

Person Indexicals in Uyghur Indexical Shifting

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1 Introduction

Every natural language known so far has indexicals — expressions whose meanings are dependent on the context of utterance (e.g. *I, you, here, now*, etc. in English). An intriguing semantic property of indexicals was pointed out by Kaplan (1989): their referents are fixed regardless of the syntactic environments they are in. Especially, they are insensitive to modals unlike definite descriptions. For example, in the examples below, the word *I* obligatorily refers to the speaker, even though it is in modal contexts.

- (1) a. John thinks that **I** am a linguist
 b. If **I** were a biologist, **I** wouldn't be a linguist

This fact led Kaplan (1989) to conjecture that indexicals always refer to the actual context of utterance, and moreover that there is no operator in natural language that manipulate contexts. He called such (supposedly non-existent) context-shifting operators *monsters*. The logic here is that if a context-shifting operator did exist, indexicals under its scope would be interpreted relative to non-actual contexts. In this paper, we call such phenomena *indexical shifting*.

Contrary to Kaplan's (1989) conjecture, however, Schlenker (1999, 2003) pointed out that there are languages with indexical shifting. Specifically, in Amharic attitude reports, indexicals may be interpreted relative to the reported context, rather than the current context of utterance, as shown by the examples below.

- (2) *Amharic*
- a. John [j̥jəɡna ləmin n-ññ] yil-all?
 John [hero why COP.PRES-1S] says-3sm
 'Why does John say that {I am, he is} a hero?' (Anand 2006:82)

- b. [*min amt'-a*] *ind-al-ə-ññ* *al-səmma-hu-mm*
 [what bring.IMPER-2m] COMP-say.PF-3m-1sO NEG-hear.PF-1s-NEG
 'I didn't hear what he told me to bring.' (Leslau 1995:779)

In addition, recent studies show that Amharic is not the only language with indexical shifting. Specifically, Navajo (Speas 1999), Zazaki, Slave (Anand and Nevins 2004; Anand 2006), Catalan Sign Language (Quer 2005), Nez Perce (Deal 2008) and Matses (Ludwig et al. to appear) are reported to allow indexical shifting in attitude contexts. Based on these languages, it is now considered that monsters in fact do exist in natural language, contrary to Kaplan's (1989) surmise (Schlenker 1999, 2003; Anand and Nevins 2004; Anand 2006 among others).¹

One of the goals of the present paper is to provide novel data of indexical shifting from yet another language, (Modern) Uyghur.² Focusing on the interpretation of 1st and 2nd person singular indexicals, we observe two peculiar features of Uyghur indexical shifting: (i) that 1st person indexicals are obligatorily *de se*, while 2nd person indexicals are not obligatorily *de se* in the sense explained below; and (ii) that shifted 2nd person pronouns are not allowed under certain attitude verbs, while shifted 1st person pronouns are always licensed. We propose a formal semantic account of both phenomena.

This paper is organized as follows. In Section 2, the basic facts about Uyghur indexical shifting are introduced. The semantic properties of shifted indexicals are discussed in Section 3, a formal semantic account of which is proposed in the subsequent section. We look at the behavior of person indexicals under various kinds of attitude verbs in Section 5, which we claim follows from the lexical semantics of the attitude verbs and can be given a straightforward account in our theory presented in Section 4. In Section 6, we review a previous account of similar facts in Slave due to Anand and Nevins (2004) and Anand (2006), and claim that our analysis is conceptually better.

2 Uyghur Indexical Shifting

Just as in the other languages mentioned in Section 1, indexical shifting in Uyghur is confined to complement clauses to attitude verbs, but Uyghur is special in that it has two kinds of complement clauses that differ in whether indexical shifting takes place. More specifically, some attitude verbs only take nominalized complement clauses, others only take finite complement clauses, and still others are compatible with both types. For example, the verb *de-* 'say, tell' can take either.

