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Poster Session II
Saturday 4:00 - 5:45

Harmony via Positive Agreement: Evidence from trigger-based count effects

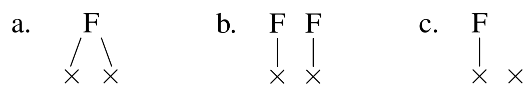
The Phenomenon In most patterns of harmony and assimilation, a single segment triggers harmony of a feature to the left and/or the right, until the end of the word or until some intervening blocker. In contrast, some languages demonstrate a **trigger-based count effect**, in which harmony requires *multiple* triggers (Classical Manchu and Oroqen: Walker 2001; Cantonese: Flemming 2003; Kazakh). For example, in Kazakh, the onset of a suffix assimilates to a nasal-final stem exactly when the suffix also contains a nasal coda. In (1) and (2), an underlying /d/ nasalizes to [n] when there is a nasal trigger on either side.

(1) Nasal Assimilation between two triggers (Kazakh):
  a. /adam-**d**an/ → [adam-**n**an] 'from the person'

(2) No Nasal Assimilation with only one trigger (Kazakh):
  a. /adam-**d**a/ → [adam-**d**a] 'at the person'
  b. /bala-**d**an/ → [bala-**d**an] 'from the child'

I propose an analysis of trigger-based count effects in Harmonic Grammar with Harmonic Serialism (HG: Legendre et al. 1990; HS: McCarthy 2000). I argue for a harmony constraint that demands feature agreement between adjacent and non-adjacent segments.

Harmony Constraints Theories of harmony generally employ one of two main classes of constraints: SPREAD constraints, which prefer multiply-linked feature spans (McCarthy 2011, Kimper 2011), or AGREE constraints, which prefer segments with matching feature specifications (Baković 2000, Hayes & Londe 2006). Under both constraint classes, (3a) is considered harmonic and (3c) disharmonic; however, (3b) is only considered harmonic under an AGREE constraint.

(3)


SPREAD: 3a > 3b, 3c
AGREE: 3a, 3b > 3c

McCarthy (2004) and Kimper (2011) observe that a negatively defined AGREE is subject to "sour-grapes spreading": the constraint undergenerates, failing to capture patterns of partial spreading. McCarthy (2004) presents this as an argument for a SPREAD constraint. Kimper's (2011) solution is a *positively defined* SPREAD constraint: it rewards segments that share a feature instead of penalizing segments that don't. Harmonic Serialism ensures the existence of a maximally harmonic candidate. I partially follow Kimper, and show that a positively defined AGREE constraint also escapes from this pathology.

Proposal My proposal is framed within Serial Harmonic Grammar, which has the weighted constraints of HG and the serial evaluation of HS. Harmony is motivated by a positively defined constraint which rewards feature agreement. Non-local harmony is allowed, but the reward is reduced by a scaling factor based on distance.

(4) **POSAGREE(F):** Assign a reward of +1 for every pair of segments which both bear feature F.
Scaling Factor: For each locus of satisfaction, multiply the reward by a factor of 0.5 for every segment intervening between the pair of agreeing segments.

Under POSAGREE, a target is rewarded for *each* segment it agrees with; thus, unlike in a spreading analysis, a target may have *multiple triggers*. Harmonic Grammar allows the rewards from multiple triggers to accumulate to outweigh the anti-harmony constraint (canonically Faithfulness).

Arguments from Multiple Triggers Trigger-based count effects provide evidence to favor an agreement analysis over a spreading analysis: POSAGREE can capture these patterns, but SPREAD cannot. A sketch of the POSAGREE analysis is given in (5) and (6). The anti-harmony constraint prohibits nasal assimilation when there is just one trigger, but when there are two triggers, POSAGREE wins. The additional rewards in (6) come from non-local agreement with the final [n]: a reward of +0.25 comes from agreement with [m], and, in (6b), a reward of +0.5 comes from agreement with the suffix-initial [n].

(5) No assimilation with a single trigger:

/adam+da/	**5** DEP(Link)	**4** POSAGREE	$\mathscr{H}$
a. ☞ adamda			0
b. adamna	–1	+1	–1

(6) Assimilation with two triggers:

/adam+dan/	**5** DEP(Link)	**4** POSAGREE	$\mathscr{H}$
a. adamdan		+.25	+1
b. ☞ adamnan	–1	+1 + .5 + .25	+2

Since SPREAD only rewards segments which are part of the same feature span, it does not distinguish between (5) and (6). Thus, no weighting can be given for SPREAD that will prefer (5a) over (5b) but prefer (6b) over (6a).

An analogous argument extends to trigger-based count effects where the triggers appear on the same side of the target instead of surrounding it (as in Oroqen: [ɔ̱lɔ̱-w**o**], 'fish-ACC' vs. [mɔ̱ː-w**a**], 'tree-ACC'). Here, POSAGREE receives an additional reward for non-local agreement with the first of the two syllables.

Interactions with Syllable Contact Nasal assimilation is at odds with another constraint active in Kazakh: typically, sonority must fall across a syllable boundary.

(7) Sonority fall between syllables (Kazakh): (Davis 1998, Gouskova 2004)

a. /qar+lar/ → [qar**l**ar] 'snows'
b. /qol+lar/ → [qol**d**ar] 'hands'
c. /qol+ma/ → [qol**m**a] 'Is it a hand?'
d. /adam+ma/ → [adam**b**a] 'Is it a person?'

We observe that the harmonic form [adamnan] (in (1a)) violates this constraint: [m.n] has no sonority fall. The additional complexity that this adds to the Kazakh pattern eliminates some possible alternative analyses that use negatively defined constraints, including an extension of Walker's 2001 analysis of disyllabic triggers. The argument takes the form of a ranking/weighting paradox: if the harmony constraint penalizes disagreeing segments (instead of rewarding agreeing ones), then it could be resolved by feature deletion, as Syllable Contact is resolved in (7d). The form /qol-ma/ would then be predicted to surface as [qolba] (which has no disagreeing segments), but this prediction is not borne out (see (7c)).

Extensions Under the proposed analysis, harmony can be achieved either by inserting a feature (a violation of DEP(F)) or by extending an existing feature span (a violation of DEP(Link)). I analyze local assimilation (as in Kazakh) to be a result of feature spreading, and long-distance harmony (Rose & Walker 2004) to be a result of feature insertion. The differences between the two processes may then result from differences between the faithfulness constraints. Additionally, transparency can be derived as a result of feature insertion, so does not require split feature spans (contra Kimper 2011). Blocker-based count effects (Hungarian: Hayes & Londe 2006) can still be derived as the result of competing triggers (Kimper 2011).

Selected References

Hayes & Londe, 2006. *Stochastic phonological knowledge: the case of Hungarian vowel harmony*. Phonology 23:1, pp 59-104.

Kimper, 2011. *Competing triggers: transparency and opacity in vowel harmony*. PhD thesis, UMass Amherst.

McCarthy, 2011. *Autosegmental spreading in Optimality Theory*. In Goldsmith, Hume, & Wetzels (Eds.) *Tones and Features (Clements memorial volume)*. Mouton.

Potts, Pater, Jesney, Bhatt, & Becker, 2010. *Harmonic grammar with linear programming: from linear systems to linguistic typology*. Phonology 27:1, pp 77-117.

Walker, 2001. *Round licensing, harmony, and bisyllabic triggers in Altaic*. NLLT 19.