Matrix Operators in Georgian Indexical Shift

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Abstract

This paper examines indexical shift in Georgian (South Caucasian), which has been noted but understudied in the literature. I argue that its matrix-level shift provides evidence in favour of the shifty operator theory (Anand and Nevins, 2004; Shklovsky and Sudo, 2014; Deal, 2020, i.a.). In these approaches, an embedded indexical is interpreted against a non-utterance context whose parameters are determined by an operator. Crucially, this operator is distinct from the verb that introduces it, which logically allows for the operator to merge freely in the structure. This prediction is evidenced by shifted indexicals in Georgian matrix clauses.

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1 Introduction

This paper focuses on *shifty indexicals* in Georgian (South Caucasian), and discusses its theoretical consequences for a unified theory of indexical shift. While Georgian has been reported in the literature to be a language with shifty indexicals, its patterns are understudied and underreported (see Aronson 1990, Boeder 2002). The goals of this paper are to (i) situate Georgian indexical shift within the relevant body of literature, and (ii) outline the theoretical import of the indexical shift patterns in Georgian. I argue that the existence of indexical shift in *non-embedded clauses* in Georgian provides evidence in favour of the *shifty operator theory* of indexical shift (Anand and Nevins 2004, Shklovsky and Sudo 2014, Deal 2020, among others).

The phenomenon of indexical shift is characterized by an embedded indexical (i.e. a pronoun or a locative) that receives its interpretation from an *attitude event*, not the utterance context. For example, the sentences below show that the embedded first person pronoun can optionally refer to the attitude holder.

(1) Hɛseni va kɛ ɛz dɛwletia.
Hesen said that I rich.be-PRES
✓ 'Hesen said that I am rich.'
✓ 'Hesen said that Hesen is rich.'
(Zazaki; Anand and Nevins 2004)

The literature on indexical shift is largely split between two families of theories, which vary along two major points: (i) whether indexicals are rigid or shiftable, and (ii) where the source of context shift is located. Under one family of approaches, individual pronouns and other indexicals are independently specified as shifty (e.g. Schlenker 1999, 2003, et seq.). The context of evaluation, which sets the interpretation for the indexical, is inherently tied to an embedding verb of speech or attitude. An embedded indexical can thus receive its reference from the context of evaluation introduced by the speech/attitude verb, if the indexical is indeed shifty.[1]

Under another family of approaches to indexical shift, all indexicals are, in principle, shifty. That is, an indexical receives its reference from the "closest" context of evaluation at hand (e.g. Anand and Nevins 2004, Shklovsky and Sudo 2014, Deal 2020). The context of evaluation may either constitute the utterance context, in which case indexical shift is not induced. Alternatively, verbs of speech or attitude can introduce an operator that rewrites the utterance context. Embedded indexicals in the scope of the shifty operator are thus interpreted against the new set of parameters.[2] Under this family of analyses, the shifty operator is notably distinct from the verb that introduces it. This property logically allows for the operator to merge freely in the structure, without being introduced by an embedding verb to introduce it. We might thus expect to find cases where indexical shift is induced without the corresponding presence of a verb of speech or attitude. This prediction is borne out by shifted indexicals in Georgian matrix clauses, which is demonstrated below.

(2) a. *Context*: Nino_N and Dato_D have been dating for a significant period of time, and Nino_N tells Gio_G she_N loves Dato_D. If I overhear their conversation, I can tell you:

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[1] There are several nuances to the mechanisms adopted by this theory of indexical shift, and I refer the reader to those works for a more detailed discussion.

[2] Various shifty operator analyses display individual properties and nuances; as above, I refer the reader to the relevant body of literature here as well.

b. Nino-m *pro* m-i-txr-a-o, (rom) Dato *pro* m-i-q'var-s-o
Nino-ERG 1SG 1-APPL-say-3SG.AOR-O C Dato.NOM 1SG 1-APPL-love-3SG.PRES-O
'**Nino$_N$** told *me$_G$* that **I$_N$** love Dato$_D$.'
(Where *Gio* and the matrix 1st person pronoun are co-referent)

In the sentence above, indexical shift is overtly marked by a phrase-final '*-o*'. For the embedded clause, a shifted reading of the *embedded* 1st person indexical obtains under either of the two families of indexical shift analyses outlined above. The shifted reading for the *matrix* 1st person indexical cleaves the two analyses apart, since only the shift operator approach allows for the possibility of matrix-level shift. Georgian thus provides novel evidence in favour of the operator approach to indexical shift.

