Article

Disentangling words, clitics, and suffixes in Uyghur

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Abstract: Turkic languages have been shown to form words using a wide range of word formation strategies: suffixation, cliticization, and auxiliaries (Kornfilt, 1996; Gribanova 2020). The present paper offers a detailed description of word formation in Uyghur, compares the patterns in Uyghur with the prior literature on Turkic, offers explicit diagnostics for suffixes and clitics, and proposes a morpho-syntactic analysis for each strategy.

Keywords: head movement, word formation, clitic, suffix, auxiliary, Uyghur

1. Introduction

The relationship between the syntactic component and the ways in which morphemes are bundled into words at PF is a longstanding puzzle. The Mirror Principle (Baker 1985), which proposes that morphological derivations must directly reflect syntactic derivations (and vice versa), has played a prominent role with respect to the ways in which the literature relates morpheme orders and syntactic derivations. However, determining whether a given morpheme will be realized as a suffix, clitic, or an auxiliary has remained a serious challenge (Anderson 2005; Zwicky 1985). We adopt the following definitions in this paper: suffixes and clitics form a prosodic word with the material on their left, while auxiliaries form independent prosodic words. Clitics and suffixes are differentiated in that suffixes form tighter units with the material they combined with than clitics, both syntactically and phonologically.

Turkic languages, in particular, exemplify these complexities (Fenger 2020; Gribanova 2020; Kornfilt 1996). In Turkish (Southwestern Turkic), for instance, the conditional morpheme can be realized as a suffix when it combines with a verbal element (1a), in which case it harmonizes with the root and bears word level stress. In complex tenses involving participials, word level stress shifts to the participial, in which case the conditional can either be realized as a clitic (1b) or with the auxiliary *i-* (1c).

(1)   a.   git-sé-m
       go-COND-1SG
       'if I go' (adapted from Kornfilt 1996, pp. 96)

      b.   gid-ecék-se-m
       go-FUT-COND-1SG
       'if I will go' (adapted from Kornfilt 1996, pp. 102)

      c.   gid-ecék i-se-m
       go-FUT   COP-COND-1SG
       'if I will go' (adapted from Kornfilt 1996, pp. 102)

Kornfilt argues that genuine suffixes (1a) are inflections of the main verb, while the conditional + AGR in (1b) and (1c) are treated as inflections of the copula, which happens to be null in the former case. Gribanova (2020) discusses similar data in Uzbek (Southeastern

Turkic), proposing that the equivalent data in Uzbek are derived via three distinct morphological processes. Suffixation is accomplished via roll-up head movement, cliticization results from Local Dislocation, and the Uzbek equivalent to the copula *i-* results from E-SUPPORT, a process akin to *do-support* in English. The present paper builds upon these proposals based on novel data from Uyghur (Southeastern Turkic).

The first contribution of this paper is that it provides a detailed case study of the morphological complexity of the Uyghur verbal and tense/evidentiality domains. This is of value to both the Uyghur and Turkic literatures. From a theoretical perspective, we build upon the model of Uzbek in Gribanova (2020). We propose a cyclic analysis of word formation in Uyghur, where suffixation is accomplished in the narrow syntax via roll-up head movement. Auxiliaries are shown to be merged in the narrow syntax and similarly involve head movement, just as regular verbs do. Finally, we show that cliticization results from Local Dislocation and that inversion is possible only between two heads that combine with the verbal complex via Local Dislocation. We also offer morpho-syntactic and morphophonological diagnostics for Uyghur that make evaluating the predictions of this proposal concrete. This expands the discussion of the aforementioned Turkic languages, providing evidence for analyses that treat auxiliaries as elements that are merged into the structure in the narrow syntax (Arregi and Pietraszko ms; Cowper 2010; Déchaine 1995; Pietraszko 2017). We show that it is necessary to differentiate between heads that are rolled up into complex heads via head movement (Subwords) and those that are maximal heads or M-words (Embick and Noyer 2001). Finally, we offer the beginnings of a proposal that inversion under Local Dislocation (entirely a PF operation) is optimizing, similar to Haugen (2006), where inversion is not free, but instead should gain something.

The structure of this paper is as follows: Section 2 provides an overview of the empirical picture and analyses proposed for Turkish and Uzbek. Section 3 introduces the formal tools and diagnostics we use to account for the differences between suffixation, cliticization, and auxiliaries. We also introduce the core data in Uyghur. In Section 4, we extend our analysis to more complex constructions, highlighting some the strengths and weaknesses of our proposal. Section 5 offers discussion of the implications of our proposal and then we conclude in Section 6.

2. Background on related languages

This paper builds upon discussions of similar phenomena in Turkish (Kornfilt 1996) and Uzbek (Gribanova 2020). In this section, we summarize the empirical facts and analyses proposed for both languages to set the stage for discussion of Uyghur. Both languages, like Uyghur, have distinct word-formation strategies that give rise to differences in morpheme order and phonological properties. Despite the fact that this basic contrast exists in Turkish, Uzbek, and Uyghur, each language provides different insights into these word-formation strategies.

2.1. Turkish

Kornfilt (1996) discusses two different agreement paradigms in Turkish that are conditioned by tense/aspect/mood. Kornfilt argues that there is one set of genuine verbal forms that are used in cases like the definite past and the conditional. An example of the former is provided in (2).

(2)   a.   git-ti-**m** "leave-PST-1SG" (adapted from Kornfilt 1996, pp. 96)

      b.   git-ti-**n** "leave-PST-2SG"

      c.   git-ti-∅ "leave-PST-3SG"

      d.   git-ti-**k** "leave-PST-1PL"

      e.   git-ti-**niz** "leave-PST-2PL"

      f.   git-ti-**ler** "leave-PST-3PL"

The second paradigm involves what Kornfilt calls "fake" tenses, which contain an overt participle and agreement. An example is shown in (3). This agreement paradigm

differs from the definite past, particularly in the 1PL, 2SG, and 2PL. Kornfilt argues that
the constructions in (3) contain a covert copula that is responsible for introducing this
agreement paradigm, unlike the genuine verbal suffixes in (2). In this way, the agreement
markers are actually inflections of the copula, not the verb.

(3)   a. git-miş-∅-**im** "leave-PST.REP-COP.PRES-1SG" (adapted from Kornfilt 1996, pp. 97)
      b. git-miş-∅-**sin** "leave-PST.REP-COP.PRES-2SG"
      c. git-miş-∅-∅ "leave-PST.REP-COP.PRES-3SG"
      d. git-miş-∅-**iz** "leave-PST.REP-COP.PRES-1PL"
      e. git-miş-∅-**siniz** "leave-PST.REP-COP.PRES-2PL"
      f. git-miş-∅-**ler** "leave-PST.REP-COP.PRES-3PL"

Although the copula is covert in the cases above, it is realized in certain contexts. For
instance, in underived adjectives, such as *hastá* "sick", the copula is overtly realized as *y* (4).

(4)   a. hastá-y-miş-ım "sick-COP-PST.REP-1SG" (adapted from Kornfilt 1996, pp. 98-99)
      b. hastá-y-miş-sın "sick-COP-PST.REP-2SG"
      c. hastá-y-miş-∅ "sick-COP-PST.REP-3"
      d. hastá-y-miş-ız "sick-COP-PST.REP-1PL"
      e. hastá-y-miş-sınız "sick-COP-PST.REP-2SG"
      f. hastá-y-miş-lar "sick-COP-PST.REP-3SG"

In the contexts where *y* can be used, the copula can also be realized as *i* at the beginning
of a new prosodic word (5). Kornfilt refers to the realization as *y* as the *weak form* of the
copula, and to *i* as the *strong form*.

(5)   a. hastá i-miş-ım "sick-COP-PST.REP-1SG" (adapted from Kornfilt 1996, pp. 100)
      b. hastá i–miş-sın "sick-COP-PST.REP-2SG"
      c. hastá i–miş-∅ "sick-COP-PST.REP-3"
      d. hastá i–miş-ız "sick-COP-PST.REP-1PL"
      e. hastá i–miş-sınız "sick-COP-PST.REP-2SG"
      f. hastá i–miş-lar "sick-COP-PST.REP-3SG"

These data show that the same agreement paradigm is applied to the copula in both
weak and strong forms, as well as verb + participle forms. Kornfilt thus suggests that
there is a dependency between particular heads (verbal vs. copular) and the realization of
agreement. This same general contrast arises in Uzbek and Uyghur as well, with certain
caveats that we return to.

In addition to the correlation between heads and agreement paradigms, there are other
pieces of evidence for making a split between genuine verbal forms and copular forms.
These include different realizations of negation and different positions of the Q-particle.

First, verbal negation involves the suffix *-me-*, which merges with the verb root, as in
(6a). In contexts where Kornfilt argues that a copula is present, the negation is realized as
değil-, which is an independent prosodic word that hosts a participle and agreement, as in
(6b).

(6)   a. git-me-di-m
          leave-NEG-PST-1SG

          "I didn't leave." (Kornfilt 1996, pp. 104, (19a))

      b. gid-ecek   değil-miş-im
          leave-FUT NEG-PST.REP-1SG

          "It is said that I will not go." (Kornfilt 1996, pp. 105, (21))

The Q-particle *mi* is also realized differently when it occurs with genuine verbs (7a) vs. copular forms (7b). In the former case, the Q-particle occurs sentence-finally after agreement. In the latter, it intervenes between the participle and agreement.

(7) a. git-{*mi}-ti-niz-{mi}?
go-NEG-PST-2SG-Q
"Did you go?" (Adapted from Kornfilt 1996, pp. 106)

b. gid-ecek-{mi}-siniz-{*mi}?
leave-FUT-Q-2SG-Q
"Will you go?" (Adapted from Kornfilt 1996, pp. 106)

Yu and Good (2000) present a diachronic argument for a similar analysis, suggesting that genuine verbal forms take true suffixes, while the copular forms take enclitics. We will adopt precisely this division in our discussion of Uyghur in the next section.

2.2. Uzbek

We present a more detailed description of Uzbek here due to it being the most closely related language to Uyghur. Gribanova (2020) presents an analysis of data in Uzbek similar to the Turkish data presented in the previous section. Her analysis builds on Kornfilt (1996), focusing on some of the idiosyncratic properties of Uzbek. The biggest difference between these studies is the way that relationship between affix type and word formation strategy is analyzed.

(8) *Verbal Predicates*

a. Yoz-a-siz.
write-PRS-2
"You write." (Gribanova 2020, pp. 8, (7a))

b. Yoz-d-ingiz.
write-PST-2
"You wrote." (Gribanova 2020, pp. 8, (7b))

Uzbek has a similar distinction in agreement paradigms to Turkish, as shown in (8a) and (8b). While Kornfilt accounts for the differences in Turkish on the basis of copular vs. non-copular constructions, suggesting that verbal constructions like (8a) involve a null copula that is inflected for TAM and agreement, Gribanova instead argues instead that the verbal constructions in (8a) and (8b) should receive the same morpho-syntactic analysis: the distinctions between the two correspond to idiosyncractic realizations of different morphological feature bundles, rather than any morpho-syntactic difference. Thus while Gribanova follows Kornfilt in assuming an important distinction between copular and non-copular forms, she does not treat the different verbal agreement paradigms as a diagnostic for the presence of the copula. In other words, the differences in how agreement is realized in (8a) and (8b) are treated as irrelevant to the particular problems that the paper sets out to solve.

In addition to agreement, the realization of negation is similarly sensitive to verbal vs. non-verbal constructions. Negation surfaces as *-ma-* when it attaches with a verbal predicate (9) and *-mas* for non-verbal predicates (10).

