

A Phase-Based Approach to Uyghur Morphosyntax

Jacob Kodner*

Abstract. Research on the syntax-PF interface has highlighted strategies for forming words across languages, explored in Uyghur in Major et al. (2023), and how words are mapped in different components of the grammar, discussed in Fenger (2020) in relation to syntactic phases. This work applies the mechanisms of Fenger’s theoretical proposal to Uyghur data from Major et al. (2023), and in doing so puts forth the argument that the locations of prosodic word boundaries conditioning morphophonological changes can be predicted by the presence of featurally marked phase heads in the narrow syntax. Specifically, it is argued that synthetic forms involving the past tense marker in Uyghur arise when there is no feature marking at the phase head Asp(ect), and periphrastic forms arise when there is marking at the Asp phase head, such as for the perfective participle. This work expands upon cross-linguistic work in word-formation strategies and provides evidence in favor of a strong correspondence between locality domains in syntax and phonology, specifically with respect to the prosodic word.

Keywords. morphology; syntax-phonology interface; morphosyntax; Uyghur; phases; cyclic spell-out

1. Introduction. An ongoing point of inquiry within the literature on the architecture of the grammar in the generative tradition concerns the locality domains defined within the different components, particularly from the mapping of syntax to PF. The question of to what degree is there an isomorphism between syntactic and phonological domains has received considerable attention in the literature. For example, work by Newell (2005) and Embick (2010) argues that phonological domains are isomorphic with syntactic phases.

This work contributes an argument in favor of there being a strong correspondence between syntactic phases and phonological domains, specifically at the domain of the prosodic word. This correspondence is evidenced by the observation that the locations of prosodic word boundaries conditioning morphophonological changes can be predicted by the presence of featurally marked phase heads in the narrow syntax. The empirical phenomenon central to the argumentation developed here is the derivational mechanisms involved in the formation of the past tense morpheme *-d/-t* in Uyghur. This morpheme can surface as a suffix to the verb stem (1), a stem-adjoined clitic (2)¹, and a suffix to a merged auxiliary (3).

- (1) Uyghur, suffixed form (Major et al. 2023:11, ex. 21a)
 men oqu-d-um.
 1SG read-PST-1SG
 ‘I read.’

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¹ ‘=’ represents a clitic boundary.

- (2) Uyghur, clitic form (Major et al. 2023:11, ex. 21b)
 men oqu-ghan=t-im.
 1SG read-PTCP=PST-1SG
 ‘I had read.’
- (3) Uyghur, auxiliary form (Major et al. 2023:11, ex. 21c)
 men oqu-ghan i-d-im.
 1SG read-PTCP AUX
 ‘I had read.’

Note the morphophonological changes associated with the varying forms of the past tense morpheme in (1)-(3). In (1), as a suffix, the past morpheme surfaces in its voiced form [d], in addition to when it surfaces with an auxiliary like in (3). The past morpheme in its clitic form (2) is otherwise its voiceless counterpart [t].² Moreover, in (1) the vowel [u] in the agreement marker undergoes vowel harmony and assimilates with the vowel in the verb root, while in (2)-(3) the agreement marker surfaces as [i]. This work seeks to address the question of what are the derivational processes in (1)-(3) and what factors give rise to their distinct morphophonological forms.

Previous work by Major et al. (2023), from which all of the Uyghur data here is cited, argues that selection criteria, specifically whether or not the complement of T^0 is verbal, determines which combinatorial strategy applies. While this approach correctly predicts many of the alternations observed in Uyghur, it hinges on language-particular assumptions, such that in Uyghur head movement cannot target T^0 from a non-verbal complement. I will demonstrate that a theory adopting Fenger’s (2020) model of cyclic spell-out not only derives the observed alternation. This theory also correctly predicts the distribution of prosodic word (PWD) boundaries that condition the morphophonological alternations in forms like (1)-(3) – a distribution that is not immediately derived under Major et al.’s (2023) proposal. Crucially, the theory put forth in this work inherits the cross-linguistic applicability of Fenger’s (2020) proposal, for it encompasses a broader range of data including the languages it accounts for, namely Turkish and Japanese.

