

ROUND HARMONY AND FEATURAL TAUTOSYLLABICITY*

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1. Introduction

Recent investigation of round harmony (RH) in the Tungus group (Altaic) has made the interesting discovery that some Tungusic languages appear to require round vowels in two syllables to initiate round spreading (Zhang 1996). In this paper, I argue that this bisyllabic trigger effect can be derived without stipulation through the interaction of optimality-theoretic constraints (Prince & Smolensky 1993). A critical role in this analysis is played by a constraint on featural tautosyllabicity. This constraint, I propose, is one of a family of tautosyllabicity constraints, which follow from extension of the CrispEdge constraints of Itô & Mester (in press).

2. Canonical Tungusic round harmony

I begin by briefly reviewing the description of what I will call “canonical Tungusic RH”, i.e. the core pattern which does not exhibit the bisyllabic trigger condition (for cross-linguistic studies of Tungusic RH see Kaun 1995; Li 1996; Zhang 1996; and references therein). Three properties characterize the canonical pattern. First, RH is always initiated by a vowel in the initial syllable. Second, RH propagates only amongst nonhigh vowels, that is, nonhigh vowels are both triggers and targets of RH, and further, round nonhigh vowels never occur after unrounded or high vowels. Third, high vowels do not participate in RH at all: they block round spreading from a preceding vowel and round high vowels never trigger RH. Round high vowels occur freely after unrounded vowels.

Some Tungusic languages exhibiting canonical RH include Ulcha, Oroch, Solon, Evenki, and Negimal. The pattern is illustrated below for Ulcha. The Ulcha people number about 3,200 and live mainly in the Amur River region of Russia; data and description are based on Kaun (1995). The Ulcha vowel inventory is given in (1), and the boxed vowels, [a] and [ɔ], are the ones that are affected by RH. Like many Tungusic languages, Ulcha also exhibits a tongue root harmony. This harmony will be evident in much of the data in this paper but will not be the subject of analysis (on this harmony see the studies cited above).

(1) Ulcha vowel inventory: (vowel length is contrastive in the initial syllable)

	Front	Central	Back	
High	i		u	-RTR
	ɪ		ʊ	+RTR
Nonhigh		ə		-RTR
	ɛ	a	ɔ	+RTR

* For comments on this work I am grateful to Jill Beckman, Diamandis Gafos, Junko Itô, John McCarthy, Armin Mester, Jaye Padgett, Geoff Pullum, and Cathie Ringen, also audience members at the CLA and participants in phonology reading groups at the University of Massachusetts, Amherst and the University of California, Santa Cruz. This research was supported by SSHRC fellowship 752-93-2397, and NSF grant SBR-9510868 to Junko Itô and Armin Mester.

(2a) shows examples of RH in Ulcha from [ɔ(:)] in the initial syllable to subsequent nonhigh vowels. In this environment [ɔ] occurs, never [a]. (2b) gives forms showing that high vowels block RH and never trigger it themselves. In (2c) round high vowels occur freely in postinitial syllables after unrounded vowels.

(2) a. Ulcha RH:	b. cf. no RH
bɔ:nɔ (*bɔ:nɔ) 'hail (weather)'	ɔjɪlɔvɯ 'leggings'
gɔrɔ 'far'	kɔ:vɯlɔvɯ 'to raise a mast'
tɔŋdɔ 'straight ahead'	bɯqtɔ 'fragment'
tɔtɔŋgɔ 'multi-coloured'	
kɔ:rɔtʃɯvɯ 'to regret'	c. ba:pɯ 'pack, bunch'
dʒɔgbɔlɔvɯ 'to prick, stab'	sɪtʃɯ 'sack for tinder'

A schematic summary of the kinds of nonhigh round vowel patterns occurring in Ulcha is given in (3). Here “C” represents any consonant.

- (3) Summary of Ulcha round harmony.
- a. Nonhigh vowels agree in rounding with an immediately preceding nonhigh vowel: Cɔ(:)Cɔ, *Cɔ(:)Ca, Ca(:)Ca, *Ca(:)Cɔ.
 - b. After a high vowel, a nonhigh vowel must be unrounded: Cɔ(:)CɪCa, *Cɔ(:)CɪCɔ, Cɔ(:)CuCa, *Cɔ(:)CuCɔ.

