns:[4]

(375) a. $[\![ \text{I}_i ]\!]^{g,c} = speaker_c$

b. $[\![ \text{you}_i ]\!]^{g,c} = addressee_c$

c. $[\![ \text{he/she/it}_i ]\!]^{g,c} = g(i)$

As a consequence, while third person pronouns can be interpreted as variables that can be bound by a lambda-binder manipulating the assignment function, this is not the case of indexicals, whose interpretation during semantic composition does not rely on assignments. A further problem is that strict readings for (369)-(371) are not possible in this system. To further illustrate the problem, consider the following examples discussed in Sag and Hankamer (1984), attributed to Barbara Partee:

[2] Subscripted indices are used to indicate (lack of) co-reference between referents, and have no formal import.

[3] According to Kaplan (1977), the meaning of indexicals is not a function from intensions to truth values (as it is the case for non-indexical expressions), but a function from contexts to such intensions - what Kaplan calls a *character*, as opposed to a *content*. In order to capture this, Kaplan's theory devotes a novel set of parameters, the *context*, that assign indexicals their reference prior entering semantic composition. Once the character of an indexical has been set to the corresponding parameter of a given context, it will then rigidly refer to this parameter. See Rabern and Ball 2017 for a thorough overview of Kaplan's system.

[4] Ignoring $\phi$-features like gender and number throughout, which can be added as presuppositions to the above entries (Cooper 1983; Heim 2008).

(376) A. Do you think they'll like me?

B. Of course they will ⟨ like $\left\{ \begin{array}{c} \text{you} \\ \#\text{me} \end{array} \right\}$ ⟩.

(377) A. Are you coming over here ?

B. Yes, I am ⟨ coming over $\left\{ \begin{array}{c} \text{there} \\ \#\text{here} \end{array} \right\}$ ⟩. [Sag and Hankamer 1984: (17-18)]

Assuming an ellipsis licensing algorithm that relies on some form of structural identity with a linguistic antecedent, as in the Sag/Williams account, alongside a standard Kaplanian semantics for indexicals, derives the wrong readings for (376) and (377): since indexicals cannot be bound, they will directly be copied by the ellipsis algorithm, thereby acquiring a new meaning (i.e., a new content) within the elided structure. This is essentially because the indexical's character (a function from contexts to contents, following Kaplan), will remain stable across clauses, delivering the same context-dependent value in each context: *me* is therefore expected to refer to speaker B in (376b), and similarly, *here* is expected to refer to B's location in (377b). Analogous reasoning applies to (369) and (370).

### 5.2.2 Elided indexicals as e-type pronouns

The most recent and worked out account of examples such as (369)-(371) is that of Charnavel (2019b). Her account builds on the influential proposal by Evans (1977) to treat some pronouns as definite descriptions (cp. Heim 1990; Heim and Kratzer 1998; Elbourne 2005), as a response to cases of 'donkey anaphora' (Geach, 1962), as illustrated below:

(378) Every farmer who owns a donkey$^i$ beats it$_i$.

In (378), the pronoun *it* co-varies with the donkeys - even though the NP *donkey* is unable to bind the pronoun due to its position in the structure. A traditional solution to this problem is to assume that the pronoun *it* in (378) is of a special type, referred to since Evans (1977, 1980) as 'e-type'. E-type pronouns are complex entities that can roughly be described as silent definite descriptions containing a definite article and a phonologically null NP, itself consisting of two elements: a relational variable $R$, of type $\langle e, \langle e, t \rangle \rangle$ and whose value is contextually supplied, and a variable of type $e$ that eventually gets bound by the quantifier *every farmer* that c-commands it. In our example, this variable denotes the two-place relation between farmers and the donkey they own. The second variable can be assumed to be some kind of silent, obligatory bound pronoun *pro*. Hence, the following structure for e-type *it* can be represented as follows:

(379) $[\![ \text{ it } ]\!] = [\text{the } [\text{R } \textit{pro}]]$

Charnavel proposes that, similarly, there exists 'indexical' e-type variants of 1st and 2nd person pronouns that explain their behavior in sentences like (369). Like their 3rd person counterparts, E-type indexicals are made of two variables: a silent *pro* variable of type $e$ and a relational variable INTER of type $\langle e, \langle e, t \rangle \rangle$ that is inherently indexical, relating discourse participants to each other.[5] The INTER function is defined as follows:

(380) $[\![ \text{ INTER } ]\!]^{g,c} = \lambda x.\lambda y$ $y$ is an interlocutor of $x \mid \{x, y\} \in \{s_c, a_c\}$

INTER is a relational function that maps discourse participants in the context of utterance $c$ to each other. Its indexical nature guarantees that the silent *pro* part of the elided e-type indexical can only be bound by another indexical pronoun, e.g. the subject pronoun of the elided clause:

(381) $[\![ \text{ I } \langle \text{ love you } \rangle ]\!]^{g,c} = \text{I}_i$ love the INTER $(pro_i)$, where $pro_i \in \{s_c, a_c\}$

Crucially, this analysis stipulates that *pro* in the above structure must be bound by another indexical.[6] Charnavel (2019b) take the following examples, for which the supersloppy reading is degraded, as an empirical support for her claim:

(382) *Context: Paul is talking to his sister Julie.* (Charnavel 2019b: 36)

A. *Paul*: The man I hate loves you.

B. *Julie*: The woman I hate does not ⟨ love $\left\{ \begin{array}{c} \text{me} \\ \#\text{you} \end{array} \right\}$⟩.

(383) *Context: Paul is talking to his sister Julie.* (Charnavel 2019b: 37)

A. *Paul*: The woman you hate loves me.

B. *Julie*: The man you hate does not ⟨ love $\left\{ \begin{array}{c} \text{you} \\ \#\text{me} \end{array} \right\}$⟩.

This is expected under Charnavel's account, since in both (382) and (383), the overt indexicals are embedded within a relative clause headed by a definite NP and therefore, cannot bind the *pro* variable in the e-type indexical within the ellipsis site. Similarly, her account rules out supersloppy readings in configurations where no indexical is present in the antecedent:

[5] In that, Charnavel follows and refines previous insights from Rebuschi (1994, 1997) and Chung (2000) that also model the meaning of indexicals in examples like (369) in a relational manner to each other. See Charnavel (2019b), sec. 2.2.1 for a discussion of their analyses.

[6] This feature of Charnavel's account is modified in Charnavel and Sportiche (2023). We only focus on the original English data in what follows, leaving discussion about French for another occasion.

(384) *Context: Paul is talking to his sister Julie.* (Charnavel 2019b: 38)

A. *Paul*: Jonathan voted for me.

B. *Julie*: Mike did ⟨ vote for $\left\{ \begin{array}{c} \text{you} \\ \text{\#me} \end{array} \right\}$⟩ too.

(385) *Context: Paul is talking to his sister Julie.* (Charnavel 2019b: 39)

A. *Paul*: The handsome neighbor loves you.

B. *Julie*: His sister does not ⟨ love $\left\{ \begin{array}{c} \text{me} \\ \text{\#you} \end{array} \right\}$⟩.

(386) *Context: Paul is talking to his sister Julie.* (Charnavel 2019b: 41)

A. *Paul*: The handsome neighbor loves you.

B. *Julie*: I do ⟨ love $\left\{ \begin{array}{c} \text{him} \\ \text{myself} \\ \text{\#you} \end{array} \right\}$ ⟩ \#(too).

Structural relations between e-type indexicals and their binders are not the only ingredient needed to account for supersloppy readings, however. As Charnavel herself notes, e-type interpretations of elided indexicals can arise whenever pragmatic conditions make the relation between discourse participants both salient and relevant, something that is also highlighted in previous literature on the topic (Bevington 1998, Chung 2000, as well as Balachandran 2021):

> The key of the present analysis is to hypothesize that discourse participants are not always directly defined by their role in the context (i.e. as the speaker or the addressee of the context), but can also be interpreted through their relation to each other in the context (the interlocutor of the speaker or addressee in the context). This possibility arises in pragmatic conditions that make this relation highly salient and relevant [...] supersloppy readings preferably obtain in situations of love, conflict, negotiation or any other type of specific interaction between the two interlocutors.
>
> [Charnavel 2019b: 475]

Appealing to pragmatics is necessary in order to explain why supersloppy readings are strongly dispreferred for examples such as (387):

(387) *Context: Claire is talking to a neighbor.* (Charnavel 2019b: (60))

A. I came across your daughter yesterday.

B. I did ⟨ come accross $\left\{ \begin{array}{c} \text{my} \\ \#\text{your} \end{array} \right\}$ daughter ⟩ too.

One might wonder, however, what is it that possibly makes the relation between discourse participants in any given linguistic interaction 'highly salient and relevant': is it not, rather trivially, the case that any discourse configuration qualify for this? In §5.4, we will provide a predictive pragmatic theory that helps explaining the contrasts between examples (369) and those such as (387), which crucially involves the different goals that interlocutors pursue when exchanging information during conversation.

### 5.2.3 Is the problem specific to indexicals?

Note that the problematic reading of examples such as (369) is not specific to indexicals; indeed, it seems that analogous restrictions arise with 3rd person pronouns, (388)-(389):

(388) A. He$^i$ loves her$^j$.

B. She$_j$ does ⟨ love $\left\{ \begin{array}{c} \text{him}_i \\ \text{herself}_j \end{array} \right\}$ ⟩ too.

(389) He$^i$ loves her$_j$ and she$^j$ does ⟨ love $\left\{ \begin{array}{c} \text{him}_i \\ \text{herself}_j \end{array} \right\}$ ⟩ too.

This is also the case for monoclausal ellipsis, where (390) resembles (407), repeated here:

(390) John$^i$ wanted to dance with Mary$^j$, but she$_j$ didn't ⟨ want to dance with him$_i$ ⟩. [Stockwell 2020: 65]

(407) I wanted to dance with you but you didn't ⟨ want to dance with me ⟩.

Interestingly, introducing a novel discourse referent prevents the supersloppy reading to arise:

(391) A. He$^i$ loves her$^j$.

B. The neighbor$^k$ does ⟨ love $\left\{ \begin{array}{c} \text{her}_j \\ \#\text{him}_i \\ \#\text{himself}_k \end{array} \right\}$ ⟩ too.

The above data suggests that the (un)availability of (super)sloppy readings are part of a more general phenomenon involving discourse reference, rather that stemming from the indexicality of 1st and 2nd person pronouns themselves. Moreover, in configurations where the indexical targets are 'unbound' in their antecedents (i.e., in configurations where the binder is not an indexical itself, and thus cannot bind the second indexical in the antecedent) as (386) repeated here, the elided pronoun can refer back to either *the handsome neighbor* or speaker B, but not to speaker A:

(386) A. The handsome neighbor loves you. (Charnavel 2019b: 41)

B. I do ⟨ love $\left\{\begin{array}{c}\text{him}\\ \text{myself}\\ \text{\#you}\end{array}\right\}$ ⟩ too.

In the e-type framework, this gap is explained by the very nature of the function INTER, which prevents any such binding, since it can only bind a variable denoting a participant in the conversation.

It is worth noting that the fact that supersloppy readings are not restricted to indexicals is acknowledged by Charnavel (2019b), who provides data involving proper names (§4.2):

(392) *Context: Tess and Sean are talking about their colleagues.*

a. *(Tess to Sean)* Matthew owes Clarissa.

b. *(Sean to Tess)* Clarissa does ⟨ owe Matthew ⟩, too.

(Charnavel 2019b: 103)

This leads Charnavel to conclude that "proper names, like e-type pronouns, can depend on the assignment function g and be construed as descriptions containing a bound variable.", which leads her to positing a non-indexical variant of INTER, the function OTHER, with the following semantics:

(393) $[\![ \text{ OTHER } ]\!]^{g,c} = \lambda x.\lambda y\ y \text{ is other than } x \mid \{x, y\} \in \{g(1), g(2)\}$

There is, therefore, *a priori* no constraint as to which kind of referential expression could posess an e-type variant in the lexicon of any language, the only relevant factor being the pragmatic factors mentioned in the previous section.

All in all, the data reviewed so far suggests that pragmatics considerations might be central in accounting for the strict-supersloppy alternation, and not a side mechanism filtering out irrelevant readings in some contexts. It also appears that e-type readings of elided indexicals seems to be sensitive to information-structural factors that regulate the status of available discourse referents. As it will be argued in the following sections, the key notion to understand the correct pattern exemplified by the above data is *topicality*, i.e.

the *aboutness* relation between a proposition and the relevant discourse referents. More precisely, I will argue that the availability of a dedicated discourse referent (understood in terms of QUD-aboutness) is what restricts the possible readings available in the above cases. In what follows, I shall introduce the QUD-model of ellipsis, and discuss further the notions of topicality and aboutness.

## 5.3 Ellipsis and the structure of discourse

My proposal in order to deal with the above issues is to make use of a formal model of discourse structure, the question-under-discussion model of Roberts (1996). Such a model has already proved fruitful in the treatment of various ellipsis phenomena, such as VP-ellipsis (Kehler and Büring 2007, Keshet 2013, Kehler 2016, Elliott et al. 2016), sluicing (AnderBois 2010, 2014, Barros 2014, Kotek and Barros 2018, Poppels and Kehler 2023), fragment answers (Weir, 2014), as well as issues related to presupposition projection (Roberts et al. 2009, Simons et al. 2010) the distinction of at-issue vs not at-issue content (Tonhauser et al. 2013, Koev 2013, 2018) and information structure (Büring 2003, Roberts 1996).

Roughly, my proposal is that the distribution of strict and (super)sloppy readings in cases discussed above can adequately be captured if it is assumed that ellipsis sites are viewed as answers to (sometimes implicit) questions that the interlocutors have in mind when they steer the conversation: those questions, as well as other kind of semantic/pragmatic information, such as the available discourse referents that can serve as antecedents for pronominal reference, restrict the range of available alternatives that the ellipsis site can denote. In what follows, I shall expose the main features of the model before turning to the QUD approach to ellipsis.

### 5.3.1 Utterances, questions, and the structure of discourse

When we talk, what we say does not occur randomly: utterances are meaningful strings of sounds tied together by organizational principles, rules in a language game (in the sense of Lewis 1979b) that speakers follow in order for information to go through. In a QUD model, assertions and questions alike are viewed as inquiries about the 'big question', *what is the way things are* (Stalnaker, 1978). Speech acts can then be viewed as discourse moves that follow a strategy of inquiry shared by the interlocutors (Roberts 1996; Büring 2003). Each discourse move is dependent on a prior QUD, be it explicit or implicit: as a consequence, in order to be relevant, assertions and questions must assess the QUD:

(394) **Relevance for discourse moves** [Adapted from Roberts 1996: 21]
A move $m$ is *relevant* to the QUD $q$ iff

a. $m$ introduces a partial answer to $q$ ($m$ an assertion); or

b. $?m$ is part of a strategy to answer $q$ ($?m$ a question).

Assertions can either provide complete answers to the QUD, or provide partial answers to it, i.e. be compatible with a restricted set of more specific questions that stand in a subset relation to the higher, more general QUD. Questions are organized in a hierarchical stack to which they are added to as the conversation proceeds, and assertions can be viewed as implicit answers to these questions. For instance, a statement of the form

(395) Margaux will wear her turquoise emerald tonight.

Can be viewed as an implicit answer to the following questions, which are organized in a subset-superset relation:

1. What will Margaux wear tonight?
   (a) What kind of jewel will Margaux wear tonight?
      i. Will Margaux wear her purple amethyst?
      ii. Will Margaux wear her blue sapphire?
      iii. ...
   (b) What kind of dress will Margaux wear tonight?
   (c) ...