Following Fenger in assuming a model of Late Insertion within the framework of Distributed Morphology (Halle & Marantz 1993; Embick 2010), I demonstrate that the morphophonological alternations exhibited by these forms arise because in each, there is a phase head, Asp^0 , that can block or allow head movement of V^0 to T^0 . In configurations where Asp^0 is featurally unmarked, V^0 can move to Asp^0 , and Asp^0 undergoes post-syntactic pruning. The verbal complex later moves to T^0 , and this is the predicted state of affairs for (1). When Asp^0 is featurally marked, for example as the participle suffix *-ghan* that marks perfective aspect (Tomur 2003), movement of V^0 to T^0 is blocked. This is the predicted derivation for forms like (2)-(3).

This paper is organized as follows. In §2, I detail the core components of Fenger’s (2020) proposal, as well as a brief overview of Uyghur morphophonology. I will provide the details of

² This alternation is due to a more general rule of voicing assimilation that makes obstruents match in voicing to the immediately preceding segment, as will be discussed in §2.1. This applies to a variety of suffixes in the language, including *-ghan* ($gh = [ɣ]$), which would surface as *-qan* ($g = [q]$) if it is not preceded by a voiced segment (e.g., *ut-qan*, win-PTCP). The crucial instance of voicing assimilation that will be explored in this work is as it applies to the past tense marker, which follows the same pattern of voiced-voiceless alternations (see (10) vs. (11)), but surfaces as voiceless in cliticized forms like (2) due to what I argue to be a prosodic word boundary preceding this affix.

my proposal in §3, along with sample derivations of the forms in (1)-(3). Finally, in §4, I will compare the benefits of and challenges for my analysis with those of Major et al.'s (2023) approach, and conclude with further predictions my approach makes.

2. Background. I first provide an overview of Fenger's (2020) proposal, the purpose of which is to understand the mismatch in locality domains for stress and vowel harmony in Turkish and Japanese. One innovation of the proposal is that Fenger implements an account of cyclic spell-out to derive the correspondence between syntactic words and PWDs. Under this theory, it is proposed that head movement, which drives word-formation, stops at phase heads. Crucially, a complex head that contains a phase head is parsed in the phonology as a PWD. Fenger, assuming a model of Late Insertion, also implements an operation that removes heads that are featurally unmarked in the post-syntax, known as "pruning" (Embick 2010). Putting the components of this theory together, this means that phase heads that are marked would not undergo pruning, and a complex unit containing the phase head would be parsed by the phonology as a PWD; further head movement of this complex unit would not be able to apply. On the other hand, phase heads that are featurally unmarked would undergo pruning, and the complex unit, as a syntactic root, can undergo further head movement. In other words, the absence of features at the phase head would allow head movement to follow through. The prediction under this theory then is that PWD-boundaries would surface where there are marked phase heads and head movement is blocked.

There are two additional components of Fenger's proposal that are relevant to this discussion. First, following Bjorkman (2011), Fenger assumes a constraint against stranding of features at T^0 , and head movement of V^0 to T^0 is one way to provide a host. Other ways to provide a host for T^0 are through post-syntactic auxiliary insertion, as well as direct adjunction to the verb stem. The second component, following Harwood (2015), is that Asp^0 is a phase head (part of the inner vP phase), and as such there is a phase-boundary above $AspP$.³ Overall, Fenger's system predicts then there should be a PWD-boundary where there is a marked Asp^0 . This prediction is borne out in languages such as Japanese and Turkish, where the tense morpheme can appear synthetically ((4) and (6)) or periphrastically ((5) and (7)) with respect to the verb.

(4) Japanese, synthetic form (Fenger 2020:17, ex. 4b)

hedatar-sase-ru.

be.distant-CAUS-PRS

'To make it distant.'

(5) Japanese, periphrastic form (Fenger 2020:21, ex. 10b)

hedatar-te (i)-ru

be.distant-ASP AUX-PRS

'It is being (becoming) distant / It is distant.'

³ It is assumed under Fenger's theory that the entire phase, including the phase head, undergoes spell-out (as opposed to just the complement of the phase head).

(6) Turkish, synthetic form (Fenger 2020:44, ex. 66a)

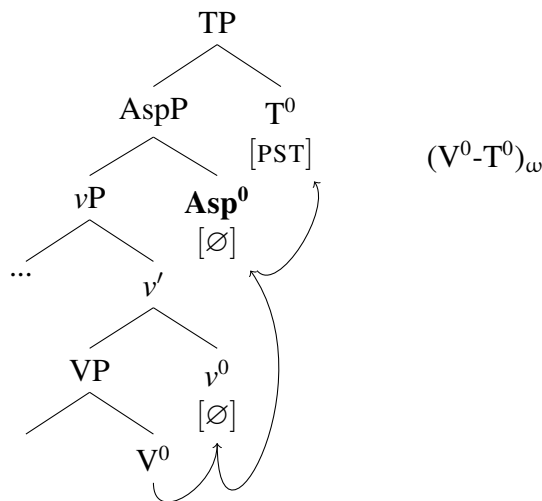
kal-dı.
 stay-PST
 ‘S/he stayed.’