3. Bisyllabic trigger round harmony

Some Tungusic languages complicate the core pattern of RH with what appears to be a requirement of a bisyllabic trigger (Zhang 1996; Zhang & Dresler 1996, henceforth Z&D 1996). Examples of this more complex harmony occur in Classical Manchu and Oroqen.

3.1 Classical Manchu

Classical Manchu is the language represented by the Manchu writing system. It was the language of the Manchu court from the seventeenth century to the early twentieth century (Z&D 1996 citing Ard 1984) and is considered to be based on the Jianzhou dialect of the seventeenth century (Li 1996). The following description and data are mainly from Zhang (1996) and Z&D (1996), with some forms from Li (1996). The vowel inventory for Classical Manchu is given in (4). The nonhigh vowels [a] and [o] are the ones that alternate in RH.

(4) Classical Manchu vowel inventory:

	Unrounded	Rounded	
High	i	u	+ATR
		ɯ	-ATR
Nonhigh	ə		+ATR
	a	o	-ATR

(5a) illustrates Classical Manchu RH from root to suffix in nonhigh vowels (compare unrounded suffix forms in (b)). Like the other Tungusic languages,

high vowels block round spreading and their rounding is independent of RH (5b). (5c) shows RH in trisyllabic roots. Note that in trisyllables, if the first two syllables contain nonhigh round vowels, a third nonhigh vowel must be round.

- (5) a. RH from root to suffix:
- | | |
|------------|-------------------|
| dobono- | 'go to offer' |
| dorolo-no- | 'go to salute' |
| bof̄o-ŋgo | 'coloured' |
| osoxo-ŋgo | 'having claws' |
| monggo-ro- | 'speak Mongolian' |
| obo-xo | 'to wash' |
- b. cf. unrounded suffix alternants:
- | | |
|-------------|-------------------------|
| dosi-na- | 'go to enter' |
| kofori-na- | 'to become hollow' |
| gosi-ŋga | 'loving, compassionate' |
| arbu-ŋga | 'image' |
| mond̄zi-ra- | 'wring the hand' |
| nomula-xa | 'to preach' |
- c. RH in trisyllabic roots:
- | | |
|---------|---------|
| dorolon | 'rite' |
| foxolon | 'short' |
| osoxo | 'claw' |
- NB:
*CoCoCa

Surprisingly, when a root contains a nonhigh round vowel only in the initial syllable, RH fails:

- (6) a. RH fails from root to suffix:
- | | |
|--------|-----------------------------------|
| to-ŋga | 'few, rare' |
| do-na- | 'alight in swarm' |
| jo-na- | 'form a sore' |
| no-ta | 'younger sisters' |
| go-xa | 'break a promise'
(perfective) |
- b. RH fails in roots:
- | | |
|-------------|---------------------|
| t̄joban | 'a lever' |
| oxa | 'obedient' |
| t̄jola- | 'to fry' |
| doran | 'virgin land' |
| pod̄zan | 'firecracker' |
| t̄jot̄jara- | 'to act carelessly' |

From these facts Zhang & Drescher establish the descriptive generalization that the first two syllables must contain nonhigh round vowels in order for [+round] to spread in Classical Manchu. I will call this the bisyllabic trigger condition.

There is a further point concerning the distribution of round vowels in Classical Manchu which must be taken into consideration. Independent of RH, nonhigh round vowels only occur in the second syllable of roots when the initial syllable also contains a nonhigh round vowel, that is, *CaCo roots are ill-formed. This distribution cannot be attributed to RH, since both CoCo and CoCa are well-formed root structures, and there must be two consecutive nonhigh round syllables to trigger round spreading. (7) gives some minimal pairs contrasting solely in terms of the round specification of the second vowel. These forms unambiguously show that rounding in a second syllable is contrastive after an initial round vowel (this data from Li 1996: 161).

- (7) dola 'barren land' doxa 'stick'
dolo 'inside' doxo 'lime'
- noran 'a pile of wood' oxa 'obedient'
noron 'longing' oxo 'armpit'

I suggest that the distribution of round vowels in the second syllable is the result of a licensing effect, that is, a [+round] feature on a nonhigh vowel is only

Although not shown here, Oroqen RH is subject to the usual height stratification. The examples in (11) show RH taking place when the first two vowels of the root are round and nonhigh. However, RH fails when just the initial syllable of the root contains a round vowel. As Z&D (1996) observe, forms like those in (12) show that a bimoraic (long) round vowel is insufficient to trigger RH on its own.