The semantic value of the QUD is the set of complete answers to it (Hamblin 1976, Karttunen 1977):

(396) $[\![$ What will Margaux wear tonight? $]\!] = \lambda p.\exists x.\ (p = \lambda w.$ Margaux will wear $x$ in $w)$

Prosody can also alter the QUD in significant ways: focus marking, for instance, can introduce novel sets of alternatives which the prosodically marked element is a member of:

(397) a. Margaux will wear [her turquoise emerald]$^F$ tonight.
$\rightsquigarrow$ Margaux won't wear anything else tonight.
$[\![$ QUD $]\!] = \{$ What $x$ will Margaux wear tonight ? $\mid x \in D_e \}$

b. Margaux will wear her turquoise emerald [tonight]$^F$.
$\rightsquigarrow$ Margaux won't wear it any other time.
$[\![$ QUD $]\!] = \{$ When is the time $t$ s.t. Margaux will wear her TE ? $\mid t \in D_r \}$

Here, the placement of focus signal different strategies of inquiry aimed at answering different QUDs.

### 5.3.2 Ellipsis and the QUD

Most formal analyses of ellipsis in the generative tradition have analyzed the process in terms of syntactic and/or semantic identity with a linguistic antecedent (Ross 1969; Sag 1976; Williams 1977; Fiengo and May 1994; Merchant 2001, 2013; Chung 2006, 2013; Barros 2014; Kotek and Barros 2018; **?**; Stockwell 2020, 2022 a.o.). However, there is evidence that ellipsis is sensitive to discourse structure and coherence broadly conceived in a way similar that pronominal anaphora is, rather than depending exclusively on some structure-specific constraints holding between the elided material and a linguistic object (Wasow 1972; Webber 1978; Hardt 1992, 1993, 2009, 2003; Kehler 2000, 2016, 2019; Jäger 1997, 2005; Poppels and Kehler 2018; Poppels 2020; see Poppels 2022 for an in-depth discussion on the topic). VP-ellipsis, in particular, is known for displaying especially flexible licensing conditions to this respect, being not sentence-bound but discourse bound (398a), insensitive to islands (398b) and allowing for backwards anaphora or cataphora, (398c):

(398) a. I disagree with the writer who says funeral services should be government-controlled. The funeral for my husband was just what I wanted and I paid a fair price, far less than I had expected to pay. But the hospitals and doctors should be ⟨ government controlled ⟩. (Hardt 1993; (105))

b. John didn't hit a home run, but I know a woman who did ⟨ hit a home run ⟩. (Sag 1976; (1.1.8))

c. Although Sandy said she didn't ⟨ go to the store ⟩, Besty actually did go to the store. (Sag 1976; (1.1.12 a))

For the present purposes, I will take an intermediate stance on the subject and assume ellipsis to be a general process of phonological reduction of given semantic material (Rooth, 1992a) that can be identified as a possible answer to a question-under-discussion in the sense discussed above. In the present system, the semantic value of the QUD raised by an element $\alpha$ equates the set of propositions that answer it (*per* Hamblin semantics). This amounts to saying that the QUD represents the focus alternatives of $\alpha$, as in Rooth (1992b). Note that the status of $\alpha$ here is not defined, and is crucially *not* equated with what a number of ellipsis theories call the *antecedent*. $\alpha$ can be the antecedent, but need not be: it can also be another, salient proposition (or, in our case, a salient VP) entailed by the context.[7] I will therefore write $[\![ \alpha ]\!]$ for the standard semantic value of $\alpha$, and $\|\alpha\|$ for its focus semantic value, i.e. the set of alternatives to $\alpha$ under focus. Ellipsis is licensed when the content of the elided clause is part of the QUD, that is, when the alternatives it

[7] A similar proposal can be found in Kroll (2019) for sluicing, although in a different setup using dynamic semantics.

denotes are the same as those required to answer the QUD. This is the question-answer *congruence* condition, that can be defined as follows:

(399) **Congruence** (Roberts 1996: 31)
$\beta$ is congruent to a question $\alpha$ iff $[\![\alpha]\!] = \|\beta\|$.

Congruence posits that in order to be felicitous, the alternative semantic value of a given assertion $S$ must be part of the alternatives denoted by the question it aims at answering. As we will see, congruence will play a crucial role in predicting available readings for strict/sloppy cases of pronoun resolution. As pointed out by Kehler (2016), a challenge to syntactic and/or semantic parallelism theories of VP-ellipsis in the generative tradition are sentences such as (400) which allow a sloppy reading of *him* (indexed to *John*), in spite of the antecedent being unable to provide a syntactic configuration that would license binding in that case (the pronoun *him* being already bound by the QP *every boy*):

(400) Every boy$^i$ in Mrs. Smith's class hoped she would pass him$_i$. In John$^j$'s case, I think she will ⟨ pass him$_{*i,j}$ ⟩. [Kehler (2016), (10)]

Kehler (2016) analyzes (400) as involving a contrastive topic realized as the appositive *in John's case*, introducing a novel sub-QUD within the discourse tree, of the form *will Mrs. Smith pass John?*. A consequence of this analysis is that there is no re-binding of the pronoun in the ellipsis clause: rather, the pronoun obtains its reference through the QUD, being identified as referring to the contrastive topic *John*. Here, ellipsis is not licensed by direct parallelism with the antecedent, but triggered by focus-matching against the alternatives denoted by the *implicit* QUD inferred from the contrastive topic *in John's case*, of the form

(401) QUD (400) = { What about John$^i$ ? Will Mrs. Smith pass him$_i$ ? }

In order to allow focus-matching against accommodated QUDs *via* antecedents, Kehler (2016) proposes the following condition:

(402) **QUD - Ellipsis licensing condition** (Kehler 2016: 522)
For ellipsis clause $C_E$ and antecedent clause $C_A$ for which $[\![C_A]\!]^g \in \|C_E\|^g, QUD = \|C_E\|^g$

This condition states that the available alternatives of an ellipsis site equal the possible congruent answers to the QUD, on the condition that the meaning of the antecedent clause be a member of that set. This is a restatement of Rooth's 1992a parallelism condition that crucially allows ellipsis to be licensed if the parallel domain of the ellipsis clause includes not only the antecedent, but the congruent answers to the QUD as well.

## 5.4 *You* and *I* under discussion

In light of the above, we suggest that the availability of supersloppy readings in examples such as (369B) arise because of a massive ambiguity that is generated at the level of interpretation: more precisely, the source of the ambiguity is located at the level of the QUD that B's answer is meant to address. On this view, different interpretations obtain given what the QUD from B's perspective is. Strict readings arise when B's answer targets a more specific QUD introduced by A's statement - a sub-QUD whose answer set is a subset of the main QUD. On the other hand, supersloppy readings arise when B's statement answers a reciprocal QUD, which can arise either as default when utterances involve reciprocal predicates such as *love* and *hate* (Balachandran, 2021), or whenever reciprocity is contextually relevant, i.e. when the common ground contains discourse referents that the QUD can be about.

### 5.4.1 Supersloppy readings: inferring reciprocity

Consider (369), repeated here:

(369) A. I love you.

B. I do ⟨ love $\left\{ \begin{array}{c} \text{you} \\ \text{myself} \end{array} \right\}$ ⟩ too.

As was already mentioned in the introductory part of this paper, it has been observed that (super)sloppy readings arise in the scope of some predicates, but not others (cf. Charnavel 2019b, §3.4; Balachandran 2021). This explains why supersloppy readings are dispreffered in the following:

(387) *Context: Claire is talking to a neighbor.*

A. I came across your daughter yesterday.

B. I did ⟨ come accross $\left\{ \begin{array}{c} \text{my} \\ \#\text{your} \end{array} \right\}$ daughter ⟩ too. [Charnavel 2019b: (60)]

(403) *Context: Robert is talking to a neighbor, who is as keen on cars as he is.*

A. Do you like my new car?.

B. Do you ⟨ love $\left\{ \begin{array}{c} \#\text{my} \\ \text{your} \end{array} \right\}$ new car ⟩ ? [Charnavel 2019b: (61)]

It thus seems that the lexical meaning of the predicate plays a role in allowing for a kind of reciprocal interpretation, through which the supersloppy reading can obtain. Here we

follow Balachandran (2021) and related ideas by Asher et al. (2001) and Hardt et al. (2013) in assuming that an utterance of (369A) promotes a reciprocal QUD to salience: without any further contextual information, predicates such as *love* and *hate* relating two individuals bring about a QUD that relates their meaning to the individuals they take as arguments in a reciprocal fashion. More precisely, for any given reciprocal predicate $R$ that applies to two individuals $x$ and $y$, its use in discourse will raise the reciprocal QUD *?R(y,x)* to relevance:

(404) **Reciprocity**
For any move $m$ in discourse compatible with context $c$ and the QUD, then $m(R(x,y)) \rightsquigarrow ?m(R(y,x))$

(404) closely relates to Balachandran's *Discourse Reciprocity Principle*, which she grounds in a more general behavioural principle from the sociological literature, the *norm of reciprocity* (see Balachandran 2021: 4 sqq.). While we do not exclude the possibility or relevance of such principle, we would rather like to consider the principle in (404) as inherently linguistic, closer to the notion of *Most Specific Common Denominator* of Prüst et al. (1994), or that of *Maximal Common Theme* of Asher et al. (2001) and Hardt et al. (2013). Although differing in their respective implementation, both of these notions have at their core the idea that ellipsis is an interpretive principle seeking to maximize coherence by relating the maximal amount of elements shared by two structures[8]. In our specific case, the principle in (404) reflects a similar constraint seeking to maximize coherence in ellipsis interpretation, through the accommodation of a reciprocal QUD, which allows the supersloppy reading in (369B). Upon utterance of (369A) and assuming, for the sake of simplicity, that there are no other QUDs active in the conversation, A's assertion answers the maximal QUD, which we write down as Stalnaker's 'big question':

(405) QUD (369A) = { What is the way things are? }

As proposed above, the meaning of the QUD is the set of possible answers to it, which represents basically any assertion compatible with the context $c$ (leaving aside accommodation possibilities).In turn, B's utterance has to be interpreted within a global strategy of inquiry aimed at answering the QUD introduced by A. However, utterance of (369A) narrows the QUD down to some question congruent with the meaning of the predicate *love* and its arguments, A and B. The reciprocity principle raises a novel QUD, which could be paraphrased roughly as *Since x Rs y, is it the case that y Rs x?*, licensing the supersloppy reading. The reciprocal QUD is stated in (406), where $R$ is a relation expressed by a transitive predicate (in our case, *love*) and two of its arguments:

[8] Again, the term *structure* is used to denote different entities in the two theories, which are parse trees in Prüst et al. (1994) and DRSs in Asher et al. (2001) and Hardt et al. (2013).

(406) R-QUD (369B) = { $m(R_{love}(x,y)) \rightarrow ?m(R_{love}(y,x))$ }

Since A's utterance is an assertion about the relation of loving between two individuals, A and B, the R-QUD it brings about consists of an inquiry about whether the same relation holds for a different sequence of individuals. This explains the contrast in (407):

(407) a. John$^i$ wanted to dance with Mary$^j$, and she$_i$ wanted to ⟨dance with him$_i$⟩, too.

b. #John$^i$ danced with Mary$^j$, and she$_i$ did ⟨dance with him$_i$⟩, too.

(408) a. John$^i$ wanted to meet with Mary$^j$, and she$_i$ wanted to ⟨meet with him$_i$⟩, too.

b. #John$^i$ met with Mary$^j$, and she$_i$ did ⟨meet with him$_i$⟩, too.

[Adapted from Stockwell 2020: 11, 65]

Example (407) shows that the principle in (404) is not operative in cases of ellipsis where the predicates express a symmetrical relation between participants: since $xR_{dance}y \leftrightarrow yR_{dance}x$, and $xR_{meet}y \leftrightarrow yR_{meet}x$, ellipsis cannot obtain, since the would-be R-QUD in that case is trivial and therefore, does not constitute an appropriate discourse move - in Roberts'terms, the R-QUD is not part of any well-formed strategy of inquiry.[9] But in the case of (369), it is: the R-QUD tracks information about the situation just described by A's utterance, a proposition involving a relation of loving between two individuals. The strategy of inquiry of (369) under this interpretation is described in (409):

(409) { *What is the way things are?* }

A. I love you.

{ $?R_{love}(y,x)$ }

B. I do ⟨ love you ⟩ too.

This corresponds to the following alternatives:

(410) $\|C_E$ (409)B$\| = \left\{ y \text{ loves } x \text{ in } c \mid y, x \in D_e \right\}$

Since the meaning of the elided clause is congruent with the R-QUD, ellipsis is licensed.

That the lexical meaning of predicates involved into VP-ellipsis is crucial can be seen with those examples in which the elided verb has no reflexive interpretation, such as (411):

[9] See Stockwell (2020, 2022) for more detailed arguments about the role of triviality in ellipsis licensing.

(411) A. I don't want to be divorced from you.

B. Well, I do ⟨ want to be divorced from $\left\{ \begin{array}{c} \text{you} \\ \#\text{myself} \end{array} \right\}$ ⟩! [Chung 2000: (4)]

Since the predicate *divorce* requires that both of its arguments be distinct, no strict interpretation can arise here, enforcing an obligatory supersloppy reading. However, reciprocal readings can also arise when contextual information allows for an R-QUD to be accommodated on the basis of what is established as common ground between conversational participants[10]. Consider (412) (slightly adapted from example (403) from Charnavel 2019b), which does not allow for a supersloppy interpretation:

(412) *Context: Robert is talking to a neighbor, who is as keen on cars as he is.*

A. I love my new car.

B. I do ⟨ love $\left\{ \begin{array}{c} \#\text{my} \\ \text{your} \end{array} \right\}$ new car ⟩, too.

Here, the default context only establishes one potential referent for the DP *my new car*, namely, A's car, licensing the strict reading:

(413) { *What about the new cars ?* }

A. I love my new car$^{i}$.

B. { *Who else loves A's new car$_i$ ?* }
I do ⟨ love your$_i$ new car ⟩ too.

The relevant alternatives for ellipsis are the following:

(414) $\| \text{C}_E$ (403B) $\| = \{x$ loves A's car $\mid x \in D_e\}$

In (412), B's statement is taken to answer the sub-QUD *who else loves A's car ?*, given that this is common ground that there is only one new car that can be discussed. Consider now the same example uttered in a context where *both* speakers recently acquired a new car. In that context, the common ground now contains worlds in which both speakers have recently acquired cars, and B's answer can be computed against another QUD, licensing a supersloppy reading:

(415) { *What about the new cars ?* }

[10] As it is standard following Stalnaker (1974), I define the *common ground*, or CG, as the set of propositions that are believed to be true by the conversational participants.

A. { *Who loves his new car ?* }
I$^{i}$ love my$_{i}$ new car.

B. { *Who else loves his new car ?* }
I$^{j}$ do ⟨ love my$_{j}$ new car ⟩ too.

In that context, the alternatives for the ellipsis site are different, computed against a different CG:

(416) $\| \text{C}_E$ (415B) $\| = \{x \text{ loves } x\text{'s car} \mid x \in D_e\}$

(417) $[\![ \text{CG (415)} ]\!] = \lambda w.$ A and B both own new cars in $w$

Common knowledge can thus gear speakers and hearers alike into computing supersloppy readings, in cases where those are relevant for the purposes of the conversation. An analogous example with two indexicals referring to distinct individuals in the same clause can be provided, such as in (418) below:

(418) A. I want to hire you.