¹ See von Stechow (2002) and Ogihara (2006) for monster-free theories.

² Uyghur is an eastern Turkic language spoken by 8-10 million speakers mainly in the Xinjiang Autonomous Region of China. It possesses the usual Turkic features including SOV word order, scrambling, radical pro-drop, highly agglutinative verbal morphology, allomorphy involving vowel harmony, and case suffixes on nouns (see Hahn 1991 and De Jong 2007 for descriptive grammars).

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- (3) a. *Nominalized Complement Clause*
 Ahmet [profesor-ning kit-ken-lik-i-ni] di-di
 Ahmet [professor-GEN leave-REL-NMLZ-3-ACC] say-PAST.3
 ‘Ahmet said that the professor left’
- b. *Finite Complement Clause*
 Ahmet [profesor ket-ti] di-di
 Ahmet [professor.NOM leave-PAST.3] say-PAST.3
 ‘Ahmet said that the professor left’

Interestingly enough, indexical shifting is basically obligatory in finite complement clauses to attitude verbs (see Shklovsky and Sudo to appear for some complications), but never observed in nominalized complement clauses, as illustrated by the following examples.

- (4) a. *Nominalized Complement Clause*
 Ahmet [**mening** kit-ken-lik-**im**-ni] di-di
 Ahmet [1SG.GEN leave-REL-NMLZ-1SG-ACC] say-PAST.3
 OK (non-shifted) ‘Ahmet said that I_{speaker} left’
 * (shifted) ‘Ahmet_i said that he_i left’
- b. *Finite Complement Clause*
 Ahmet [**men** ket-**tim**] di-di
 Ahmet [1SG leave-PAST.1SG] say-PAST.3
 * (non-shifted) ‘Ahmet said that I_{speaker} left’
 OK (shifted) ‘Ahmet_i said that he_i left’

These sentences are not synonymous. In (4a), *mening* ‘my’ refers to the speaker of the entire sentence, just like in English, while in (4b), *men* ‘I’ obligatorily refers to the attitude holder Ahmet, rather than the speaker.

At this point, one might wonder whether the embedded clause in (4b) is an instance of direct quotation. However, there are several pieces of evidence showing that finite complement clauses need not be quotational.³ For example, the finite complement in (5) contains a *wh*-phrase taking the matrix scope, which guarantees that the embedded clause is not a quotation, because *wh*-quantification into quotations is generally impossible. Nonetheless, the first person indexicals obligatorily refer to the attitude holder Tursun.

- (5) Tursun [**men** kim-ni kör-**dim**] di-di?
 Tursun [1SG who-ACC see-PAST.1SG] say-NEG-PAST.3
 ‘Who did Tursun_i say he_i saw?’

³ Due to space limitations, we present just one argument here and refer the interested reader to Shklovsky and Sudo (to appear).

We observed in this section that Uyghur morphosyntactically distinguishes shifting and non-shifting complement clauses to attitude verbs, unlike in the languages known so far. For the rest of this paper, we exclusively look at 1st and 2nd person indexicals in shifting environments, but it should be noted here that certain temporal indexicals also shift in the same way, while locative indexicals and demonstratives never do in Uyghur.

3 (Non-)Obligatory *De Se* Readings of Shifted Indexicals

This section discusses the semantic properties of shifted indexicals in Uyghur. In particular, we observe that shifted 1st person indexicals are obligatorily *de se*, while shifted 2nd person indexicals need not be 2nd person *de se* (or *de te*).

By *de se* interpretations of pronouns, we mean the following. In the *de se* construal, a pronoun refers to the individual that the attitude holder identifies as himself, not just that we, as a third party, identify as him (Lewis 1979). That this is a linguistically relevant distinction is shown by the contrast between 3rd person pronouns and PRO in obligatory control constructions in English. That is, English 3rd person pronouns are generally ambiguous between *de se* and non-*de se* readings, while PRO is obligatorily *de se* (Chierchia 1989).