This paper is organized as follows. In section 1, I provide a crosslinguistic overview of the environments where indexical shift is possible, and I discuss some common diagnostics. In section 3, I outline the environments where indexical shift is possible in Georgian, and I discuss the results of applying the diagnostics to the language. Section 3 also focuses on the matrix-level shifted readings in more detail; I discuss the theoretical import and consequences in section 4. Section 5 concludes.

2 A Brief Primer on Indexical Shift

A crosslinguistic investigation shows that indexical shift is possible in a wide variety of languages, e.g. Amharic (Schlenker 1999, 2003), Catalan Sign Language (Quer 2005), Japanese (Sudo 2012), Laz (Demirok and Öztürk 2015), Mishar Tartar (Podobryaev 2014), Navajo (Speas 1999), Nez Perce (Deal 2014), Slave (Rice 1989), Tamil (Sundaresan 2012), Tsez (Polinsky 2015), and Uyghur (Shklovsky and Sudo 2014). The canonical instantiation of indexical shift is demonstrated in the Zazaki example below, where an embedded indexical is interpreted against a matrix referent rather than the utterance context.

(3) Hɛseni va kɛ ɛz dɛwletia.
Hesen said that I rich.be-PRES
✓ Hesen said that I am rich.
✓ Hesen said that Hesen is rich.
(Zazaki; Anand and Nevins, 2004)

In the Zazaki sentence above, the embedded 1st person indexical may be interpreted as the speaker (i.e. non-shifted), or as the attitude holder *Hesen* (i.e. shifted). We know that the embedded clause is not a direct quotation due to the behaviour of A′-extraction and NPI licensing since these dependencies hold only across true embedded structures. For example, the Zazaki relative clause structure below may feature a shifted indexical.

(4) čɛnɛkɛ [kɛ Hɛseni va **mɨ** *t* paci kɛrda] rindɛka
girl that Hesen said I *t* kiss did pretty.be-PRES
✓ 'The girl that Hesen said I kissed is pretty.'
✓ 'The girl that Hesen said Hesen kissed is pretty.'
(Zazaki; Anand and Nevins, 2004)

Similarly, an embedded negative polarity item (NPI) is licensed by negation that originates in the matrix clause. Taken together, these diagnostics show that the shifty indexical is indeed in an embedded clause, rather that, say, a direct quotation.

(5) a. Mɨ **kes** paci *(ne) kɛrd
I.ERG anyone kiss *(not) did
'I did *(not) kiss anyone.'
b. Rojda ne va kɛ **mɨ** kes paci kɛrd
Rojda not said that I anyone kiss did
✓ 'Rojda didn't say that Rosen kissed anyone.'
(Zazaki; Anand and Nevins, 2004)

Two additional tests diagnose these patterns as true indexical shift. First, sentences that have undergone indexical shift allow descriptions in the embedded clause to be read *de re*, as shown below. A *de dicto* reading is infelicitous given this context, yet a shifted interpretation is possible for the embedded 1st person indexical.

(6) a. *Context*: Beth told me she met Harold. She doesn't know he is a teacher. When we are in class, I say to someone else:
b. Beth-nim hi-hi-n-e *pro* [*pro* 'e-wewkuny-∅/-e
Beth-ERG 3SUBJ-say-P-REM.PAST 1SG.ACC [1SG 3OBJ-meet-P-REM.PAST
sepehitemenew'etuu-ne]
teacher-ACC]
✓ 'Beth told me that Beth met the teacher.'
(Nez Perce; Deal 2020)

Second, shifted indexicals must be read *de se*. In the sentence below, for example, the shifted indexical must refer to an individual that the the attitude holder recognizes as him/herself.