(7) Turkish periphrastic form (Fenger 2020:50 ex. 79a)

kal-ıyor i-di.
 stay-PROG AUX-PST
 ‘Was staying’

I will demonstrate the mechanics of Fenger’s proposal through derivations for the Turkish forms (6)-(7); those for the Japanese forms (4)-(5) would virtually be the same. In (6), there is no feature marking of aspect. V^0 would undergo head movement and stop at the phase head, Asp^0 . Asp^0 , without any feature specifications, would be pruned. Not parsed as a PWD, V^0 can undergo further head movement to and combine with T^0 . As a result, V^0 and T^0 would surface in the same prosodic word, and the derivation of (6) under Fenger’s theory is shown in (8) – boundaries of a PWD are represented with a subscript ω . Note that I follow in Fenger in assuming stress assignment and vowel harmony apply to the surface forms within the domain of the PWD, though I abstract away from the specifics of these processes in the derivations for (6)-(7).

(8) Derivation of Turkish synthetic form (6)⁴

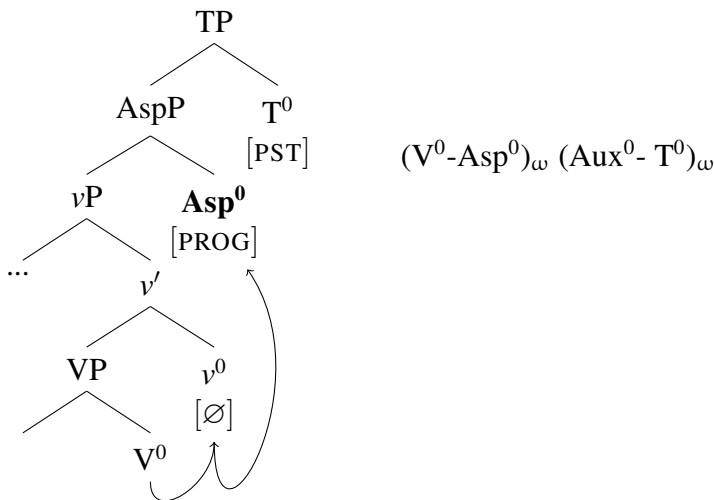


⁴ I follow Major et al. (2023) in having T^0 host agreement morphology along with tense, as opposed to a separate head Agr^0 . My analysis does not hinge on distinguishing tense and agreement in separate syntactic heads, and for expository purposes a more simplified representation is presented.

- i. Head movement to Asp^0 : $\text{V}^0\text{-v}^0\text{-Asp}^0$
- ii. Pruning: $\text{V}^0\text{-v}^0\text{-Asp}^0$
- iii. Head movement to T^0 : $\text{V}^0\text{-T}^0$
- iv. Prosodification: $(\text{V}^0\text{-T}^0)_\omega$
- v. Vocabulary Insertion:
(stress assignment & vowel harmony) $(\text{kal-DI})_\omega$
- vi. Surface form: $(\text{kal-dı})_\omega$

Now turning to the periphrastic form (7), there is feature marking for aspect in the form of the progressive marker *-iyor*. Like before, V^0 would undergo head movement and stop at Asp^0 . Asp^0 , featurally marked as $\text{PROG}(\text{RESSIVE})$, would not undergo pruning. Crucially, the complex head containing V^0 and the marked phase head Asp^0 would be parsed as a prosodic word. Head movement of this complex unit to T^0 is blocked, and this leaves the features at T^0 at risk of being stranded. Fenger proposes here to satisfy the constraint laid out by Bjorkman (2011), where post-syntactic auxiliary insertion would target T^0 and provide its features with a host. Crucially, the auxiliary (Aux^0) and T^0 would form a prosodic word separate from the verb-aspect complex. The derivation of this periphrastic form is shown in (9).