(9) a. Yoz-ma-y-man.
write-NEG-PRS-1SG
"I don't write."
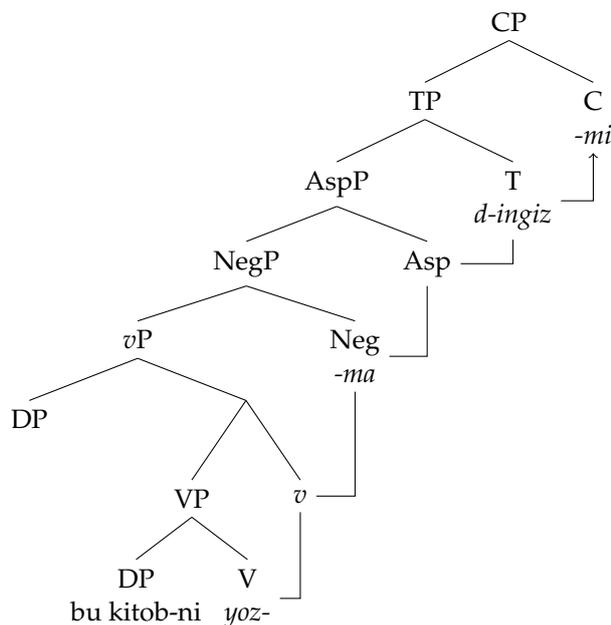
b. Yoz-ma-d-im.
write-NEG-PST-1SG
"I didn't write."

    c.   * Yoz-ma(s) e-d-im.   **169**
        write-NEG E-PST-1SG

        Intended: "I didn't write."   **170**

   (Gribanova 2020, pp. 10, (15a-c))   **171**

(10) a.   Talaba-mas-man.   **172**
        student-NEG-1SG

        "I'm not a student."   **173**

    b.   * Talaba-ma(s)-d-im.   **174**
        student-NEG-PST-1SG

        Intended: "I was not a student."   **175**

    c.   Talaba-mas   e-d-im.   **176**
        student-NEG E-PST-1SG

        "I was not a student."   **177**

   (Gribanova 2020, pp. 11, (16a-c))   **178**

Because of these observations, Gribanova assumes that the division between verbal and   **179**
non-verbal predicates is responsible for allomorph selection.   **180**

2.2.1. Verbal predicates and head movement   **181**

    The structural analysis provided by Gribanova for verbal forms like (8a) and (8b) is   **182**
provided in (11a). These suffixes, akin to Kornfilt's genuine verbal forms, are derived via   **183**
roll-up head movement, which unifies all heads in the spine.   **184**

(11) a.   **185**

    b. Bu kitob-ni   yoz-ma-d-ingiz-mi?   **186**
        this book-ACC write-NEG-PST-2-Q

       'Didn't you write this book?' (pp. 17, (29a-b); Gribanova 2020)   **187**

    Head movement is restricted to adjacent heads in the syntactic structure, leading   **188**
to each head that undergoes movement raising to form a complex head with the head   **189**
immediately above it in the structure (Koopman 1984; Travis 1984). This is taken to be   **190**
reflected at PF by fixing the linear order of the morphemes involved. Gribanova notes   **191**
that all speakers agreed on the morpheme order judgments for words formed by head   **192**
movement.   **193**

2.2.2. Nonverbal predicates

Gribanova motivates a different structure for unambiguously non-verbal predicates (12b), treating them as copular constructions that lack *v*, and thus verbal predication. These constructions instead involve PredP. Gribanova suggests that the copula, covert in the present (12a) and overt in the past (12b), is a Pred head that is responsible for introducing copular predication.

(12) *Non-verbal predicates*

    a. Qiziq-siz
        interesting-2
        "You are interesting."

    b. Qiziq   e-d-ingiz
        interesting E-PST-2
        "You were interesting." (Gribanova 2020, pp. 8, (9a-b))

In addition to the covert versus overt alternation between the non-past and the past and the use of a different agreement paradigm in each case, these past form also displays an element glossed as E. Gribanova suggests that this element strictly provides phonological support. This contrasts with Kornfilt's analysis of similar constructions in Turkish, where it is treated as the overt realization of the copula.

Gribanova argues for the structure in (13) for non-verbal forms.

(13)
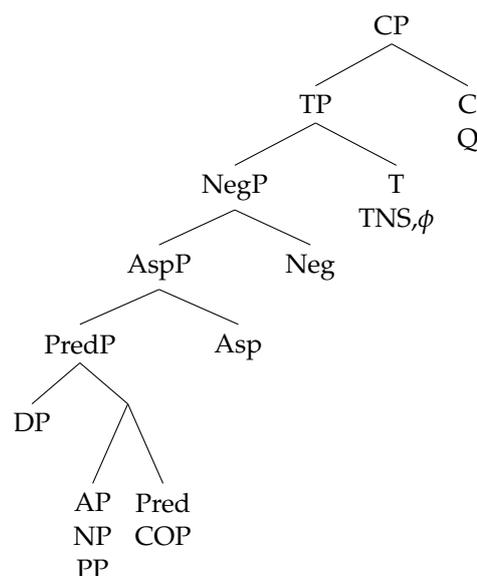
(14) shows examples of how negation and tense are realized in non-verbal forms. In non-verbal structures involving copular predication, negation is high. It does not merge directly with the predicate, instead appearing higher in the clausal spine, similar to *değil* in Turkish. Thus the low suffixal negation found in verbal negation is unavailable in non-verbal structures (14a).[1]

(14)   a.   * Talaba-mas-d-ingiz.
            student-NEG-PST-2

      b.   Talaba e-mas e-d-ingiz.
           student E-NEG E-PST-2
           "You weren't a student."

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[1]   If we assume that T must combine with something verbal in Uzbek, one option of which is the auxiliary *e-*, it might explain the Uzbek pattern. Given that *e-* in *emas* is verbal, it is possible for T to find a verbal feature within its complement.

    c.   Talaba-mas   e-d-ingiz.   220

            student-NEG E-PST-2

            "You weren't a student."   221

    d.   ? Talaba e-mas-d-ingiz.   222

            student E-NEG-PST-2

            "You weren't a student." (Gribanova 2020, pp. 11-12, (19a-d))   223

2.2.3. E-SUPPORT   224

Negation and tense on non-verbal forms must be realized using E-SUPPORT. E-   225
SUPPORT is treated as a phonological support mechanism by which E is supplied to host   226
certain morphemes (e.g. negation/tense/agreement/evidentiality) when they combine   227
with a non-verbal form. Notice in (14b) that E may be inserted twice: once to host negation   228
and once to host tense and agreement. It is also possible for negation to attach directly to   229
the predicate nominal *talaba* 'student', and for tense and agreement to be realized inde-   230
pendently with E-SUPPORT (14c). A marginally acceptable, though possible, 3rd option   231
is presented in (14d), where a single instance of E-SUPPORT hosts negation, tense, and   232
agreement morphology.   233

Gribanova reasonably points to the existence of constructions such as (14b), with two   234
separate instances of E, as evidence against a copular analysis of *e-* and in support of a   235
phonological explanation. We will argue for a copular analysis of this element in Uyghur   236
later in the paper.   237

E-SUPPORT is supplied in contexts where head movement does not or cannot apply.   238
For instance, the past tense morpheme *-d-* requires a verbal element on its left (the verb and   239
verbal morphology). In (14), at least one instance of E-SUPPORT is required to prevent T   240
from combining with something that is non-verbal.   241

2.2.4. Local Dislocation   242

If we consider interrogatives involving non-verbal elements, we see an additional   243
ordering pattern that cannot be accounted for by E-SUPPORT. Consider the cases in (15).   244
Gribanova takes the output of the syntax to be (15a). Each of the cases in (15b)-(15d) are   245
well-formed at PF. The primary issue that needs to be resolved in mapping from syntax to   246
PF is that the past tense marker must have something verbal on its left.   247

In (15b), *-mas* attaches directly to *qiziq*. Since *qiziq-mas* 'interesting-NEG' is not verbal   248
(see (14) T and Q are inverted: this results in T no longer being adjacent to the non-verbal   249
predicate, and thus the construction is well-formed. In (15c), E-SUPPORT applies to host   250
-mas, but inversion of T and Q must still apply to prevent T from combining with non-verbal   251
negation.[2] Finally, in (15d), when two instances of E-SUPPORT take place, the Q-particle is   252
able to remain in final position, because E intervenes between the non-verbal material and   253
T.   254

(15)   a. *Syntactic Output*   255

         Qiziq   mas d   ingiz   mi?   256

         interesting NEG PST 2SG.INF Q

      b. Qiziq-mas-mi-d-ingiz?   257

         interesting-NEG-Q-PST-2

         "Weren't you interesting?" (Gribanova 2020, pp. 18, (34a))   258

      c. Qiziq   e-mas-mi-d-ingiz?   259

         interesting E-NEG-Q-PST-2

         "Weren't you interesting?" (Gribanova 2020, pp. 17, (31a))   260

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[2]   It is unclear whether this inversion is obligatory or not, since (14d) is acceptable. Given the optionality of
inversion in other places, we do not see why the Q particle in final position would not be marginally acceptable,
as well.

d. Qiziq   e-mas e-d-ingiz-mi?
   interesting E-NEG E-PST-2-Q
   "Weren't you interesting?" (Gribanova 2020, pp. 17, (31c))

Gribanova suggests that these cases of inversion are the result of Local Dislocation (Embick 2003; Embick and Noyer 2001). Local Dislocation is defined in (16) (the star indicates immediate precedence).

(16) Local Dislocation (as formulated in Kramer 2009):
    X * Y → X - Y or Y - X

Gribanova restricts the application of inversion to T and Q (recall that T + AGR forms a single head). The output of Local Dislocation can be string vacuous (X - Y) or can result in inversion between heads (Y - X). Local Dislocation is responsible for the string-vacuous combination of *qiziq* and *-mas* in (15b), as well as for the cases of inversion in (15b) and (15c).

Thus E-SUPPORT or Local Dislocation (or both) are used in cases where head movement does not or cannot apply. Local Dislocation keeps heads within the same prosodic word, while E-SUPPORT begins a new prosodic word. To some extent, whether head movement, Local Dislocation, or E-support applies is specified on a morpheme-by-morpheme basis.

2.2.5. Participial Constructions

Before turning to Uyghur, we must finally introduce participial constructions, which show mixed behavior with respect to being verbal or non-verbal. The next section demonstrates that these mixed properties can be modeled using the tools introduced above: head movement, E-SUPPORT, and Local Dislocation.

Examples of participial constructions are provided in (17). Unlike copular constructions, these constructions contain *v*, introducing verbal predication. Participial constructions contain a participle (e.g. *-gan*, which is an aspectual suffix). It can occur without overt tense-marking (17a) or with it (17b). Note the distinct agreement paradigms in each case.

(17) *Participial forms*
   a. Yoz-gan-man.
     write-PTCP-1SG
     "I have written."
   b. Yoz-gan-d-im.
     write-PTCP-PST-1SG
     "I had written." (Gribanova 2020, pp. 8, (8a-b))

In participial constructions, low negation (between *v* and Asp) is permitted (18). Following the participle, it is possible for T to appear as a suffix (18a) or with E-SUPPORT (18b).

(18) a. Kitob-ni yoz-ma-gan-d-ingiz.
     book-ACC write-NEG-PTCP-PST-2
     "You hadn't written the book." (Gribanova 2020, pp. 14, (25a))
   b. Kitob-ni yoz-ma-gan   e-d-ingiz.
     book-ACC write-NEG-PTCP E-PST-2
     "You hadn't written the book." (Gribanova 2020, pp. 14, (26a))

Participial constructions also allow high negation (19). In these cases, NEG and T may optionally occur with E-SUPPORT.