- (6) CONTEXT: John is so drunk that he has forgotten that he is a candidate in the election. He watches someone on TV and finds that that person is a terrific candidate, who should definitely be elected. Unbeknownst to John, the candidate he is watching on TV is John himself.
- a. John_i hopes that **he**_i will be elected
 - b. #John_i hopes **PRO**_i to be elected (Schlenker 2003:61)

There is a comparable reading for pronouns denoting the hearer, which is called 2nd person *de se* or *de te*. That is, *de te* pronouns denote the individual that the attitude holder identifies as the person she is/was talking to. Again PRO in English object control is sensitive to this distinction.

- (7) CONTEXT: John is hosting a party. He hears that a certain waiter named Bill is being a nuisance. John tells the nearest waiter, “Bill has to go.” Unbeknownst to him, he’s talking to Bill.
- a. John told Bill_i that **he**_i had to leave
 - b. #John told Bill_i **PRO**_i to leave (Anand 2006:16)

With this in mind, we now observe that Uyghur shifted 1st person pronouns are obligatorily *de se*, just as PRO in English. The logic is the same as above: the given context only supports the non-*de se* readings of the pronouns and an infelicity indicates that the pronoun can only be read *de se*. Here, the contrast is illustrated

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by shifted 1st person pronoun *men* and a 3rd person pronoun (a 3rd person reflexive or *pro*) in a nominalized complement clause which is not a shifting environment.

- (8) CONTEXT: Ahmet took an exam, and later saw the top 10 scorers with the respective ID numbers. He forgot his own ID number, so didn't know who was who. Pointing to the No.1 scorer, he remarked "This guy is very smart!" But it turned out that he was talking about himself.

Ahmet üzi ik-ken-lik-i-ni bil-mey,
 Ahmet himself COP-REL-NML-3sg-ACC know-NEG,
 'Ahmet did not know that it was him, but'

- a. # Ahmet [**men** bek aqriliq] di-di
 Ahmet [1sg very smart] say-PAST.3
 'Ahmet_i said that he_i is very smart'
- b. Ahmet [(üz-i-ning) bek aqriliq ik-ken-lik-i-ni] di-di
 Ahmet [(self-3-GEN) very smart COP-REL-NML-3sg-ACC] say-PAST.3
 'Ahmet_i said that he_i is very smart'

On the other hand shifted, 2nd person pronouns are not obligatorily *de te*.

- (9) CONTEXT: Muhemmet is hosting a party. He hears that a certain waiter named John is being a nuisance. Muhemmet tells the nearest waiter, "John should go home." Unbeknownst to him, he's talking to John.

- a. Muhemmet John-gha [*pro* öy-ge kit-sh-**ing** kirek] di-di
 Muhemmet John-DAT [*pro* home-DAT leave-GER-2sg should] say-PAST.3
 'Muhemmet told John_i that he_i should go home'
- b. Muhemmet John-gha [u-ning öy-ge kit-sh-i kirek ik-ken-lik-i-ni
 Muhemmet John-DAT [3sg-GEN house-to leave-GER-3 should COP-REL-NML-3-ACC
] di-di
] say-PAST.3
 'Muhemmet told John_i that he_i should go home'

It is even possible to be explicit about Muhemmet's epistemic state as in the following example, which is felicitous in the same context as above.

- (10) Muhemmet John-ni tunu-imay, uninggha [**sen** öy-ge kit-sh-**ing**
 Muhemmet John-ACC recognize-NEG, he.DAT [2sg house-DAT leave-GER-2sg
 kirek] di-di
 should] say-PAST.3
 'Muhemmet did not recognize John_i, and told him_i that he_i should go home'

This behavior of Uyghur 2nd person pronouns in shifted contexts is different from other languages with indexical shifting such as Amharic and Zazaki, in which both shifted 1st and 2nd person pronouns are obligatory *de se* or *de te*, as Anand (2006) discusses. We will come back to this in Section 6.