(7) Heseni va [kɛ ɛz newɛsha]
Hesen.OBL said [that I be-sick-PRES]
✓ Hesen says, "I am sick today."
Hesen, at the hospital for a checkup, happens to glance at the chart of a patient's blood work. Hesen, a doctor himself, sees that the patient is clearly sick, but the name is hard to read. He says to the nurse when she comes in, "This guy is really sick."
(Zazaki; Anand 2006:79)

While there is the expected wide range of patterns in the indexical shift properties that each language exhibits, Deal 2017 identifies four major points of variation: (i) the classes of verbs that are involved in indexical shift; (ii) the class of shiftable items; (iii) optionality in shifty interpretations; and (iv) obligatory *de se* readings. In the remainder of this section, I discuss two major generalizations that arise from these points of variation.

First, the phenomenon of indexical shift (canonically) occurs in embedded clauses headed by an attitude verb, or a verb of speech. Notably, we find that these classes of verbs are arranged in an implicational hierarchy as shown below. While all languages with indexical shift allow shifted interpretations under verbs of speech, only a subset of those further allow shifted interpretations under verbs of thought. Of that group, an even smaller subset of languages allow indexical shift under verbs of knowledge as well. What we do not find are languages that allow indexical shift under verbs of knowledge without also allowing indexical shift under, say, verbs of speech.

LANGUAGE	SPEECH	THOUGHT	KNOWLEDGE
Nez Perce	✓	✓	✓
Navajo, Slave, Uyghur	✓	✓	—
Tamil, Zazaki	✓	—	—
English	—	—	—

Table 1: Verbs that trigger indexical shift (Deal 2017, 2020).

Second, the classes of indexicals that can undergo indexical shift is limited to 1st and 2nd person pronouns as well as locatives (e.g. 'here, there'). These classes fall under an implicational hierarchy as well, shown below. All languages with indexical shift exhibit shifty 1st person indexicals, but only a subset further display shifty 2nd person indexicals. While languages may also have shifty locatives, they are limited to those languages that already have shifty 1st and 2nd person indexicals.

LANGUAGE	SHIFTY 1ST	SHIFTY 2ND	SHIFTY HERE
Zazaki	✓	✓	✓
Uyghur	✓	✓	—
Tamil	✓	—	—
English	—	—	—

Table 2: Indexicals that may be shifted (Deal 2017, 2020).

These generalizations suggest that a unified theory of indexical shift is viable, given that the ranges of variation appears to follow some principle that manifests an implicational hierarchical relationship. In the next section, I situate Georgian indexical shift within the attested crosslinguistic patterns and apply the appropriate diagnostics.

3 Shifty Indexicals in Georgian

As discussed in the previous section, two common diagnostics of indexical shift involve clausal boundaries: (i) cross-clausal *wh*-movement, and (ii) NPI-licensing across a clausal boundary. However, these diagnostics are not fully applicable in Georgian due to language-specific properties. Namely, *wh*-movement in Georgian does not cross clausal boundaries (Harris 1981; see also Borise 2019 and references therein), and negation in Georgian is a complex system that remains to be investigated. I will leave these diagnostics aside at this point in the paper, and instead turn to the application of the remaining diagnostics discussed in section 2. We will see that, as in other languages with indexical shift, embedded descriptions can be read *de re* in Georgian indexical shift environments, and that embedded shifted indexicals must be read *de se*. I will also discuss an alternative diagnostic that shows bleeding effects of shifted readings—namely, an indexical cannot shift if it is in the same clause as a non-shiftable pronoun.

3.1 Embedded Cases

The following three cases demonstrate Georgian indexical shift in canonical embedded clauses. As will be shown throughout this paper, indexical shift in Georgian is marked via a phrasal affix '*-o*'. This affix appears at the end of the entire phrase within which indexical shift has occurred, and it optionally appears at the end of every phonological phrase (Boeder 2002). While there may be subtleties in interpretations depending on where '*-o*' is affixes throughout the phrase, I leave the question for future research. In this paper, I will only focus on sentences which bear one '*-o*' marker per clause. I will now turn to an overview of diagnosing indexical shift in Georgian.