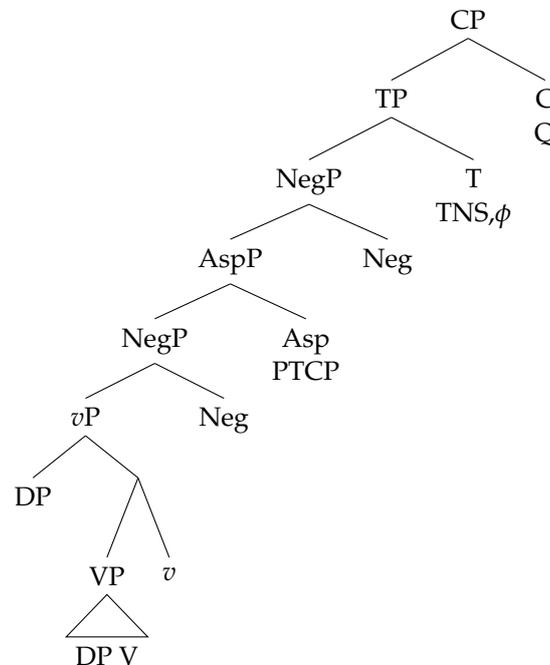(19) a. Kitob-ni yoz-gan-mas-d-ingiz.
     book-ACC write-PTCP-NEG-PST-2
     'You hadn't written the book.' (Gribanova 2020, pp. 15, (28a))

      b. Kitob-ni   yoz-gan   e-mas-d-ingiz.   302
          book-ACC write-PTCP E-NEG-PST-2

          'You hadn't written the book.' (Gribanova 2020, pp. 15, (28b))   303

Gribanova proposes the structure in (20) for participial constructions.   304

(20)   305

Gribanova suggests that head movement is responsible for unifying all heads up to 306
Asp. However, in the 'outer' shell higher than Asp, the hallmarks of non-verbal predication 307
are observed, in which case words are formed via Local Dislocation or with E-SUPPORT. 308

2.2.6. Uzbek Summary   309

Gribanova presents data from Uzbek that is similar to the Turkish data discussed by 310
Kornfilt, but offers a slightly different analysis and illustrates that some minor differences 311
between languages. Both agree that the most important distinction is between copular 312
and verbal predicates. However, while Kornfilt assumes that null copulas are responsible 313
for clitic-like behavior of certain morphemes, Gribanova suggests that the driving force 314
is a combination of categorical properties (verbal versus non-verbal) and whether head 315
movement applies.   316

Gribanova suggests that in genuine verbal constructions, head movement unifies all 317
heads from V to C, picking up all intervening heads along the way. In copular constructions, 318
the mapping from syntax to PF relies on either E-SUPPORT or Local Dislocation (or both). 319
Local Dislocation can apply string vacuously, in which case linear order is not affected, or 320
inversion can apply, which reorders two morphemes.   321

Our analysis of Uyghur will rely on the same mechanisms, but we will show that 322
Uyghur offers insights into how these processes apply and interact that are not made visible 323
in Uzbek.   324

3. Uyghur suffixes, clitics, and auxiliaries   325

We now turn to Uyghur, where we look at similar configurations to the Turkish and 326
Uzbek cases above. The goal of this section is to account for the three distinct ways in 327
which morphemes are combined into words in Uyghur, shown for the direct past in (21). 328

   (21)   a. Men oqu-d-um.   329
             1SG read-PST-1SG

       'I read.'   **330**

   b. Men oqu-ghan=t-im.   **331**
       1SG read-PTCP.PST=PST-1SG

       'I had read.'   **332**

   c. Men oqu-ghan   i-d-im.   **333**
       1SG read-PTCP.PST AUX-PST-1SG

       'I had read.'   **334**

     In keeping with Gribanova, we assume that the distinct realizations of the direct past **335** arise from three different combinatorial strategies. We take the simple suffix form in (21a) to **336** derive from head movement, the clitic form in (21b) to derive from Local Dislocation, while **337** the form in (21c) involves merging an auxiliary. We deviate from Gribanova's analysis in **338** that we take both head movement and auxiliary merger to occur in the narrow syntax, **339** while Local Dislocation takes place in the post-syntactic PF component. **340**

     We begin by introducing the phonological diagnostics that we use to distinguish **341** between suffixes, clitics, and auxiliaries throughout the rest of this paper. We suggest **342** that voicing assimilation is fed by head movement, meaning that their (non-)application **343** is informative. Morphemes combined via head movement have the morpho-syntactic **344** restriction that only one morpheme order is possible as well. We further suggest that **345** exceptions to voicing assimilation indicate Local Dislocation, resulting in cliticization. We **346** then show that both suffixes and clitics occur within the same vowel harmony domain **347** as the root, while auxiliaries begin a new prosodic word, thus a new harmony domain. **348** After introducing these diagnostics, we introduce the core data from all three categories, **349** beginning with suffixation, then turning to cliticization and auxiliaries. **350**

3.1. Uyghur morphophonology **351**

     One way in which Uyghur provides greater insight into word formation strategies is **352** via its phonology. A number of phonological processes are relevant for determining suffix **353** forms. In this section we will first describe the relevant processes, and then show how their **354** application (or failure to apply) can serve as a diagnostic for word formation strategies. A **355** full description of these processes is beyond the scope of this paper, but for more detail see **356** Mayer et al. (accepted). **357**

3.1.1. Voicing assimilation **358**

     Initial obstruents in many Uyghur suffixes assimilate to match the voicing of the **359** immediately preceding sound. For example, the past tense marker PST surfaces as *-d* or *-t* **360** depending on whether the final sound in the stem is voiced (22a) and (22d) or voiceless **361** (22b) and (22c). **362**

(22) a. Men Tursun-ni   kör-d-üm.   **363**
        1SG Tursun-ACC see-PST-1SG

        "I saw Tursun."   **364**

     b. Men Tursun-ni   ut-t-um.   **365**
        1SG Tursun-ACC win-PST-1SG

        "I beat Tursun."   **366**

     c. Men Tursun-ni   kes-t-im.   **367**
        1SG Tursun-ACC cut-PST-1SG

        "I cut Tursun."   **368**

     d. Men Tursun-ni α-d-im.   **369**
        1SG Tursun-ACC take-PST-1SG

        "I took Tursun."   **370**

     We will suggest that voicing assimilation only occurs when suffixes are attached using **371** head movement, and thus can serve as a diagnostic for different word formation strategies. **372**

Specifically, in cases where suffixes are attached as clitics, they uniformly surface in their voiceless forms, even when preceded by a voiced sound.[3]

3.1.2. Vowel harmony

Vowel harmony in Uyghur has two components: backness harmony and rounding harmony. A simple characterization that is sufficient for our purposes here is that segments in many suffixes are required to agree in backness and/or rounding with the final root vowel. The effects of vowel harmony can also be seen in (22a)–(22d).

When the 1SG suffix is attached to a root ending in a consonant, it is realized as either *üm* [-ym], *-um* [-um], or *-im* [-im]. In (22a), the final vowel in the root *ö* /ø/ is front and rounded, and therefore the vowel in the 1SG suffix is realized as *ü* [y]. In (22b), the final vowel in the root *u* /u/ is back and rounded, and therefore the suffix vowel is realized as [u]. In (22c) and (22d), the final vowels *e* /æ/ and *a* /ɑ/ are unrounded and thus the suffix vowel surfaces as *i* [i]: note that because backness is not contrastive for high unrounded vowels, there is no alternation conditioned by backness in this case.

Vowel harmony occurs at the word level, and thus can be used to distinguish between suffixes/clitics, which combine with stems to form a larger word, and auxiliaries, which begin a new word.

3.1.3. u-reduction

Uyghur has a number of vowel reduction processes that generally reduce certain vowels to *i* [i] or *é* [e] when they occur in particular contexts. The relevant process here is *u-reduction*. This process reduces the vowel *u* to *i* in the Q suffix *-mu* (23a) and (23b), the 3 suffix *-du* (23c) and (23d), and the PST.INDIR suffix *-(i)ptu* (23e) and (23f) when they occur in unstressed syllables: this often, though not always, corresponds to word-medial positions.

(23)   a. Siz oqughuchi=mu?
           you student=Q

           'Are you a student?'

       b. Oqughuchi=mi siz
           student=Q   2SG.INF

           'Are you a student?'

       c. Tursun bar-i=du.
           Tursun go-NONPAST-3

           'Tursun will go.'

       d. Tursun bar-i=di=ken.
           Tursun go-NONPAST-3-INFER

           'It seems that Tursun will go."

       e. Tursun kél-iptu.
           Tursun come-PST.INDIR

           'It seems Tursun came.'

       f. Tursun kél-ipti-ken.
           Tursun come-PST.INDIR-INFER

           'It seems Tursun came (reportedly)."

---

3   Vowel hiatus resolution (repairing sequences of adjacent vowels) may also serve as a diagnostic for head movement. The most commonly applied strategies in Uyghur are vowel deletion and glottal stop insertion. Two additional strategies are less commonly used. The first is vowel gliding, where a *V-i* sequence is realized as *V-y*, as in the non-past suffix *-i-* being realized as *-y-* in *Men Tursun-din sora-**y**-men* "I will ask Tursun" (cf. *Men Tursun-ni kör-**i**-men* "I will see Tursun". The second is glide insertion, which is used when the abilitative suffix *-ala-/-ele-* is attached to vowel-final roots, as in *sözli-**yele**-y-du* "She can speak" (cf. *kél-**ele**-y-du* "She can come"). We leave this as an area for future investigation.

This process is not productive in the same way as other reduction processes in the language, in that it applies only to these specific morphemes: for example, /bulut-i/ 'cloud-3.POSS' → [buluti], not *[buliti].

u-reduction does not serve as a diagnostic for any of the word formation strategies we discuss below, but it is necessary to understand the alternations exhibited in the data.

3.2. Suffixation and head movement

We take suffixation to derive from roll-up head movement, driven by morpho-syntactic features. We assume this process to be equivalent to Gribanova's analysis of Uzbek, which was shown in (11a). The only difference is that we suggest head movement takes place in the narrow syntax. We suggest that when possible, head movement is obligatory. The result of head movement is rigid morpheme ordering and strict application of the phonological processes described in Section (3.1). That is, the complex heads formed by head movement constitute a single harmony domain and alternations involving voicing assimilation will be triggered across morpheme boundaries when their conditions are met.

This is exemplified by "genuine" verbal forms like those in (24), where all heads in the verbal complex are unified by head movement. In these cases the causative and 1SG suffixes both display harmony, and the causative also displays voicing assimilation. The PST suffix also undergoes voicing assimilation here, but the result is the same in both cases.

(24) a. yaz-dur-d-um
          write-CAUS-PST-1SG

          'I caused X to write'

      b. püt-tür-d-üm
          finish-CAUS-PST-1SG

          'I caused X to finish.'

Generally speaking, heads that merge close to the verb are all unified by head movement. We suggest that the fact that harmony transits from the root through agreement tells us that the verbal complex forms a single prosodic word, while the fact that there is voicing assimilation across the junctures tells us that head movement is responsible for unifying the heads. In addition, the morpheme order in both cases in (24) is the only possible morpheme ordering.

Our proposed syntactic analysis of (24b) is provided in (25).