4 Analysis of Indexical Shifting

In this section, we present a formal semantic analysis of indexical shifting. We adopt Anand’s (2006) analysis to a large extent, although there are some differences.

Firstly, we model a (possible) context of utterance as an additional index c to which the interpretation function $\llbracket \cdot \rrbracket$ is relativized. As we are only interested in indexical shifting of person indexicals, we assume that contexts are triples consisting of two individuals and a world ($c = \langle a_c, h_c, w_c \rangle$). By assumption, indexicals make reference to the context index.

- (11) a. $\llbracket \text{I} \rrbracket_g^c = a_c$
 b. $\llbracket \text{you} \rrbracket_g^c = h_c$
 c. $\llbracket \text{we} \rrbracket_g^c =$ the salient group of individuals that includes a_c

Also, we postulate possible evaluation indices i in the object language (cf. Ty2 of Gallin 1975; see also Percus 2000; Keshet 2008), whose denotations are assumed to be of the same semantic type as context indices (cf. von Stechow and Zimmermann 2005; Anand 2006; *pace* Kaplan 1989).

In general, modals are quantifies over indices. For examples, the universal deontic modal *must* is of type $\langle st, st \rangle$ and given the following meaning.

- (12) For any $\llbracket \phi \rrbracket_g^c$ of type $\langle s, t \rangle$,
 $\llbracket \text{must } \phi \rrbracket_g^c = \lambda i.$ for any $\langle a_i, h_i, w_j \rangle$ such that the relevant rules are obeyed
 in w_j , $\llbracket \phi \rrbracket_g^c(\langle a_i, h_i, w_j \rangle) = 1$

It should be remarked here that modals never manipulate the context index, which ensures indexicals’ insensitivity to modality discussed in Section 1.

In order to account for indexical shifting, we claim that there is a ‘monstrous’ lexical item \mathcal{M} in Uyghur that manipulates the context index. Notice that this operator should not be attitude verbs, because indexical shifting never takes place in nominalized complements clauses although the same attitude verbs are employed as in finite complement constructions (*pace* Schlenker 1999, 2003). Instead we assume that \mathcal{M} is a covert operator that only and always appears in finite complements and never in nominalized complements (see Shklovsky and Sudo to appear for its syntax). \mathcal{M} performs the following operation.

- (13) For any $\llbracket \phi \rrbracket_g^c$ of type t , $\llbracket \mathcal{M}_i \phi \rrbracket_g^c = \llbracket \phi \rrbracket_g^{g(i)}$

Just as other lexical items in the current system, \mathcal{M} is assumed to take an object language index as its first argument as indicated by the subscript. Also for compositional purposes, we take (13) to be a new compositional operation triggered by this particular lexical item (cf. ‘Monstrous Functional Application’ of von Stechow and Zimmermann 2005; Anand 2006).

de te individual coordinate of a shifted context index. To this end, we claim that they are disguised definite descriptions containing a 1st person indexical. Being definite descriptions, they take an index as their first argument.

$$(17) \quad \llbracket \text{sen} \rrbracket_g^c = \lambda i. \text{ the individual in } w_i \text{ that } a_c \text{ is/was talking to in } w_i$$

It is assumed here that this definite description can be read *de re*, just like other normal definite descriptions, in which case *sen* takes the matrix index. This is illustrated by the following schematic example.

$$(18) \quad \lambda i \text{ John told Mary [that } \lambda j \mathcal{M}_j \dots [\text{sen}_i] \dots]$$

Thus *sen* ‘you’ in (18) is interpreted as the individual in w_i that a_c was talking to in w_i , and there is no requirement that John be able to identify the same individual as the person he was talking to. It is also allowed for the index *sen* takes to be j , in which case it receives a *de te* reading.⁴

5 Restrictions on Shifted 2nd Person Pronouns

In this section, we turn to another difference between 1st and 2nd person indexicals in Uyghur indexical shifting. That is, certain attitude verbs shift only 1st person indexicals and shifted 2nd person indexicals under them are infelicitous. Furthermore, we claim that these two classes of attitude verbs are not determined arbitrarily, but are semantic natural classes. Specifically, under verbs of communication whose subject is the language user and the other argument is the hearer, both 1st and 2nd person indexicals undergo indexical shifting.