- (12) RH fails:
- | | | | |
|---------|---------------|---------|-------------------|
| a. +RTR | | b. -RTR | |
| mɔ:-wa | 'tree' (obj.) | dɔ:-rən | 'to mince' (obj.) |
| nɔ:da:- | 'throw' | ko:rgə | 'bridge' |

What Oroqen contributes then is a second case of the bisyllabic trigger effect, and it demonstrates that this is truly a bisyllabic condition not just a bimoraic one.

Like Classical Manchu, round vowels in Oroqen are also subject to an initial syllable licensing effect, such that nonhigh round vowels occur in the second syllable of roots only when the initial syllable contains a nonhigh round vowel (i.e. *CəCo, *CaCə roots are ill-formed).¹ Also like Manchu, in the syllable following an initial round vowel, rounding is contrastive, so both round and unrounded vowels may occur (compare second root vowels in (11) and (12)).

A schematic summary of Oroqen rounding patterns is given in (13). (Vowels not marked for length may be long or short).

- (13) Summary of Oroqen round harmony and licensing.
- Licensing: a postinitial round nonhigh vowel only occurs immediately following a round nonhigh vowel: Co:Cə, CoCo, CəCə, *CəCo.
 - Bisyllabic trigger: [+round] spreads to subsequent vowels when the first two syllables contain round nonhigh vowels.
CoCo-Co *CoCo-Cə CoCə-Cə *Co:Cə-Co;
CɔCɔ-Cɔ *CɔCɔ-Ca CɔCa-Ca *Cɔ:Cə-Cɔ.

To review, across the canonical and bisyllabic trigger RH patterns it holds that round nonhigh vowels occur in a postinitial syllable only when the initial syllable is also round — this I have characterized as licensing. Further, in the canonical pattern, [+round] spreads to unrounded nonhigh vowels with no condition on the size of the trigger; while in the bisyllabic trigger pattern, rounding spreads only when there are two consecutive round vowels to initiate spreading.

4. Analysis

Z&D (1996) point out that the bisyllabic trigger condition in Classical Manchu and Oroqen does not appear to be connected to the prosody of these languages.² I will argue that it is connected to the licensing effect for round.

¹ Licensing of [+round] in nonhigh vowels is complicated in Oroqen by a requirement that [+round] be linked to the first two moras of a root in order to surface, that is, *CoCə and *CɔCa are ill-formed, but Co:Cə, Cɔ:Ca, CoCo, and CɔCɔ are grammatical. While interesting, this complication will not directly bear on the analysis of the bisyllabic trigger effect, since spreading of [+round] to subsequent vowels only occurs when the first two syllables (not just first two moras) are round. This aspect of licensing will thus not be discussed further here.

² Stress in both of the bisyllabic trigger languages is essentially final. In Classical Manchu stress is word-final, except in non-imperative verbs, where it is penultimate (Li 1996: 20). In Oroqen, primary stress is final and the initial syllable receives secondary stress (Li 1996: 20).

4.1 The constraints

In the analysis of bisyllabic triggers, it will be necessary to refer to the round spreading and licensing requirements apparent in Tungusic grammar. I will refer to these demands with the optimality-theoretic constraints below.

- (14) SPREAD[+round]-highV
“Spread a [+round] feature on a nonhigh vowel to all vowels in a word.”
- (15) LICENSE ([+round, -high], initial syllable)
“Link each [+round, -high] feature cluster to the initial syllable.”

The constraint in (14) requires that [+round] spread from a nonhigh vowel, that is, a [+round] feature on a nonhigh vowel in an output must be linked to all other vowels within the word. This constraint follows the spreading constraint proposed and formalized by Padgett (1995) (see also Kaun on EXTEND) with the restriction to nonhigh triggers after Kaun (1995). Note that the trigger restriction alone will not capture the blocking behaviour of high vowels, but this could be handled with a UNIFORMITY constraint (Kaun 1995). (15) gives the constraint which mandates that [+round] on nonhigh vowels be licensed by a link to the initial syllable (after Zoll 1996; formalized as COINCIDE). The precise formulation of the spreading and licensing constraints here is not crucial (for example, spreading could instead be expressed in terms of alignment); in fact, Walker (in prep.) argues that Tungusic round spreading, licensing and height stratification (restriction to nonhigh vowels) can be derived simply through the interaction of faith and markedness constraints (drawing on Beckman 1995, 1996). The details of that proposal are beyond the scope of this paper; the above constraints are assumed for expositional transparency. For our purposes what is important is how the demands of spreading and licensing interact with another constraint to produce a bisyllabic trigger.