First, embedded descriptions can be read *de re* in Georgian. In the sentence below, Dato (the attitude holder) does not personally know that the activist Bryan Adams is also a musician. Conceptually, it would thus be infelicitous to report Dato's statement "I saw Bryan Adams" as "I saw this singer", given that Dato does not know that Bryan Adams is indeed a singer. However, the description "this singer" can indeed be read *de re* in Georgian. This constitutes evidence against a direct quotation analysis, and suggests a shifty indexical approach is viable.

(8) a. *Context*: Dato knows Bryan Adams for his activism work, but not for his music career. If Dato says to me, "I saw Bryan Adams", I can report Dato's meeting as:
b. Dato-m tkv-a, (rom) *pro* v-nax-e es momxreral-i-o
Dato-ERG say-3SG.AOR C 1SG 1-see-PART.AOR DEM.PROX singer-NOM-O
✓ '**Dato$_{\mathbf{D}}$** said **I$_{\mathbf{D}}$** saw this singer.'

Second, embedded non-shifty items bleed shifted readings for 1st and 2nd person indexicals. As shown below, an embedded 3rd person pronoun—which does not exhibit shifty behaviour—that is coindexed with a matrix argument blocks a shifted interpretation for the embedded 1st person indexical. This bleeding effect is particularly notable in light of partial quotation analyses, e.g. Maier (2007, 2012, 2014). These analyses derive indexical shift as sub-clausal direct quotations. That is, the indexical—and only the indexical—is quoted material. If this were the case, we would not expect the shifted readings of the embedded 1st person indexicals below to be blocked.

(9) a. Nino-m u-txr-a Gio-s, (rom) *pro* *pro* m-i-qvar-s-o
Nino-ERG APPL-tell-3SG.AOR Gio-DAT C 1SG 3SG 1-VER-love-3SG.PRES-O
✗ '**Nino$_{\mathbf{N}}$** told Gio$_i$ that **I$_{\mathbf{N}}$** love him$_i$.'

b. Nino-m u-txr-a Gio-s, (rom) *pro* *pro* u-qvar-xar-o
Nino-ERG APPL-tell-3SG.AOR Gio-DAT C 3SG 2SG VER-love-2.PRES-O
✗ 'Nino$_i$ told **Gio$_G$** that she$_i$ loves **you$_G$**.'

Additionally, we would also expect to find cases where only one of multiple indexicals shift (since the partial quotation approach states that indexicals are independently quoted material). However, *Shift Together* effects (Rice 1986, Anand and Nevins 2004, Anand 2006) undermine partial quotation analyses. The *Shift Together* pattern is characterized by across-the-board shift for all indexicals in the same embedded clause, and it is observed across several languages with indexical shift (see also Deal 2020, Sundaresan 2018). As shown below, Georgian exhibits *Shift Together* as well: mixed interpretations are not licit.

(10) Nino-m u-txr-a Dato-s, (rom) *pro* *pro* da-g-i-nax-e-o
Nino-ERG APPL-tell-3SG.AOR Dato-DAT C 1SG 2SG PRV-2-APPL-see-AOR.PART-O
✓ 'Nino told Dato that I saw you.'
✓ '**Nino$_N$** told *Dato$_D$* that **I$_N$** saw *you$_D$*.'
✗ 'Nino told *Dato$_D$* that I saw *you$_D$*.'
✗ '**Nino$_N$** told Dato that **I$_N$** saw you.'

Finally, shifted indexicals must be read *de se* in Georgian. As shown below, the 1st person indexical in Dato's report "I am sick" obligatorily refers to Dato himself, i.e. Dato must recognize himself as the referent of the 1st person indexical. In the case of accidental co-reference, the shifted reading is infelicitous.

(11) a. Dato-m tkv-a, (rom) *pro* avad v-ar-**o**
Dato-ERG say-3SG.AOR C 1SG sick 1-be.PRES-O
'**Dato$_D$** said **I$_D$** am sick.'
✓ Earlier today, Dato told me he (Dato) is sick.
Dato, at the hospital for a checkup, happens to glance at the chart of a patient's blood work. Dato, a doctor himself, sees that the patient is clearly sick, but the name is hard to read. He says to the nurse when she comes in, "This guy is really sick."