(25)
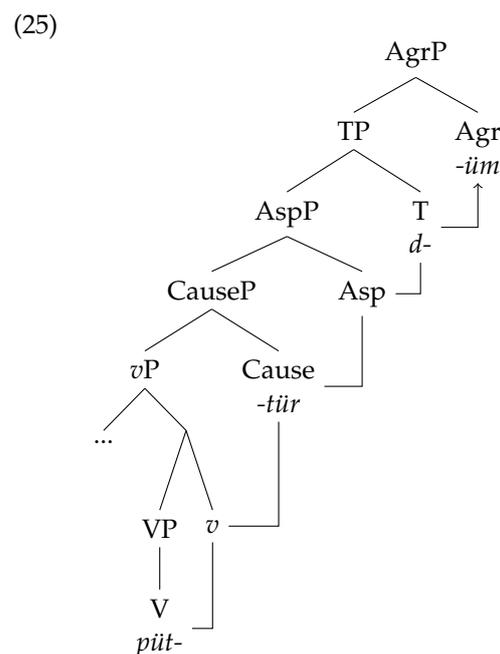
While the presence of harmony can serve as a diagnostic for prosodic wordhood, its absence is less informative. There are many suffixes in Uyghur that categorically fail to harmonize, such as the progressive *-wat* (which imposes its own harmonic value on subsequent suffixes, as in *sözlewatqan* 'she has been speaking'; cf. *sözligen* 'she has spoken') or the SIMIL suffix *-dek/-tek* (as in *tashtek* 'rock-like'), which undergoes voicing assimilation but not harmony. A possible phonological analysis of these suffixes treats the elements that fail to harmonize as underlyingly specified for the feature [back], while harmonizing elements are underspecified for this feature (e.g. Mayer 2021; Mayer et al. accepted).[4]

Voicing assimilation, on the other hand, appears to cleave cleanly to the distinction between suffixes and clitics: suffixes beginning in obstruents always assimilate, while clitics never do. Of particular interest is cases where the same morpheme can attach as either a suffix or a clitic, such as the PST suffix *-t-/-d-*. In the former case they consistently undergo voicing assimilation, while in the latter they do not, even when the phonological context suggests they should. We turn to the latter cases in greater detail below.

3.3. Auxiliaries and Clitics

There are two other ways in which morphemes are realized that do not involve head movement: cliticization via Local Dislocation (21b) and auxiliary insertion (21c). It is often (but not always) the case that both options exist in the same environments. In many ways, the clitic forms appear to be classic cases of *simple clitics*. Zwicky (1985, a.o.) classify simple clitics as those that alternate with independent words, often-times auxiliaries. However, we illustrate that both forms have different syntactic distributions, in addition to distinct morpho-phonological properties.

Beginning with a terminological issue raised by Gribanova, we agree that *e/i-* in Uyghur is not actually responsible for copular predication. The role and distribution of these auxiliaries is far clearer in Chagatay, the language Uyghur and Uzbek are descend from.

Gribanova suggests that in Uzbek the *e-* in *emas*, *eken*, and *edi* is a phonological support mechanism akin to English *do-support*, while Kornfilt treats the Turkish equivalent as a defective copula. For Uyghur, we suggest that *e/i-* is an auxiliary verb akin to be/have in English, which can merge low, where it hosts negation, or high, where it hosts tense/evidentiality. We suggest that negation requires a V element within its complement, while T exhibits flexibility.

3.3.1. Chagatay Auxiliaries

Chagatay is the historical ancestor of modern Uyghur. Chagatay often (at least optionally) allows for overt auxiliaries in all contexts, whereas the present tense copula has largely been lost in Modern Uyghur and Uzbek. Turning to the Chagatay data in (26), there are two realizations of items treated as copulas: *dur/tur* or *e(r)-*. Eckmann (1966) treats *dur/tur* as the present tense copula, *e(r)mäs* as the negative copula, and *e(r)di* as the past tense copula, provided respectively:

(26) a. Men paadishaah dur-män.
          1SG king   COP-1SG
          "I am a king." (adapted from Schluessel 2018, pp. 22)

      b. Men paadishaah e(r)-mäs-män.
          1SG king   COP-NEG-1SG
          "I am not a king." (adapted from Schluessel 2018, pp. 22)

      c. Men paadishaah e(r)-d-im.
          1SG king   COP-NEG AUX-PST-1SG
          "I was a king." (adapted from Schluessel 2018, pp. 22)

---

4   Syntactic structure may provide greater insight into the behavior of suffixes like *-wat*, which are historically derived from multi-word constructions, and display generally idiosyncratic phonological (Mayer et al. accepted) and prosodic (Fiddler 2021) behavior.

One could suggest that the elements above are copular predicates, but even in Chagatay it is possible for more than one auxiliary to occur in the same sentence. It is unclear whether these elements are implicated in copular predication directly or simply appear in copular environments.[5] Notice that it is possible for one auxiliary to host negation low and another to host tense/agreement high.

(27)   a.   Men paadishaah e(r)-mäs   e(r)-d-im.
         1SG   king   AUX-NEG AUX-PST-1SG

         "I was not a king."

     b.   Men paadishaah e(r)-mäs   tur(-ur)-män.
         1SG   king   AUX-NEG COP-AOR-1SG

         "I am not a king."

We do not take a strong stance on exactly what these elements are in modern Uyghur. Instead we offer a description of their distribution and evidence that they are indeed verbal elements, essentially equivalent to their Chaghatay counterparts.

3.3.2. Auxiliaries in Uyghur

In modern Uyghur, the present tense copula is null in the affirmative (28a). In the negative present, the auxiliary *e-* is obligatory (28b), as is the case for *i-* in the past tense (28c).[6]

(28)   a.   Men oqughuchi.
         1SG   student

         "I am a student."

     b.   Men oqughuchi e-mes.
         1SG   student   AUX-NEG

         "I am not a student."

     c.   Men oqughuchi i-d-im.
         1SG   student   AUX-PST-1SG

         "I was a student."

(29) shows that, as in Chaghatay, two instances of the copula are able to co-occur: one hosts negation (*emes*) and the other hosts tense/evidentiality (*idim/iken*).

(29)   a.   Men oqughuchi e-mes   i-d-im.
         1SG   student   AUX-NEG AUX-PST-1SG

         "I was not a student."

     b.   Men oqughuchi e-mes   i-ken=men.
         1SG   student   AUX-NEG AUX-PST=1SG

         "I am/was not a student."

Again, the auxiliary *e/i-* does not appear to be involved directly in copular predication. Instead, it appears in environments where there would otherwise be no verbal element to host negation or tense.

The order of the auxiliaries is fixed – negation must precede T/Evid:

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[5]   This is similar to English "be" (e.g. "Derrick *is being* mean"), where multiple instances occur and neither instance is necessarily responsible for copular predication.

[6]   The copula is typically realized as *i* in Uyghur, except when it hosts negation, where it is realized as *e*. The general change from *e* in Chaghatay to *i* in Uyghur is likely to be related to development of the pervasive vowel raising processes in modern Uyghur (see Section (3.1.3)), but it is unclear why this has not occurred in negation contexts. We leave this as an open question, but assume that *e* and *i* are allomorphs of the same auxiliary, as was the case in Chaghatay.

(30) a. * Men oqughuchi i-d-im   e-mes.   515
          1SG student   AUX-PST-1SG AUX-NEG

          Intended: "I was not a student."   516

      b. * Men oqughuchi i-ken=men   e-mes.   517
          1SG student   AUX-PST=1SG AUX-NEG

          Intended: "I am/was not a student."   518

      c. * Men oqughuchi i-ken   e-mes=men.   519
          1SG student   AUX-PST AUX-NEG=1SG

          Intended: "I am/was not a student."   520

Based on these observations, we take the structure of these auxiliary constructions to   521
be roughly as follows: 522

(31)   523
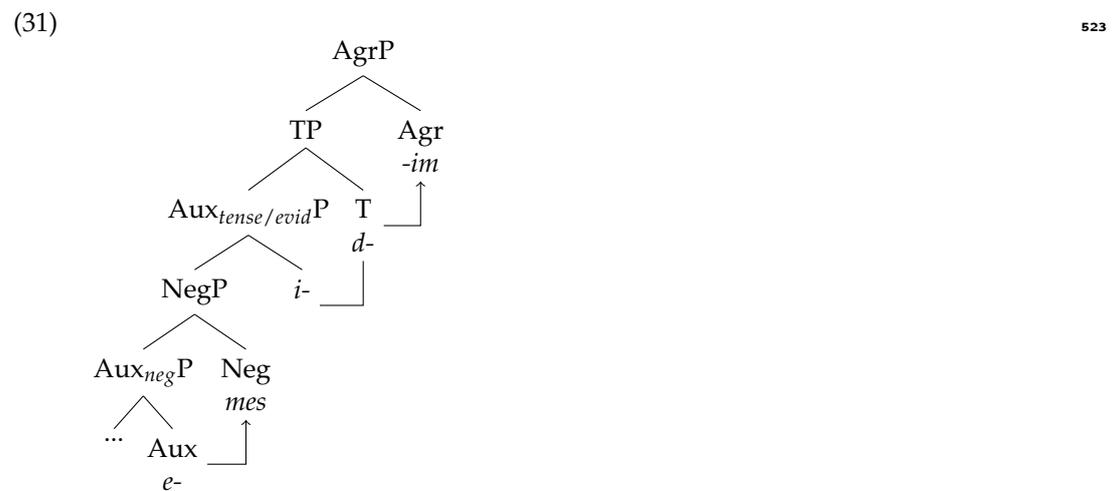
Notice that we assume movement of Aux to Neg and also Aux to T to AGR. Several   524
facts support head movement: the morphemes are rigidly ordered and the past tense   525
morpheme *-d* undergoes voicing assimilation. In the next section we will turn to clitic   526
forms, where voicing assimilation does not occur.   527

3.3.3. Clitics in Uyghur   528

Suffixes and clitics often look identical at first glance. In the case of suffixation in   529
(32), notice that the vowels in the suffixes *-dür* and *-üm* harmonize with the root vowel   530
and the initial consonants in these suffixes agree in voicing with the preceding sounds.   531
As mentioned earlier, we assume vowel harmony to be word bound, as has been argued   532
for Turkish (Fenger 2019 2020; Kornfilt 1996). Rigid morpheme ordering and voicing   533
assimilation indicate that heads have been unified by head movement in Uyghur.   534

(32) Men u-ni   kül-dür-d-üm.   535
      1SG 3SG-ACC laugh-CAUS-PST-1SG

      "I made him/her laugh."   536

Turning to non-verbal constructions, the pattern shifts. When a copular construction   537
occurs in the past tense, the auxiliary strategy is available (33a), as is cliticization (33b). In 538
(33a), the auxiliary *i-* begins a new prosodic word, as evidenced by the fact that it begins a 539
new harmony domain: the agreement suffix *-im* harmonizes with *i*, not the root *üzüm*). The 540
auxiliary raises to T and triggers voicing assimilation in the *-d* suffix as well.   541

In (33b), there is no head movement to T, and hence no voicing assimilation of the   542
PST suffix to the final segment in *üzüm*. Unlike the auxiliary construction, the AGR suffix 543
harmonizes with the root, indicating that *üzüm=t-üm* forms a single prosodic word.   544

(33)   a. Men üzüm i-d-im.   **545**
            1SG grape AUX-PST-1SG

          'I was a grape.'   **546**

     b. Men üzüm=t-üm.   **547**
            1SG grape=PST-1SG

          'I was a grape.'   **548**

Participial constructions exhibit the same behavior, with the exception that it is im-   **549**
possible to show whether harmony transits through due to the phonological properties   **550**
of participials in the language.[7]. However, it is clear that voicing assimilation (*-d-* vs. *-t-*)   **551**
occurs in the auxiliary forms (34a)-(34b), but not in the clitic forms (34c)-(34d), suggesting   **552**
the latter are not created by head movement.   **553**