B. I do, too.

Depending on the context, the ellipsis clause in (418B) can have the following meanings:

(419) a. *Context: B is applying to a job in A's company.*
B: I do ⟨ want you to hire me ⟩ too.

b. *Context: A and B are both renowned specialists in their field and both seek to recruit a peer for their own company.*
B: I do ⟨ want to hire you ⟩ too.

The proposal can be extended to other indexicals, such as *here* and *now*. Charnavel (2019b) provides examples such as (420), which involves a supersloppy reading of *here*:

(420) *Context: Rachel is in Kamchatka, and Simon is in Yakutsk. They are talking over Skype.*

A. *Rachel*: I feel good here ! [Charnavel 2019b: (93)]

B. *Simon*: I do ⟨feel good $\left\{ \begin{array}{c} \text{there, in Kamchatka} \\ \text{here, in Yakutsk} \end{array} \right\}$⟩too.

Crucially, is is common ground here that $loc(sp(c_{Rachel})) \neq loc(sp(c_{Simon}))$, providing two different discourse referents for both location variables in the sequence. This assumption is crucial for computing the supersloppy reading: removing it from the CG (i.e., assuming that both participants are in the same location) makes it unavailable:

(421) *Context: Rachel and Simon are in Kamchatka.*

A. *Rachel*: I feel good here$_i$ !

B. *Simon*: I do ⟨feel good here$_i$⟩too.

It has been argued elsewhere (Egan 2009; Parsons 2011) that the interpretation of indexicals display common-ground sensitivity[11], as in so-called 'answering machine paradoxes' (Sidelle 1991; Predelli 1998a, 1998b), where indexicals seem to be evaluated in contexts distinct from that of utterance. Another argument comes from utterances involving indexicals where one or more contextual parameters are not part of the CG, as in the following:

(423) *Context: John is calling his doctor out of working hours. He decides to leave a message on his voice mailbox.*

a. ??Hello Dr Jones. It's me calling. [Marty 2017: 193]

b. Hello Dr Jones. It's John calling.

Marty (2017) convincingly argues that the sentence involving an indexical (423a) cannot be felicitously uttered in such a context since (423a) does not contextually entails (423b), explaining (among other things) why uttering (423b) in such a context does not give rise to the (otherwise obligatory) implicature that John is not the speaker. An analogous reasoning can be applied to our ellipsis cases (420)-(421), where ellipsis reference in B sentences is constrained by the CG: since, in (420), it is not the case that $loc(sp(c_{Rachel})) = loc(sp(c_{Simon}))$, B's utterance is therefore ambiguous, being able to refer to both locations, as opposed to (421).

All in all, the present account thus formalizes the 'pragmatic conditions' hinted at in previous accounts of the phenomenon: what matters in those contexts is not the salience of the relationship between the two speakers, but rather, the common assumptions that they both hold true regarding the context in which the conversation is taking place. Some predicates, through their lexical meaning, straighforwardly increase the level of prominence of a relation between participants; in some other cases, this relation is brought about by the common ground, or by virtue of mentioning the relevant discourse referents. Whenever these conditions obtain, a reciprocal QUD can be accommodated, allowing for supersloppy readings in elliptical utterances.

[11] Egan (2009) argues that the semantic norm guiding the interpretation of indexicals should not be defined relatively to the sole context of utterance, as Kaplan (1977) has it, but rather should take into account the utterance's destination, and be interpreted according to the following:

(422) **Audience sensitivity** [Egan 2009: 256]
For some uses of context-sensitive vocabulary, the contribution that they make to the content of sentences in which they occur is sensitive not (merely) to features of the speaker's predicament, but (also) to features of the predicaments of particular audience members.

### 5.4.2 Strict readings: the role of contrast

Reciprocal QUDs may not be the preferred interpretation, however. Note at this point that A's utterance itself in (369) can be interpreted as introducing a novel sub-QUD whose meaning is a subset of the original QUD:

(424) a. Sub-QUD (369A) = { Who loves B? }

b. $[\![$ Sub-QUD (369A) $]\!]$ = { $x$ loves B $\mid x \in D_e$ }

It follows from this that speaker B's answer can be ambiguous in two ways: either her utterance will answer the R-QUD in (406), or it will answer the Sub-QUD in (424). The latter will license ellipsis and allow it to be interpreted with a strict reading:

(425) { *What is the way things are?* }

A. I love you.

{ *Who else loves* $B_i$ *?* }

B. I do ⟨ love myself$_i$ ⟩ too.

Since the semantic value of the ellipsis site is a possible answer to the sub-question introduced by A, namely *who loves B?*, which meaning is a subset of the broader question *what is the way things are?*, or *what is the nature of our relationship?*, which is a possible QUD for A's original assertion. It turns out that, under the strict reading, the focus value of the ellipsis clause is part of the alternatives denoted by the subquestion *who loves B?*:

(426) $\|\text{C}_E$ (425)B$\| = \left\{ x \text{ loves B} \mid x \in D_e \right\}$

The congruence condition is satisfied and, as a consequence, ellipsis is licensed under the strict reading. Importantly, the strict reading corresponds to a continuation of the strategy of inquiry initiated by A's utterance, where the non-elided part of B's answer is understood as a partial answer to; this is not the case with the reciprocal cases licensing supersloppy readings, where B answers a different (but pragmatically related) QUD. Note also at this point that, although (369) allows for two different parses of the ellipsis site, an accented prosodic marking in (369A) could straightforwardly help narrowing the QUD to its Sub-QUD unambiguously, thus forcing the strict reading of B's answer:

(427) A. $[\text{I}]_F$ love you.

B. I do ⟨ love $\left\{ \begin{array}{c} \#\text{you} \\ \text{myself} \end{array} \right\}$ ⟩ too.

Focus-marking the subject in (427A) will consistently force the hearer to consider only those alternatives that the focused constituent is a member of, ruling out the supersloppy reading alongside the R-QUD in (406). This is expected under the present account, which crucially relies on the notion of contrast. Contrast has repeatedly been considered to be one of the central-defining features of ellipsis licensing and resolution, influencing both its form and interpretation. This is the case for so-called 'contrastive ellipses' such as gapping and stripping, where unelided material (the 'remnants') are said to be contrastive (Klein 1993, Takahashi and Fox 2005, Konietzko and Winkler 2010, Winkler 2005, 2011, 2016 a.o.). The same holds for VP-ellipsis as well (Rooth 1992a, Frazier et al. 2007, Stockwell 2020, 2022): most notably, Rooth 1992a argues that VP-ellipsis structures always bear focus marking (which is contrastive), either on the elided VP, as in (428a) or on the subject of the antecedent, as in (428b), where the symbol '~' stands for Rooth's focus operator:

(428) a. John$^i$ left, and Bill$^i$ did ⟨ [leave]~ ⟩, too.

b. John$^i$ left, and [BILL$^i{}_F$ did ⟨ leave ⟩]~, too. [Rooth 1992a: (22-23)]

In fact, for Rooth (1992a), ellipsis licensing entails the presence of a contrastive focus. This predicts that the range of possible readings an ellipsis site can have will be significantly sensitive to the presence or absence of a contrastive element (which, in Rooth's alternative semantics, will be assigned contrastive focus marking through association with ~). This is precisely what happens in Kehler's contrastive topic example (400) discussed above, where the presence of a contrastive topical constituent *in John's case* signals a novel strategy of inquiry and in turn constraints the possible readings the ellipsis site can have, preventing the elided pronoun to be co-indexed with *every boy*. The discourse referent *John* here is part of a topic expression (Lambrecht 1996; Büring 2003) and, as such, assigned contrastive marking (which can be realized by different means, such as syntactic movement to the left edge of the clause, as in (400), or by prosodic marking, assigning a 'rise-fall-rise' contour to the topic, Büring 2003, 2016). This is further supported by cases in which the topical discourse referent appears in a dedicated structural topic position, such as in an *as for* left-dislocation (Reinhart, 1981); in (429), the preferred reading is the one referring back to A's friend:

(429) A. As for my friend$^i$, he$_i$ likes you$^j$

B. I do ⟨ like $\left\{ \begin{array}{c} \text{him}_i \\ {}^{??}\text{myself}_j \end{array} \right\}$ ⟩ too.

What counts as a topic can alter ellipsis resolution in many ways, as the following gapping example from Levin and Prince (1986) shows:

(430) *Sue and Nan had worked long and hard for Carter. When Reagan was declared the winner...*

a. Sue became upset and Nan became downright angry.

b. Sue became upset and Nan ⟨ became ⟩ downright angry.

(431) *Susan's histrionics in public have always gotten on Nan's nerves, but it's getting worse. Yesterday, when she couldn't have her daily Egg McMuffin because they were all out...*

a. Sue became upset and Nan became downright angry.

b. #Sue became upset and Nan ⟨ became ⟩ downright angry.

[Adapted from Levin and Prince 1986]

Here, the felicity of realizing a gapping structure depends on the context - more precisely, as whether the antecedent and the ellipsis site stand in a symmetric (430) or an asymmetric (431) relation, gapping being licensed in the first case only. As convincingly argued by Hendriks (2004), the availability of gapping stems directly from the ability of the NP *Nan* to be interpreted as a contrastive topic with respect to the NP *Sue*; this is the case in (430), and ellipsis is licensed, whereas no such contrastive interpretation is provided in (431). In our framework, a contrastive topic relation obtains in (430) because both referents *Sue* and *Nan* can be understood as partial answers to the same QUD (Krifka 1999, Büring, 2003), which in this case has the form *What happened to x when Reagan was declared the winner?*. This is not the case in (431), where each conjunct answers a different QUD, as illustrated in (432)-(433):

(432) a. QUD = {*What happened to x when Reagan was declared the winner?*}

b. Sue became upset and Nan ⟨ became ⟩ downright angry.

(433) a. QUD = {*What happened to x when x couldn't get a McMuffin?*}

b. Sue became upset...

c. QUD = {*What happened as a consequence?*}

d. ...and Nan became downright angry.

The partial answering requirement on contrastive topics can in turn shed light on our indexical cases; more precisely, it can help explain why it is so that some constructions seem unable to deliver supersloppy readings, as illustrated by the following examples:

(384) *Context: Paul is talking to his sister Julie.* [Charnavel 2019b: (38)]

A. Jonathan voted for me.

B. Mike did ⟨ vote for $\left\{\begin{array}{c}\text{you}\\ \#\text{me}\end{array}\right\}$⟩ too.

(385) *Context: same.* [Charnavel 2019b: (39)]

A. The handsome neighbor loves you.

B. His sister does not ⟨ love $\left\{\begin{array}{c}\text{me}\\ \#\text{you}\end{array}\right\}$⟩.

(386) *Context: same.* [Charnavel 2019b: (41)]

A. The handsome neighbor loves you.

B. I do ⟨ love $\left\{\begin{array}{c}\text{him}\\ \text{myself}\\ \text{\#you}\end{array}\right\}$ ⟩ #(too).

(434) *Context: same.* [Charnavel 2019b: (46)]

A. I hate you.

B. The handsome neighbor does ⟨ hate $\left\{\begin{array}{c}\text{me}\\ \#\text{you}\end{array}\right\}$⟩ too.

In Charnavel's e-type approach, the supersloppy reading here is blocked because, since B's utterance does not feature any indexical, the relational variable *R* cannot find a suitable antecedent to 'feed' its contextual argument slot and bind the *pro* contained within the silent NP. This is essentially because the function INTER is indexical in nature: consequently, in the examples above, the indexicals cannot be bound by 3rd person NPs such as *the handsome neighbor* or *Jonathan*, and the strict reading is the only derivation accessible for the ellipsis site. At the information-structural level, what crucially differentiates examples like (384)-(434) from those such as (369) is that in the former, B's utterance introduces a new discourse referent as a sentence topic within the discourse structure. Introducing a novel discourse referent restricts the range of possible meanings that the ellipsis site can have, the contrastive element being seen as a partial answer to a previously answered QUD. In other words, introducing a novel contrastive topic can only be interpreted within an existing strategy of inquiry (each topical element being a partial answer to the QUD, cf. Büring 2003). As previously argued in §5.4.1, only the strict reading is compatible as being part of the same strategy of inquiry, the reciprocal (or supersloppy)

reading being associated with a different QUD: the fact that the available strict readings are all available under CT-focus marking of the contrastive element is an additional argument in favor of this point.

(435) { *What is the way things are?* }

A. $[\text{I}]_F$ hate you$^i$.

{ *Who else hates* $B_i$*?* }

B. $[\text{The handsome neighbor}]_F$ does ⟨ hate $\text{B}_i$ ⟩ too.

This follows from the contrastive analysis developped here, according to which contrast (through focus marking in the sense of Rooth 1992a) helps establishing topics as partial answers to a common QUD. Here, *the handsome neighbor* is added within the topic set and therefore, immediately signaling a new sub-QUD created by focus-matching the topic referent against a corresponding alternative, the indexical *I* in A's utterance (Roberts 1996, Büring 2003). Adding a new topic forces the listener to interpret (434A) as an answer to a question about the individuals who love B, preventing B's answer to be understood as answering a new (reciprocal) QUD.

### 5.4.3 Relative clauses and non-at-issue discourse referents

Recall that, as observed by Charnavel (2019b), supersloppy readings do not arise in configurations where the relevant indexical is part of a relative clause, as in (382) and (383) repeated here; this is so because they fail to be in the appropriate structural relation (defined by Charnavel as c-command) to bind the variable of the INTER function in the ellipsis site.

(382) A. The man I hate loves you. (Charnavel 2019b: (36))

B. The woman I hate does not ⟨ love $\left\{ \begin{array}{c} \#\text{you} \\ \text{me} \end{array} \right\}$ ⟩ too.

(383) A. The woman you hate loves me. (Charnavel 2019b: (37))

B. The man you hate does not ⟨ love $\left\{ \begin{array}{c} \#\text{me} \\ \text{you} \end{array} \right\}$ ⟩ too.

It has long been noted that appropriate discourse referents needs to be provided for anaphora resolution (Karttunen 1976, Heim 1982). However, it might be the case that relative clauses fail at being able to introduce such referents. As noted as early as Schachter (1973) and Kuno (1973), and emphasized later by Lambrecht (1996), relative clauses

are statements about their head noun. As a consequence, expressions other than the one serving as the head of the relative clause cannot be identified as topics, being somewhat 'demoted' as comments about the referent the relative clause is about. What is crucial here is that the referents for indexicals in (382)-(383) are 'not-at-issue', i.e. are not what the content of the utterance is about. Following Roberts (2010, 2011), we assume that these restrictions arise via a constraint that filters the possible answers to an established QUD regarding the potential referents the question is about:

(436) **Relevant discourse referents (RDR)** (Roberts 2010, 2011)
In a discourse with scoreboard $S$, discourse referent $d \in$ DR (the set of discourse referents) is Relevant to the QUD $Q$ just in case for some property $P$, the question of whether $d$ has $P$ is evidently Relevant to $Q$.

In a more general sense, this constraint can be viewed as an information-structural reflex of Grice's (1975) Maxim of Relevance, which forces the hearer to consider newly introduced referents as maximally relevant for the QUD, and in turn, as a point of departure to further pragmatic operations, such as implicatures.[12] A welcome result of such a definition is that it relates salience to QUD-relevance: referents for alternatives will only be taken into account if the QUD is about them. Arguably, recency of mention is an indicator of QUD-aboutness; it is thus expected that it should have interpretive effects concerning the available set of referents for a given pronoun.[13] This has long been observed in the literature on anaphora resolution with cases like (437), which exemplify the so-called 'problem of the formal link':

(437) a. I dropped ten marbles and found all of them, except for [one]$^i$. *It*$_i$ is probably under the sofa.

b. I dropped ten marbles and found only nine of them. ?*It* is probably under the sofa. (Heim 1982, after Partee (p.c.))

