# Morphological effects on indexical shift in Uyghur[*]

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**Abstract**

Novel fieldwork on Uyghur shows indexical shift to be sensitive to *morphological form*. Isolated reduced indexicals always optionally shift (despite various manipulations to structural position). This is surprising for an operator-based theory, and calls for indexical-by-indexical specifications of shifting *à la* pronoun-based theories. However, this optionality disappears when full and reduced indexicals co-occur, suggesting that shiftability is determined by morphological makeup instead. Current theories of indexical shift are not form-sensitive and thus inadequate. I propose that a hierarchy of pronominal forms differentiating reduced from full indexicals, and stipulate that reduced indexicals can be uninterpretable (and thus invisible to an operator), but full ones cannot.

## 1  Theories of (Uyghur) indexical shift

Indexical shift is the phenomenon where the reference of an embedded indexical may shift *away* from its reference in the matrix context of utterance.

English is a non-indexical shift language. *I* can only refer to the speaker of the matrix utterance, never to the speaker of the reported utterance (1a). Shifting is only licensed in quotations (1b). In contrast, Uyghur (Turkic) exhibits indexical shift in finite clausal complements, where nominative-marked subjects shift. *mën* 'I' can only refer to the speaker of the reported utterance, Ahmet; not to the speaker of the matrix utterance (1).

| (1) | a. | My father said **I** left. | (=speaker, ≠speaker's father) |
| | b. | My father said, "**I** left". | (≠speaker, =speaker's father) |

| (2) | Ahmet [**mën** | kät-tim] | di-di. |
| | Ahmet [1SG.NOM leave-PST.1SG] say-3PST |
| | 'Ahmet said 1SG (≠speaker, =Ahmet) left.' | | (Sudo & Shklovsky 2014: 383) |

As the reference of indexicals was traditionally thought to be fixed to only the utterance context (e.g. Kaplan 1977), formalizing the mechanics of indexical shift has been greatly interesting for generative semantics. Current theories are broadly divided between two families, which are *operator*- or *pronoun-based*.

*Operator-based theories* propose a tight link between an indexical's height relative to an operator ⋒ and its shiftability (e.g. Anand & Nevins 2004, Anand 2006, Sudo & Shklovsky 2014, Deal 2020). A covert semantic operator ⋒ overwrites components of the context $c$ with components from the index $i$, essentially overwriting $c$ with $i$ (3). This erases any information of the matrix speech act, so that all indexicals are interpreted relative to the reported speech act as a result.

(3)    $[[ \text{⋒XP} ]]^{c,i} = [[ \text{XP} ]]^{i,i}$

👻 is an independent lexical item, selectively introduced into the structure by attitude predicates like *say*. Whether 👻 is present is a matter of parametric variation. Not all attitude verbs introduce 👻 into their complement, and not all languages have 👻 in their lexicon. Since shiftability is tightly linked with height, an important prediction of such theories is that when 👻 is present, all indexicals within a clause must be evaluated with respect to the *same* context. This is known as *Shift Together* (Anand 2006: 100). The meanings of indexicals themselves are cross-linguistically uniform, since shifting only occurs within the scope of an independent context-shifting operator 👻 . The burden of shifting lies upon the position of 👻 .

A competing theory is *pronoun-based* (Schlenker 1999, 2003), which denies any link between an indexical's height and its shiftability. Rather, all attitude verbs are monstrous operators quantifying over contexts (4).

(4)     $[[ \text{ say } _{<\alpha',\beta',\gamma'>} c_i\phi ]]^{c,s} = 1$, iff for all $c'$ compatible with the claim made by individual $[[ \alpha ]]^{c,s}$ at time $[[ \beta ]]^{c,s}$ in world $[[ \gamma ]]^{c,s} : [[ \phi ]]^{c,s[c_i \to c']} = 1$

Each indexical carries its own lexical presupposition, whether they are bound by regular context pronouns $c_i$ or a distinguished context pronoun $c^*$. $c_i$ picks out reported contexts, resulting in shifted readings; $c^*$ picks out the matrix utterance context, resulting in unshifted readings. Shift is defined on an indexical-by-indexical basis. Ambiguity is expected—indexicals have the choice to bind either $c_i$ or $c^*$. The burden of shifting lies upon each indexical.