(9) Derivation of Turkish periphrastic form (7)



i. Head movement to Asp ⁰ :	V ⁰ -v ⁰ -Asp ⁰
ii. Pruning:	V ⁰ -v ⁰ -Asp ⁰
iii. Prosodification:	(V ⁰ -Asp ⁰) _ω
iv. Vocabulary Insertion: (stress assignment & vowel harmony)	(kal-Iyor) _ω
v. Surface Form:	(kal-ıyor) _ω
vi. Blocking of movement to T ⁰ :	(kal-ıyor) _ω T ⁰
vii. Auxiliary Insertion:	(kal-ıyor) _ω Aux ⁰ -T ⁰
viii. Prosodification:	(kal-ıyor) _ω (Aux ⁰ -T ⁰) _ω
ix. Vocabulary Insertion: (stress assignment & vowel harmony)	(kal-ıyor) _ω (i-DI) _ω
x. Surface Form:	(kal-ıyor)_ω (i-di)_ω

From the derivations of Turkish (as well as Japanese), it is evident that under Fenger’s (2020) approach, the distribution of PWD-boundaries depends on the markedness of phase heads like Asp⁰. The blocking of head movement by marked phase heads essentially constrains the size of the complex head and as such the PWD itself. Fenger’s system makes it so that domains in the phonology, like the PWD, are mapped from locality domains in the syntax (i.e., phases), rather than a separate interface condition (cf. Shwayder 2014 for an example of a rule mapping of morphological “M” words to PWDs). This is evidence in favor of a strong correspondence between locality domains in the syntactic and phonological components of the grammar, as noted in §1.

Referring back to Uyghur, I will show that Fenger’s system in Japanese and Turkish straightforwardly extends to Uyghur – the presence or absence of a marked phase head, Asp⁰ will determine the distribution of PWD-boundaries of the forms I am looking at. Before turning to the main part of my proposal in Section 3, I provide a brief overview of the morphophonological diagnostics I will use to determine PWD-hood.

2.1. UYGHUR MORPHOPHONOLOGY. I follow Major et al. (2023) in using the phonological processes of voicing assimilation and vowel harmony to diagnose the presence of PWD-boundaries.

Under voicing assimilation, an obstruent matches the voicing of the segment that immediately precedes it. This is shown in (10), where the past morpheme surfaces in its voiceless form following a voiceless segment, and in (11) where it surfaces in its voiced form after a voiced segment. A key component of the argumentation to come, I will consider voicing assimilation not to apply across PWD-boundaries; if it were to, then the initial obstruent in ‘cut’ would surface in its voiced form, contrary to what is observed.

- (10) Uyghur (Major et al. 2023:11, ex. 22c)
 men Tursun-ni kes-t-im.
 1SG Tursun-ACC cut-PST-1SG
 ‘I cut Tursun.’

- (11) Uyghur (Major et al. 2023:11, ex. 22d)
 men Tursun-ni al-d-im.
 1SG Tursun-ACC take-PST-1SG
 ‘I took Tursun.’

The other relevant diagnostic of PWD-hood is vowel harmony, under which segments in suffixes harmonize with the final vowel in the root for backness and/or roundness. This is shown in (12), where the vowel in the agreement suffix [u] matches that of the root verb. In (13), the vowel in the agreement marker [i] does not match that of the verb root. Major et al. (2023) state that in forms with a participle and auxiliary like (13), whether or not vowel harmony here occurs is unclear due to particular properties of the harmony system of Uyghur.⁵ Like the process of voicing assimilation, I consider vowel harmony not to occur across PWD-boundaries.

- (12) Uyghur (Major et al. 23:11, ex. 21a)
 men oqu-d-um.
 1SG read-PST-1SG
 ‘I read.’

- (13) Uyghur, auxiliary form (Major et al. 2023:11, ex. 21c)
 men oqu-ghan i-d-im.
 1SG read-PTCP AUX-PST-1SG
 ‘I had read.’

3. Proposal. To derive the different past tense forms and their associated morphophonological changes, I demonstrate that Fenger’s (2020) theory of cyclic spell-out in Japanese and Turkish straightforwardly extends to Uyghur, with minor differences in details. Rather than having progressive aspect introduce PWD-boundaries like in (7) in Turkish, it would be perfective aspect, realized as *-ghan*, that introduces PWD-boundaries in Uyghur.⁶

As a high-level overview, the past marker is predicted to surface as a suffix to the verb stem when Asp^0 is unmarked, allowing head movement to proceed from V^0 to T^0 and unite them in a single PWD. This is what occurs in the hypothesized derivation of suffix form (1), which is virtually identical to the Turkish synthetic derivation in (8) and expected derivation for the Japanese synthetic form (4). On the other hand, when Asp^0 is marked, for example as perfective, head movement from V^0 to T^0 would be blocked, creating a PWD-boundary that would intervene between both heads. To prevent the stranding of the PAST feature at T^0 , the derivation has a choice of either cliticizing T^0 to the verb stem, like in (2), or merging an auxiliary to host T^0 as a suffix, (3). This is similar to what was observed in the Turkish periphrastic derivation in (9) and Japanese form (5). Voicing assimilation and vowel harmony will be employed as diagnostics to

⁵ Namely, alternations conditioned by backness are not observed with high unrounded vowels. The participle like *-ghan* has an unrounded low vowel, and as a result would not vary with the backness of the participle form – the vowel would surface as [i].