Although the two sentences are logically equivalent in terms of contextual entailment (there is one missing marble), pronominal anaphora using *it* is infelicitous if the marble was not linguistically introduced as a potential referent beforehand. Ellipsis being an extreme form of anaphoric reduction of non-prosodically marked forms (Rooth, 1992a), we expect it to be highly sensitive to salience of retrievable linguistic material. Not every linguistically-realized discourse referent will do, however: as examples (382)-(383) show, the intended referents have to be spelled out as topics in order to be considered relevant to

[12] See Geurts (2007), (2009) and Sudo (2023) for arguments that discourse referents are used to derive implicatures.

[13] Recency of mention is a way to promote salience, but not the only one. Surface order and thematic role preservation across utterances have been argued to play an even greater role in promoting salience (Terken and Hirschberg, 1994), something that could possibly explain the increased importance of parallelism in computing VP-ellipsis. See Kim and Runner 2009, 2011 for experimental data in support of this claim.

the QUD and through it, to ellipsis. Conversely, this is the reason why indexical expressions in these examples cannot license supersloppy readings, in spite of being indexicals and, as such, 'permanently available topics' *qua* denoting participants of the conversation (Erteschik-Shir, 2007): they need to be identified as topics. It is therefore not unreasonable to think that the *relevant* alternatives on which ellipsis is computed will only include those that are deemed relevant for the QUD in the way defined above, and that linguistic mention in a previous discourse move is a way to promote relevant alternatives, through topicality. Further support for this claim comes from examples involving non-restrictive relative clauses like (438):

(438) A. The handsome neighbor, [who I don't like very much], loves you.

B. I do ⟨ love $\left\{ \begin{array}{c} \text{him} \\ \text{myself} \\ \#\text{you} \end{array} \right\}$ ⟩ too.

In this example, the indexical *I* in A's statement is part of a non-restrictive relative clause (NRCC). Such environments have been claimed to be prototypical constructions involving non-at-issue meaning (Simons et al. 2010, Koev 2018), which can be thought of as a property of propositions that directly address the QUD ('q-at-issueness', in the sense of Koev (2018)).

(439) **At-issueness** (Simons et al., 2010)

a. A proposition $p$ is at-issue iff the speaker intends to address the QUD via $?p$.

b. An intention to address the QUD via $?p$ is felicitous only if (i) $?p$ is relevant to the QUD, and (ii) the speaker can reasonably expect the addressee to recognize this intention.

Here, at-issueness directly relates to the ability of syntactic material to introduce sentence topics; since a NRRC like *who I don't like very much* cannot introduce an appropriate discourse referent in a way much similar to their restrictive counterparts, they cannot be taken to address the current QUD or triggering accommodation of a new QUD, being non-at-issue. It is therefore deemed irrelevant to it and, as such, its content cannot serve as a relevant alternative to be taken into account for the computation of ellipsis meaning.

## 5.5 Contrast through additive particles

As argued in the previous section, contrast plays a crucial role in the computation of ellipsis meaning: non-elided material has to be contrastive in order to license ellipsis. This is essentially what prevents supersloppy readings with symmetrical predicates as in (440), adapted from example (407) above:

(440) #I$^{i}$ danced with you and you did ⟨ dance with me$_{i}$ ⟩ too.

Similarly, ellipsis is not licensed in the case of so-called 'tautologous conditionals' (Stockwell, 2022):

(441) a. If John$^{i}$ is wrong, then he$_{i}$ is wrong. [Stockwell 2022: (1)]

b. #If John$^{i}$ is wrong, then he$_{i}$ is ⟨ wrong ⟩.

Additional support for a contrastive theory is the role of the additive particle *too* in examples (369)-(371). In (369), B's answer cannot be felicitously uttered if the E(llipsis)-site is not followed by the additive particle *too*. As argued above, (388) shows that this the pattern at stake is not specific to indexicals:

(369) A. I love you.

B. I do ⟨ love $\left\{ \begin{array}{c} \text{you} \\ \text{myself} \end{array} \right\}$ ⟩ #(too).

(388) A. He$^{i}$ loves her$^{j}$.

B. She$_{j}$ does ⟨ love $\left\{ \begin{array}{c} \text{him}_{i} \\ \text{herself}_{j} \end{array} \right\}$ ⟩ #(too).

This must not be overlooked as a mere side effect of ellipsis; rather, the contribution of *too* is essential in such contexts. Consider the examples below: when subjects are distinct across clauses, *too* is obligatory, and both readings become available, as in (389) repeated here. However, in (442)-(443), the presence of *too* is infelicitous, and the E-site only delivers a strict reading.[14]

(442) A. I love you.

B. You do ⟨ love $\left\{ \begin{array}{c} \text{me} \\ \text{\#you} \end{array} \right\}$ ⟩ #too.

(443) A. He$^{i}$ loves her$^{j}$.

B. He$_{i}$ does ⟨ love $\left\{ \begin{array}{c} \text{her}_{j} \\ \text{\#himself}_{i} \end{array} \right\}$ ⟩ #too.

In order to explain this contrast, let us assume, following i.a. Krifka (1999) and Sæbø (2004), that the role of additive particles such as *too* and *again* is to introduce alternatives

[14] Literature on the obligatoriness/optionality of *too* in VP-ellipsis structures is surprisingly scarce. Notable exceptions are Bos (1994) and Stockwell (2020).

to the proposition they associate with, by presupposing that the context provides a contrastive alternative to the sentence the additive occurs in, and that this proposition is true. We adopt the following semantics for *too*:

(444) **Semantics of *too*** (Sæbø 2004: 202)
Assuming that *T(p)* is a partial function assigning to $p$ its accented topic *T(p)*,
$[\![ \text{too} ]\!] = \lambda p : p[\exists \alpha \mid p[T(p)/\alpha]]$

This definition states that the meaning of *too* is the proposition it attaches to with the presupposition that there exists an alternative $\alpha$ such that $p$ holds under the substitution of $\alpha$ for *T(p)*. In other words, *too* comes with the presupposition that the context must provide a suitable candidate $\alpha$ that can replace the contrastive topic of $p$ and still be part of the relevant alternatives in the utterance context. An important part of this definition is that *too* associates with topics that are *contrastive*, i.e. topics that presuppose the existence of alternatives for which information is required. In our model, a contrastive topic is an element that will stand in a partial-answerhood relation to a previously established QUD. But what is more, as Sæbø (2004) notes after Krifka (1999), assertion of a topic $T$ triggers a distinctive contrastive implicature, from which the hearer understands that no alternatives hold for the asserted topic:

(445) **Contrastive implicature** (Sæbø 2004: 204)
For any $\phi$ and $C$ s.t. $T(\phi)$ is defined and there are alternatives $\alpha$ to $T(\phi)$ active in $C$, then for all such $\alpha$, $\phi$ implicates $\neg\phi[T(\phi)/\alpha]$ in $C$.

The contrastive implicature can be viewed as an instance of quantity implicature (Grice, 1975): if, upon uttering $T(\phi)$, the speaker also believed that $T(\alpha)$ was the case, he should have uttered $T(\phi) \wedge T(\alpha)$ in order to satisfy the first maxim of quantity and be maximally informative; if he didn't, the hearer can then reasonably infer that $\neg\phi[T(\phi)/\alpha]$ in $C$. Assertion of *too*, by contrast, allows speakers to cancel this implicature, in presupposing that one alternative to the associate (topic) is true.

With that in mind, we can now assess the differences between (369)-(388) and (442)-(443). Consider the latter first: in order to license the presence of *too*, B's answer has to be *contrastive* with some previous contextual antecedent. But here, the ellipsis site provides no such contrast: it is identical to the antecedent, the subject *he* being interpreted as co-referential with the subject of A's utterance. As a consequence, ellipsis is licensed, but assertion of *too* isn't, and the contrastive implicature triggered by A's assertion is not cancelled. Now, compare this to (388) or (369): here, ellipsis is licensed under the conditions that we stated above in the same fashion, but since the two subjects are distinct, the presence of *too* indicates distinctiveness: there is at least one alternative of the proposition $p$ that *too* associates with that is true in context $c$, since the use of *too* cancels

the contrastive implicature that negates these alternatives in $C$. Hence, both readings in (388) are licensed. This was the final piece needed to solve the puzzle posed by (369). Recall from §5.2 section that, since the meaning of indexicals is computed through what Kaplan (1977) calls their character (a function from context to contents/meanings), their reference changes from context to context. This is true in our (369), where $c_a$ differs from $c_b$ in (at least) their *speaker* (notated $sp(c)$) and *addressee* ($ad(c)$) parameters. However, although the kaplanian *characters* of *I* and *you* in those contexts provide us with four different candidates ($sp(c_a)$, $ad(c_a)$, $sp(c_b)$, $ad(c_b)$, respectively), their *contents* or *meanings* only involve reference to two individuals: A and B, who assume distinct discourse roles across sentences. This has a major consequence for our examples: since, in order to license a supersloppy reading, additive *too* has to be added (and its presupposition satisfied), we expect to observe the inverse pattern in examples such as (443) where, in contraposition to its indexical counterpart (369), reference for 3rd person pronouns remains constant across clauses. As it turns out, the prediction is borne out: in (369), B's answer is infelicitous without the presence of *too*, while the reverse holds for (442). This follows naturally from the semantics and pragmatics of additive *too* discussed above: in (369), the mere use of the same indexical in B's answer suffices to license a contrast and hence, the presence of *too*: the presupposition associated with it is satisfied (there is an available, salient alternative for B in $c$ - A's utterance) and the implicature conveyed by A is effectively cancelled. The same is not true for (442), where *you* and *I* refer to the *same* individuals across sentences, and contrast does not obtain: as a consequence, the use of *too* is infelicitous in that context, since there is no available contrastive alternative proposition in $c$ to be cancelled.

## 5.6 Conclusion

In this paper, we have tried to provide a formal account of the pragmatic restrictions under which e-type readings of indexicals can arise under ellipsis. We did so by appealing to a theory that allows ellipsis sites to establish their reference anaphorically, through the computation of alternatives viewed as congruent answers to a mutually shared question under discussion. We have shown that the referential constraints operating on ellipsis sites can be stated in terms of their ability (or lack thereof) to answer different kind of QUDs, some with a reciprocal meaning (licensing supersloppy readings) and some best defined as partial answers to an existing QUD with a contrastive meaning (licensing strict readings). In this respect, e-type readings of indexicals under ellipsis do not differ from their 3rd person counterparts. Last, we have tried to highlight the role of the additive particle *too* in restricting the available readings associated with participant-switching ellipsis.

# Bibliography


Aaron, U. E. (1992). Reported speech in obolo narrative discourse. In *Language in context: essays for Robert E. Longacre*, pages 227–240. SIL & The University of Texas at Arlington Dallas.

Abbott, B. (2005). Some notes on quotation. In De Brabanter, P., editor, *Hybrid Quotations*. John Benjamins.

Ackema, P. and Neeleman, A. (2013). Person features and syncretism. *Natural Language & Linguistic Theory*, 31(4):901–950.

Ackema, P. and Neeleman, A. (2018). *Features of person: From the inventory of persons to their morphological realization*. MIT Press.

Ackema, P. and Neeleman, A. (2019). Processing differences between person and number: A theoretical interpretation. *Frontiers in Psychology*, 10:211.

Adesola, O. (2005). *Pronouns and Null Operators – A-bar Dependencies and Relations in Yoruba*. PhD thesis, Rutgers University.

Adesola, O. P. (2006). A-bar dependencies in the yoruba reference-tracking system. *Lingua*, 116(12):2068–2106.

Adger, D. (2003). *Core syntax: A minimalist approach*. Oxford University Press.

Adger, D. and Harbour, D. (2008). Whi phi? In *Phi Theory: Phi-Features Across Domains and Interfaces*, pages 1–38. Oxford University Press.

Ahn, D. (2019). *THAT thesis: A competition mechanism for anaphoric expressions*. PhD thesis, Harvard University.

Ahn, D. (2020). Asl ix to locus as a modifier. In *Proceedings of NELS 50, MIT*.

Ahn, D. (2022). Indirectly direct: An account of demonstratives and pointing. *Linguistics and Philosophy*, 45(6):1345–1393.

Akkuş, F. (2019). Un-shifting indexicals. *Ms., UMass Amherst*.

Alibasic, T. and Wilbur, R. (2006). Pronominal system in croatian sign language. *Sign Language & Linguistics*, 9(1-2):95–132.

Anand, P. (2006). *De De Se*. PhD thesis, MIT.

Anand, P., Grimshaw, J., and Hacquard, V. (2019). Speech and attitude predicates and their subjects. *Unpublished manuscript*.

Anand, P. and Hacquard, V. (2008). Epistemics with attitude. In *Semantics and linguistic theory*, volume 18, pages 37–54.

Anand, P. and Hacquard, V. (2014). Factivity, belief and discourse. *The art and craft of semantics: A festschrift for Irene Heim*, 1:69–90.

Anand, P. and Nevins, A. (2004). Shifty operators in changing contexts. In *Semantics and Linguistic Theory*, volume 14, pages 20–37.

AnderBois, S. (2010). Sluicing as anaphora to issues. In *Semantics and linguistic theory*, volume 20, pages 451–470.

AnderBois, S. (2014). The semantics of sluicing: Beyond truth conditions. *Language*, pages 887–926.

Anderson, S. R. (1969). *West Scandinavian vowel systems and the ordering of phonological rules*. PhD thesis, Massachusetts Institute of Technology.

Anvari, A. (2020). *Meaning in context*. PhD thesis, Ecole Normale Supérieure.

Ariel, M. (1988). Referring and accessibility. *Journal of linguistics*, 24(1):65–87.

Asher, N., Hardt, D., and Busquets, J. (2001). Discourse parallelism, ellipsis, and ambiguity. *Journal of Semantics*, 18(1):1–25.

Bach, K. and Harnish, R. M. (1979). *Linguistic communication and speech acts*. The MIT Press.

Bade, N. (2021). On the scope and nature of maximise presupposition. *Language and Linguistics Compass*, 15(6):e12416.

Baker, M. C. (2008). *The syntax of agreement and concord*. Cambridge University Press.

Balachandran, L. (2021). Reciprocal questions and the pragmatics of argument reversing verb phrase ellipsis. In *Proceedings of Sinn und Bedeutung 26*.

Banfield, A. (1973). Narrative style and the grammar of direct and indirect speech. *Foundations of language*, 10(1):1–39.

Banfield, A. (1982). *Unspeakable Sentences. Narration and Representation in the Language of Fiction*. Routledge & Kegan Paul.

Barberà, G. and Quer, J. (2013). Impersonal reference in catalan sign language (lsc). *Sign language research, uses and practices: Crossing views on theoretical and applied sign language linguistics*, pages 237–258.

Barros, M. (2014). *Sluicing and identity in ellipsis*. PhD thesis, Rutgers University.

Bassi, I. (2019). Fake indexicals and their sensitivity to focus. *Ms., MIT*.

Beaver, D. and Krahmer, E. (2001). A partial account of presupposition projection. *Journal of logic, language and information*, 10:147–182.

Beaver, D. and Zeevat, H. (2007). Accommodation. In Ramchand, G. and Reiss, C., editors, *The Oxford Handbook of Linguistic Interfaces*. OUP.

Beaver, D. I. (2004). The optimization of discourse anaphora. *Linguistics and philosophy*, 27:3–56.

Benveniste, E. (1966). La nature des pronoms. In *Problèmes de linguistique générale*. Gallimard.