Previous work on Uyghur indexical shift has favored the operator-based theory (Sudo & Shklovsky (2014, henceforth S&S). Strikingly, Uyghur exhibits *partial indexical shift* which is sensitive to case of the embedded subject. When the subject of a finite embedded clause is *nominative* (5a), it must be shifted. Changing only the case of the embedded subject, so that it is *accusative* (5b), the indexical must be unshifted.

(5)     a.    Ahmet [**mën**      kät-tim]      di-di.
              Ahmet [**1sg.nom** leave-1SG.PST] say-3PST
              'Ahmet said I ($\neq$speaker, =Ahmet) left.'
        b.    Ahmet [**mëni**   kät-ti]     di-di.
              Ahmet [**1sg.acc** leave-3PST] say-3PST
              'Ahmet said I (=speaker, $\neq$Ahmet) left.'        (S&S 2014:383, 386)

S&S sandwich 👻 between embedded accusative and nominative subjects, as in (6). This configuration is responsible for partial indexical shift in Uyghur, and is supported by other diagnostics (involving long-distance *wh-* and NPI dependencies) showing that accusative embedded subjects are structurally higher than nominative ones. Notably, *Shift Together* falls out for free since 👻 is fixed.

(6)
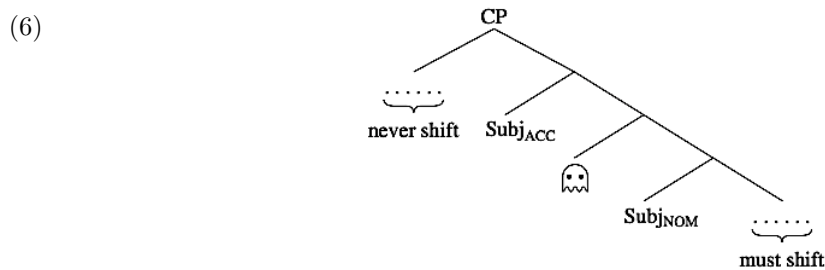


Under a pronoun-based theory, the Uyghur partial indexical shift pattern are not so easy to capture. Since (6) applies to all accusative or nominative embedded subjects, regardless of

whether they are indexicals, it is hard to fix an individual indexical's shifting in a way that co-varies systematically with case. Additionally, *Shift Together* must be independently stipulated.

In what follows, I present novel data from Uyghur which additionally considers the bound 1SG indexical *-im* (along with the previously investigated full indexicals *mën/mëni*). Bound indexicals in isolation are recalcitrantly ambiguous, *i.e.* exhibiting optional indexical shift, despite various manipulations to structural position (§2.1). Yet, this persistent ambiguity disappears with manipulations to morphological form (§2.2). Neither the operator- nor pronoun-based theory can capture both puzzles, since neither considers the morphological form of an indexical, which is the crucial factor here. I capture Uyghur's form-sensitive shifting by positing a hierarchy of pronominal forms (e.g. Patel-Grosz & Grosz 2017), where reduced indexicals can be uninterpretable, but full ones cannot (§3), making a connection to similar facts in Mishar Tatar and Austrian Bavarian.

# 2 Form-sensitive shifting in Uyghur

## 2.1 Manipulating structural positions

The bound indexical informing this puzzle is *-im*, the 1SG possessive suffix, where it is *ambiguous* between shifted and unshifted readings (7a). Ambiguity persists even after the embedded subject is accusative (7b). This is surprising for S&S' analysis in (6), as the case of the embedded subject directly affects shiftability, contradicting the paradigm of partial indexical shift.

(7)  a.  Ahmet [Dilyar-∅     imtihan-**im**-din     öt-ti]     di-di.
         Ahmet Dilyar-NOM test-1SG.POSS-ABL pass-3PST say-3PST
         'Ahmet said Dilyar passed 1SG's (**=speaker, =Ahmet**) test.'                    (8:7)

     b.  Ahmet [Dilyar-ni    imtihan-**im**-din     öt-ti]     di-di.
         Ahmet Dilyar-ACC test-1SG.POSS-ABL pass-3PST say-3PST
         'Ahmet said Dilyar passed 1SG's (**=speaker, =Ahmet**) test.'                    (8:5)

The puzzle deepens as ambiguity persists after varied manipulations to the bound indexical's position. Recalling (6), an ACC embedded subject earmarks a position above 𝕔 (so indexicals above it must shift), and a NOM embedded subject a position below 𝕔 (so indexicals below it must not shift).