⁶ For Fenger, progressive aspect introduces PWD-boundaries because it is a type of viewpoint aspect, which, based on a typological survey in the same work, is typically expressed as an affix and occurs in more periphrastic constructions with higher categories, such as tense. That progressive aspect introduces PWD-boundaries in Turkish and perfective in Uyghur is consistent with Fenger’s proposal, with both being forms of viewpoint aspect.

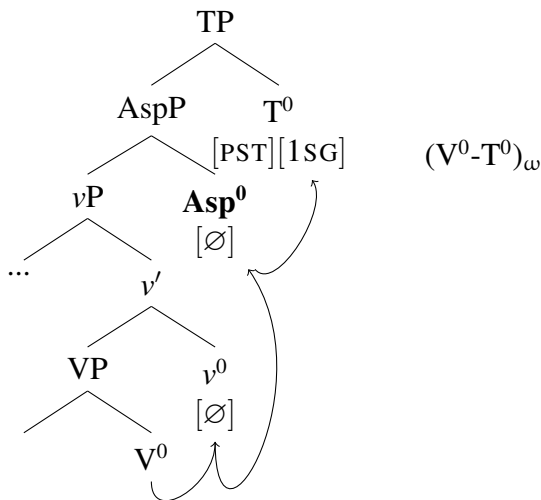
determine the presence or absence of PWD-boundaries between V^0 and T^0 , and the hypothesized order of derivational processes is given below:

- i. Head movement
- ii. Pruning
- iii. Auxiliary Insertion
- iv. “Adjunction”
- v. Prosodification
- vi. Vocabulary Insertion
- vii. Voicing Assimilation
- viii. Vowel Harmony

I will now detail the derivation for the Uyghur suffixed form, reproduced in (14), which is similar to the synthetic forms in Japanese (4) and Turkish (6). In these forms, there is no feature marking for aspect. After V^0 moves to and combines with Asp^0 , Asp^0 would undergo pruning as it is featurally unmarked. Movement to V^0 can subsequently follow through, and the result is that V^0 and T^0 combine into a single PWD. Without any feature marking, the phase head Asp^0 does not introduce a PWD-boundary between V^0 and T^0 . That V^0 and T^0 are in the same prosodic word is evidenced by the application of voicing assimilation ($[d] < /t/$) and vowel harmony (the vowel in 1SG assimilates with the rounded back vowel in the root). The derivation of the suffix form (14) is shown in (15), which is nearly identical to the Turkish synthetic derivation in (9).

- (14) Uyghur, suffixed form (Major et al. 23:11, ex. 21a)
 men oqu-d-um.
 1SG read-PST-1SG
 ‘I read.’

- (15) Derivation of Uyghur suffixed form (14)



Moving onto the clitic and auxiliary forms, reproduced in (16) and (17) below respectively, in both there is feature marking for aspect, the perfective *-ghan*. In both structures, V^0 moves to and stops at Asp^0 . Featurally specified as PERF(ECTIVE), Asp^0 would not be pruned. The verbal complex, which includes the phase head Asp^0 , would undergo spell-out and be parsed as a PWD, with there being a PWD-boundary following the exponent for Asp^0 . With the verb complex up

- i. Head movement to Asp^0 : $V^0-v^0-Asp^0$
- ii. Pruning: $V^0-v^0-Asp^0$
- iii. Head movement to T^0 : V^0-T^0
- iv. Prosodification: $(V^0-T^0)_\omega$
- v. Vocabulary Insertion: $(oqu-T-Vm)_\omega$
- vi. Voicing Assimilation: $(oqu-d-Vm)_\omega$
- vii. Vowel Harmony: $(oqu-d-um)_\omega$