In conclusion, Georgian exhibits true indexical shift. This was shown by the application of three diagnostics relating to shifty indexicals: (i) embedded descriptions can be read *de re*, (ii) shifted readings can be blocked in embedded non-shifty environments, and (iii) embedded indexicals must be read *de se*. In the next section, I provide an overview of indexical shift in non-embedded clauses.

3.2 Non-embedded Cases

The main data point of this paper—shown below—displays two notable properties: (i) '*-o*' can appear across multiple clauses, and (ii) '*-o*' marks the scope of indexical shift. When '*-o*' appears in the matrix clause, a shifted interpretation is induced for a matrix 1st person indexical provided that the intended referent is salient in the discourse.[3]

(12) a. *Context*: Nino and Dato have been dating for a significant period of time, and Nino tells Gio that she loves Dato. If I overhear their conversation, I can tell you:
b. Nino-m *pro* m-i-txr-a-o, (rom) Dato *pro*
Nino-ERG 1SG 1-APPL-say-3SG.AOR-O C Dato.NOM 1SG
m-i-q'var-s-o
1-APPL-love-3SG.PRES-O
'**Nino$_N$** told *me$_G$* that **I$_N$** love Dato$_D$.'
(Where *Gio* and the matrix 1st person pronoun are co-referent)

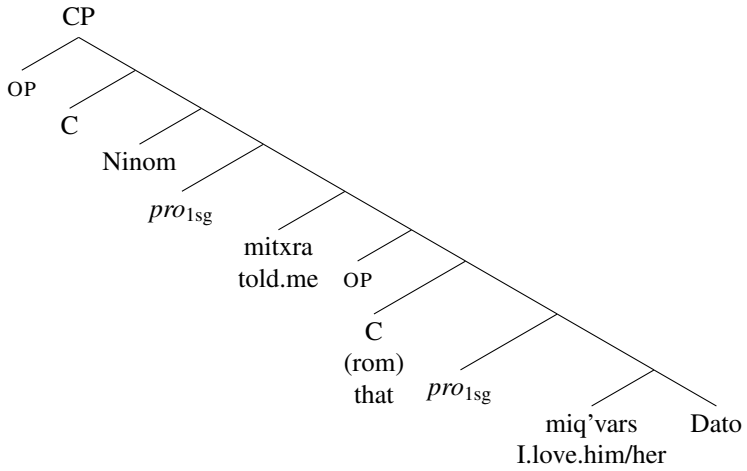
While the context for a matrix-level shifted interpretation is somewhat complex, the judgements

[3]If '*-o*' does not appear in the matrix clause (and only in the embedded clause), a shifted interpretation is—as expected—infelicitous for the matrix 1st person indexical.

provided by my Georgian language consultants are robust and clear. In all cases, the appearance of '*-o*' in the matrix clause results in a shifted indexical in the matrix clause as well. When prompted with a novel string with multiple occurrences of '*-o*', my consultants offered a context where the report was overheard. This suggests that the shifted interpretation of matrix indexicals must be licensed by a particular type of discourse saliency. Notably, this pattern goes beyond the typical embedding speech and attitude verbs discussed in the literature on indexical shift.

As a preliminary analysis, I assume that the shifted interpretations of the embedded and matrix 1st person indexicals result from the presence of two shifty operators: one operator in the embedded CP periphery and the other in the matrix CP periphery. This is illustrated below.

(13) *Matrix and embedded operator*



Following the general framework of the shifty operator family of approaches, I assume that the verb of speech in the matrix clause introduces a shifty operator in the periphery of the complement clause, which is signalled by the phrase-final '*-o*'. The embedded operator provides the context parameters which the embedded 1st person indexical receives its reference from. As for the indexical shift pattern in the matrix clause, I assume that a shifty operator merges into the matrix CP periphery given that the discourse includes the highly salient *Gio*. The matrix operator, which is also signalled by '*-o*', provides a set of context parameters that differs from the utterance context. The matrix 1st person indexical thus receives its reference from the rewritten context of evaluation provided by the matrix shifty operator. While this pattern is novel in the literature, the general framework is not: the mechanisms which license indexical shift in *embedded* clauses are assumed to be the same that license indexical shift in *matrix* clauses.