The first structural manipulation is to scramble an indexical above the 𝕔 operator, as (6) predicts that scrambling an indexical above ACC embedded subjects should force an unshifted reading. (8) exhibits scrambling of the indexical-containing phrase *periqlik oqughüch-im-din* 'different student of 1SG' above the accusative subject *herbir oqutqüchi-ni* 'every teacher-ACC'. Yet, the ambiguity of *-im* persists (albeit preferring an unshifted reading).

(8)  Adil [periqlik oqughüch-**im**-din     herbir oqutqüchi-ni päxirlini-du]  di-di.
     Adil different student-1SG.POSS-ABL every  teacher-ACC proud-3NPST say-3PST
     'A said every teacher is proud of a diff. student of 1SG's (=speaker, =?Tursun).' (7:31)

The second structural manipulation makes use of Principle A reconstruction. Consider a scenario where Tursun draws a picture of himself on Adil's desk. (9) displays scrambling of the phrase containing both the indexical *üm* and the anaphor *öz* (contained in *üstel-üm-diki öz-ning resim-i-ge* 'a picture of oneself on 1SG's desk'.)

(9)  Adil [[üstel-**üm**-diki     öz-ning resim-i-ge]     Tursun-∅     siz-di]     di-di.
     Adil desk-1SG.POSS-REL self-GEN picture-3POSS-LOC Tursun-NOM draw-3PST say-3PST

'Adil said Tursun drew a picture of himself on 1SG's (=speaker, =Adil) desk.'    (7:13)

According to Principle A, for the reflexive *öz-* to be bound by its antecedent *Tursun*, *öz-* must be lower than *Tursun* at LF. However, since (9) is grammatical, Principle A reconstruction has occurred. The anaphor *öz* is bound in its LF position, below *Tursun-∅* and hence below ⌂ . Since the indexical is contained within the same phrase as the anaphor, it should also be interpreted at its lower LF position, yielding only a shifted reading. Yet, ambiguity is possible in (9). The failure of Principle A considerations to "un-shift" the indexical is also seen with another anaphor *birbir*, 'each other' (10).

(10)    Adil [[sinip-**im**-diki      birbiri-ning     yaxshi köridighan  oqughüchi-si-gha]
        Adil class-1SG.POSS-REL each.other-GEN good   see.PSTPART student-3POSS-DAT
        Tursun we Norvin-∅      xet    ewet-ti]   di-di.
        Tursun and Norvin-NOM letter send-3PST say-3PST
        'Adil told me that Tursun and Norvin sent a letter to each other's favorite students in
        1SG's (=speaker, =Adil) class.'                                          (7:7)

The third structural manipulation is to make use of pragmatic reconstruction. Reconstruction can also be forced by pragmatic considerations (Fox 1995). Consider (11), which contains the ∀ phrase *hazir herbir* 'every girl' and the indexical-containing ∃ phrase *üch dost-üm bilen* 'with three of 1SG's friends'. A surface scope interpretation is pragmatically forced because mahjong is strictly a four-player game.

(11)    hazir herbir qiz üch   dost-**üm**      bilen majang  oyna-wati-du.
        now   every  girl three friend-1SG.POSS with  mahjong play-PRG-3NPST
        'Every girl is playing mahjong with three of my friends now.'             (5:7a)

Now, we embed (11) under 'say', creating the context for indexical shift, and also disrupt the pragmatically felicitous surface scope by scrambling. The result is (12):

(12)    Adil [[üch dost-**üm**        bilen] herbir qiz-**ni**   majang oyna-wati-du]   di-di.
        Adil three friend-1SG.POSS with  every  girl-ACC mahjong play-PRG-3NPST say-3PST
        'Adil said that every girl is playing mahjong with three of 1SG's (==speaker, =Adil)
        friends.'                                                            (5:8d, 7:23)

In addition to persistant ambiguity, the pragmatically plausible reading (∀ > ∃) is still the only one which holds after scrambling. This shows that the phrase containing the existential—and the indexical—is interpreted below the universal. Since the universal is an ACC embedded subject marking the position above ⌂ , we see that scrambling above ⌂ did not destroy ambiguity of the bound indexical *üm*.