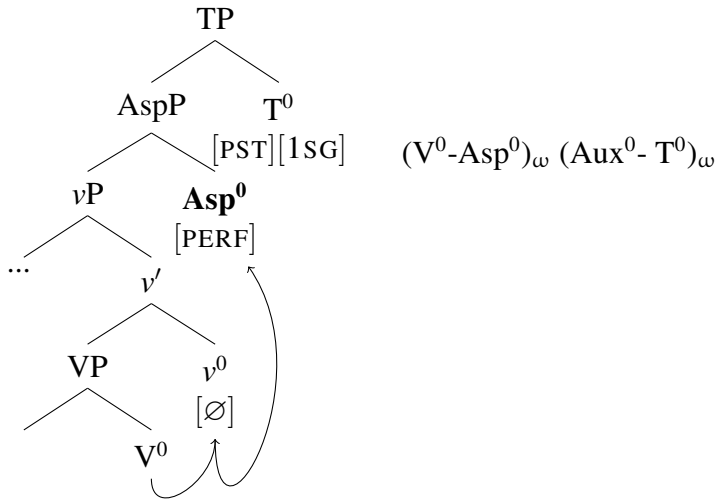
to Asp^0 now a PWD, it cannot undergo head movement to T^0 . To prevent the features at T^0 from being stranded, the derivation has the options of adjoining T^0 to the verb stem as a clitic, as in (16), or merging an auxiliary to host T^0 as a suffix, (17). The optionality between these two combinatorial processes when there is a marked Asp^0 is evidenced by Major et al.'s (2023) descriptive observation that the clitic and auxiliary forms occur in the same environment: where movement of V^0 to T^0 is blocked. I detail in the subsequent paragraphs for how the clitic (16) and auxiliary (17) would be derived under this cyclic spell-out approach.

- (16) Uyghur, clitic form (Major et al. 2023:11, ex. 21b)
 men oqu-ghan=t-im.
 1SG read-PTCP=PST-1SG
 'I had read.'

- (17) Uyghur, auxiliary form (Major et al. 2023:11, ex. 21c)
 men oqu-ghan i-d-im.
 1SG read-PTCP AUX-PST-1SG
 'I had read.'

In the case of the auxiliary form in (17), the grammar would employ the option of merging an auxiliary, Aux^0 , postsyntactically at T^0 to provide a host for its features. The auxiliary and T^0 would form a new prosodic word separate than that of verb stem. The derivation of the auxiliary form (17) is shown in (18).

- (18) Derivation of Uyghur auxiliary form (17)



- | | |
|--|--|
| i. Head movement to Asp ⁰ : | $V^0-v^0-Asp^0$ |
| ii. Pruning: | $V^0-v^0-Asp^0$ |
| iii. Prosodification: | $(V^0-Asp^0)_\omega$ |
| iv. Vocabulary Insertion: | $(oqu-Gan)_\omega$ |
| v. Voicing Assimilation: | $(oqu-ghan)_\omega$ |
| vi. Blocking of movement to T ⁰ : | $(oqu-ghan)_\omega T^0$ |
| vii. Auxiliary Insertion: | $(oqu-ghan)_\omega Aux^0-T^0$ |
| viii. Prosodification: | $(oqu-ghan)_\omega (Aux^0-T^0)_\omega$ |
| ix. Vocabulary Insertion: | $(oqu-ghan)_\omega (i-T-Vm)_\omega$ |
| x. Voicing Assimilation: | $(oqu-ghan)_\omega (i-d-Vm)_\omega$ |
| xi. Vowel Harmony: | $(oqu-ghan)_\omega (i-d-im)_\omega$ |

For the clitic form in (16), the grammar would not merge an auxiliary and instead adjoin T⁰ to the verb stem as a clitic – a choice that is consistent with Major et al.’s observation on the optionality between the clitic and auxiliary forms in the same environment. Following Fenger (2020) and Major et al. (2023), as well as earlier work by Embick (2007), the adjunction of T⁰ can be modeled by a postsyntactic operation, referred to as Local Dislocation, that merges together two heads that are linearly adjacent into a more complex head. This is schematized in (19).

