Headed Agreement By Correspondence in Basque Disharmonic Roots

Overview. Two major questions are involved in consonant harmony: how the grammar determines the set of features that are required to agree, and what the harmonizing feature values are. This paper focuses on the latter question, and proposes the new concept that in Agreement By Correspondence (ABC, Walker 2000, 2001; Rose & Walker 2004; Hansson 2010; Bennett, 2013) correspondence relations hold between heads and correspondents (HD-Correspondence). The head of a domain (c-head), selected via constraint interaction, determines the harmonizing feature its dependents agree with. This revision of ABC provides an alternative analysis of “harmony blocking”, a phenomenon whereby consonant harmony is blocked by processes of a particular type. Basque will be used to illustrate this claim.

Harmony Blocking. Some eastern dialects of Basque (Basque henceforth) distinguish between laminal sibilants [ʂ, ʂ], and apical sibilants [ʒ, ʒ]. Typically, all sibilants in disharmonic roots are realized as [-distributed] apicals [ʂ, ʂ], regardless of their morphological affiliation (1d) and their position in the input (1a, b). Basque has been argued to show the effects of sibilant harmony in compounds (1a), in the outcome of a sound change (1b), and in loanword adaptation (1c).

(1) Basque coronal harmony (data from Michelen, 1961; Trask, 1996; cited in Hansson, 2001/2010)

a. /sin-etztʃ/ → [sin-etztʃ] ‘believe’
   c.f. /sin/ ‘truth’

b. /satʃuri/ > /satʃuri/ ‘mole’

c. /frantzɛʃ/ > /frantzɛʒ/ ‘French’ from Spanish frances

d. /itsaso+iʃ/ → [itsaso+iʃ] ‘sea (instr.)’

Sibilant harmony in Basque interacts with a process of neutralization (Hualde, 1994), whereby laminal sibilants are neutralized when followed by another consonant. Neutralized sibilants do not agree with other sibilants in the root. For example, the word for “bag” is the disharmonic [ɕiʂku], not [ɕiʂku̯] or [ɕiʂku]. The rightmost sibilant neutralizes to [ʂ]; consequently, harmony with the leftmost laminal [ʂ] is blocked.

HD-Correspondence. Falk (2014) shows that headless ABC cannot capture the mapping /ɕiʂku/ → [ɕiʂku]. Ident-CC (which requires agreement of segments in correspondence) has to be ranked above Ident-IO(dist) in order to obtain assimilation, but below the same constraint Ident-IO(+dist) to avoid overapplication in neutralized forms. In ABC, there is no other constraint that distinguishes the two segments in correspondence, and therefore no ranking exists that can select the right optima.

This paper argues that languages such as Basque provide evidence that ABC is a headed correspondence relation. As in ABC, correspondence is established among segments that share a specific feature. However, one of the segments in correspondence is a consonant head (c-head), and as such, it is the target of specific constraints. Figure (2) illustrates the difference between the two correspondence relations.

(2) HD, CC and IO correspondence

<table>
<thead>
<tr>
<th>/ilmişu/</th>
<th>/ilmişu/</th>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

a. HD-Correspondence

b. original C-Correspondence

Analysis. Typological evidence suggests that in consonant harmony the harmonizing feature in dominant harmony is preferably the marked value (Bennett, 2013:579), and in directional harmony it is the rightmost consonant in the prosodic word (Hansson, 2001/2010:339-371). In headed ABC, these effects are captured by two constraints that target c-heads: Align(c-head, R), and *c-head/unmarked.

Directional harmony is an effect of Generalized Alignment (McCarthy and Prince, 1993) constraints. Since c-heads are phonological constituents, they can be the target of alignment constraints, such as Align(c-head, R), which penalizes c-heads that are not aligned to the right edge of the prosodic word. The other c-head constraint is *c-head/unmarked, which is violated when a c-head has an unmarked feature
value (e.g. de Lacy, 2002; Smith, 2002). I will assume that [-distributed] is more marked than [+distributed] for sibilants, and thus use the constraint *c-head[/+dist]. The last constraint used is Ident-IO(c-head), which penalizes unfaithful mappings of c-heads (Alderete, 1995, Murray, 2001, a.o.).

The tableau in (3) shows how harmony and blocking interact in Basque. As in ABC, both Corr-HD (≡Corr) and Ident-HD (≡Ident-CC) constraints have to be ranked above the Ident-IO constraint of the non-harmonizing feature value [+distributed] to obtain assimilation (a, c), but below the Ident-IO constraint of the correspondence feature [+sibilant] to avoid dissimilation. In Basque, the harmonizing feature is always [-distributed], regardless of directionality and morphological affiliation. This is captured by the relative ranking *c-head[/-apical], Id-IO(-dist) ≫ Id-IO(-dist), Align(c-head, R), as shown in (b).

Candidates (d-f) show how blocking occurs. Since *sC is never violated by a winner, and because of the ranking Corr-HD(+sib), Ident-HD(dist) ≫ Ident-IO(+dist), the loser of candidates (e) wins in headless ABC. Only Ident-IO(+dist) would be violated in these candidates. In contrast, in headed ABC, all correspondence domains are headed. This means that if two sibilants are in correspondence, one of the two must be a head. Candidate (e) is sub-optima because the output fatally violates Id-IO(c-head). As in headless ABC, the candidate with no agreement, and the candidate with [+dist] agreement cannot win either, since it fatally violates *sC (and *c-head[/+dist]).

(3) Harmony and blocking in Basque roots (c-heads between parentheses).

<table>
<thead>
<tr>
<th>Input</th>
<th>Winner</th>
<th>Loser</th>
<th>*c-head[/+dist]</th>
<th>Id-HD(dist)</th>
<th>*sC</th>
<th>Id-IO(-dist)</th>
<th>Id-HD(+sib)</th>
<th>Corr-HD(+sib)</th>
<th>Id-IO(+dist)</th>
<th>Align(c-head, R)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>şatsuri</td>
<td>a. (g)atşuri</td>
<td>(g)atşuri</td>
<td>W</td>
<td>W</td>
<td>L</td>
<td>Agreement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. (g)atşuri</td>
<td>ş,at(ş)uri</td>
<td>W</td>
<td>W</td>
<td>L</td>
<td>L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dominant harm.</td>
</tr>
<tr>
<td></td>
<td>c. (g)atşuri</td>
<td>ş,atşuri</td>
<td>W</td>
<td>L</td>
<td>L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Correspondence</td>
</tr>
<tr>
<td>şîkku</td>
<td>d. ş,îk,ku</td>
<td>ş,îk,ku</td>
<td>W</td>
<td>W</td>
<td>L</td>
<td>No agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>e. ş,îk,ku</td>
<td>ş,îk,ku</td>
<td></td>
<td>W</td>
<td>L</td>
<td>Agree [-dist]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>f. ş,îk,ku</td>
<td>(ş),îk,ku</td>
<td>W</td>
<td>W</td>
<td>L</td>
<td>L</td>
<td>Agree [-dist]</td>
<td></td>
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</tbody>
</table>

**Further consequences.** Headed ABC makes other desirable predictions. It provides a better account of directional harmony. Under certain conditions, it eliminates majority rule effects. It also accounts for languages where directional and dominant harmony interact. Two major predictions remain to be investigated. The first is how c-heads determine the segments that dissipilate in disharmonic systems. The second is seemingly more problematic, and concerns languages where segments are mapped unfaithfully just to satisfy *c-head/unmarked.

**Selected References**
Rose, S. & Walker, R. (2004), 'A Typology of Consonant Agreement as Correspondence', Language 80(3), 475--531