While matrix-level indexical shift in Georgian may be surprising given the current state of the literature, the phenomenon is perhaps not so surprising when we consider the broader view of indexical shift throughout Georgian. Indexical shift is possible under verbs of speech, thought, and cognition in Georgian, which are classes of verbs that, crosslinguistically, commonly induce indexical shift in their complement clauses (section 2; Deal 2017, 2020). Furthermore, Georgian indexical shift also occurs under the scope of attitude verbs such as *nanoba* 'to regret', as shown below. Note that this particular attitude verb is not typically part of the implicational hierarchies of verbs that induce indexical shift in the literature.

(14) Nino nanob-s, (rom) *pro* Dato-s da-v-šor-di-o
Nino.NOM regret-3SG.PRES C 1SG Dato-DAT PRV-1-break.up-PART.IMPF-O
'**Nino$_N$** regrets that **I$_N$** broke up with Dato.'

The ability of *nanoba* to license indexical shift suggests that the phenomenon is more widespread throughout Georgian, in comparison to other languages where indexical shift is more restricted (e.g. only under verbs of speech). This property of Georgian may help make sense of the shifty

behaviour of indexicals in matrix clauses, a near-novel phenomenon that has only been attested in a handful of other unrelated languages, e.g. Tigrinya (Spadine 2019) and Uyghur (Alexander Williams, p.c.). Indexical shift thus appears to be more free throughout Georgian (as well as Tigrinya and Uyghur) compared to its crosslinguistic counterparts. In the next section, I discuss the import that the Georgian behaviour has on a unified theory of indexical shift.

4 Theoretical Issues and Consequences

The indexical shift literature is currently divided, and largely split between *pronoun-based* analyses (Schlenker, 1999, 2003, et seq.) and *shifty operator* approaches (Anand and Nevins 2004, Shklovksy and Sudo 2014, Deal 2020). Under the pronoun-based approach, pronouns and other indexicals are exceptional in that they are individually specified to be interpreted against different contexts of evaluation (i.e. the utterance or attitude event). That is, each indexical is independently shifty. This is not the case under operator-based approaches, where the specification of indexicals is broadly the same across all languages—namely, all indexicals are interpreted against the closest context of evaluation. Indexical shift occurs when a shifty operator rewrites the utterance context upon being introduced into the structure. Under operator-based analyses, indexicals are notably *not* independently shifty. This distinction provides an important testing ground for adjudicating between the two approaches.

Specifically, empirical evidence in the form of *Shift Together* effects (Anand and Nevins, 2004; Anand, 2006) provides support of the shifty operator approach. *Shift Together*, demonstrated below, is a widely attested pattern that restricts the interpretation of indexicals to an all-or-nothing affair. Only the shifty operator approach explains this effect: the variable binding mechanisms found in pronoun-based analyses cannot induce all indexicals in a single domain to shift together since indexicals are individually specified to be (non-)shifty. That is, we would not expect to see the restrictions on the shifted interpretations provided below if each indexical could shift independently of the others.[4]

(15) Nino-m u-txr-a Dato-s, (rom) *pro* *pro* da-g-i-nax-e-o
Nino-ERG APPL-tell-3SG.AOR Dato-DAT C 1SG 2SG PRV-2-APPL-see-AOR.PART-O
✓ 'Nino told Dato that I saw you.'
✓ '**Nino$_N$** told *Dato$_D$* that **I$_N$** saw *you$_D$*.'
✗ 'Nino told *Dato$_D$* that I saw *you$_D$*.'
✗ '**Nino$_N$** told Dato that **I$_N$** saw you.'

The shifty operator theory straightforwardly captures *Shift Together* since all indexicals receive their interpretations from the nearest context of evaluation. In languages with indexical shift, the shifty operator provides a new context of evaluation for all indexicals in its scope; in languages without indexical shift, the nearest context is the utterance context. Furthermore, the operator is a distinct entity separate from the speech/attitude verb. This theory thus allows for the possibility that a shifty operator may merge into the structure *without being introduced by a verb*. Since these operators occur in the CP periphery, it is logically possible that they may appear in the *matrix* CP—that is, it is open for debate whether indexical shift is strictly licensed via syntactic embeddings under lexical speech/attitude verbs.