(19) **de-** (say, tell)

- a. Ahmet [*pro* kim-ni jaxshi kör-**imen**] di-di?
 Ahmet [*pro* who-ACC well see-IMPERF.1sg] say-PAST.3
 ‘Who did Ahmet say that he likes?’
- b. Ahmet Aygül-ge [*pro* kim-ni jaxshi kör-**isen**] di-di?
 Ahmet Aygül-DAT [*pro* who-ACC well see-IMPERF.2sg] say-PAST.3
 ‘Who did Ahmet told Aygül that she likes?’

(20) **sözle-** (speak, talk)

- a. Ahmet [*pro* kim-ni jaxshi kör-**imen** dep] sözli-di?
 Ahmet [*pro* who-ACC well see-IMPERF.1sg C] speak-PAST.3
 ‘Who did Ahmet say that he likes?’

⁴ Strictly speaking, for *sen* to receive the correct interpretation in this construal, the world coordinate of the index *sen* combines with should be a world compatible with what John believes, rather than a world compatible with what John told Mary. This is a general problem of this type of account of *de re/de dicto* (cf. Geurts 1999).

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- b. Ahmet Aygül-ge [*pro* kim-ni jaxshi kör-**isen** dep] sözli-di?
Ahmet Aygül-DAT [*pro* who-ACC well see-IMPERF.2sg C] speak-PAST.3
'Who did Ahmet told Aygül that she likes?'

(21) **maxtan-** (brag)

- a. Ahmet Aygül-ge [*pro* kim-ni kör-**dim** dep] maxtan-di?
Ahmet Aygül-DAT [*pro* who-ACC saw C] brag-PAST.3
'Who did Ahmet brag to Aygül that he met?'
- b. Ahmet Aygül-ge [**men sen**-din igiz dep] maxtan-di
Ahmet Aygül-DAT [1sg 2sg-from tall C] brag-PAST.3
'Ahmet bragged that he is taller than Aygül'

(22) **qayil qil-** (persuade, convince)

- a. Ahmet Aygül-ni [*pro* kim-ni kör-**imen** dep] qayil
Ahmet Aygül-ACC [*pro* who-ACC see-IMPERF.1sg C] convince
qil-di?
do-PAST.3
'Who did Ahmet convince Aygül that he should meet?'
- b. Ahmet Aygül-ni [*pro* kim-ni kör-**isen** dep] qayil
Ahmet Aygül-ACC [*pro* who-ACC see-IMPERF.2sg C] convince
qil-di?
do-PAST.3
'Who did Ahmet convince Aygül that she should meet?'

(23) **aghrin-** (complain)

- a. Ahmet Aygül-ge [*pro* kim-ni kör-**dim** dep] aghrin-di?
Ahmet Aygül-DAT [*pro* who-ACC see-PAST.1sg C] complain-PAST.3
'Who did Ahmet complain to Aygül that he met?'
- b. Ahmet Aygül-ge [*pro* kim-ni kör-**ding** dep] aghrin-di?
Ahmet Aygül-DAT [*pro* who-ACC see-PAST.2sg C] complain-PAST.3
'Who did Ahmet complain to Aygül that she met?'

