We argue that Kazakh backness harmony presents two clear cases of affixes which are idiosyncratically transparent to harmony, a phenomenon claimed to be unattested as recently as Törkeneczy (2013). We show that the dismissive prior treatment of one such affix in Kazakh (Vajda, 1994, Tamir, 2007) relies on a transcription that does not reflect the speech of our speakers, and we introduce another affix whose behavior has not been documented previously. We show that both Agreement by Correspondence for vowel harmony (ABC, most recently Rhodes, 2010) and Trigger Competition (TC, Kimper, 2011) can be straightforwardly modified to account for these facts, and that TC makes the strongest predictions about the rarity of the phenomenon.

Harmony requires that native word stems contain either only back vowels (bolded in our inventory above) or only front vowels, and limits which consonants can appear with each. Further, most vowel types are restricted to initial syllables (underlined above), leaving vocalic suffixes to generally show alternations between either /e/ and /a/ (as here) or /i/ and /u/:

\[
\begin{align*}
\text{FRONT ROOT:} & \quad \text{søjl\textsuperscript{e}-g\textsuperscript{en}} *\text{søjl\textsuperscript{e}-y\textsuperscript{un}} & \text{`speak-PST.PTCP'} \\
\text{BACK ROOT:} & \quad *\text{ajuw\textsuperscript{e}-er} \quad \text{ajuw-l\textsuperscript{ar}} & \text{`bear-PL'}
\end{align*}
\]

Two suffixes break that generalization by showing harmonically neutral behavior: the comitative case marker /+m\textsuperscript{en}/ and the infinitive marker /+uw/. Both occur after both front and back vowels, and both are transparent to harmony, allowing subsequent suffixes to harmonize with the root:

\[
\begin{align*}
\text{FRONT ROOT:} & \quad \text{syt-pl\textsuperscript{en}-b\textsuperscript{le}} *\text{syt-pl\textsuperscript{en}-ba} & \text{`milk-COM-Q'} \\
\text{BACK ROOT:} & \quad *\text{num-m\textsuperscript{en}-b\textsuperscript{le}} \quad \text{num-m\textsuperscript{en}-ba} & \text{`bread-COM-Q'}
\end{align*}
\]

\[
\begin{align*}
\text{FRONT ROOT:} & \quad \text{Zyz-ul\textsuperscript{e}-d\textsuperscript{i}} *\text{Zyz-ul\textsuperscript{e}-d\textsuperscript{u}} & \text{`swim-INF-ACC'} \\
\text{BACK ROOT:} & \quad *\text{al-ul\textsuperscript{e}-d\textsuperscript{i}} \quad \text{al-ul\textsuperscript{e}-d\textsuperscript{u}} & \text{`take-INF-ACC'}
\end{align*}
\]

Vajda and Tamir attempt to account for INF (/+uw/ above) by describing it as a normal harmonizing suffix with two phonological variants: /uw/ in back contexts and /yw/ in front contexts. This allows this common suffix to be accounted for under standard theories of harmony, but it runs counter to both the standard Kazakh orthographies—which all represent it with a static single vowel—and to our acoustic observations.

We conducted a systematic acoustic analysis of the vowel systems of two native speakers from different regions of Kazakhstan: we recorded a wordlist and focused our analysis on six minimal or near-minimal pairs of front and back words containing INF. These pairs did not differ in preceding consonant nor in the height and roundedness of the surrounding vowels. To test the effects of harmonic environment, we measured F1 and F2 at a point 25% of the way through the vowel in INF and converted frequencies to Bark values.

We found that harmonic context had a significant effect on the realization of the INF affix (especially in Z2), but that the initial target of the vowel did not come close to any other vowel, including [u] or [y]. The differences in Z2 between front-context INF and /y/ and between back-context INF and /u/ were significant \((p < 0.01\) across speakers and contexts), and the Euclidean distance between the front-context INF and /y/ was relatively large (in Bark: 2.7 for speaker 1, 1.1 for speaker 2). Given the minimal spectral overlap between INF and either /y/ or /u/, we conclude that the fronting effect can be ascribed to phonetic coarticulation rather than phonological harmony. Thus, we include /u/ as a vowel phoneme and treat its behavior in INF as a case of idiosyncratic transparency.
Both INF and COM show behavior that cannot be predicted on the basis of the general phonology of the language: except in COM, /e/ participates in harmony, and except in INF, /u/ is neither transparent nor even licit in non-initial syllables. As such, both must be lexically protected in some way, but this alone is not sufficient: both are distinct in their failure to trigger harmony in subsequent affixes, and the grammar must be able to explicitly account for this failure.

Many current approaches to harmony account for lexically idiosyncratic opaque affixes by introducing lexically-indexed protection constraints, but there is only one clear case of an idiosyncratically transparent affix in the literature (Lesley-Neuman, 2007), and that case can be explained on the basis of morphosyntactic facts that do not hold in Kazakh. We claim that the Kazakh facts can be most readily accounted for in a harmony system that allows for non-local agreement.

ABC presents the simplest such account. Since it can selectively establish long-distance links between segments, it is possible to build a grammar in which all alternating segments are compelled to enter into a relationship that the idiosyncratic segments avoid. We follow Rhodes’s terminology in claiming that these two affixes are idiosyncratic in that they are stored with weak backness specifications (here marked †), allowing a strength-sensitive correspondence constraint to skip them. Crucially the idiosyncratic nature of these cases forces us to claim, newly, that weak specifications cannot be the sole result of any property of the inventory. For COM, this claim is all that is necessary, and for INF, we need only add an indexed faithfulness constraint to protect the /u/ from neutralizing to a less marked back vowel:

<table>
<thead>
<tr>
<th>/5yz+u1w+du1/</th>
<th>IO-IDENT-σ₁</th>
<th>IO-ID-INDEXED</th>
<th>*{iuyooosæ}</th>
<th>CORRV₁St, V₁St</th>
<th>IDENTVV[BK]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [3y₁z+u₁w+du₁]</td>
<td></td>
<td>**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. [3y₁z+u₁w+du₁]</td>
<td></td>
<td>**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. [3y₁z+u₁w+du₁]</td>
<td></td>
<td>**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. [3y₁z+u₁w+du₁]</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The newer TC framework claims to offer a more focused approach to non-local harmony, and is compatible with the essentials of our ABC account. Normal transparent vowels in TC are modeled as vowel types which are too well cued for backness to trigger harmony, but which are blocked by another constraint from undergoing harmony and alternating. To account for the idiosyncratic affixes, we first require that they are protected from undergoing harmony (or, in the case of INF, neutralizing) using a lexically indexed faithfulness constraint, but we additionally and novelty allow them to be specified as weak triggers of backness harmony, in order to prevent them triggering harmony on subsequent affixes. While both the ABC and TC analyses generate the expected forms, the TC analysis makes a much stronger claim about the (real) rarity of the phenomenon by requiring additional lexical specifications. If a vowel is protected but not weak, then it will be a typical idiosyncratic opaque vowel, and if it is weak but not protected, it will participate normally.

References


