Covert harmony in Turkish

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Turkish vowel harmony is very systematic, but in a little-studied class of words, appears to break down. I propose that this apparent harmony failure is actually covert harmony. 

**Background:** The backness of vowels in Turkish suffixes is determined by the backness of the nearest vowel in the word they attach to (1).

(1)  
<table>
<thead>
<tr>
<th>Nom.</th>
<th>Dative</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. kadran → kadran-a, *kadran-e 'clockface'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. beden → beden-e, *beden-a 'body'</td>
<td></td>
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</tbody>
</table>

Harmony within roots is often violated, but harmony between suffixes and the nearest root vowel is extremely robust (2). Nonetheless, in exceptional cases (3), the backness of the nearest root vowel is ignored, and suffixes surface with front vowels.

(2)  
<table>
<thead>
<tr>
<th>Singular</th>
<th>Plural</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. kitap → kitap-lar, *kitap-ler 'book'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. kahve → kahve-lar, *kahve-lar 'coffee'</td>
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Harmony is observed when suffixes are immediately adjacent to roots (e.g., *kay-bib, *kitap-lar, *kahve-lar). To account for this apparent suffix disharmony, I extend Smolensky's (2006) headed feature domains theory, and propose that the input to phonology contains HEADLESS FEATURE DOMAINS.

In the existing autosegmental analysis of suffix- (Clements and Sezer 1982), the unexpected frontness of the suffixes in words like *dikkat-lar* is attributed to a floating [-back] feature on the root's final consonant. Phonetically, however, a supposedly opaque /t/ and a normal transparent /t/ are identical. The consonant-driven analysis exploits a pre-existing representational mechanism, but lacks phonetic grounding. Moreover, this analysis cannot explain the new observation that all apparent failures of harmony involve the vowel /a/: there are no words *hurf-ler, *horf-ler or *hırf-ler to correspond to *harf-ler. An account of which roots unexpectedly select front suffixes should explain why only /a/ can fail to trigger back harmony.

**Proposal:** Smolensky (2006) models harmony as the building of a segmentally-headed feature domain that spans a whole word. But *harf* contains no [-back] segment to head a front feature domain and select front suffixes, so *harf-lar* remains unexplainable. Extending Smolensky (2006), I propose that ALL FEATURES ARE FEATURE DOMAINS, which replace traditional segmental feature specifications.

In Turkish, backness domains normally coincide with roots. Alternating suffixes lack their own backness domains and merge into the stem's domain. The apparent failure of suffix harmony in (3) is actually covert harmony: the root as a whole is a front domain, but it contains /a/ in an embedded back domain. Suffixes are incorporated into the outermost backness domain as usual. Thus, they conflict with the embedded vowel but harmonize with the root.

(4)  
(dik(ka)b(ler)ₗ) + IlEr → (dik(ka)b(ler)ₗ)

Since vowels must realize the backness of their containing domains, high- and mid-vowels cannot occur in conflicting embedded domains. However, as a low vowel, /a/ is more central than the other back vowels, and unlike the other Turkish back vowels, it lacks an exactly height-matched front counterpart phoneme. Perceptual reasons, then, lead the Turkish constraint-ranking to allow only /a/ to occur within front roots. The feature-as-domain analysis of vowel harmony models the selection of front suffixes by *harf* and *dikkat* without the need to posit phonetically unrealized front features on consonants, or any other additional apparatus.