(19) Local Dislocation (via Kramer 2009)

- a. $X*Y \rightarrow X-Y$ or $Y-X$, where * represents immediate precedence
- b. Prosodic structures: $((X)_\omega Y)_\omega$ or $(Y (X)_\omega)_\omega$

The process of Local Dislocation preserves the PWD-boundary originally between X and Y prior to their merger, and creates a recursive prosodic word, as shown in (19b). In the clitic form (16), the grammar would choose to supply T⁰ a host by adjoining it to the verb stem via Local Dislocation. The result would be that the verb stem and T⁰ form a single prosodic word, with the

PWD-boundary from the spell-out of the marked Asp^0 intervening between the verb stem and T^0 . That voicing assimilation fails to apply between the past tense marker, which surfaces as [t] and not [d] despite following a voiced segment, provides evidence for the presence of an intervening PWD-boundary between Asp^0 and T^0 . The remaining derivation of the clitic form (16) is shown in (20). Crucially, this derivation, as well as that for the auxiliary form in (19), behaves similar to the Turkish periphrastic derivation in (7). I discuss the implications of these cross-linguistic similarities in the next and final section.

(20) Derivation of Uyghur clitic form (16)⁷
 (steps i-v same as auxiliary form (18))

- vi. Blocking of movement to T^0 : $(\text{oqu-ghan})_\omega \text{T}^0$
- vii. “Adjunction”: $(\text{oqu-ghan})_\omega = \text{T}^0$
- viii. Prosodification: $((\text{oqu-ghan})_\omega = \text{T}^0)_\omega$
- ix. Vocabulary Insertion: $((\text{oqu-ghan})_\omega = \text{T-Vm})_\omega$
- x. Voicing Assimilation: $((\text{oqu-ghan})_\omega = \text{t-Vm})_\omega$
- xi. Vowel Harmony: $((\text{oqu-ghan})_\omega = \text{t-im})_\omega$

4. Discussion. Through Fenger’s (2020) model of cyclic spell-out, the differing morphophonological forms of the past tense marker in Uyghur are straightforwardly accounted for, in that the markedness of the phase head Asp^0 determines the distribution of PWD-boundaries. This contributes an argument in favor of there being a strong correspondence between syntax and phonology with respect to locality domains: the distribution of PWD-boundaries is directly predictable from the narrow syntax. In the remainder of this paper, I provide a brief overview of a previous approach by Major et al. (2023), and draw a comparison in these theories’ predictions and challenges.

In Major et al. (2023), it is proposed that the syntactic category of the complement of T^0 determines which combinatorial strategy applies. If T^0 selects a verbal complement, V^0 would be able to move to T^0 , and this is how suffixed forms like (14) are hypothesized to be derived. On the other hand, if the complement of T^0 is non-verbal, like in the case of the participle suffix *-ghan* or a noun phrase, head movement of V^0 to T^0 would be blocked. Under their theory, an auxiliary form like (17) would be derived through merging an AuxP into the narrow syntax, and a clitic form like (16) through Local Dislocation of T^0 with the verb stem.

While the selection-based theory of Major et al. (2023) and the phase-based theory in this work derive the same forms, they differ in the characterization of when head movement fails. This would be where the complement of T^0 is non-verbal, as under the selection-based approach, or alternatively where the complement is a phase with a marked head, as under this approach.

These theories also differ in the range of their predictions beyond what is observed in Uyghur. The selection-based treatment depends on language-particular assumptions, such that Uyghur

⁷ An anonymous reviewer points out that the facts from vowel harmony and voicing assimilation are also consistent with another representation – $(\text{V}^0\text{-Asp}^0)_\omega (\text{Aux}^0\text{-T}^0)_\omega$ – in which, unlike (20), there is no PWD nested within another PWD. The empirical facts outlined here indeed do not distinguish between both representations, and the representation in (20) is posed as this is more consistent with the syntax: a higher syntactic head T^0 adjoins to the head of a phrase (AspP) that it c-commands. Future work can verify if recapitulating the syntactic structure as done in (20) lines up with what is observed empirically in Uyghur, perhaps via other domain-sensitive processes.

requires a verbal complement to T^0 for head movement to follow through. This approach immediately does not rule out the opposite state of affairs, where in a hypothesized Uyghur' head movement would land at T^0 with a non-verbal complement like the participle *-ghan*. On the other hand, the phase-based approach would rule out head movement in the hypothesized movement of V^0 to T^0 past *-ghan* in Uyghur'. It is predicted that head movement would occur iff the complement of T^0 takes a phase head that is unmarked and later pruned. Here, with *-ghan*, the phase head is marked and head movement is predicted to not follow through, which is correct given what is observed in the Uyghur clitic and auxiliary forms. Overall, the mechanics of this phase-based proposal hinge more on the cross-linguistic tendency of (viewpoint) aspect to co-occur with PWD-boundaries (cf. footnote 4), which was already shown in the Turkish and Japanese forms (4)-(7). The phase-based approach accounts for the data in Uyghur on cross-linguistic grounds without having to make comparable assumptions about the grammar of Uyghur.