(34)   a. Men oqu-ghan   i-d-im.   **554**
            1SG read-PTCP.PST AUX-PST-1SG

          'I had read.'   **555**

     b. Men ut-qan   i-d-im.   **556**
            1SG win-PTCP.PST AUX-PST-1SG

          'I had won.'   **557**

     c. Men oqu-ghan=t-im.   **558**
            1SG read-PTCP.PST=PST-1SG

          'I had read.'   **559**

     d. Men ut-qan=t-im.   **560**
            1SG win-PTCP.PST=PST-1SG

          'I had won.'   **561**

The verb raises to Asp, and the participial assimilates in voicing with the final sound of   **562**
verb root (*gh* [ʁ] is the voiced correspondent of *q* [q]). All morphemes up to the participial   **563**
are also rigidly ordered. For this reason (following Gribanova), we assume that the landing   **564**
site of the verbal complex is Asp in these cases.   **565**

(35)   Men Tursun-gha yaz-dur-iwet-ken=t-im/*d-im.   **566**
      1SG Tursun-DAT write-CAUS-COMPL-PTCP.PST=PST-1SG/PST-1SG

     'I had completed making Tursun write.'   **567**

One final general note is that when head movement is possible, in cases such as (32),   **568**
it is obligatory. Forms like those in (36) are ungrammatical, because head movement is   **569**
possible.   **570**

(36)   a. * Men u-ni   kül-dür   i-d-im.   **571**
            1SG 3SG-ACC laugh-CAUS AUX-PST-1SG

          "I made him/her laugh."   **572**

     b. * Men u-ni   kül-dür=t-üm.   **573**
            1SG 3SG-ACC laugh-CAUS-PST-1SG

          "I made him/her laugh."   **574**

A consequence of taking head movement to occur in the narrow syntax and for Local   **575**
Dislocation to be post-syntactic is that it predicts no alternations between suffix forms and   **576**
clitic forms.   **577**

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[7] As described in Section (3.1), backness is not contrastive for high unrounded vowels. Because participials only
contain unrounded low vowels, the AGR suffix is realized as *-im* regardless of whether the participial appears
in its front or back form.

3.3.4. More on auxiliaries and clitics

Whereas there are never alternations between suffixation and cliticization in the same environment, it is often the case that Local Dislocation and auxiliaries are both possible in the same environments. We show in this section that their distributions overlap, but not entirely. Ultimately, we illustrate that the auxiliary is generally only available when Neg or T would otherwise lack a verbal element as its complement.

There are two common analyses of the behavior of auxiliaries. Under one approach, auxiliaries are lexical items that merge as verbs (Déchaine 1995; Ross 1969) or as functional heads (Adger and Ramchand 2003; Cinque 2006; Tenny 1987). This is in competition with other approaches that propose that auxiliaries are inserted as a last resort mechanism to avoid stranding an affix due to the absence of head movement (Fenger 2019 2020; Laka 1990). We will present evidence that Uyghur auxiliaries should be analyzed as lexical verbs.

The first argument against *i-* being a post-syntactic last resort mechanism in Uyghur comes from the fact that the clitic strategy is usually available in the same contexts, as shown in (37).

(37) a. Mahinur oqughuchi=t-i.
          Mahinur student=PST-3

          'Mahinur was a student.'

      b. Mahinur bar-ghan=t-i.
          Mahinur go-PTCP.PST=PST-3

          'Mahinur had left.'

      c. Mahinur oqughuchi i-d-i.
          Mahinur student   AUX-PST-3

          'Mahinur was a student.'

      d. Mahinur bar-ghan   i-d-i.
          Mahinur go-PTCP.PST X-PST-3

          'Mahinur had gone.'

If *i-* is only inserted as a last resort, it is unclear why it would apply in situations where cliticization is possible.

From a theory internal perspective, we have suggested that head movement happens in the narrow syntax. Given that AUX undergoes head movement, as evidenced by its triggering of voicing assimilation, it must be inserted before Local Dislocation applies, and hence it cannot be post-syntactic.

The fact that head movement is obligatory when possible offers an explanation for why forms like **i=ti* are not possible. If *i-* is a verb and head movement is obligatory when T Agrees with V within its complement, =ti cannot undergo Local Dislocation.

There is also clear evidence that the auxiliary strategy and Local Dislocation are not equivalent processes. In (38), for example, *e-* is obligatory in all four cases, while the higher AUX that hosts temporal morphology is optional. This indicates that the licensing conditions for the lower and higher instances of the auxiliary are not the same: negation obligatorily selects for V, which can be satisfied by the presence of a main verb or an auxiliary, but not by Local Dislocation. T, on the other hand, does not require a verbal complement.

(38) a. Men oqughuchi *(e)-mes=t-im.
          1SG student   AUX-NEG=PST-1SG

          'I was not a student.'

      b. Men bar-ghan   *(e)-mes=t-im.
          1SG go-PCP.PST AUX-NEG=PST-1SG

          'I had not gone.'

      c. Men oqughuchi *(e)-mes i-d-im.
          1SG student   AUX-NEG AUX-PST-1SG

‘I was not a student.’ ₆₂₂

  d. Men bar-ghan   *(e)-mes i-d-im.   ₆₂₃
     1SG go-PCP.PST AUX-NEG PST-1SG

  ‘I had not gone.’ ₆₂₄

The idea that the distribution of auxiliaries is determined by selection is not new. In ₆₂₅
particular, there are many arguments that T selects for a verbal complement, which can ₆₂₆
be satisfied by merging an auxiliary into the structure (Arregi and Pietraszko ms; Cowper ₆₂₇
2010; Déchaine 1995; Pietraszko 2017). We propose that Neg requires an overt V within its ₆₂₈
complement, while T is compatible with a silent copula or any other complex head that ₆₂₉
contains a verbal feature. ₆₃₀

In the case of negation, the auxiliary is obligatory, but the auxiliary *i-* that hosts tense ₆₃₁
is optional. There are some environments where AUX is obligatory to host tense, such as ₆₃₂
when PST combines with a verb in the aorist: ₆₃₃

(39) Men kél-er   {i-d-im,   *=t-im}.   ₆₃₄
     1SG come-AOR AUX-PST-1SG =PST-1SG

  ‘I would come.’ ₆₃₅

If the clitic form were equivalent to realizing the auxiliary as silent, we should expect both ₆₃₆
forms to be permitted. ₆₃₇

Another distributional property of interest is that there is a single position for the ₆₃₈
higher auxiliary, which is situated below T. Evidence for this comes from the fact that when ₆₃₉
more than one evidential is present (*mish* and *ken*), they are able to occur in either order, ₆₄₀
but only one instance of *i-* is (optionally) available, which obligatorily merges below both ₆₄₁
evidentials. ₆₄₂

(40) a. Men oqughuchi (i)-ken   (*i)-mish=men.   ₆₄₃
         1SG student   AUX-INFER AUX-REP=1SG

     ‘I was a student (reportedly).’ ₆₄₄

   b. Men bar-ghan   (i)-ken   (*i)-mish=men.   ₆₄₅
      1SG go-PTCP.PST AUX-INFER AUX-REP=1SG

     ‘I have gone (apparently).’ ₆₄₆

   c. Men oqughuchi (i)-mish (*i)-ken=men.   ₆₄₇
      1SG student   AUX-REP AUX-INFER=1SG

     ‘I was a student (reportedly).’ ₆₄₈

   d. Men bar-ghan   (i)-mish (*i)-ken=men.   ₆₄₉
      1SG go-PTCP.PST AUX-REP AUX-INFER=1SG

     ‘I have gone (apparently).’ ₆₅₀

Given that *ken* itself does not encode tense, but evidentiality, we assume that there is a null ₆₅₁
T head intervening between it and Aux. This differentiates it from the past tense, where T ₆₅₂
is overt. Given that T is null, it is difficult to determine whether head movement from Aux ₆₅₃
to T to Evid takes place. Because *=ken* does not exhibit allomorphy (it neither harmonizes ₆₅₄
nor undergoes voicing assimilation in any context), we are unable to use phonological ₆₅₅
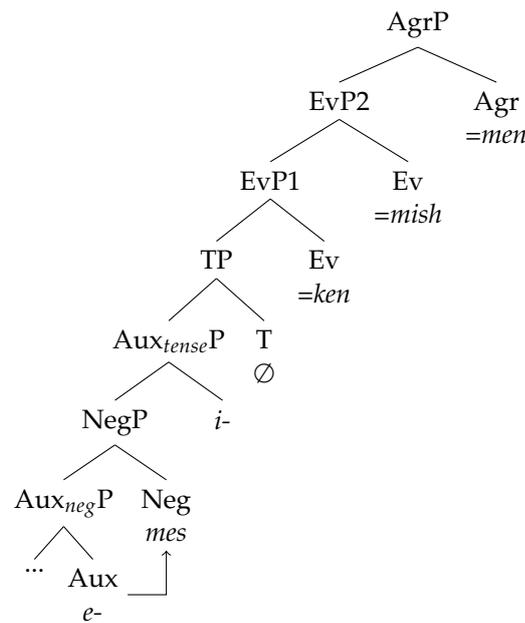diagnostics. ₆₅₆

Our analysis of cases like (41a), which contain two auxiliaries and more than one ₆₅₇
evidential, is provided in (41b). ₆₅₈

(41) a. Men oqughuchi e-mes   i-ken=mish=men.   ₆₅₉
         1SG student   AUX-NEG AUX-INFER=REP=1SG

     ‘I was apparently not a student.’ ₆₆₀

b.   661

```
                    AgrP
                   /    \
                EvP2     Agr
               /    \    =men
            EvP1     Ev
           /    \    =mish
          TP     Ev
         /  \    =ken
    Aux_tense P   T
       /   \      ∅
    NegP    i-
    /   \
Aux_neg P  Neg
  /  \     mes
...  Aux
      e-
```

Notice that this structure contains two auxiliary positions, both below T. This predicts that **662** we should not find auxiliaries higher than T. **663**

In forms with an overt T, the auxiliary form is prohibited, as shown for both the non- **664** past and the indirect past respectively in (42a)-(42b). We take this as evidence that when **665** the verbal complex raises to T (or higher), the auxiliary is no longer available. However, **666** this does not prevent the evidentials from combining with the verbal complex via Local **667** Dislocation. **668**

(42) a. Men ket-me-y-men   (*i)=ken=mish.   **669**
          1SG leave-NEG-NONPST-1SG AUX=INFER=REP

          "I will leave (apparently)."   **670**

      b. Men ket-ma-pti-men   (*i)=mish=ken.   **671**
          1SG leave-NEG-PST.INDIR-1SG AUX=REP=INFER

          'I left (apparently).'   **672**

When the complement to overt T is verbal, head movement is obligatory. If the verbal **673** complex rolls up to the head that immediately precedes T, that complex raises to T. When **674** the complement is not verbal, T triggers movement of the auxiliary (as in *i-d-*). We propose **675** the structure below for these verbal constructions that take evidentiality: **676**
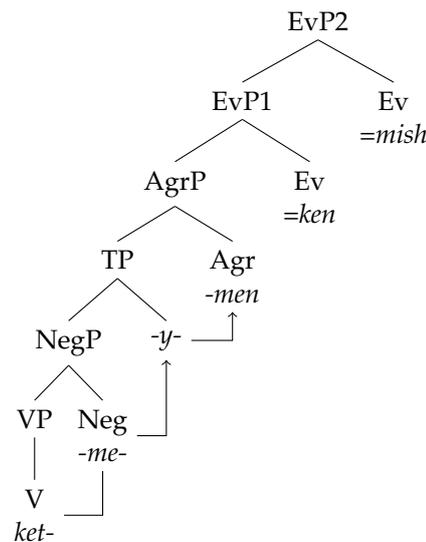
(43)   677

```
                              EvP2
                           ╱      ╲
                        EvP1        Ev
                       ╱    ╲      =mish
                    AgrP     Ev
                   ╱   ╲    =ken
                 TP     Agr
                ╱  ╲    -men
            NegP   -y-  ↑
           ╱   ╲    ↑
         VP    Neg
         │     -me-
         V      ↑
        ket-
```