We do see some evidence from Buryat which suggests that indexical shift is not solely governed by the embedding verb. Rather, the case-marking on the embedded indexical dictates its possible interpretations (Bondarenko 2017). As shown below, an embedded 1st person indexical only receives a shifted interpretation if it is marked *nominative*; in contrast, an embedded *accusative* 1st person indexical can only refer to the speaker. Bondarenko shows that the 1st person pronoun remains within the embedded clause; the different case-marking of the embedded pronoun correlates with the syntactic height of the pronoun in the embedded CP periphery. It is thus possible for a pronoun to move out of the scope of the operator yet still remain in the embedded clause.

[4] I refer the reader to Deal 2020 for a discussion of additional arguments against non-shifty-operator approaches. For discussion on apparent *Shift Together* violations and potential solutions, see Sundaresan 2018 and Deal 2018, 2020

(16) a. sajənə (bi) tɜgə ɜmdəl-ɜ-b gɜžə mɜd-ɜ
Sajana 1SG.NOM cart break-PST-1SG COMP know-PST
✗ 'Sajana knows that I broke the cart.'
✓ 'Sajana$_i$ found out that she$_i$ broke the cart.'

b. sajənə namɛjə tɜgə ɜmdəl-ɜ gɜžə mɜd-ɜ
Sajana 1SG.ACC cart break-PST COMP know-PST
✓ 'Sajana knows that I broke the cart.'
✗ 'Sajana$_i$ found out that she$_i$ broke the cart.'
(Bondarenko 2017:19)

The Buryat data shows that indexical shift is not restricted by the *syntax/semantics* of the embedding verb, since the embedded indexical can move out of the scope of the shifty operator. If we take this view further—that is, if indexical shift is not inherently tied to an embedding verb, regardless of its syntax/semantics—then we should be able to observe cases where a shifty operator is truly an independent entity. I have argued that this is the case in Georgian indexical shift, where matrix 1st person indexicals receive shifted interpretations just in case an appropriate participant is salient in the discourse. In this case, I assume the discourse licenses the introduction of a shifty operator in the matrix CP, as schematized below.

(17) [Op$_1$ Nino-m *pro* m-i-txr-a-o [Op$_2$ (rom) *pro* Dato
[OP Nino-ERG 1SG 1-APPL-tell-3SG.AOR-O [OP C 1SG Dato.NOM
m-i-qvar-s-o]]
1-APPL-love-3SG.PRES-O]]
'**Nino$_N$** told me$_{GIO}$ that **I$_N$** love Dato.'

While the formalization of this approach is admittedly underdeveloped, my proposal lays the foundation for how the overall mechanisms must work. I leave the finer details to future work.

5 Conclusion

Georgian indexical shift provides novel evidence for free shifty operators, expanding the current typology of languages with shifty indexicals. As in other languages with indexical shift, Georgian speech and attitude verbs can introduce a shifty operator which governs the interpretation of embedded indexicals. Georgian further shows that shifty operators may also be licensed by the discourse, thus governing the interpretation of matrix indexicals. Indexical shift thus cannot be solely induced by the shiftability of an indexical, *pace* pronoun-centric approaches.

This paper contributes to current research that seeks to narrow down a shifty operator theory of indexical shift. While *Shift Together* effects suggest that the shifty-operator approach is on the right track, there is still a lot that could be said within this family of analyses. Many research questions are tied, in some way, to the embedding verb itself. However, given the matrix-level indexical shift patterns in Georgian, we can now say that indexical shift is not strictly tied to the embedding verb. This view is empirically supported by indexical shift patterns in Tigrinya (Spadine 2019) and Buryat (Bondarenko 2017), where we see, respectively, that matrix-level indexical shift is not limited to Georgian and that indexical shift is not governed by the syntax/semantics of an embedding verb.

References

Anand, Pranav. 2006. De de se. Doctoral dissertation, Massachusetts Institute of Technology.