To conclude this paper, I will review how the phase-based approach could account for an open question posed by Major et al. (2023) regarding more complex forms with the interrogative *=mu*. In Uyghur, this marker, which acts as a clitic, attaches to the right of the element it combines with. In some forms, it can optionally undergo inversion and surface to the left of the element it is adjacent to. This is modeled by Major et al. (2023) via Local Dislocation (cf. (19)). (21a) shows that the interrogative marker *=mu* can surface to the right of the tense and agreement complex *=[t-ingiz]*. The interrogative marker can also surface to the left of the complex, as shown in (21b). Note that what the interrogative marker is inverting with is the clitic form of the tense-agreement complex (cf. (16)), and it is attested that *=mu* can also invert with the tense-agreement complex when it is in the auxiliary form (like (18)).⁸

(21) Uyghur periphrastic interrogative forms (Major et al. 2023:26, ex.59a-b)

- a. siz oqu-ghan=[t-ingiz]=[mu]?
2sg.FML read-PTCP.PST=PST-2SG.FML=Q
'Had you read?'
- b. siz oqu-ghan=[mi]=[t-ingiz]?
2SG.FML read-PTCP.PST=Q=PST-2SG.FML
'Had you read?'

The interrogative marker, like in the cases above, can also adjoin to the right of the tense-agreement complex when suffixed to the verb stem (i.e., when V^0 has undergone movement to T^0), as shown in (22a). Interestingly, unlike the clitic and auxiliary forms, the interrogative marker cannot undergo inversion with its adjacent element, here the verb stem, as shown in (22b). The question of why the interrogative marker can invert with the clitic and auxiliary forms, but not the suffix forms, is left as an open question by Major et al. (2023).

(22) Uyghur synthetic interrogative forms (Major et al. 2023:25, ex.55a-b)

⁸ According to Major et al., the alternation between *=mu* in (21a) and *=mi* in (21b) is phonological in nature. In Uyghur there is a vowel reduction process targeting vowels in unstressed syllables, which can be at the word-medial position. This process results in the reduction of *u* to *i* in (21b).

- 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
Intended: 'Did Mahinur leave?'

The phase-based approach here could provide an answer to this puzzle. In the forms where inversion is possible, namely the clitic and auxiliary forms, the interrogative marker is adjoining to a complex unit that has not yet been spelled out. For example, in the forms in (21) under the phase-based approach, only the lexical verb and the participle have been spelled out in a PWD due to the feature marking of the phase head Asp^0 . That the interrogative marker can undergo inversion with clitic form in (21b) is then non-surprising, as it is not changing the order of an already spelled out and linearized form.⁹

Conversely, with respect to (22), it was already shown that without feature marking for aspect, head movement of V^0 to T^0 can follow through and unite both heads into a single PWD (cf. the derivation (15) for the suffixed form). Assuming that inversion cannot target elements already parsed as prosodic words (i.e., the lexical verb and T^0), then the ungrammaticality of (22b) is also directly accounted for by this phase-based approach.¹⁰ Future research can be done to verify the interactions between Local Dislocation and prosodic constituency under a theory where phase heads determine PWD-boundaries, as well as additional correspondences between syntax and phonology with respect to locality domains.

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⁹ An anonymous reviewer raises an alternative line of argumentation, under which clitics take hosts to their left or right edges. (21) and (22a) seem to suggest that Uyghut =*mu* takes a host to its left. This would rule out (22b) where there is no host to the left of the =*mu*. Though a more straightforward account, this does not rule out forms where the interrogative marker precedes the tense-agreement complex in periphrastic forms, like in (23). Under the present approach, the interrogative marker can precede the tense-agreement complex in the auxiliary form since it is a unit that has not yet been spelled out, similar to (21b).

(23) siz oqu-ghan m=[i-d-ingiz]?
2SG.FEM read-PTCP Q=AUX-PST-2SG.FEM
'Had you read?'
(Major et al. 2023:27, ex. 61a)

¹⁰ Another possibility is that =*mu* is an enclitic that attaches to a prosodic word. In the forms in (21), there are recursive prosodic words (cf. (20) for a sample derivation), which makes it so that the interrogative marker can precede the tense-agreement complex in (21b). Conversely, it would be impossible for the interrogative marker in (22b) to precede the verbal complex, as there is no embedded PWD-boundary. I thank Jonathan Bobaljik for bringing up this point.

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