Berenz, N. (1996). *Person and deixis in Brazilian sign language*. PhD thesis, University of California, Berkeley.

Berenz, N. (2002). Insights into person deixis. *Sign Language & Linguistics*, 5(2):203–227.

Bernardi, R. and Szabolcsi, A. (2008). Optionality, scope, and licensing: An application of partially ordered categories. *Journal of Logic, Language and Information*, 17:237–283.

Bevington, B. (1998). *Indexical expressions: Syntax and context*. PhD thesis, Graduate Center, City University of New York.

Bhatt, R. and Keine, S. (2017). Long-distance agreement. *The Wiley Blackwell Companion to Syntax, Second Edition*, pages 1–30.

Bimpeh, A. A. (2019). Default de se: The interpretation of the ewe logophor. In *Proceedings of Triple A5*. Universität Tübingen.

Bimpeh, A. A., Driemel, I., Bassi, I., and Silleresi, S. (2022). Obligatory de se logophors in ewe, yoruba and igbo: variation and competition. In *Talk given at WCCFL 40, May 13th, 2022*.

Bimpeh, A. A., Driemel, I., Bassi, I., and Silleresi, S. (2023). De se dependencies without binding: evidence from strict readings of logophoric pronouns. Ms, ZAS.

Bimpeh, A. A. and Sode, F. (2021). Not all occurences of logophoric pronouns are bound by a logophoric operator: The case of ewe. *Snippets*, 41.

Blunier, D. (2023). A unified analysis of shifted indexicals and logophoric pronouns. *Ms., University of Geneva*.

Blunier, D. and Khristoforova, E. (2023). Role-shifted indexicals in Sign Language of the Netherlands (NGT). *Ms., University of Geneva and University of Amsterdam*.

Blunier, D. and Zorzi, G. (2020). The role of QUD in ellipsis and role shift in Catalan Sign Language. In *QUDs and exhaustivity: experiments, computation, and theory, September 25, 2020 , Graz, Austria*.

Blutner, R. and Zeevat, H., editors (2003). *Optimality theory and pragmatics*. Palgrave MacMillan.

Bobaljik, J. D. (2008). Missing persons: A case study in morphological universals. *The Linguistic Review*, 25(1-2):203–230.

Bonami, O. and Godard, D. (2008). On the syntax of direct quotation in french. In *15th International Connference on HPSG*, pages 358–377. CSLI Publications.

Bondarenko, T. (2017). Ecm in buryat and the optionality of movement. In *Proceedings of the 12th Workshop on Altaic Formal Linguistics (WAFL 12). MIT Working Papers in Linguistics*, volume 83, pages 31–42.

Bondarenko, T. (2022). Hyperraising and semantics of clausal embedding. Talk given at MIT workshop "Crossing boundaries:Empirical and theoretical aspects of A-dependencies in complementation".

Bos, J. (1994). Presupposition & vp-ellipsis. In *COLING 1994 Volume 2: The 15th International Conference on Computational Linguistics*.

Brasoveanu, A. and Farkas, D. (2007). Say reports, assertion events and meaning dimensions. *Pitar Mos: A Building with a View. Papers in Honour of Alexandra Cornilescu, Editura Universitatii din Bucuresti, Bucharest*, pages 175–196.

Breheny, R., Klinedinst, N., Romoli, J., and Sudo, Y. (2018). The symmetry problem: current theories and prospects. *Natural Language Semantics*, 26(2):85–110.

Buccola, B., Križ, M., and Chemla, E. (2022). Conceptual alternatives: Competition in language and beyond. *Linguistics and Philosophy*, 45(2):265–291.

Bugaeva, A. (2008). Reported discourse and logophoricity in southern hokkaido dialects of ainu. *GENGO KENKYU (Journal of the Linguistic Society of Japan)*, 133:31–75.

Büring, D. (2003). On D-trees, beans, and B-accents. *Linguistics and philosophy*, 26(5):511–545.

Büring, D. (2016). (contrastive) topic. In Féry, C. and Ishihara, S., editors, *The Oxford Handbook of Information Structure*. Oxford University Press.

Butler, L. K. (2009). Explaining logophoricity, with special reference to aghem. *Ms, University of Arizona*.

Bybee, J. L. (2011). Usage-based theory and grammaticalization. In Heine, B. and Narrog, H., editors, *The Oxford Handbook of Grammaticalization*, pages 69–78. OUP.

Caha, P. (2009). *The nanosyntax of case*. PhD thesis, Universitetet i Tromsø.

Cappelen, H. and Lepore, E. (1997). Varieties of quotation. *Mind*, 106(423):429–450.

Cappelen, H. and Lepore, E. (2003). Varieties of quotation revisited. *Belgian Journal of Linguistics*, 17(1):51–75.

Cappelen, H. and Lepore, E. (2007). *Language Turned On Itself. The Semantics and Pragmatics of Metalinguistic Discourse*. Oxford University Press.

Cappelen, H., Lepore, E., and McKeever, M. (2020). Quotation. In Zalta, E. N., editor, *The Stanford Encyclopedia of Philosophy*. Metaphysics Research Lab, Stanford University, Summer 2020 edition.

Cardinaletti, A. and Starke, M. (1999). The typology of structural deficiency: A case study of the three classes of pronouns. *Clitics in the languages of Europe*, pages 145–233.

Cecchetto, C., Checchetto, A., Geraci, C., Santoro, M., and Zucchi, S. (2015). The syntax of predicate ellipsis in italian sign language (lis). *Lingua*, 166:214–235.

Charnavel, I. (2019a). Presupposition failure and intended pronominal reference: Person is not so different from gender after all. *Linguistic Inquiry*, 50(2):372–387.

Charnavel, I. (2019b). Supersloppy readings: Indexicals as bound descriptions. *Journal of Semantics*, 36(3):453–530.

Charnavel, I. and Sportiche, D. (2016). Anaphor binding: What french inanimate anaphors show. *Linguistic Inquiry*, 47(1):35–87.

Charnavel, I. and Sportiche, D. (2023). Indexical binding, presuppositions and agreement. *Talk presented at Sinn und Bedeutung 2023, Universität Bochum*.

Chemla, E. (2008). An epistemic step for anti-presuppositions. *Journal of Semantics*, 25(2):141–173.

Chierchia, G. (1989). Anaphora and attitudes "de se". In *Semantics and Contextual Expressions*, pages 1–31. Kluwer/Reidel.

Chierchia, G. (2004). Scalar implicatures, polarity phenomena, and the syntax/pragmatics interface. *Structures and beyond*, 3:39–103.

Chierchia, G. (2006). Broaden your views: Implicatures of domain widening and the "logicality" of language. *Linguistic inquiry*, 37(4):535–590.

Chierchia, G., Fox, D., and Spector, B. (2012). Scalar implicature as a grammatical phenomenon. In Claudia Maienborn, Klaus von Heusinger, P. P., editor, *Semantics: An International Handbook of Natural Language Meaning, Volume 3*. De Gruyter Mouton.

Chomsky, N. (1981). *Lectures on government and binding*. Dordrecht, The Netherlands:Foris Publications.

Chung, S. (2000). Close encounters with pronouns in vp ellipsis. In *Jorge Hankamer WebFest*. URL http://ling. ucsc. edu/Jorge/chung. html.

Chung, S. (2006). Sluicing and the lexicon: The point of no return. In *Proceedings of the annual meeting of the Berkeley Linguistics Society*, volume 31, pages 73–91.

Chung, S. (2013). Syntactic identity in sluicing: How much and why. *Linguistic Inquiry*, 44(1):1–44.

Cinque, G. (1990). *Types of $\bar{A}$-dependencies*. MIT press.

Cinque, G. (1999). *Adverbs and functional heads: A cross-linguistic perspective*. Oxford University Press on Demand.

Clark, H. H. and Gerrig, R. J. (1990). Quotations as demonstrations. *Language*, pages 764–805.

Clements, G. N. (1975). The logophoric pronoun in ewe: Its role in discourse. *Journal of West African Languages*, 10:141–177.

Cooper, R. (1979). The interpretation of pronouns. In Heny, F. and Schnelle, H., editors, *Selections from the Third Groningen Round Table, Syntax and Semantics*, volume 10, pages 61–92. New York: Academic Press.

Cooper, R. (1983). *Quantification and syntactic theory*. Springer Science & Business Media.

Coppock, E. and Wechsler, S. (2018). The proper treatment of egophoricity in kathmandu newari. In *Expressing the Self: Cultural Diversity and Cognitive Universals*. Oxford University Press.

Corbett, G. G. (2006). *Agreement*, volume 109. Cambridge University Press.

Coulmas, F. (1986). Reported speech: Some general issues. In Coulmas, F., editor, *Direct and indirect speech*, volume 31, pages 1–28.

Crasborn, O. A. and Zwitserlood, I. (2008). The corpus NGT: an online corpus for professionals and laymen. In *Proceedings of the 3rd Workshop on the Representation and Processing of Sign Languages*. Paris: ELRA.

Culy, C. (1994a). Aspects of logophoric marking. *Linguistics*.

Culy, C. (1994b). A note on logophoricity in Dogon. *Journal of African Languages and Linguistics*, 15:113–125.

Cumming, S. (2005). Two accounts of indexicals in mixed quotation. *Belgian Journal of Linguistics*, 17(1):77–88.

Curnow, T. (2002a). Verbal logophoricity in African languages. In *Proceedings of the 2002 Conference of the Australian Linguistic Society*.

Curnow, T. J. (2002b). Three types of verbal logophoricity in african languages. *Studies in African linguistics*, 31(1 & 2):1–25.

Dahl, Ö. (1973). On so-called "sloppy identity". *Synthese*, pages 81–112.

Davidson, D. (1979). Quotation. *Theory and decision*, 11(1):27–40.

Davidson, K. (2015). Quotation, demonstration, and iconicity. *Linguistics and Philosophy*, 38(6):477–520.

de Vries, M. (2008). The representation of language within language: a syntactico-pragmatic typology of direct speech. *Studia Linguistica*, 62:39–77.

Deal, A. R. (2013). Nez perce embedded indexicals. In *Proceedings of SULA 7*, volume 7.

Deal, A. R. (2017). Shifty asymmetries: universals and variation in shifty indexicality. *Ms., University of California, Berkeley*.

Deal, A. R. (2018). Indexiphors: Notes on embedded indexicals, shifty agreement, and logophoricity. *Ms., University of California, Berkeley*. Ms., University of Berkeley.

Deal, A. R. (2019). Uncentered attitude reports. *Ms., University of California Berkeley*.

Deal, A. R. (2020). *A Theory of Indexical Shift*. The MIT Press.

Deal, A. R. (2021). Person features and shiftiness. *Ms., University of California Berkeley*.

Dimmendaal, G. J. (2001). Logophoric marking and represented speech in african languages as evidential hedging strategies. *Australian Journal of Linguistics*, 21(1):131–157.

Djärv, K., Heycock, C., Rohde, H., Bailey, L., and Sheehan, M. (2017). Assertion and factivity: Towards explaining restrictions on embedded v2 in scandinavian. In *Order and structure in syntax I*, page 3. Language Science Press.

Doyle, A. W., Friesen, K., Reimer, S., and Pexman, P. M. (2019). Grasping the alternative: Reaching and eyegaze reveal children's processing of negation. *Frontiers in Psychology*, 10:1227.

Egan, A. (2009). Billboards, bombs and shotgun weddings. *Synthese*, 166(2):251–279.

Elbourne, P. D. (2005). *Situations and individuals*, volume 90. Mit Press Cambridge, MA.

Elliott, P. D., Nicolae, A., and Sudo, Y. (2016). The sticky reading: Vp ellipsis without parallel binding. In *Semantics and Linguistic Theory*, volume 24, pages 640–655.

Engberg-Pedersen, E. (1993). *Space in Danish Sign Language*. Signum Press, Hamburg.

Engberg-Pedersen, E. (1995). Point of view expressed through shifters. In Emmorey, K. and Reilly, J., editors, *Language, gesture, and space*, pages 143–164. Lawrence Erlbaum Associates, Inc.

Erdogan, S.-E. (2022). Bascule de l'indexical 1sg en turc. Technical report, University of Geneva.

Erteschik-Shir, N. (2007). *Information structure: The syntax-discourse interface*, volume 3. OUP Oxford.

Evans, G. (1977). Pronouns, quantifiers, and relative clauses. *Canadian journal of philosophy*, 7(3):467–536.

Evans, G. (1980). Pronouns. *Linguistic inquiry*, 11(2):337–362.

Evans, N. (2013). Some problems in the typology of quotation: a canonical approach. In *Canonical morphology and syntax*. Oxford University Press.

Faltz, L. M. (1985). *Reflexivization: A study in universal syntax*. New York: Garland.

Farkas, D. F. and Bruce, K. B. (2010). On reacting to assertions and polar questions. *Journal of semantics*, 27(1):81–118.

Fiengo, R. and May, R. (1994). *Indices and identity*, volume 24. MIT press.

Finkbeiner, R. (2015). "ich kenne da so einen jungen… kennen ist gut, wir waren halt mal zusammen weg." on the pragmatics and metapragmatics of xist gut in german[1]. *The pragmatics of quoting now and then*, 89:147.

Fox, D. (2000). *Economy and semantic interpretation*. MIT press.

Fox, D. (2007). Free choice and the theory of scalar implicatures. In *Presupposition and implicature in compositional semantics*, pages 71–120. Springer.

Fox, D. and Hackl, M. (2006). The universal density of measurement. *Linguistics and philosophy*, 29:537–586.

Fox, D. and Katzir, R. (2011). On the characterization of alternatives. *Natural language semantics*, 19(1):87–107.

Frajzyngier, Z. (1985). Logophoric systems in chadic. *ournal of African Languages andLinguistics*, pages 23–37.

Frajzyngier, Z. (1993). *A grammar of Mupun*. Berlin: Reimer.

Frajzyngier, Z. (1997). Pronouns and agreement: systems interaction in the coding of reference. In *Atomism and binding*, pages 115–140. Dordrecht: Foris.

Frazier, L., Clifton Jr, C., and Carlson, K. (2007). Focus and vp ellipsis. *Language and speech*, 50(1):1–21.

Frege, G. (1892). Über sinn und bedeutung. *Zeitschrift für Philosophie und philosophische Kritik*, 100(1):25–50.

Gan, L. E. (2021). Shifted indexicals in hong kong sign language with (-out) role shift. *Proceedings of FEAST*, 4:74–86.

Ganenkov, D. (2021). Agreement shift in embedded reports. *Linguistic Inquiry*, pages 1–50.

Ganenkov, D. and Bogomolova, N. (2021). Binding and indexicality in the caucasus. In Polinsky, M., editor, *The Oxford Handbook of Languages of the Caucasus*. OUP, https://ling.auf.net/lingbuzz/004385.

Gazdar, G. (1979). *Pragmatics: Implicature, presupposition and logical form*. New York: Academic Press.

Geach, P. T. (1962). *Reference and generality: An examination of some medieval and modern theories*. Cornell University Press, Ithaca, NY.

Gerhard, J. (2005). *Anaphora and type logical grammar*, volume 24. Springer Science & Business Media.

Geurts, B. (2007). Implicature as a discourse phenomenon. In *Proceedings of Sinn und Bedeutung*, volume 11, pages 261–275.

Geurts, B. (2009). Scalar implicature and local pragmatics. *Mind & Language*, 24(1):51–79.

Geurts, B. and Maier, E. (2003). Quotation in context. *Belgian Journal of Linguistics*, 17(1):109–128.