We conclude that auxiliaries are inserted when a verbal category is selected by a   678
head in the syntax (e.g. Neg, Evid, T), but its complement is non-verbal or at least not 679
straightforwardly verbal (e.g. participials display mixed nominal and verbal properties, as 680
noted in the descriptive literature (Tömür 2003) and theoretical literature (Asarina 2011)). 681
Auxiliaries undergo head movement like any other verb. Local Dislocation/cliticization 682
occurs in all environments that do not involve head movement, which includes environ- 683
ments where an auxiliary is not merged into the structure. Thus Local Dislocation applies 684
in all environments where head movement does not, including some environments where 685
an auxiliary is not merged into the structure. This accounts for the overlap.   686

3.3.5. Notes on T and Agr   687

We should note that the trees in (41b) and (43) suggest that AgrP merges in two distinct 688
positions. This may seem stipulative at first glance, but these two positions have different 689
properties. This is distinct from the Turkish and Uzbek works that we build on. This section 690
first offers an explanation for where Agr is (or is not) realized, suggesting it appears only 691
when there is overt T/Evid. We then suggest that Agr obligatorily merges into a high Agr 692
position (above the evidentiality layers) when there is no overt T head.   693

First, there are some constructions where Agreement is not realized at all. For instance, 694
neither copular constructions (44) nor participial constructions (45) exhibit overt tense or 695
agreement in the present tense.   696

(44) a. Men oqughuchi.   697
          1SG student
          "I am a student."   698

      b. Siz   oqughuchi.   699
          2SG.INF student
          "You're a student."   700

      c. Tursun oqughuchi.   701
          Tursun student
          "Tursun is a student."   702

(45) a. Men ut-qan.   703
          1SG win-PTCP.PST
          "I won."   704

      b. Siz   ut-qan.   705
          2SG.INF win-PTCP.PST
          "You won."   706

   c. Tursun ut-qan. 707
      Tursun win-PTCP.PST
      "Tursun won." 708

One could reasonably assume the cases above to be the result of clausal truncation to 709
something smaller than a T, but this is unlikely the solution. For instance, the Q-particle *mu* 710
is able to occur without agreement (46), which suggests that both cases constitute full CPs. 711

(46) a. Men oqughuchi=mu? 712
      1SG student=Q
      "Am I a student?" 713

   b. Men ut-qan=mu? 714
      1SG win-PTCP.PST=Q
      "Have I won?" 715

On the other hand, agreement is obligatory when an element in the tense/evidentiality 716
region is merged. For "simple" tenses (47a)-(47b), morpheme order is rigid and T + Agr 717
are inseparable (due to head movement). However, Agr must be overtly realized in 718
copular constructions (47c)-(47d) and participial constructions (47e)-(47f), as well, when 719
tense/evidential morphemes are introduced into the structure 720

(47) a. Men ut-i=*(men). 721
      1SG win-NONPST-1SG
      "I will win." 722

   b. Men ut-t-*(um). 723
      1SG win-NONPST-1SG
      "I won." 724

   c. Men oqughuchi i-ken=*(men). 725
      1SG student   AUX-INFER=1SG
      "I was a student (reportedly)." 726

   d. Men oqughuchi i-d-*(im). 727
      1SG student   AUX-PST-1SG
      "I was a student." 728

   e. Men ut-qan   i-ken=*(men). 729
      1SG win-PTCP.PST AUX-INFER=1SG
      "I have won (reportedly)." 730

   f. Men ut-qan   i-d-*(im). 731
      1SG win-PTCP.PST AUX-PST-1SG
      "I had won." 732

The generalization then seems to be that Uyghur requires agreement if any element 733
is overtly realized in the T/Evid region. One possibility would be to assume that Agr is 734
subject to the *stranded affix filter*. 735

(48) **The stranded affix filter**: A morphologically realized affix must be a syntactic 736
     dependent of a morphologically realized category, at surface structure. (Lasnik 737
     1981) 738

For this reason, in cases like (45) and (46), no T or Evid is overtly realized in the structure to 739
prosodically host Agr, which the language solves by simply dropping Agr. This contrasts 740
with cases where T/Evid do merge into the T domain, which case Agr is obligatorily 741
realized, such as (47). 742

Turning to the second issue, agreement merges at different heights depending on 743
whether there is overt tense (49a) or only overt evidentiality (49b). Agreement appears 744

adjacent to T and below the evidentials when T is overt, but following the evidentials when there is no overt T. The higher position is only able to host Paradigm A markers, as shown in (49b).

(49) a. Siz   oqu-y-**siz**=ken=mish.
          2SG.INF read-NONPST-2SG.INF=INFER=REP
          'You will read (so they say).'

     b. Siz   oqughuchi=ken=mish=**siz**.
          2SG.INF student=INFER=REP=2SG.INF
          'You are a student (so they say).'

The descriptive generalization is thus as follows:

- If T or EV is merged, agreement is obligatory.
- If there is an overt T, AGR must merge directly above it.
- If there is no overt T, AGR merges above EV.

The existence of a higher agreement position is also supported by focus environments where the high and low agreement markers can be realized simultaneously (50).

(50) a. Men ket-ken   i-d-im=men.
          1SG leave-PTCP.PST AUX-PST-1SG=1SG
          'I had left! (not someone else)!'

     b. Men ket-i=men=ken=men.
          1SG leave-NON.PST-1SG=INFER=1SG
          'I will leave (I'm told) (not someone else)!'

This suggests a higher position in the structure to host the Paradigm A marker in emphatic contexts, and the data in (47) suggest that it not only present, but obligatory when there is EV but no overt T in the structure. This is reminiscent of arguments in favor of a structural split between the position where subject clitics merge and the position for agreement, where the higher position is similar to CliticP (Sportiche 1998). The precise position in Uyghur is obscured by the fact that the language is head-final and thus determining the precise position of heads is not straightforward.

4. Extending the analysis to more complex constructions

So far we have essentially implemented Gribanova's analysis of Uzbek to account for suffixes, clitics, and auxiliaries in Uyghur, introducing minor modifications and introducing diagnostics for each word formation strategy along the way. In this last section, we illustrate the strengths and weaknesses of our analysis by looking at interrogatives and evidentials. We begin by introducing the precise characterization we assume for Local Dislocation, inversion, and the predictions that this analysis makes.

4.1. Formal tools and predictions

We primarily follow Gribanova in assuming that some words are formed by head movement, some by Local Dislocation, and others by inserting an Auxiliary verb. We suggest one further distinction for the discussion of Uyghur that follows; namely, that we need to differentiate between heads or feature bundles that have been unified via head movement and those that have not. Embick and Noyer (2001) makes a distinction between *m-words* and *sub-words*, which accomplishes almost exactly this, as defined in (51):

(51) a. M-Word: (Potentially complex) head not dominated by further head-projection
          (cf. Chomsky (1995) "H^0max")

     b. Subword: Terminal node within an M-Word (i.e. either a Root or a feature
          bundle)

Gribanova suggested for Uzbek that inversion under Local Dislocation should be restricted ₇₈₇ to T and C. We expand upon this by suggesting that Local Dislocation and inversion apply only to M-Words, not subwords. This means that terminals within a complex head derived by head movement are opaque to reordering. We assume that head movement takes place in the narrow syntax, but, as for Gribanova, what is crucial is simply that head movement take place before Local Dislocation. This could also be accomplished by positing cycles within the phonological component.

The first prediction made is straightforward: heads combined via head movement should completely reflect the syntactic structure (i.e. they should be Mirror Principle compliant). However, complex heads that are not anchored to a verb should be eligible for reordering via Local Dislocation. In other words, subwords are opaque under our system, meaning that Local Dislocation (repeated in (52)), does not differentiate between M-words and Subwords (i.e. X can stand in for a complex head). This means that inversion can take place between simple and complex heads.

(52) Local Dislocation (as formulated in Kramer 2009):
     X * Y → X - Y or Y - X

We assume that Local Dislocation applies from left to right, fixing the order between two heads at a time. Consider the possibilities for the realization of the sequence of heads X * Y * Z, shown in (53). The order in (53a) can be realized in two different ways: head movement or string vacuous Local Dislocation. (53b)-(53d) can be derived only by Local Dislocation, with the specific order dependent on which heads undergo inversion. (53e)-(53f) are not possible under this system, because it would require re-establishing the order for a head that has already been fixed.

(53) X * Y * Z
    a. X - Y - Z
    b. Y - X - Z
    c. X - Z - Y
    d. Y - Z - X
    e. * Z - X - Y
    f. * Z - Y - X

There are certain complex heads that cannot undergo reordering, as shown in (54).

(54) a. Mahinur ket-t-i=mu?
        Mahinur leave-PST-3=Q
        "Did Mahinur leave?'
     b. * Mahinur mu=ket-t-i?
        Mahinur Q=leave-PST-3
        "Did Mahinur leave?'

Despite the fact that the Q particle is an enclitic (an independent M-word), inversion between Q and the verbal complex (V+v+T+AGR) is not possible. Whether this restriction is best treated as a syntactic constraint on locality (e.g. phases), a prosodic constraint (resist moving heavy things), or some other factor, we leave to future research. For the present, we simply stipulate that certain complex heads (e.g. those containing main verbs) are unable to undergo inversion.

4.2. Analysis of interrogative constructions

The distribution of the Q-particle is perhaps the most interesting case study for present purposes. In certain cases, particularly in the direct past, the mirror principle is essentially obeyed. Our analysis predicts that in these cases the Q-particle can only occur at the end of the verbal complex, because the complex is constructed using head movement and cannot be subject to Local Dislocation. This is indeed the case, as shown in (55).