The examples above were replicated across different predicates, scenarios, and sessions, so such ambiguity is neither example-specific nor session-specific. None of the three structural manipulations did not make ambiguity disappear, suggesting that shiftability and position are less tightly linked than operator-based theories assume. However, now we will see a factor which *does* make ambiguity disappear: co-occurrence with a full indexical.

## 2.2   Manipulating morphological form

Uyghur possession can be expressed via a fuller construction, where the possessive suffix *-im* is accompanied by a full genitive pronoun *mening*. Strikingly, addition of the full pronoun *mëning*

destroys the ambiguity that was so recalcitrant before. (13) shows this with a nominative subject; (14) the same with an accusative subject. This shows a lack of co-variance with case.

(13)    a.    Ahmet [Dilyar-∅    imtihan-**im**-din    öt-ti]    di-di.
                Ahmet Dilyar-NOM test-1SG.POSS-ABL pass-3PST say-3PST
                'Ahmet said that Dilyar passed 1SG's (=speaker, =Ahmet) test.'        (8:7)
    b.    Ahmet [Dilyar-∅    **mëning** imtihan-**im**-din    öt-ti]    di-di.
                Ahmet Dilyar-NOM 1SG.GEN test-1SG.POSS-ABL pass-3PST say-3PST
                'Ahmet said that Dilyar passed 1SG's (≠speaker, =Ahmet) test.'        (8:8)

(14)    a.    Ahmet [Dilyar-ni    imtihan-**im**-din    öt-ti]    di-di.
                Ahmet Dilyar-ACC test-1SG.POSS-ABL pass-3PST say-3PST
                'Ahmet said that Dilyar passed 1SG's (=speaker, =Ahmet) test.'        (8:5)
    b.    Ahmet [Dilyar-ni    **mëning** imtihan-**im**-din    öt-ti]    di-di.
                Ahmet Dilyar-ACC 1SG.GEN test-1SG.POSS-ABL pass-3PST say-3PST
                'Adil said that Dilyar passed 1SG's (=speaker, ≠Ahmet) test.'        (8:6)

Yet, there *is* a correlation between case of the embedded subject and shiftability of indexicals underneath it, as per (6): indexicals under a NOM subject shift; all indexicals under a ACC one do not, swinging favor back to operator-based theories. This is especially because shifting coheres to *Shift Together* (15):

(15)    a.    Tursun [**mën**    oqughüchi-**im**-din    paxirlini-men] di-di.
                Tursun 1SG.NOM student-1SG.POSS-ABL proud.of-1NPST say-3PST
                'Tursun said that 1SG (≠speaker, =Tursun) am proud of 1SG's (≠speaker, =Tursun) student.'        (8:13)
    b.    Tursun [**mëni**    oqughüchi-**im**-din    paxirlini-du]    di-di.
                Tursun 1SG.ACC student-1SG.POSS-ABL proud.of-3NPST say-3PST
                'Tursun said that 1SG (=speaker, ≠Tursun) am proud of 1SG's (=speaker, ≠Tursun) student.'        (8:14)

# 3    A proposal for form-sensitive shifting

Neither the operator- nor pronoun-based theory explains the Uyghur facts. The operator-based theory, tightly linking position and shiftability, cannot explain why manipulation to structural position never destroys ambiguity, but manipulation to morphological form does. The pronoun-based theory, unlinking position from shiftability, cannot explain why the destruction of ambiguity is both *Shift Together*-adherent and S&S-adherent. Hence, I formalize a distinction between full vs. bound indexicals—within an operator-based theory—to capture the facts.

I adopt a hierarchy of pronominal forms (in the spirit of Patel-Grosz & Grosz (2017) and Cardinaletti & Starke (1999)), where reduced pronouns are weaker than full personal pronouns (with the strongest being a demonstrative pronoun). Here, "strength" correlates with the amount of functional material projected, as in (16)—$\phi$ encodes the purely formal phi-features, and $\Sigma$ encodes features that forms pronouns into independent prosodic words. Another asymmetry: it is possible for reduced pronouns to be *uninterpretable* so that it lacks semantically interpreted material, but not possible for full pronouns, as $\Sigma$ is not vacuous (presumably containing features pertaining to spell-out).