Green, M. (2021). Speech Acts. In Zalta, E. N., editor, *The Stanford Encyclopedia of Philosophy*. Metaphysics Research Lab, Stanford University, Fall 2021 edition.

Grice, H. P. (1975). Logic and conversation. In *Studies in the Way of Words*. Harvard University Press.

Grimshaw, J. (2001). Optimal clitic positions and the lexicon in romance clitic systems. In Legendre, G., Grimshaw, J., and Vikner, S., editors, *Optimality-theoretic syntax*. MIT Press Cambridge, MA.

Grosz, B., Joshi, A., and Weinstein, S. (1983). Providing a unified account of definite noun phrases in discourse. In *Proceedings of the 21st Annual Meeting of the Association for Computational Linguistics*, pages 44–49.

Grosz, B. J., Joshi, A. K., and Weinstein, S. (1995). Centering: A framework for modelling the local coherence of discourse. *Computational Linguistics*, 21(2):203–226.

Grubic, M. and Wierzba, M. (2019). Presupposition accommodation of the german additive particle auch (="too"). *Frontiers in Communication*, 4:15.

Gunlogson, C. (2004). *True to form: Rising and falling declaratives as questions in English*. Routledge.

Gutzmann, D. and Stei, E. (2011). How quotation marks what people do with words. *Journal of Pragmatics*, 43(10):2650–2663.

Hacquard, V. (2010). On the event relativity of modal auxiliaries. *Natural language semantics*, 18(1):79–114.

Hagège, C. (1974). Les pronoms logophoriques. *Bulletin de la Société de Linguistique de Paris*, 69(1):287–310.

Halle, M. and Marantz, A. (1993). Distributed morphology and the pieces of inflection. In *The view from Building 20*, pages 111–176. Hale, Kenneth and Keyser, Samuel Jay.

Hamblin, C. L. (1976). Questions in montague english. In *Montague grammar*, pages 247–259. Elsevier.

Harbour, D. (2016). *Impossible persons*. Mit Press.

Hardt, D. (1992). VP ellipsis and semantic identity. In *Semantics and Linguistic Theory*, volume 2, pages 145–162.

Hardt, D. (1993). *Verb phrase ellipsis: Form, meaning, and processing*. PhD thesis, University of Pennsylvania.

Hardt, D. (2003). Sloppy identity, binding, and centering. In *Semantics and Linguistic Theory*, volume 13, pages 109–126.

Hardt, D., Asher, N., and Hunter, J. (2013). VP ellipsis without indices. In *Semantics and Linguistic Theory*, volume 23, pages 239–256.

Harley, H. and Ritter, E. (2002). Person and number in pronouns: A feature-geometric analysis. *Language*, pages 482–526.

Harris, J. A. (2021). Extended perspective shift and discourse economy in language processing. *Frontiers in psychology*, 12.

Harris, J. A. and Potts, C. (2009). Perspective-shifting with appositives and expressives. *Linguistics and Philosophy*, 32(6):523–552.

Härtl, H. (2018). Name-informing and distancing sogenannt 'so-called': Name mentioning and the lexicon-pragmatics interface. *Zeitschrift für Sprachwissenschaft*, 37(2):139–169.

Haspelmath, M. (2006). Against markedness (and what to replace it with). *Journal of linguistics*, 42(1):25–70.

Haspelmath, M. (2011). The indeterminacy of word segmentation and the nature of morphology and syntax. *Folia linguistica*, 45(1):31–80.

Hauk, B. (2020). *Deixis and reference tracking in Tsova-Tush*. PhD thesis, University of Hawai'i at Manoa.

Hawkins, J. A. (1991). On (in) definite articles: implicatures and (un) grammaticality prediction. *Journal of linguistics*, 27(2):405–442.

Hedinger, R. (1984). Reported speech in akoose. *Journal of West African Languages*, 14(1):81–102.

Heim, I. (1982). *The semantics of definite and indefinite noun phrases*. PhD thesis, Amherst: UMass.

Heim, I. (1990). E-type pronouns and donkey anaphora. *Linguistics and philosophy*, 13(2):137–177.

Heim, I. (1991). Artikel und definitheit. In *Semantik: Ein Internationales Handbuch*, page 487–535. Berlin: de Gruyter.

Heim, I. (1992). Presupposition projection and the semantics of attitude verbs. *Journal of semantics*, 9(3):183–221.

Heim, I. (2002). Features of pronouns in semantics and morphology. *hand-out of a talk given at USC*, 1(02).

Heim, I. (2008). Features on bound pronouns. In Harbour, D., Adger, D., and Béjar, S., editors, *Phi theory: Phi-features across modules and interfaces*. Oxford University Press.

Heim, I. and Kratzer, A. (1998). *Semantics in generative grammar*, volume 13. Blackwell Oxford.

Hellwig, B. (2006). Complement clause type and complementation strategies in goemai. In Dixon, R. W. and Aikhenvald, A. Y., editors, *Complementation*. Oxford University Press.

Hendriks, P. (2004). Coherence relations, ellipsis and contrastive topics. *Journal of Semantics*, 21(2):133–153.

Hendriks, P. and De Hoop, H. (2001). Optimality theoretic semantics. *Linguistics and philosophy*, 24(1):1–32.

Herrmann, A. and Steinbach, M. (2012). Quotation in sign languages. *Quotatives: Cross-linguistic and Cross-disciplinary Perspectives. Amsterdam: John Benjamins*, pages 203–228.

Heycock, C. (2006). Embedded root phenomena. In *The Blackwell companion to syntax*, pages 174–209. Wiley Online Library.

Hill, H. (1995). Pronouns and reported speech in adioukrou. *Journal of West African Languages*, 25(1):87–106.

Hintikka, J. (1969). Semantics for propositional attitudes. In *Models for modalities*, pages 87–111. Springer.

Hooper, J. B. and Thompson, S. A. (1973). On the applicability of root transformations. *Linguistic inquiry*, 4(4):465–497.

Horn, L. (1984). Toward a new taxonomy for pragmatic inference: Q-based and r-based implicature. *Meaning, form, and use in context: Linguistic applications*, 11:42.

Horn, L. R. (1972). *On the semantic properties of logical operators in English*. PhD thesis, University of California Los Angeles.

Hübl, A. (2013). Context shift (im)possible: Indexicals in German Sign Language. *ConSOLE XXI*, 171:171.

Hübl, A., Maier, E., and Steinbach, M. (2019). To shift or not to shift: Quotation and attraction in DGS. *Sign Language & Linguistics*, 22(2):171–209.

Huddleston, R. and Pullum, G. K. (2002). *The Cambridge Grammar of the English Language*. Cambridge University Press.

Hyman, L. M. and Comrie, B. (1981). Logophoric reference in gokana. *Journal of African Languages and Linguistics 3: 19-37*.

Hyman, L. M. and Watters, J. R. (1979). Aghem grammatical structure, with special reference to noun classes, tense-aspect and focus marking. *Southern California OccasionalPapers in Linguistics No. 7*.

Ikoro, S. (1996). *The Kana language*, volume 40. Research School CNWS.

Jacobson, P. (2012). Direct compositionality and 'uninterpretability': The case of (sometimes) 'uninterpretable' features on pronouns. *Journal of Semantics*, 29(3):305–343.

Jäger, G. (1997). Anaphora and ellipsis in type-logical grammar. In *Proceedings of the Eleventh Amsterdam Colloquium, ILLC, University of Amsterdam*, pages 175–180.

Jakobson, R. (1939). Signe zéro. In *Mélanges de linguistique offerts à Charles Bally*, pages 143–153. Genève, Georg.

Kaiser, E. (2015). Perspective-shifting and free indirect discourse: Experimental investigations. In *Semantics and Linguistic Theory*, volume 25, pages 346–372.

Kao, J., Bergen, L., and Goodman, N. (2014). Formalizing the pragmatics of metaphor understanding. In *Proceedings of the annual meeting of the Cognitive Science Society*, volume 36.

Kaplan, D. (1979). On the logic of demonstratives. *Journal of philosophical logic*, 8:81–98.

Kaplan, D. (1989[1977]). Demonstratives. In Almog, J., Perry, J., and Wettstein, H., editors, *Themes From Kaplan*, pages 481–563. Oxford University Press.

Karttunen, L. (1976). Discourse referents. In *Notes from the linguistic underground*, pages 363–385. Brill.

Karttunen, L. (1977). Syntax and semantics of questions. *Linguistics and philosophy*, 1(1):3–44.

Kasimir, E. (2008). Prosodic correlates of subclausal quotation marks. *ZAS Papers in Linguistics*, 49:67–77.

Katz, J. J. (1970). Interpretative semantics vs. generative semantics. *Foundations of language*, pages 220–259.

Katzir, R. (2007). Structurally-defined alternatives. *Linguistics and Philosophy*, 30(6):669–690.

Katzir, R. (2014). On the roles of markedness and contradiction in the use of alternatives. In *Pragmatics, semantics and the case of scalar implicatures*, pages 40–71. Springer.

Kehler, A. (2000). Coherence and the resolution of ellipsis. *Linguistics and Philosophy*, 23(6):533–575.

Kehler, A. (2016). On QUD-based licensing of strict and sloppy ambiguities. In *Semantics and Linguistic Theory*, volume 25, pages 512–532.

Kehler, A. (2019). Ellipsis and discourse. *The Oxford Handbook of Ellipsis*.

Kehler, A. and Büring, D. (2007). Be bound or be disjoint! *Proceedings of NELS 2007*.

Keshet, E. (2013). Sloppy identity unbound. In *Semantics and Linguistic Theory*, volume 23, pages 412–431.

Kim, C. S., Gunlogson, C., Tanenhaus, M. K., and Runner, J. T. (2015). Context-driven expectations about focus alternatives. *Cognition*, 139:28–49.

Kim, C. S. and Runner, J. T. (2009). Strict identity, coherence, and parallelism in vp ellipsis. In *Semantics and Linguistic Theory*, volume 19, pages 275–287.

Kim, C. S. and Runner, J. T. (2011). Discourse structure and syntactic parallelism in vp ellipsis. *University ofMassachusetts Occasional Papers in Linguistics: Processing Linguistic Structure*, 38:75–102.

Kimmelman, V. and Khristoforova, E. (2018). Quotation in russian sign language: insights from corpus and elicitation. In *Proceedings of FEAST*, pages 93–102.

Kiparsky, P. (1985). Some consequences of lexical phonology. *Phonology*, 2:85–138.

Klein, W. (1993). Ellipse. In *Syntax: Ein internationales Handbuch zeitgenössischer Forschung [1. Halbband]*, pages 763–799. de Gruyter.

Klockow, R. (1978). Anführungszeichen, norm und abweichung. *Linguistische Berichte Braunschweig*, (57):14–24.

Knyazev, M. (2022). Say-complementizers and indexical shift in poshkart chuvash: With emphasis on communicative reception reports. *Studies in Language*, 46(2):402–452.

Köder, F., Maier, E., and Hendriks, P. (2015). Perspective shift increases processing effort of pronouns: A comparison between direct and indirect speech. *Language, cognition and neuroscience*, 30(8):940–946.

Koev, T. (2018). Notions of at-issueness. *Language and Linguistics Compass*, 12(12):e12306.

Koev, T. K. (2013). *Apposition and the structure of discourse*. PhD thesis, Rutgers University Graduate School, New Brunswick.

Konietzko, A. and Winkler, S. (2010). Contrastive ellipsis: Mapping between syntax and information structure. *Lingua*, 120(6):1436–1457.

Koopman, H. and Sportiche, D. (1989). Pronouns, logical variables, and logophoricity in abe. *Linguistic Inquiry*, pages 555–588.

Kotek, H. and Barros, M. (2018). Multiple sluicing, scope, and superiority: Consequences for ellipsis identity. *Linguistic Inquiry*, 49(4):781–812.

Koulidobrova, E. and Lillo-Martin, D. (2016). A 'point'of inquiry: The case of the (non-) pronominal ix in asl. *The impact of pronominal form on interpretation*, pages 221–250.

Kratzer, A. (1998). More structural analogies between pronouns and tenses. In *Proceedings of SALT*, volume 8, pages 92–110.

Kratzer, A. (2006). Decomposing attitude verbs. *Talk given at the Hebrew University of Jerusalem*.

Krifka, M. (1999). Additive particles under stress. In *Semantics and Linguistic Theory*, volume 8, pages 111–128.

Krifka, M. (2023). Layers of assertive clauses: Propositions, judgements, commitments, acts. In *Propositionale Argumente im Sprachvergleich/Propositional Arguments in Cross-Linguistic Research: Theorie und Empirie/Theoretical and Empirical Issues*, volume 84, page 183. Narr Francke Attempto Verlag.

Kroll, M. (2019). Polarity reversals under sluicing. *Semantics and Pragmatics*, 12:18.

Kuhn, J. (2016). Asl loci: Variables or features? *Journal of Semantics*, 33(3):449–491.

Kuno, S. (1973). *The Structure of the Japanese Language*. The MIT Press.

Kuno, S. (1987). *Functional syntax: Anaphora, discourse and empathy.* University of Chicago Press.

Lambrecht, K. (1996). *Information structure and sentence form: Topic, focus, and the mental representations of discourse referents*, volume 71. Cambridge university press.

Landman, M. and Morzycki, M. (2003). Event-kinds and the representation of manner. In *Proceedings of the Western Conference in Linguistics (WECOL)*, volume 11, pages 1–12. California State University Fresno.

Lee, R., Neidle, C., MacLaughlin, D., Bahan, B., and Kegl, J. (1997). Role shift in ASL: A syntactic look at direct speech. In MacLaughlin, C. N. D. and Lee, R. G., editors, *Syntactic structure and discourse function: An examination of two constructions in American Sign Language*, pages 24–45. Boston: ASLLRP Publications.

Legendre, G., Grimshaw, J., and Vikner, S., editors (2001). *Optimality-theoretic syntax*. MIT Press.

Levin, N. S. and Prince, E. F. (1986). Gapping and causal implicature. *Papers in Linguistics*, 19:351–364.

Levinson, S. C. (1987b). Pragmatics and the grammar of anaphora: a partial pragmatic reduction of binding and control phenomena1. *Journal of linguistics*, 23(2):379–434.

Levinson, S. C. (1991). Pragmatic reduction of the binding conditions revisited. *Journal of linguistics*, 27(1):107–161.

Levinson, S. C. (1998/1987a). Minimization and conversational inference. In *Pragmatics: Critical concepts*, volume 4, pages 545–612. Routledge.

Levinson, S. C. (2000). *Presumptive meanings: The theory of generalized conversational implicature*. MIT press.

Levinson, S. C. (2006). Deixis. *The handbook of pragmatics*, pages 97–121.

Lewis, D. (1979a). Attitudes de dicto and de se. *The philosophical review*, 88(4):513–543.

Lewis, D. (1979b). Scorekeeping in a language game. *Journal of philosophical logic*, 8(1):339–359.

Li, C. N. (1986). Direct speech and indirect speech: A functional study. In Coulmas, F., editor, *Direct and indirect speech*, pages 29–45. Mouton de Gruyter Berlin.

Lillo-Martin, D. (1995). The point of view predicate in american sign language. In Emmorey, K. and Reilly, J., editors, *Language, Gesture, and Space*, pages 155–170. Lawrence Erlbaum Associates, Inc.

Lillo-Martin, D. (2012). Utterance reports and constructed action. In Roland Pfau, Markus Steinbach, B. W., editor, *Sign Language: an International Handbook*, pages 365–387. De Gruyter Mouton.

Lillo-Martin, D. and Klima, E. (1990). Pointing out differences: Asl pronouns in syntactic theory. *Theoretical issues in sign language research*, 1:191–210.