The constraint which will prove to critically interact with spreading and licensing to produce the bisyllabic trigger phenomenon is one on featural tautosyllabicity for [+round], a constraint violated in cases of cross-syllable round spreading. Informally, this constraint must express the requirement in (16).

- (16) Featural tautosyllabicity for [+round]: (informal)
“Each syllable dominating an occurrence of a feature specification [+round] uniquely dominates that occurrence of [+round].”

Featural tautosyllabicity for [+round] demands of each [+round] feature that all of its associated segments be tautosyllabic. This corresponds to the notion of “crisp edges,” outlined by Itô & Mester (in press) (see also Merchant 1995). Itô & Mester’s CRISPEDGE[PCat] constraint requires that all material belonging to a given PCat be wholly contained within that PCat. For example, CRISPEDGE[σ] requires that all segments and features belonging to a syllable have no links to another syllable. I propose that the CRISPEDGE constraints be extended to capture feature-specific tautosyllabicity, as in (17) for [+round].

- (17) CRISPEDGE(σ, [+round])
A syllable has crisp edges with respect to the feature specification [+round].

A more formal definition of CRISPEDGE(σ , F) is given in (18) (with straightforward extension to the more general CRISPEDGE[PCat, F]).

(18) CRISPEDGE(σ , F): definition

- i. CRISPEDGE(σ , F) holds for the category σ of syllables with respect to the feature specification F if and only if for each occurrence f of the specification F , the following holds:

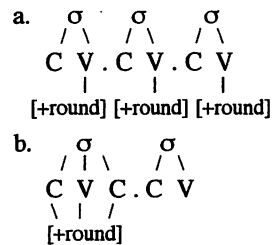
$$\forall i [\sigma_i D f \rightarrow \forall j [\sigma_j D f \rightarrow j = i]]$$

where “ $x D y$ ” expresses that x dominates y .

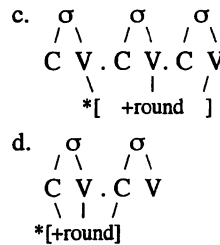
- ii. A mark is incurred for each occurrence f for which (i) is false.

Part (i) of (18) expresses that a syllable has crisp edges with respect to a feature specification F , if for each syllable i dominating an occurrence of that feature specification, any other syllable j dominating it is identical to syllable i , i.e. a feature occurrence may be dominated by no more than one syllable. Zoll (1996) notes that the mode of assessment of violations needs to be made explicit in a constraint. Part (ii) expresses the categorical interpretation of featural tautosyllabicity: one mark is assessed if a feature occurrence is linked to two syllables or if it is linked to three or more syllables. This categorical assessment of marks will prove to be critical in explaining bisyllabic triggers. (19) illustrates the evaluation of CRISPEDGE(σ , [+round]) in relation to various structures.

(19) CRISPEDGE(σ , [+round]) satisfied:



violated (*):



CRISPEDGE(σ , [+round]) is violated in (19c, d), because an occurrence of a [+round] feature specification belongs to more than one syllable; otherwise it is satisfied, as in (19a, b). More generally, members of the family of CRISPEDGE(σ , F) constraints will be violated by feature spreading in vowel harmony and they will be respected in cases of syllable-bound spreading (tautosyllabic spreading examples include Cairene Arabic emphasis harmony, Lehn 1963, Broselow 1979, and Turkish palatalization and velarization, Clements & Sezer 1982).

4.2 Analysis of canonical round harmony

I now turn to the rankings needed for Tungusic RH, first establishing those for canonical RH and then comparing the bisyllabic trigger languages.

In the canonical pattern (Ulcha), [+round] spreads from the initial syllable with no condition on trigger size. The outcome of this spreading violates the crisp edge constraint for [+round], because [+round] can belong to more than one

syllable. The spreading constraint thus outranks CRISPEDGE(σ , [+round]):

(20) SPREAD[+round]-highV >> CRISPEDGE(σ , [+round])

	bɔra	SPREAD[+rd]-highV	CRISP(σ , [+round])
☞	a. [bɔrɔ]rd		*
	b. [bɔ]rdra	*!	