(55) a. Siz   méni   kör-d-ingiz=mu?   **834**
          2SG.INF 1SG.ACC see-NONPST-2SG.INF=Q

          'Did you see me?'   **835**

      b. * Siz   méni   kör-mi/mu-d-ingiz?   **836**
          2SG.INF 1SG.ACC see-Q-PST-2SG.INF

          Intended: 'Did you see me?'   **837**

      Our analysis makes different predictions for the clitic and auxiliary forms, repeated in   **838**
(56). Recall from our analysis of auxiliary constructions that Aux, T, and AGR are unified   **839**
via head movement, resulting in a complex head (a single M-word), while the Q particle is   **840**
an independent M-word. This is schematized in (57a). The clitic form lacks an Aux (i.e. no *i*,   **841**
but T and AGR still form a complex head (57b)). Because both cases involve two M-words   **842**
joined by Local Dislocation, inversion should be possible.   **843**

(56) a. Siz   oqu-ghan {i-d-ingiz,   =t-ingiz}=mu?   **844**
          2SG.INF read   {AUX-PST-2SG.INF, =PST-2SG.INF}=Q

          'Had you read?'   **845**

      b. Siz   oqughuchi {i-d-ingiz,   =t-ingiz}=mu?   **846**
          2SG.INF student   {AUX-PST-2SG.INF, =PST-2SG.INF}=Q

          'Are you a student?'   **847**

(57) a. [AUX-[T-AGR]]=[Q]   **848**

      b. [T-AGR]=[Q]   **849**

Inversion is indeed possible in cliticized forms, as predicted by our account. Examples   **850**
of this are shown of inversion between =*tingiz* (T+AGR) and *mu* (Q) for both participial   **851**
constructions (58) and copular constructions (59).[8]   **852**

(58) a. Siz   oqu-ghan=[t-ingiz]=[mu]?   **853**
          2SG.INF read-PTCP.PST=PST-2SG.INF=Q

          'Had you read?'   **854**

      b. Siz   oqu-ghan=[mi]=[t-ingiz]?   **855**
          2SG.INF read-PTCP.PST=Q=PST-2SG.INF

          'Had you read?'   **856**

(59) a. Siz   oqughuchi=[t-ingiz]=[mu]?   **857**
          2SG.INF student-=PST-2SG.INF=Q

          'Were you a student?'   **858**

      b. Siz   oqughuchi=[mi]=[t-ingiz]?   **859**
          2SG.INF student-Q=PST-2SG.INF

          'Had you read?'   **860**

      The predictions of our analysis are less clear for auxiliary constructions. Recall from   **861**
Section (4.1) that complex heads containing main verbs cannot undergo inversion. It is   **862**
unclear a priori whether auxiliaries should behave like lexical verbs in this respect. If auxil-   **863**
iaries are different from lexical verbs, inversion could be possible between clitics/auxiliaries   **864**
and Q. If auxiliaries are like main verbs, in that they are unable to undergo inversion, only   **865**
clitics should allow inversion.   **866**

      Inversion is indeed possible with clitics, as shown in (60). Interpreting the data is   **867**
confounded by the fact that non-final Q is realized as =*mi*= and the auxiliary begins with   **868**
i-. This produces vowel hiatus (the sequence mi=i), which is repaired by vowel deletion   **869**
(see Major and Mayer (accepted) for some additional discussion of vowel deletion). Since   **870**

---

8   Recall from (3.1.3) that the alternation between *mu* and *mi* is purely phonological.

the vowels are identical, it is impossible to say which one remains. However, the fact that voicing assimilation occurs in the *-d* suffix suggests that the final vowel of *=mi=* deletes while the auxiliary is present and raises to T. This is because voicing assimilation only occurs when morphemes are combined via head movement. Otherwise we would expect the voiceless allomorph.

(60) a. Siz   oqu-ghan   m=[i-d-ingiz]?
          2SG.INF read-PTCP.PST Q=AUX-PST-2SG.INF

          'Had you read?'

     b. Siz   oqughuchi m=[i-d-ingiz]?
          2SG.INF student   Q=AUX-PST-2SG.INF

          'Were you a student?'

We therefore conclude that auxiliaries are not prohibited from undergoing inversion under Local Dislocation, unlike main verbs. For this reason, both orders involving the Q-particle are permitted.

   The cases above are straightforwardly captured by our proposal, but things get far more complex as we look at present and non-past configurations. First, recall that the Q-particle can combine directly with a predicate nominal or a participial, as in (61).

(61) a. Siz   oqughuchi=mu?
          2SG.INF student=Q

          'Are you a student?'

     b. Siz   oqu-ghan=mu?
          2SG.INF read-PTCP.PST=Q

          'Have you studied?'

There are a number of questions about what the Q particle combines with and how. We have proposed that the Q-particle always combines via Local Dislocation, but it is also possible that Q is able to interact with a null copula or null T head. Kornfilt (1996) explicitly argues that such null copulas are able to be inflected with TAM markers, evidentials, and agreement morphology. With respect to inversion, one might expect that a null copula could undergo inversion with Q, despite being string vacuous.

   Whereas Uyghur and Uzbek do not exhibit an overt present tense copula, Chagatay does (*dur/tur*). Eckmann (1966) discusses the fact that in early Chagatay, the copula was inflected for tense (*dur-ur*). Over time, the T inflection (*-ur*) was dropped and eventually *dur/tur* as well. However, for present purposes, we can use Chagatay to at least inform where these null copulas or tense-marking could be observed in Modern Uyghur.

(62) a. qil-ma-gan   dur
          do-NEG-PTCP.PST COP

          "Didn't do"

     b. qil-gan   e(r)-mäs   tur
          do-PTCP.PST COP-NEG COP

          "Didn't do"

   (4.2) shows two realizations of the phrase "didn't come" in Chagatay. Notice in (62b), T occurs following the negative auxiliary. If we assume this element to be syntactically present but covert in Modern Uyghur, it changes the ordering possibilities predicted to be acceptable under the present approach. For instance, if we consider the negative copular questions in (63), one might predict that inversion between the Q-particle and the negative auxiliary should be possible, as was the case with the auxiliaries inflected for T in (60).

(63) a. Siz   oqughuchi e-mes=mu?
          2SG.INF student   AUX-NEG=Q

          'Aren't you a student?'

  b. Siz oqu-ghan e-mes=mu?   913
    2SG.INF read-PTCP.PST AUX-NEG=Q

    'Haven't you studied?'   914

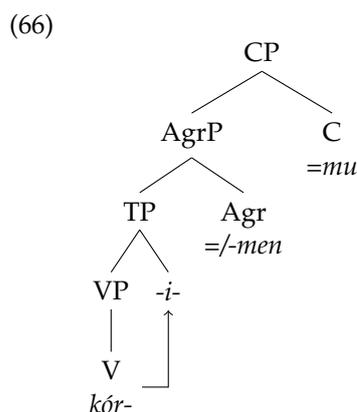Whereas the uninverted form is fine above, the inverted form is ungrammatical (64). 915

(64) a. *Siz oqughuchi mi/mu/m=e-mes?   916
     2SG.INF student Q=AUX-NEG

     Intended: 'Aren't you a student?'   917

  b. *Siz oqu-ghan mi/mu/m=e-mes   918
     2SG.INF read-PTCP.PST Q=AUX-NEG

     Intended: 'Haven't you studied?'   919

If we assume that there is a null equivalent to *dur(ur)* between the negative copula and *=mu*, 920
string-vacuous inversion of the Q particle and silent *durur* would be possible, as was the 921
case between the Q particle and the overt past tense forms in (58), (59), and (60). However, 922
assuming that the Q particle merges above T, it could invert with the null copula, but could 923
not undergo subsequent inversion with the negative copula, because it would involve the 924
prohibited Z X Y order. 925

  The distribution of Q-particles in the non-past presents an interesting puzzle. Notice 926
in (65a), that the Q-particle precedes Agr, while in (65b) it follows it. Interestingly, the 927
former is the more natural form, despite the fact that it appears to be the inverted form. 928

(65) a. Siz méni kör-em-siz?   929
     2SG.INF 1SG.ACC see-NONPST.Q-2SG.INF

     'Will you see me?'   930

  b. ?Siz méni kör-i-siz=mu?   931
     2SG.INF 1SG.ACC see-NONPST-2SG.INF=Q

     'Will you see me?'   932

At first glance, it appears that our analysis offers a straightforward account of this contrast. 933
If we assume that the output of the narrow syntax is as shown in (66), one might suggest 934
that the only difference in (65) arises from inversion between Agr and Q, a process made 935
possible by the present proposal as long as head movement to AGR does not take place 936
and AGR and Q both combine via Local Dislocation.[9] 937

(66)   938

           CP
           /   \
        AgrP   C
        / \   *=mu*
      TP Agr
      / \ *=/-men*
    VP *-i-*
     |
     V
    kór-

  The intuitive approach to this data would be to treat *-em* in (65a) as a portmanteau 939
that realizes both T + Q features. In this case, we would have to claim that the same is true 940
of *m* in cases where the verb root ends in a vowel, such as (67). 941

---

9 It is unclear why the final vowel of *mi/mu* is lost in this construction. We leave this as an open question.

(67) Siz   méni   tonu-m-siz?
    2SG.INF 1SG.ACC know-NON.PST-Q-2SG.INF

    'Do you know me?'

However, there is data to suggest that the *a/e/0* alternation we find preceding *=m* is not actually the non-past or present tense. For instance, it is possible to cliticize the past tense to *=m*, which would lead to a contradiction if the non-past/present is contained within *am/em*. This is shown in (68a), where the Q particle precedes *=tingiz*.[10] However, the past tense is incompatible with the non-past regardless of where the Q-particle resides, as shown in (68b)-(68c).

(68) a. Siz   méni   kör-e=m=t-ingiz?
           2SG.INF 1SG.ACC see-ASP=Q=PST-2SG.INF

           'Would you have seen me?'

    b. * Siz   méni   kör-i-siz-t-ingiz=mu?
           2SG.INF 1SG.ACC see-ASP=PST-2SG.INF=Q

           Intended: 'Would you have seen me?'

    c. * Siz   méni   kör-i-siz=mi=t-ingiz?
           2SG.INF 1SG.ACC see-ASP=Q=PST-2SG.INF

           Intended: 'Would you have seen me?'

For this reason, we argue that the alternation we began with in (65) is not a matter of inversion; instead, we suggest that the two interrogatives have radically different syntactic structures.

We assume that simple, but dispreferred, non-past interrogatives involve straightforward derivations which obey the mirror principle, resulting from head movement to AGR. In these cases the complex head containing the main verb is incompatible with inversion, as in (69).

(69)

-em/-am/-m constructions are more complicated. The fact that *em* constructions are compatible with the past tense is highly suggestive that *-(a/e)m* does not itself contain tense. This is supported by data from Chagatay, where we see that *-a/-e* is actually a gerundive/converbial marker that is followed by a copula. This marker (roughly) encodes imperfectivity, not tense. As shown in (70), this element is followed by the present tense copula *dur*, which does encode tense (recall discussion of *durur*).

(70) a. öl-ä   dur men
        die-CNV COP 1SG

        'I (will) die' (Eckmann 1966, pp. 94)

---

[10] The past tense in configurations like (68a) behaves more like the past tense on modals in English than the true past tense. We leave the precise semantics to future research.

b. de-y   dur men   **972**
   say-CNV COP 1SG

   'I (will) say' (Eckmann 1966, pp. 174)   **973**

c. tap-a   dur men   **974**
   find-CNV COP 1SG

   'I (will) find' (Eckmann 1966, pp. 174)   **975**

Again, if we assume the Chagatay data to reveal the position of T in modern Uyghur, **976** the difference between the forms in (65) is as follows: the *-em/-am/-m* form does not contain **977** overt tense, while *-i/-y* are truly tense markers. The syntax is such that *-a/-e* combines **978** directly with the verb below T, not unlike participials – we take this element to also be an **979** aspectual head. This aspectual head harmonizes with the root, then the copula (silent *dur*) **980** merges into the structure, which begins a new word and hosts tense/agreement/evidential **981** morphology. Interestingly, remnants of this copula remain in 1st person forms (as *-di*) even **982** in modern Uyghur.[11] **983**

(71) a. Men ket-e=m=*(di)-men?   **984**
        1SG leave-NONPST.Q-COP-1SG

   "Will I leave?"   **985**

  b. Biz ket-e=m-*(di)-miz?   **986**
        1PL leave-NONPST.Q-COP-1PL

        "Will we leave?"   **987**

We conclude that *dur* is silent in non-1st person cases, but syntactically present. The 1st **988** person forms reveal the position that tense merges in the spine, which aligns with what we **989** find in Chagatay. This means that the present and past tense forms have the same syntactic **990** structures, differing only in that the past tense clitic *=t-* is overt, while the non-past marker **991** is silent. We propose the structures in (72) for the non-past and (73) for the past. **992**
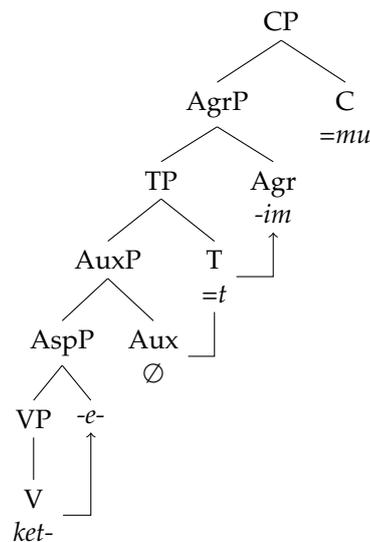
(72)   **993**

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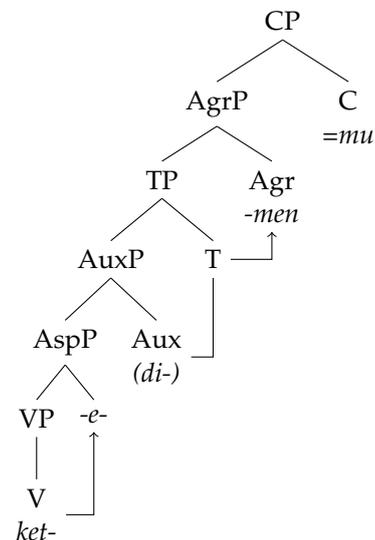
[11] The Q particle often occurs to the left of AGR in Chagatay, but to the right of the converb/gerundive marker, modals, and mood (i.e. it occurs between the optative and AGR markers) in cases like (1).