Anand, Pranav, and Andrew Nevins. 2004. Shifty operators in changing contexts. In *Proceedings of SALT XIV*, ed. Robert B. Young, 20–37. Cornell University, Ithaca, NY: CLC Publications.

Aronson, Howard I. 1990. *Georgian: A Reading Grammar*. Slavica.

Boeder, Winfried. 2002. Speech and thought representation in the kartvelian (south caucasian) languages. In *Reported discourse: A Meeting Ground for Different Linguistics Domains*, 3–48.

Bondarenko, Tatiana. 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.

Borise, Lena. 2019. Phrasing is Key: The Syntax and Prosody of Focus in Georgian. Doctoral dissertation, Harvard University.

Deal, Amy Rose. 2014. Nez Perce embedded indexicals. In *Proceedings of SULA*, ed. Hannah Greene, volume 7, 23–40. Amherst: GLSA.

Deal, Amy Rose. 2017. Shifty asymmetries: universals and variation in shifty indexicality. Manuscript, UC Berkeley.

Deal, Amy Rose. 2018. Indexiphors: Notes on embedded indexicals, shifty agreement, and logophoricity. Manuscript, UC Berkeley.

Deal, Amy Rose. 2020. *A Theory of Indexical Shift: Meaning, Grammar, and Crosslinguistic Variation*. MIT Press.

Demirok, Ömer Faruk, and Balkız Öztürk. 2015. The logophoric complementizer in laz. *Dilbilim Araştırmaları Dergisi* 26:45–69.

Harris, Alice C. 1981. *Georgian Syntax: A Study in Relational Grammar*. Cambridge University Press.

Maier, Emar. 2007. Quotation marks as monsters, or the other way around. In *Proceedings of the Sixteenth Amsterdam Colloquium*, 145–150. ILLC Amsterdam.

Maier, Emar. 2012. Switches between direct and indirect speech in ancient greek. *Journal of Greek Linguistics* 12:118–139.

Maier, Emar. 2014. Japanese reported speech: Towards an account of perspective shift as mixed quotation. In *Formal Approaches to Semantics and Pragmatics*, 135–154. Springer.

Podobryaev, Alexander. 2014. Persons, Imposters, and Monsters. Doctoral dissertation, Massachusetts Institute of Technology.

Polinsky, Maria. 2015. Embedded finite complements, indexical shift, and binding in Tsez. *Languages of the Caucasus* 1:1–37.

Quer, Josep. 2005. Context shift and indexical variables in Sign Language. In *Proceedings of SALT XV*, ed. Effi Georgala and Jonathan Howell, 152–168. Cornell University, Ithaca, NY: CLC Publications.

Rice, Keren. 1986. Some remarks on direct and indirect discourse in Slave (Northern Athapaskan). In *Direct and indirect speech*. Mouton de Gruyter.

Rice, Keren. 1989. *A grammar of Slave*. Berlin: Mouton de Gruyter.

Schlenker, Philippe. 1999. Propositional attitudes and indexicality: a cross categorial approach. Doctoral dissertation, Massachusetts Institute of Technology.

Schlenker, Philippe. 2003. A plea for monsters. *Linguistics and Philosophy* 26:29–120.

Shklovsky, Kirill, and Yasutada Sudo. 2014. The syntax of monsters. *Linguistic Inquiry* 45:381–402.

Spadine, Carolyn. 2019. The syntax of attitude holders: Evidence from Tigrinya. Manuscript, MIT.

Speas, Margaret. 1999. Person and point of view in Navajo. In *Proceedings of WCCFL Proceedings of WCCFL 18*.

Sudo, Yasutada. 2012. On the semantics of phi features on pronouns. Doctoral dissertation, Massachusetts Institute of Technology.

Sundaresan, Sandhya. 2012. Context and (Co) reference in the syntax and its interfaces. Doctoral dissertation, University of Tromsø (CASTL)/Universität Stuttgart, Tromsø.

Sundaresan, Sandhya. 2018. An alternative model of indexical shift: Variation and selection without context-overwriting. Manuscript, University of Leipzig.

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