Lillo-Martin, D. and Meier, R. P. (2011). On the linguistic status of 'agreement'in sign languages. *Theoretical linguistics*, 37(3-4):95–141.

Lohninger, M., Kovač, I., and Wurmbrand, S. (2022). From prolepsis to hyperraising. *Philosophies*, 7(2):32.

Lohninger, M. and Wurmbrand, S. (2020). Typology of complement clauses. In *Handbook of clausal embedding*, pages 1–53. Oxford University Press Oxford.

Loos, C. (2018). Detecting clauses and their dependencies in signed utterances: A syntactico-semantic approach. *Glossa*, 3(1)(123):1 –31.

Loughnane, R. M. (2005). Reported speech constructions in golin. In Stoakes, N. E. J. B. H. and Lee, A., editors, *Materials on Golin: Grammar, Texts and Dictionary*. The Department of Linguistics and Applied Linguistics, The University of Melbourne.

Ludwig, R. A., Munro, R., Fleck, D. W., and Sauerland, U. (2010). Reported speech in matses: Obligatory perspective shift with syntactic transparency. *Proceedings of SULA*, 5:33–47.

Magri, G. (2009). A theory of individual-level predicates based on blind mandatory scalar implicatures. *Natural language semantics*, 17(3):245–297.

Magri, G. (2011). Another argument for embedded scalar implicatures based on oddness in downward entailing environments. *Semantics and Pragmatics*, 4:6–1.

Maier, E. (2007a). Mixed quotation: between use and mention. In *In Logic and Engineering of Natural Language Semantics Workshop*. Citeseer.

Maier, E. (2007b). Quotation marks as monsters, or the other way around. In *Proceedings of the Sixteenth Amsterdam Colloquium*, volume 201, pages 145–150. ILLC Amsterdam.

Maier, E. (2014a). Japanese reported speech: Towards an account of perspective shift as mixed quotation. In *Formal Approaches to Semantics and Pragmatics*, pages 135–154. Springer.

Maier, E. (2014b). Language shifts in free indirect discourse. *Journal of literary semantics*, 43(2):143–167.

Maier, E. (2016). A plea against monsters. *Grazer Philosophische Studien*, 93(3):363–395.

Maier, E. (2017). The pragmatics of attraction. explaining unquotation in direct and free indirect discourse. In *The semantics and pragmatics of quotation*, pages 259–280. Springer.

Maier, E. (2018). Quotation, demonstration, and attraction in sign language role shift. *Theoretical Linguistics*, 44(3-4):265–276.

Maier, E. (2020). Mixed quotation. In Rullman, D. G. L. M. C. M. H. and Zimmerman, E., editors, *The Wiley Blackwell companion to semantics*. Wiley-Blackwell.

Marty, P. and Romoli, J. (2021). Presuppositions, implicatures, and contextual equivalence. *Natural Language Semantics*, 29(2):229–280.

Marty, P. P. (2017). *Implicatures in the DP domain*. PhD thesis, Massachusetts Institute of Technology.

Marty, P. P. (2018). An implicature-based approach to disjointness effects. In *Semantics and Linguistic Theory*, volume 28, pages 366–387.

Mayol, L. (2010). Contrastive pronouns in null-subject romance languages. *Lingua*, 120(10):2497–2514.

McBurney, S. L. (2002). Pronominal reference in signed and spoken language: Are grammatical categories modality-dependent? In Meier, R., Cormier, K., and Quinto-Pozos, D., editors, *Modality and Structure in Signed and Spoken Languages*, pages 329–369. Cambridge University Press.

McCawley, J. D. (1978). Conversational implicature and the lexicon. In *Pragmatics*, pages 245–259. Brill.

McGinnis, M. (2005). On markedness asymmetries in person and number. *Language*, 81(3):699–718.

McKillen, A. (2016). *On the interpretation of reflexive pronouns*. PhD thesis, McGill University.

Meibauer, J. (2007). Syngrapheme als pragmatische indikatoren: Anführung und auslassung. *Von der Pragmatik zur Grammatik*, 21:37.

Meier, R. P. (1990). Person deixis in american sign language. In Susan D. Fischer, P. S., editor, *Theoretical Issues in Sign Language Research, Volume 1: Linguistics*, volume 1, pages 175–190. The University of Chicago Press.

Merchant, J. (2001). *The syntax of silence: Sluicing, islands, and the theory of ellipsis*. Oxford University Press on Demand.

Merchant, J. (2013). Voice and ellipsis. *Linguistic Inquiry*, 44(1):77–108.

Messick, T. (2016). Pronouns and agreement in telugu embedded contexts. In *Proceedings of the 33rd West Coast Conference on Formal Linguistics*, pages 309–319.

Messick, T. (2017). *The morphosyntax of self-ascription: A cross-linguistic study*. PhD thesis, University of Connecticut.

Messick, T. (2022). 3/4 of a monster: On mixed shifty agreement intelugu. *Ms., Rutgers University*.

Messick, T. (2023). On apparent pronominal feature contradictions: Shifty agreement in telugu. *Syntax*.

Meurant, L. (2008). Role shift, anaphora and discourse polyphony in sign language of southern belgium (lsfb). *Signs of the time. Selected papers from TISLR*, 8:319–351.

Meyer, M.-C. (2013). *Ignorance and grammar*. PhD thesis, Massachusetts Institute of Technology.

Meyer, M.-C. (2015). Redundancy and embedded exhaustification. In *Semantics and linguistic theory*, volume 25, pages 491–511.

Montalbetti, M. M. (1984). *After binding: On the interpretation of pronouns*. PhD thesis, Massachusetts Institute of Technology.

Moulton, K. (2009). *Natural selection and the syntax of clausal complementation*. PhD thesis, University of Massachusetts Amherst.

Munro, R., Ludwig, R., Sauerland, U., and Fleck, D. W. (2012). Reported speech in matses: Perspective persistence and evidential narratives. *International Journal of American Linguistics*, 78(1):41–75.

Neidle, C. J., Kegl, J., Bahan, B., MacLaughlin, D., and Lee, R. G. (2000). *The syntax of American Sign Language: Functional categories and hierarchical structure*. MIT press.

Newkirk, L. (2017). Logophoricity in ibibio. *Handout of talk given at ACAL 48, Rutgers University, March 2017. https://lydianewkirk.com/research/ACAL3-17Handout.pdf*. https://lydianewkirk.com/research/ACAL3-17Handout.pdf.

Newkirk, L. (2019). Logophoricity in ibibio. In Botne, S. L. S. B. P. W. R. and Obeng, S. G., editors, *African linguistics across the disciplines: Selected papers from the 48th Annual Conference on African Linguistics*, pages 309–323. Berlin: Language Science Press.

Nikitina, T. (2012a). Logophoric discourse and first person reporting in wan (west africa). *Anthropological Linguistics*, 54(3):280–301.

Nikitina, T. (2012b). Personal deixis and reported discourse: Towards a typology of person alignment. *Linguistic Typology*, 16(2):233–263.

Nikitina, T. (2020). Logophoricity and shifts of perspective: New facts and a new account. *Functions of Language*, 27(1):78–99.

Nikitina, T. and Bugaeva, A. (2021). Logophoric speech is not indirect: towards a syntactic approach to reported speech constructions. *Linguistics*, 59(3):609–633.

Noyer, R. R. (1997). *Features, positions and affixes in autonomous morphological structure*. New York: Garland.

Nunberg, G. (1993). Indexicality and deixis. *Linguistics and philosophy*, 16(1):1–43.

Oguz, M., Oney, B., and Storoshenko, D. R. (2020). Obligatory indexical shift in Turkish. In *Proceedings of the 2020 annual conference of the Canadian Linguistic Association*.

Oshima, D. Y. (2006). *Perspectives in reported discourse*. PhD thesis, Stanford University.

Özyıldız, D. (2012). When I is not me: A preliminary case study of shifted indexicals in Turkish. *Ms, École Normale Superieure*.

O'Neill, T. (2015). The distribution of the danyi ewe logophor yi. *Talk given at the LSA Annual Meeting*.

Pagin, P. and Marsili, N. (2021). Assertion. In Zalta, E. N., editor, *The Stanford Encyclopedia of Philosophy*. Metaphysics Research Lab, Stanford University, Winter 2021 edition.

Pak, M., Portner, P., and Zanuttini, R. (2008a). Agreement and the subjects of jussive clauses in korean. In *Proceedings of NELS*, volume 37, page 127.

Pak, M. D., Portner, P., and Zanuttini, R. (2008b). Agreement in promissive, imperative, and exhortative clauses. *Korean Linguistics*, 14(1):157–175.

Park, Y. (2014). Indexicals and the long-distance reflexive caki in korean. *Proceedings from SALT XIV*.

Parsons, J. (2011). Assessment-contextual indexicals. *Australasian Journal of Philosophy*, 89(1):1–17.

Partee, B. (1973). The syntax and semantics of quotation. In Anderson, S. R. and Kiparsky, P., editors, *A Festschrift for Morris Hallle*, page 410–418. New York: Holt, Reinhart and Winston, Inc.

Pearson, H. (2015). The interpretation of the logophoric pronoun in ewe. *Natural Language Semantics*, 23(2):77–118.

Percus, O. (2000). Constraints on some other variables in syntax. *Natural language semantics*, 8(3):173–229.

Percus, O. (2006). Antipresuppositions. *Theoretical and empirical studies of reference and anaphora*, 52:73.

Perry, J. (1977). Frege on demonstratives. *The philosophical review*, 86(4):474–497.

Pierrehumbert, J. and Hirschberg, J. B. (1990). The meaning of intonational contours in the interpretation of discourse. In Cohen, P. R., Morgan, J., and Pollack, M. E., editors, *Intentions in communication*. Cambridge, MA: A Bradford Book, The MIT Press.

Podobryaev, A. (2014). *Persons, imposters, and monsters*. PhD thesis, MIT.

Polinsky, M. (2015). Embedded finite complements, indexical shift, and binding in tsez. *Languages of the Caucasus*, 1(1).

Poppels, T. (2020). *Towards a Referential Theory of Ellipsis*. PhD thesis, University of California, San Diego.

Poppels, T. (2022). Explaining ellipsis without identity. *The Linguistic Review*, 39(3):341–400.

Poppels, T. and Kehler, A. (2018). Overcoming the identity crisis: Novel evidence for a referential theory of verb phrase ellipsis. In *Proceedings from the Annual Meeting of the Chicago Linguistic Society*, volume 53, pages 291–305. Chicago Linguistic Society.

Poppels, T. and Kehler, A. (2023). Ellipsis and the QUD: Sluicing with nominal antecedents. In Konietzko, A. and Winkler, S., editors, *Information structure and ambiguity*. Berlin:De Gruyter.

Potts, C. (2005). Lexicalized intonational meaning. *University of Massachusetts Occasional Papers*, 30:129–146.

Potts, C. (2007). The dimensions of quotation. In *Direct Compositionality*, pages 405–431. Oxford: Oxford University Press.

Predelli, S. (1998a). 'i am not here now'. *Analysis*, 58(2):107–115.

Predelli, S. (1998b). Utterance, interpretation and the logic of indexicals. *Mind & Language*, 13(3):400–414.

Predelli, S. (2003). Scare quotes and their relation to other semantic issues. *Linguistics and philosophy*, 26:1–28.

Primus, B. (1999). *Cases and thematic roles*.

Prüst, H., Scha, R., and van den Berg, M. (1994). Discourse grammar and verb phrase anaphora. *Linguistics and Philosophy*, 17:261–327.

Quer, J. (2005). Context shift and indexical variables in sign languages. In *Semantics and linguistic theory*, volume 15, pages 152–168.

Quer, J. (2011). Reporting and quoting in signed discourse. *Understanding quotation*, 7:277.

Quine, W. O. v. (1940). *Mathematical logic*. Harvard University Press.

Quine, W. O. v. (1956). Quantifiers and propositional attitudes. *the Journal of Philosophy*, 53(5):177–187.

Quine, W. O. v. (1960). *Word and Object*. The MIT Press.

Rabern, B. and Ball, D. (2017). Monsters and the theoretical role of context. *Philosophy and Phenomenological Research*.

Ransom, E. N. (1988). The grammaticalization of complementizers. In *Annual Meeting of the Berkeley Linguistics Society*, volume 14, pages 364–374.

Rebuschi, G. (1994). When tu is my alter ego (and vice versa). In *Proceedings of the IV Colloquium of Generative Grammar*, pages 267–93. Università Rovira i Virgili Tarragona.

Rebuschi, G. (1997). Quirky dependence: discourse pronouns and predicate ellipsis. In *Empirical Issues in Formal Syntax and Semantics. Selected Papers from the Colloque de Syntaxe et de Sémantique de Paris (CSSP 95). Peter Lang. Berne*, pages 171–91.

Recanati, F. (2001). Open quotation. *Mind*, 110(439):637–687.

Recanati, F. (2008). Open quotation revisited. *Philosophical Perspectives*, 22(1):443–471.

Reinhart, T. (1981). Pragmatics and linguistics: an analysis of sentence topics. *Philosophica*, 27:53–94.

Reinhart, T. and Reuland, E. (1993). Reflexivity. *Linguistic inquiry*, 24(4):657–720.

Repp, S. and Spalek, K. (2021). The role of alternatives in language. *Frontiers in Communication*, 6:682009.

Rett, J. (2020). Manner implicatures and how to spot them. *International Review of Pragmatics*, 12(1):44–79.

Rice, K. (1986). Some remarks on direct and indirect discourse in Slave (Northern Athapaskan). In Coulmas, F., editor, *Direct and indirect speech*. De Gruyter Mouton.

Rizzi, L. (1982). *Issues in Italian syntax*. De Gruyter Mouton.

Rizzi, L. (1997). The fine structure of the left periphery. In *Elements of grammar*, pages 281–337. Springer.

Rizzi, L. and Cinque, G. (2016). Functional categories and syntactic theory. *Annual Review of Linguistics*, 2:139–163.

Roberts, C. (2010). Retrievability and incomplete descriptions. *Ms. The Ohio State University*.

Roberts, C. (2011). Solving for interpretation. *Ms., Ohio State University*.

Roberts, C. (2012/1996). Information structure: Towards an integrated formal theory of pragmatics. *Semantics and Pragmatics*, 5:1–69.

Roberts, C., Simons, M., Beaver, D., and Tonhauser, J. (2009). Presupposition, conventional implicature, and beyond: A unified account of projection. In *Proceedings of the ESSLLI 2009 Workshop New Directions in the Theory of Presupposition*. Citeseer.

Rooth, M. (1992a). Ellipsis redundancy and reduction redundancy. In *Proceedings of the Stuttgart ellipsis workshop*, volume 29. Citeseer.

Rooth, M. (1992b). A theory of focus interpretation. *Natural language semantics*, 1(1):75–116.

Ross, J. R. (1969). Guess who. In Binnick, R. I., Davison, A., Green, G., and Morgan, J., editors, *Papers from the Fifth Regional Meeting of the Chicago Linguistic Society*. University of Chicago, Chicago, Illinois.

Rouillard, V. and Schwarz, B. (2017). Epistemic narrowing from maximize presupposition. In *Proceedings of NELS*, volume 47.

Rudin, D. (2023). Embedded intonation and quotative complements to verbs of speech. *Ms., University of California Santa Cruz*.

Sæbø, K. J. (2004). Conversational contrast and conventional parallel: Topic implicatures and additive presuppositions. *Journal of Semantics*, 21(2):199–217.

Sæbø, K. J. (2015). Lessons from descriptive indexicals. *Mind*, 124(496):1111–1161.