(24) **wede qal-** (promise)

- a. Ahmet Aygül-ge [*pro* kim-ni söy-**imen** dep] wede qil-di?
Ahmet Aygül-DAT [*pro* who-ACC kiss-IMPERF.1sg C] promise do-PAST.3
'Who did Ahmet promise Aygül to kiss?'
- b. Ahmet Aygül-ge [*pro* qaysi imtihan-din öt-**isen** dep]
Ahmet Aygül-DAT [*pro* which test-from pass-IMPERF.2sg C]
wede qil-di?
promise do-PAST.3
'Which test did Ahmet promise Aygül that she would pass?'

Unlike verbs of communication, verbs of believing shift only 1st person indexicals and 2nd person indexicals under these verbs are infelicitous. Notice that with those verbs, finite complement clauses simply cannot contain a shifted 2nd person indexical and there is no alternative acceptable interpretation.

(25) **bil-** (believe, know)

- a. Ahmet [*pro* kim-ni jaxshi kör-**imen** dep] bil-du?
 Ahmet [*pro* who-ACC well see-IMPERF.1sg C] believe-IMPERF.3
 ‘Who does Ahmet believe that he likes?’
- b. *Ahmet [*pro* kim-ni jaxshi kör-**isen** dep] bil-du?
 Ahmet [*pro* who-ACC well see-IMPERF.2sg C] believe-IMPERF.3

(26) **oyla-** (think)

- a. Ahmet [*pro* kim-ni jaxshi kör-**imen** dep] oyla-du?
 Ahmet [*pro* who-ACC well see-IMPERF.1sg C] think-IMPERF.3
 ‘Who does Ahmet think he likes?’
- b. *Ahmet [*pro* kim-ni jaxshi kör-**isen** dep] oyla-du?
 Ahmet [*pro* who-ACC well see-IMPERF.2sg C] think-IMPERF.3

(27) **ansir-** (worry)

- a. Ahmet [*pro* qaysi imitihan-din ötül-ma-**imen** dep] ansir-di?
 Ahmet [*pro* which test-from pass-NEG-IMPERF.1sg C] worry-PAST.3
 ‘Which test does Ahmet worry that he didn’t pass?’
- b. *Ahmet [*pro* qaysi imitihan-din ötül-ma-**isen** dep] ansir-di?
 Ahmet [*pro* which test-from pass-NEG-IMPERF.2sg C] worry-PAST.3

(28) **ümid qil-** (hope)

- a. Ahmet [*pro* kim-ni kör-**imen** dep] ümid qil-du?
 Ahmet [*pro* who-ACC see-IMPERF.1sg C] hope do-IMPERF.3
 ‘Who does Ahmet want to meet?’
- b. *Ahmet [*pro* kim-ni kör-**isen** dep] ümid qil-du?
 Ahmet [*pro* who-ACC see-IMPERF.2sg C] hope do-IMPERF.3

(29) **xeval qil-** (dream about)

- a. Ahmet [*pro* qaysi imtihan-din öt-**tim** dep] xeval qil-di?
 Ahmet [*pro* which test-from pass-PAST.1sg C] dream do-PAST.3
 ‘Which test did Ahmet dream about passing?’
- b. *Ahmet [*pro* qaysi imtihan-din öt-**ting** dep] xeval qil-di?
 Ahmet [*pro* which test-from pass-PAST.2sg C] dream do-PAST.3

Interestingly, verbs of hearing also shift only 1st person indexicals.

(30) **angla-** (hear)

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- a. Ahmet Aygül-din [*pro* qaysi imtihan-din öt-**tim** dep] angla-di?
Ahmet Aygül-from [*pro* which test-from pass-PAST.1sg C] hear-PAST.3
'Which test did Ahmet hear from Aygül that he passed?'
- b. *Ahmet Aygül-din [*pro* qaysi imtihan-din öt-**ting** dep] angla-di?
Ahmet Aygül-from [*pro* which test-from pass-PAST.2sg C] hear-PAST.3
- (31) **oqu-** (read)
- a. Ahmet [*pro* qaysi imtihan-din öt-**tim** dep] oqu-di?
Ahmet [*pro* which test-from pass-PAST.1sg C] read-PAST.3
'Which test did Ahmet hear from Aygül that he passed?'
- b. *Ahmet [*pro* qaysi imtihan-din öt-**ting** dep] oqu-di?
Ahmet [*pro* which test-from pass-PAST.2sg C] read-PAST.3