    (1) ...tarcama   qïl-a   al-gay   mu men?
         ...translation do-CNV ABIL-OPT Q   1SG

        Will I be able to translate...? (Eckmann 1966, pp. 143)

(73)

```
                            CP
                           /  \
                       AgrP    C
                      /   \    =mu
                    TP    Agr
                   /  \   -im
               AuxP    T
              /   \    =t
          AspP    Aux
         /   \    ∅
       VP    -e-
       |
       V
      ket-
```

In both derivations above, the result of head movement is a complex that consists of (Aux)-T-AGR, not unlike clitic forms following participials. Also like participial constructions, Q is able to undergo inversion with the clitic. This is entirely compatible with the proposal above. What still requires an answer is why Q must obligatorily invert with the clitic in these cases, as illustrated by the contrast in (74).

(74) a. Men ket-e=m=t-im?
          1SG leave-ASP=Q=PST-1SG

          'Had I left?'

      b. * Men ket-e=t-im=mu?
          1SG leave-CNV=PST-1SG=Q

          Intended: 'Had I left?'

Aside from the peculiar fact that inversion is obligatory in precisely these cases, our proposal is able to account for all of the interrogative data provided in this section. We now complicate things by introducing evidentiality back into the mix.

4.3. Introducing evidentials

The previous section concluded that the present analysis is able to handle a wide range of interrogative constructions. This section introduces evidentials =*ken* and =*mish* back into the conversation, which presents new difficulties. These difficulties arise from multiple factors: i) grammaticality judgments are difficult for speakers, ii) establishing the morpheme order generated by the syntax is difficult, and iii) the predictions made by our analysis are unclear due to factors (i-ii).

Beginning with the simplest case where the verbal complex raises to AGR in the non-past, both the evidential and the Q-particle combine via Local Dislocation and are able to undergo optional inversion. This follows straightforwardly from our proposal, as there is only a single instance of inversion that takes place.

(75) a. Men két-i-men=mi=ken.
          1SG leave-NONPST-1SG=Q-INFER

          'Will I (really) leave?'

      b. Men két-i-men=ken=mu.
          1SG leave-NONPST-1SG=INFER=Q

          'Will I (really) leave ?'

This is the same pattern we observed when we first introduced alternations between *mish* and *ken* in (42), which similarly involved a single instance of inversion between two adjacent heads combined via Local Dislocation.

Recall that in constructions lacking overt T, such as participial and copular constructions, AGR merges above both *ken* and *mish*. This is shown again in (76).

(76)   a. Men oqughuchi=ken=mish=men.
           1SG student=INFER=REP=1SG

           'I was apparently a student.'

      b. Men oqu-ghan=ken=mish=men.
           1SG study-PTCP.PST=INFER=REP=1SG

           'I have apparently read.'

The order provided in (76) is accepted by all speakers as the most natural morpheme order. We suggested in (41b) that this is the morpheme order generated by the syntax. However, because the evidentials and Agr are not unified by head movement, they are able to undergo inversion.

The cases in (77) are all cases that are predicted to be possible by our proposal and are also confirmed to be grammatical by our speakers. These are both cases where only one instance of inversion takes place (*men* and *mish* or *mish* and *ken*).

(77)   a.   Men oqughuchi=ken=men=mish.
           1SG student=INFER=1SG=REP

           'I was apparently a student.'

      b.   Men oqu-ghan=ken=men=mish.
           1SG study-PTCP.PST=INFER=1SG=REP

           'I have apparently read.'

      c.   Men oqughuchi=mish=ken=men.
           1SG student=REP=INFER=1SG

           'I was apparently a student.'

      d.   Men oqu-ghan=mish=ken=men.
           1SG study-PTCP.PST=REP=INFER=1SG

           'I have apparently read.'

If we assume that the highest of the three dislocated heads is Agr, the only orders predicted to be ungrammatical are those that begin with =*men*, (i.e. ZXY or ZYX orders). These are universally rejected by our speakers, which offers support for our proposal.

(78)   a. * Men oqughuchi=men=ken=mish.
             1SG student=1SG=INFER=REP

            Intended: 'I was apparently a student.'

      b. * Men oqu-ghan=men=ken=mish.
            1SG study-PTCP.PST=1SG=INFER=REP

            Intended: 'I have apparently read.'

However, speakers also vary considerably with respect to the acceptability of the cases in (79), which should be acceptable based on our proposal as currently spelled out.

(79)   a. % Men oqughuchi=mish=men=ken.
             1SG student=REP=1SG=INFER

            'I was apparently a student.'

      b. % Men oqu-ghan=mish=men=ken.
            1SG study-PTCP.PST=REP=1SG=INFER

           'I have apparently read.'

Given that many speakers do not have clear or consistent judgments about the grammati- 1059
cality of the cases in (79), it is difficult to determine how to interpret the results or evaluate 1060
the predictions made by our account. The same variation in acceptability judgments arises 1061
when we look at the behavior of the Q-particle in evidential contexts. 1062

(80) demonstrates the ordering possibilities between the Q-particle, *ken*, and *men*. (80a) 1063
is the most natural order according to all speakers, (80b) is judged as grammatical by all 1064
speakers, while (80c)-(80d) are ruled out as ungrammatical by all. 1065

(80) a.   Men oqughuchi=mi=ken=men?   1066
                 1SG student=Q=INFER=1SG

                 'Was I a student?'   1067

      b.   Men oqughuchi=ken=men=mu?   1068
                 1SG student=INFER=1SG=Q

                 'Was I a student?'   1069

      c. * Men oqughuchi=ken=mi=men?   1070
                 1SG student=INFER=Q=1SG

                 'Was I a student?'   1071

      d. * Men oqughuchi=men=ken=mu?   1072
                 1SG student=1SG=INFER=Q

                 'Was I a student?'   1073

However, if the 1SG marker *men* is swapped with the 2SG marker *siz*, all speakers 1074
maintain the overall same preferences, but some speakers find (81c)-(81d) marginally 1075
acceptable. 1076

(81) a.   Siz   oqughuchi=mi=ken=siz?   1077
                 2SG.INF student=Q=INFER=2SG.INF

                 'Was I a student?'   1078

      b.   Siz oqughuchi=ken=siz=mu?   1079
                 2SG student=INFER=2SG.INF=Q

                 'Was I a student?'   1080

      c. % Siz   oqughuchi=ken=mi=siz?   1081
                 2SG.INF student=INFER=Q=2SG.INF

                 'Was I a student?'   1082

      d. % Siz   oqughuchi=siz=ken=mu?   1083
                 2SG.INF student=2SG.INF=INFER=Q

                 'Was I a student?'   1084

Again, without crisp judgments for these forms, it is difficult to conclude exactly how 1085
to interpret these data. One would need to find a way to clearly differentiate between 1086
grammaticality and acceptabilty in such cases. For this reason, it seems we cannot really 1087
evaluate the constraint on ZXY/ZYX. 1088

5. Discussion 1089

Our analysis accounts for the majority of the Uyghur data presented in this paper. We 1090
have shown that head movement precedes all PF operations, because it blocks auxiliary 1091
insertion and also prevents heads contained within a complex head from undergoing 1092
inversion. We suggest this happens in the narrow syntax, but this is also compatible with 1093
Gribanova's suggestion that head movement happens at an earlier stage at PF. In addition 1094
to strict morpheme ordering as a diagnostic for head movement, we illustrate that the 1095
application of certain phonological processes can also serve as a diagnostic. We further 1096
provide evidence for maintaining a formal contrast between M-words and Subwords, 1097
by which heads unified by head movement (Subwords) are unable to undergo inversion 1098
internal to the complex head or with an M-word (a head not unified with it by head 1099

movement). Finally, whereas Gribanova only needs inversion to apply between T and C, we demonstrate that it is a more general factor between consecutive elements that combine via Local Dislocation.

Where our analysis falls short is determining exactly what the limitations are for inversion. A head can invert with another head if and only if both heads combine to the structure via Local Dislocation. As we mentioned at the beginning of Section 4, if we assume that the reordering between two heads happens from left to right, a head should be able to be indefinitely passed rightward, but that a head can never invert more than once to the left. It seems that the preferred order for speakers is the one that obeys the mirror principle (no inversion). When inversion does take place, there is a strong preference for a single instance of inversion. It is when there are multiple attempts at inversion that speakers judgments begin to become unclear both within and across speakers.

If we take head movement to be a narrow syntactic process and Local Dislocation (and hence inversion) to be post-syntactic PF operations, we might conclude that the latter's purpose is one of optimization (Prince and Smolensky 1993). That is, we assume that inversion has a cost, and is therefore only permitted when performing inversion provides some phonological or prosodic benefit. This would predict both that the non-inverted forms are the most preferred, and that increasing the number of inversions decreases acceptability. In ongoing research, we are investigating ways in which we might evaluate what is gained from inversion, which is a necessary step in determining whether this is the right way to approach this puzzle.

6. Conclusions

This paper has expanded prior literature on Turkic word formation strategies in Turkish (Kornfilt 1996; Yu and Good 2000) and Uzbek (Gribanova 2020) to include Uyghur. Building on these analyses and expanding the number of constructions under investigation, we have offered an analysis that differentiates between suffixes, clitics, and auxiliaries in Uyghur. We have provided diagnostics for head movement in Uyghur and shown that true verbal suffixes are derived from head movement. In addition, we have shown that Uyghur, like Turkish and Uzbek, has an alternative strategy for constructing words, in following with the observations in Kornfilt and Gribanova. We follow Gribanova in analyzing this as Local Dislocation. We suggest that this results in clitic-like behavior, which optionally allows inversion. We restrict inversion to two heads, making use of the distinction in Embick and Noyer (2001) between M-words and Subwords, suggesting that Subwords are never able to undergo inversion, while complex heads can. We also offer an explanation for the environments where Local Dislocation takes place relative to head movement. Moreover, this paper offers a substantial look into the morphological system of Uyghur, which is of value for both descriptive reasons, as well as setting the stage for more comprehensive investigation of the morphological system moving forward.

Abbreviations

The following abbreviations are used in this manuscript:

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