Sag, I. A. (1976). *Deletion and logical form*. PhD thesis, Massachusetts Institute of Technology.

Sag, I. A. and Hankamer, J. (1984). Toward a theory of anaphoric processing. *Linguistics and philosophy*, pages 325–345.

Sauerland, U. (2003). A new semantics for number. In Young, R. B. and Zhou, Y., editors, *Proceedings of SALT 13*, pages 258–275. CornellUniversity, Ithaca, N.Y.: CLC-Publications.

Sauerland, U. (2004a). On embedded implicatures. *Journal of cognitive science*, 5(1):107–137.

Sauerland, U. (2004b). Scalar implicatures in complex sentences. *Linguistics and philosophy*, 27(3):367–391.

Sauerland, U. (2008a). Implicated presuppositions. In *The discourse potential of underspecified structures*, volume 8, pages 581–600. Walter de Gruyter Berlin.

Sauerland, U. (2008b). On the semantic markedness of phi-features. In Harbour, D., Adger, D., and Béjar, S., editors, *Phi theory: Phi-features across modules and interfaces*. Oxford University Press.

Sauerland, U. (2009). The presuppositional approach to phi-features. Unpublished manuscript, ZAS, Berlin.

Sauerland, U. (2013). Presuppositions and the alternative tier. In *Semantics and Linguistic Theory*, volume 23, pages 156–173.

Sauerland, U. (2018). Counterparts block some 'de re'readings. *English Linguistics*, 35(1):38–64.

Sauerland, U., Bassi, I., Bill, C., Bimpeh, A., Hirsch, A., Jereti, P., et al. (2023). An algebra of thought that predicts key aspects of language structure. In *Proceedings of Sinn und Bedeutung 27*, volume 27.

Sauerland, U. and Bobaljik, J. D. (2022). Cumulative conjunction and exhaustification in morphology. *Ms., ZAS & Harvard University*.

Sauerland, U., Hollebrandse, B., and Kratochvíl, F. (2020). When hypotaxis looks like parataxis: embedding and complementizer agreement in teiwa. *Glossa: a journal of general linguistics*, 5(1):1–30.

Schachter, P. (1973). Focus and relativization. *Language*, pages 19–46.

Schlechtweg, M. and Härtl, H. (2020). Do we pronounce quotation? an analysis of name-informing and non-name-informing contexts. *Language and Speech*, 63(4):769–798.

Schlenker, P. (1999). *Propositional attitudes and indexicality: a cross categorial approach*. PhD thesis, Massachusetts Institute of Technology.

Schlenker, P. (2003). A plea for monsters. *Linguistics and philosophy*, 26(1):29–120.

Schlenker, P. (2004a). Context of thought and context of utterance: A note on free indirect discourse and the historical present. *Mind & Language*, 19(3):279–304.

Schlenker, P. (2004b). Person and binding (a partial survey). *Rivista di Linguistica*, 16.1:155–218.

Schlenker, P. (2005a). Minimize restrictors! (notes on definite descriptions, condition cand epithets). In *Proceedings of SuB9*, page 385.

Schlenker, P. (2005b). Non-redundancy: Towards a semantic reinterpretation of binding theory. *Natural Language Semantics*, 13(1):1–92.

Schlenker, P. (2011a). Indexicality and de se reports. In von Heusinger, K., Maienborn, C., and Portner, P., editors, *Semantics. An International Handbook of Natural Language Meaning*, volume 2, pages 1561–1604. De Gruyter Mouton.

Schlenker, P. (2011b). Quantifiers and variables: Insights from sign language (asl and lsf). *Baltic International Yearbook of Cognition, Logic and Communication*, 6(1):16.

Schlenker, P. (2012). Maximize presupposition and gricean reasoning. *Natural language semantics*, 20(4):391–429.

Schlenker, P. (2013). Temporal and modal anaphora in sign language (ASL). *Natural Language & Linguistic Theory*, 31(1):207–234.

Schlenker, P. (2014). Iconic features. *Natural Language Semantics*, 22(4):299–356.

Schlenker, P. (2017a). Super monsters I: Attitude and action role shift in sign language. *Semantics and Pragmatics*, 10.

Schlenker, P. (2017b). Super monsters II: Role shift, iconicity and quotation in sign language. *Semantics and Pragmatics*, 10.

Schlenker, P. (2018). Visible meaning: Sign language and the foundations of semantics. *Theoretical Linguistics*, 44(3-4):123–208.

Schlenker, P., Lamberton, J., and Santoro, M. (2013). Iconic variables. *Linguistics and philosophy*, 36(2):91–149.

Sells, P. (1987). Aspects of logophoricity. *Linguistic Inquiry*, 18(3):445–479.

Şener, N. G. and Şener, S. (2011). Null subjects and indexicality in turkish and uyghur. In *Proceedings of WAFL 7*.

Shieber, S. M. (2003). *An introduction to unification-based approaches to grammar*. Microtome Publishing.

Shklovsky, K. and Sudo, Y. (2014). The syntax of monsters. *Linguistic Inquiry*, 45(3):381–402.

Sichel, I. and Wiltschko, M. (2021). The logic of person markedness: Evidence from pronominal competition. *Language*, 97(1):42–71.

Sidelle, A. (1991). The answering machine paradox. *Canadian Journal of Philosophy*, 21(4):525–539.

Simons, M., Tonhauser, J., Beaver, D., and Roberts, C. (2010). What projects and why. In *Semantics and linguistic theory*, volume 20, pages 309–327.

Simpson, A., Choudhury, A., and Menon, M. (2013). Argument ellipsis and the licensing of covert nominals in bangla, hindi and malayalam. *Lingua*, 134:103–128.

Smith, P. W. (2015). *Feature mismatches: Consequences for syntax, morphology and semantics*. PhD thesis, University of Connecticut.

Smolensky, P. and Legendre, G. (2006). *The harmonic mind: From neural computation to optimality-theoretic grammar (Cognitive architecture), Vol. 1*. MIT press.

Spadine, C. (2020). *The structure of attitude reports: representing context in grammar*. PhD thesis, Massachusetts Institute of Technology.

Spathas, G. (2009). Interpreting gender on bound pronouns. In *Proceedings of the 2007 Workshop in Greek Syntax and Semantics at MIT. MIT Working Papers in Linguistics*, volume 57, pages 275–290.

Speas, M. (1999). Person and point of view in navajo direct discourse complements. University of Massachhussets Amherst.

Spector, B. (2003). Scalar implicatures: Exhaustivity and gricean reasoning. In ten Caten, B., editor, *Proceedings of the Eighth ESSLLI Student Session*, page 277–88. Vienna: FOLLI.

Stalnaker, R. (1974). Pragmatic presuppositions. In Munitz, M. and Unger, P., editors, *Semantics and philosophy*, page 197–213. New York University Press.

Stalnaker, R. (1978). Assertion. In Cole, P., editor, *Syntax and Semantics*, volume 9. Academic Press.

Stalnaker, R. (2014). *Context*. OUP Oxford.

Staratschek, N. (2022). Air quotes–a case of non-written quotation. *Talk presented at the ULB workshop on quotation, october 2022*.

Starke, M. (2009). Nanosyntax: A short primer to a new approach to language. *Nordlyd*, 36(1):1–6.

Stegovec, A. and Kaufmann, M. (2015). Slovenian imperatives: You can't always embed what you want! In *Proceedings of sinn und bedeutung*, volume 19, pages 621–638.

Steinbach, M. and Onea, E. (2016). A DRT analysis of discourse referents and anaphora resolution in sign language. *Journal of Semantics*, 33(3):409–448.

Stockwell, R. (2018). Quotative dip in kazan tatar. In *Proceedings of the 3rd Workshop on Turkish, Turkic and the Languages of Turkey (Tu+3). UCLA Working Papers in Linguistics*, volume 19.

Stockwell, R. (2020). *Contrast and verb phrase ellipsis: Triviality, symmetry, and competition*. PhD thesis, University of California, Los Angeles.

Stockwell, R. (2022). Contrast and verb phrase ellipsis: The case of tautologous conditionals. *Natural Language Semantics*, pages 1–24.

Stokke, A. (2010). *Indexicality and presupposition: explorations beyond truth-conditional information*. PhD thesis, University of St Andrews.

Sturman, B. C. (2022). *Subclausal Quotation Intonation*. PhD thesis, University of California Los Angeles.

Sudo, Y. (2012). *On the semantics of phi features on pronouns*. PhD thesis, MIT.

Sudo, Y. (2018). Come vs. go and perspectival shift. *Talk given at Rutgers University Department of Linguistics, New Brunswick, NJ*.

Sudo, Y. (2023). Scalar implicatures with discourse referents: A case study on plurality inferences. *Linguistics and Philosophy*.

Sundaresan, S. (2011). A plea for syntax and a return to first principles: monstrous agreement in Tamil. In *Semantics and Linguistic Theory*, volume 21, pages 674–693.

Sundaresan, S. (2012). *Context and (Co)reference in the syntax and its interfaces*. PhD thesis, University of Stuttgart and University of Tromso.

Sundaresan, S. (2018). An alternative model of indexical shift. Ms., University of Leipzig.

Svenonius, P. (2018). Delimiting the syntactic word. *Paper presented at Linguistics at Santa Cruz*.

Svenonius, P. (2020). A span is a thing: A span-based theory of words. *Paper presented at NELS 50*.

Takahashi, S. and Fox, D. (2005). Maxelide and the re-binding problem. In Georgala, E. and Howell, J., editors, *Proceedings of SALT XV*. Ithaca, NY: Cornell University.

Tarski, A. (1933). The concept of truth in formalized languages. In *Logic, Semantics and Metamathematics*, volume 2, pages 152–278. Hackett.

Terenghi, S. (2023). *Missing Person: Structure and change in Romance demonstratives*. PhD thesis, Utrecht University.

Terken, J. and Hirschberg, J. (1994). Deaccentuation of words representing 'given'information: Effects of persistence of grammatical function and surface position. *Language and Speech*, 37(2):125–145.

Thomas, E. (1978). *Grammar Description of the Engenni Language*. Summer Institute of Linguistics, University of Texas at Arlington.

Thompson, R. L., Emmorey, K., Kluender, R., and Langdon, C. (2013). The eyes don't point: Understanding language universals through person marking in american signed language. *Lingua*, 137:219–229.

Tonhauser, J., Beaver, D., Roberts, C., and Simons, M. (2013). Toward a taxonomy of projective content. *Language*, pages 66–109.

Trinh, T. and Haida, A. (2015). Constraining the derivation of alternatives. *Natural Language Semantics*, 23:249–270.

Tyler, M. (2015). A locality restriction on indexical shift: Evidence from turkish. In *Tu+ 1: Proceedings of the first workshop on Turkish, Turkic and the languages of Turkey*.

Van der Sandt, R. A. (1992). Presupposition projection as anaphora resolution. *Journal of semantics*, 9(4):333–377.

Veiga Busto, R. (2022). *Person and number in Catalan Sign Language pronouns*. PhD thesis, Universitat Pompeu Fabra.

Von Fintel, K. and Heim, I. (2011). Intensional semantics. *Unpublished manuscript, MIT*.

Von Roncador, M. (1992). Types of logophoric marking in African languages. *Journal ofAfrican Languages and Linguistics*, 13:163–182.

von Stechow, A. (2002). Binding by verbs: Tense, person and mood under attitudes. In *Proceedings of NELS*, volume 33, pages 379–403.

von Stechow, A. (2003). Feature deletion under semantic binding: Tense, person, and mood under verbal quantifiers. In *Proceedings of NELS*, volume 33, pages 379–404.

Von Stechow, A. and Zimmermann, T. E. (2005). A problem for a compositional treatment of de re attitudes. In *Reference and quantification: The Partee effect*, pages 207–228. CSLI Publications Stanford, CA.

Wasow, T. (1972). *Anaphoric relations in English*. PhD thesis, Massachusetts Institute of Technology.

Webber, B. L. (1978). A formal approach to discourse anaphora. *Tech. rep. Cambridge, MA*.

Wechsler, S. (2011). Mixed agreement, the person feature, and the index/concord distinction. *Natural Language & Linguistic Theory*, 29:999–1031.

Wechsler, S. and Zlatić, L. (2000). A theory of agreement and its application to serbo-croatian. *Language*, pages 799–832.

Weir, A. (2014). *Fragments and clausal ellipsis*. PhD thesis, University of Massachusetts Amherst.

Weiß, H. (2020). Where do complementizers come from and how did they come about? a re-evaluation of the parataxis-to-hypotaxis hypothesis. *Evolutionary Linguistic Theory*, 2(1):30–55.

Westermann, D. (1907). *Grammatik der Ewe-Sprache*. De Gruyter Mouton.

Wiklund, A.-L., Bentzen, K., Hrafnbjargarson, G. H., and Hróarsdóttir, Þ. (2009). On the distribution and illocution of v2 in scandinavian that-clauses. *Lingua*, 119(12):1914–1938.

Williams, E. (1977). Discourse and logical form. *Linguistic Inquiry*, 8(1):101–139.

Williams, E. (1997). Blocking and anaphora. *Linguistic inquiry*, pages 577–628.

Winkler, S. (2005). *Ellipsis and focus in generative grammar*, volume 81. Walter de Gruyter.

Winkler, S. (2011). Ellipsis at the interfaces: An information-structural proposal. In *The Architecture of Focus*, pages 401–428. De Gruyter Mouton.

Winkler, S. (2016). Ellipsis and information structure. In Féry, C. and Ishihara, S., editors, *The Oxford Handbook of Information Structure*. Oxford University Press.

Wiślicki, J. (2023). Scare quotes as deontic modals. *Linguistics*, 61(2):417–457.

Woolford, E. (2001). Case patterns. In Legendre, G., Grimshaw, J., and Vikner, S., editors, *Optimality theoretic syntax*, pages 509–543. MIT Press, Cambridge, Massachusetts.

Woolford, E. (2003). Burzio's generalization, markedness, and constraints on nominative objects. In *New perspectives on case theory*, pages 301–329.

Wurmbrand, S. (2018). Cross-clausal a-dependencies. *Course handout for Advanced Core Training in Linguistics, University College London, London, June*.

Wurmbrand, S. and Lohninger, M. (2023). An implicational universal in complementation. theoretical insights and empirical progress. In *Propositionale Argumente im Sprachvergleich/Propositional Arguments in Cross-Linguistic Research: Theorie und Empirie/Theoretical and Empirical Issues*, volume 84, page 183. Narr Francke Attempto Verlag.

Wyngaerd, G. V. (2018). The feature structure of pronouns: A probe into multidimensional paradigms. *Exploring nanosyntax*, pages 277–304.

Zeevat, H. (2002). Explaining presupposition triggers. *Information sharing*, pages 61–87.

Zimmermann, T. E. (1991). Kontextabhängigkeit. In von Stechow, A. and Wunderlich, D., editors, *Semantik/Semantics*, pages 156–229. Berlin/New York.

Zimmermann, T. E. (2007). Mixed quotations. *Abschiedskolloquium "Alternatives, Comparison and Focus" für Arnim von Stechow.*

Zu, V. (2018). *Discourse Participants and the Structural Representation of the Context*. PhD thesis, New York University.

Zucchi, A. (2004). Monsters in the visual mode. *Ms., Università degli Studi di Milano*.

Zwicky, A. (1977). Hierarchies of person. In Woodford, A. B. and Fox, S. E., editors, *Papers from the Thirteenth Regional Meeting of the Chicago Linguistic Society*, page 714–733, Chicago. University of Chicago, Chicago Linguistic Society.