We claim that the above restrictions on shifted 2nd person pronouns follow from the meanings of attitude verbs. Recall that our meaning for *tell* in (14) quantifies over indices whose first and second coordinates are *de se* and *de te* individuals respectively. We assume the same semantics for other verbs of communication, except that they impose different restriction on the possible world coordinate. As explained in the previous section, this semantics together with the definite description analysis of Uyghur 2nd person indexicals predicts obligatory indexical shifting.

Our semantics also explains the infelicity of shifted 2nd person indexicals under verbs of believing without further ado. That is, in the *de re* construal, a 2nd person indexical denotes the individual in the actual world w_i that the *de se* individual a_j is talking to in w_i . However, verbs of believing describe events or states involving just the agent/experiencer without a person who he or she is talking to. Thus there is no individual satisfying the description, and a presupposition failure ensues. The *de dicto* reading similarly gives rise to a presupposition failure. Likewise, in events describe by verbs of hearing, the *de se* individual is talking to nobody, and shifted 2nd person indexicals under those verbs are predicted to be infelicitous as well.

6 Anand & Nevins on Slave

In this last section, we address one issue of cross-linguistic variation among languages with indexical shifting. It has been observed that languages with indexical shifting differ in whether multiple attitude verbs allow indexical shifting,⁵ and in Amharic, Zazaki, and Matses, unlike in Uyghur, only the verb *say* triggers indexical shifting.⁶ At this moment, we only know of one language, Slave, that allows for

⁵ Another cross-linguistic variation among languages with indexical shifting is optionality of indexical shifting: Indexical shifting is optional in Amharic and Zazaki, while it is obligatory in Matses, and as we saw in the present paper, in Uyghur finite complement clauses. Slave is complicated in that it is obligatory only under certain verbs. We have nothing insightful to say about this.

⁶ In Navajo, there seems to be an inter-speaker variation (Anand 2006:75).

multiple verbs to license indexical shifting. In the rest of this section, we compare Slave and Uyghur and discuss their differences. The Slave data presented in this section are taken from Anand and Nevins (2004) and Anand (2006), who in turn took them from Rice (1986).

Slave imposes restrictions on shifted 1st and 2nd person indexicals that are very similar to Uyghur we observed in the previous section. Specifically, both 1st and 2nd person indexicals shift under *édedi* (tell, ask), while only 1st person indexicals do under *hadi* (utter; intransitive), *yenjwe* (want, think), and *hudeli* (want, think).

- (32) a. [segha ráwqđí] séđđi yjlé
 [1sg-for 2sg-will-buy] 2sg-tell-1sg PAST
 ‘You told me to buy it for you’
- b. Simon [rásereyineht’u] hadi
 Simon [2sg-hit-1sg] 3sg-say
 ‘Simon said that you hit {him, *me}’
- c. sú [leshuyie k’eguhw’e] yerinewe
 Q [spoon 1sg-will-lick] 2sg-want
 ‘Do you want to lick the spoon?’
- d. denexare [wqję] yenjwe
 sister [2sg-will-sing] 3sg-want
 ‘Sister wants you to sing’
- e. John [beya ráwozje] hudeli
 John [1sg-son 3sg-will-hunt] 3sg-want-4sg
 ‘John wants his/my son to go hunting’

Anand and Nevins (2004) and Anand (2006) account for the Slave fact by postulating three kinds of monsters in (33), assuming different attitude verbs select for different monsters. In their analysis, context indices are richer than ours, and the difference between the first two monsters are not directly relevant for our purposes. Also notice that in their semantics the object language does not contain indices, and hence the interpretation function is relativized to two indices *c* and *i*.