Crucially for our purposes, it is the uninterpretable flavor that is present in Uyghur reduced indexicals, rendering it invisible to semantic operators like ⋔ explaining their recalcitrant am-

biguity in isolation (§2.1). Furthermore, recall that reduced indexicals' ambiguity disappears when co-occurring with a full one, in a fashion that coheres to *Shift Together* and Sudo & Shklovsky's analysis in (6) (§2.2). I stipulate that full pronouns must always be interpreted, so that ⌢ must apply when present. Under an interpreted full pronoun, I further stipulate that reduced pronouns must be interpreted also. This could be due to an economy constraint where interpretability between two clausemate pronouns cannot differ; this correctly predicts the Uyghur pattern where the reduced pronoun "inherits" the shiftability of the full one.

(16)   Reduced pronoun              Reduced pronoun (uninterpreted)      Full personal pronoun

$$\phi P \qquad\qquad \phi P \qquad\qquad \Sigma P$$
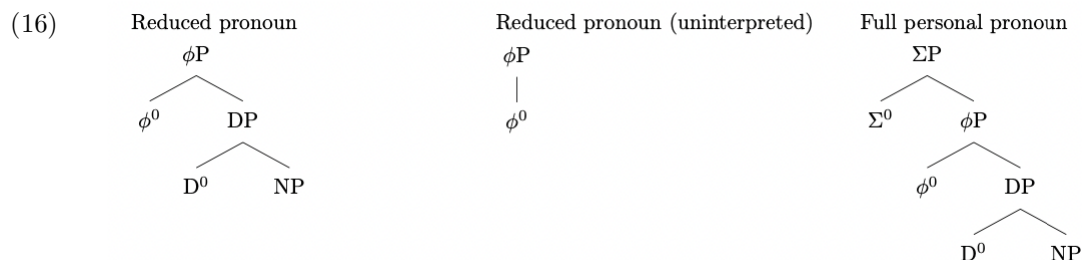
Such a proposal would not be specific to the facts here, being further motivated by other links between the morphological makeup and interpretation. In Mishar Tatar (Turkic, Podobryeav 2014), covert vs. overt pronouns show an asymmetry in shiftability very similar to the Uyghur asymmetry here. In isolation, covert indexicals are ambiguous (17a), but this ambiguity disappears when it co-occurs with an overt one (17b).

(17)  a.  Alsu [**pro**     kaja   kit-te-m        diep] at'-t?
          Alsu 1SG.NOM where go.out-PST-1SG C     say-PST
          'Which place did Alsu say 1SG$_{\text{pro}}$ (=speaker, =Alsu) went?'
      b.  Alsu [**pro**     ber kajcan da  **mija**    bag-mas-mvn      diep] bel-ä.
          Alsu 1SG.NOM one when   npcl 1SG.DAT look.at-NEG-1SG C       know-ST.IPFV
          'Alsu knows 1SG$_{\text{pro}}$ (≠speaker, =Alsu) would never look at 1SG (=speaker, ≠Alsu).'
          (Podobryeav 2014: 84, 86)

In Austrian Bavarian (Indo-European) dream reports, clitic vs. full pronouns show an asymmetry in interpretation: the clitic prefers to be read *de se* (18a), and the full pronoun *de re* (18b). The weakness of pronominal form correlates with being read *de se*, which is arguably an unmarked reading according to e.g. Pearson & Dery (2014). (Note that the Mishar covert pronoun in (17b), being shifted, is obligatorily read *de se* like the Bavarian clitic in (18a). This allows dream reports to make a connection to indexical shift.)

(18)  a.  I håb  traamt,  das 'e/i      mei Nåchba  bin und [das**'e**      reich bin].
          I have dreamed that 1SG$_{\text{cl/full}}$ my neighbor am and that=**1SG$_{\text{cl}}$** rich   am
          'I dreamed that I am my neighbor and that 1SG$_{\text{cl}}$ (=my neighbor) am rich.'
      b.  I håb  traamt,  das 'e/i      mei Nåchba  bin und [das **i**       reich bin].
          I have dreamed that 1SG$_{\text{cl/full}}$ my neighbor am and that **1SG$_{\text{full}}$** rich   am
          'I dreamed that I am my neighbor and that 1SG$_{\text{full}}$ (=actual speaker) am rich.'
          (Patel-Grosz 2020: 563)

Of course, regardless of evidence from other languages, the stipulations made in this paper should also be supported by more Uyghur data: extending the data to cover 2nd person indexicals, for example, and testing if other non-possessive bound indexicals also display ambiguity. However, we hope to have evinced the need for a form-sensitive theory of indexical shift.

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