- (33) a. $\llbracket \text{OP}_{\forall} \phi \rrbracket_g^{c,i} = \llbracket \phi \rrbracket_g^{i,i}$
 b. $\llbracket \text{OP}_{\text{per}} \phi \rrbracket_g^{c,i} = \llbracket \phi \rrbracket_g^{\langle a_i, h_i, l_c, t_c, w_c, \dots \rangle, i}$
 c. $\llbracket \text{OP}_{\text{auth}} \phi \rrbracket_g^{c,i} = \llbracket \phi \rrbracket_g^{\langle a_i, h_c, l_c, t_c, w_c, \dots \rangle, i}$

They maintain that verbs that only shift 1st person indexicals select for the third monster, which only shifts the first individual coordinate of the context index, leaving the other coordinates intact.

Although this account can basically describe the data, however, it has a conceptual weakness, on which Anand (2006:110) himself remarks as follows.

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“[I]t seems rather natural that ‘tell’ would shift 2nd person while ‘want’ would not; indeed, what would such a shift mean, given that it is unclear how the ADDR coordinate would even be filled in such cases.”

Also, in their analysis, it is in principle possible to define a monster that only shifts the second individual coordinate, but such a shifting pattern has not been found.

Under our analysis, by contrast, only verbs involving an attitude holder and her addressee are predicted to shift both 1st and 2nd person indexicals. Also, it is expected that no verbs shift only 2nd person indexicals because no attitude verbs lack an attitude holder. Thus, our analysis is more constrained than Anand and Nevins’ and better on conceptual grounds.

Lastly, we discuss an intriguing difference between Uyghur and Slave, namely, in Slave, 2nd person indexicals under verbs that do not shift them are still felicitous, and interpreted as the hearer of the current context of utterance as shown in (32b), unlike in Uyghur where they are infelicitous. This can be given a straightforward explanation in our analysis by postulating a variation in the interpretation of 2nd person indexicals. Recall that we proposed that Uyghur 2nd person indexicals are in fact disguised definite descriptions containing a 1st person indexical. We conjecture that Slave 2nd person indexicals are not definite descriptions but directly denote the second individual coordinate h_c of the context index c . Furthermore, we propose attitude verbs such as *think* and *want* just inherit the second individual coordinate from the higher index (cf. the meaning of non-attitude modals in (12)).

- (34) For any ϕ of type $\langle s, t \rangle$,
 $\llbracket \text{think } \phi \rrbracket_g^c = \lambda x. \lambda i. \forall j \in \text{DOX}_{x,i} \llbracket \phi \rrbracket_g^c(j) = 1$
 where $j \in \text{DOX}_{x,i}$ iff
- a. w_j is compatible with what x believes in w_i ;
 - b. a_j is the individual in w_j that x identifies in w_i as himself;
 - c. $h_j = h_i$
- (35) For any ϕ of type $\langle s, t \rangle$
 $\llbracket \text{hear } \phi \rrbracket_g^c = \lambda x. \lambda y. \lambda i \forall j \in \text{HEAR}_{x,y,i} \llbracket \phi \rrbracket_g^c(j) = 1$
 where $j \in \text{HEAR}_{x,y,i}$ iff
- a. w_j is compatible with what x hears from y in w_i ;
 - b. a_j is the individual in w_j that x identifies in w_i as himself;
 - c. $h_j = h_i$

This analysis explains why 2nd person indexicals in Slave under those verbs can still refer to the actual hearer.

It should be pointed out here that this semantic variation in 2nd person indexicals is independently necessary to account for the difference between Uyghur and languages such as Slave and Zazaki in which shifted 2nd person indexicals are obligatorily *de te* (Anand 2006). It is predicted therefore that shifted 2nd person index-

icals in Slave are obligatorily *de te* unlike in Uyghur, but the lack of data prevents us from testing this prediction at this moment. This is left for future research.

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