As a space-saving measure, candidates in tableaux are labelled with a bracket notation which defines the domain of segments to which a (subscripted) feature is linked. (20a) represents a candidate in which an occurrence of [+round] is linked to both syllables, while (20b) has [+round] linked only to the first syllable. In this and subsequent tableaux I consider only forms with nonhigh vowels. For a detailed analysis of height stratification, see Walker (in prep.).

In languages with canonical RH, where spreading outranks CRISPEDGE(σ , [+round]), any selection of an output with a multiply-linked [+round] feature may be attributed to the force of the spreading constraint. Although it is the case that the distribution corresponding to round licensing also holds in these languages (a [+round] feature never occurs linked to a postinitial syllable when it is not also linked to the initial syllable), this result falls under the set of cases captured with the high-ranked spreading constraint. That is, spreading demands a stronger requirement than licensing, so licensing is violated in a subset of the cases that spreading is violated. (21) shows the multiply-linked outcome for an input containing two round vowels. The licensing constraint is given in the tableau, but it is not crucially ranked with respect to the CRISPEDGE(σ , [+round]), as indicated by the bold line separating these constraint columns.

(21) LICENSE[+rd, -high] σ 1 is freely ranked with respect to CRISPEDGE(σ , [+rd])

	tɔŋdɔ	SPREAD[+rd]-highV	CRISP(σ , [+rd])	LIC[+rd, -high]
☞	a. [tɔŋdɔ]rd		*	
	b. [tɔŋ]rd[dɔ]rd	*(!)*		*(!)
	c. [tɔŋ]rdɔ	*!		

In canonical RH, the illformedness of *CaCɔ forms also falls under spreading and need not be attributed to licensing. An input of this kind could be resolved by surfacing as CaCa, with loss of the postinitial [+round] specification. It is also conceivable that it is instead resolved as [CɔCɔ], with regressive spreading of [+round] to the initial syllable. Following the work of Beckman, I assume that the featural value of the vowel in the initial syllable is preserved over postinitial featural specifications, which selects the CaCa output as optimal. The featural faith constraints that realize this kind of result are given in (22) (expressed as IDENT after McCarthy & Prince 1995).

- (22) a. IDENT[+round] σ 1, IDENT[-round] σ 1,
 b. IDENT[+round], IDENT[-round]

The constraints in (22a) express position-specific faithfulness (after Beckman

1995, 1996); the first of these constraints requires that correspondents of [+round] input segments *in the initial syllable* be [+round] in the output. The second constraint enforces initial syllable identity for [-round] correspondents. The constraints in (22b) more generally express the same faith requirements for all positions.

Beckman points out that ranking position-specific faithfulness constraints over their more general counterparts yields outcomes in which faith to the privileged position (in this case the initial syllable) is more strictly upheld than faith in other positions.³ The application of this kind of ranking to a CaCɔ input is illustrated below. Spreading is ranked with the initial syllable faith constraints over the other faith constraints. (Separate faith constraints for [+round] and [-round] are collapsed here for reasons of space).

(23) IDENT[±round]_{σ1}, SPREAD[+round]-highV >> IDENT[±round]

	CaCɔ	IDENT[±round] _{σ1}	SPREAD[+rd]-highV	IDENT[±round]
☞	a. CaCa			+
	b. Ca[Cɔ] _{rd}		*!	+
	c. [CɔCɔ] _{rd}	*!		+

In (23), an initial [-round] specification is preserved at the cost of a postinitial [+round] one. In cases where [+round] spreads from an initial syllable to a following unrounded vowel, it is [+round] in the privileged position maintained at the cost of [-round]:

(24) IDENT[±round]_{σ1}, SPREAD[+round]-highV >> IDENT[±round]

	bɔra	IDENT[±round] _{σ1}	SPREAD[+rd]-highV	IDENT[±round]
☞	a. [bɔrɔ] _{rd}			+
	b. [bɔ] _{rd} ra		*!	+
	c. bara	*!		+

In general, it holds in the Tungusic languages that initial syllable faith for [±round] is undominated, as rounded and unrounded vowels have a free distribution in this position.

A summary of the rankings established for canonical RH is given in (25).

(25) Summary of rankings for canonical round harmony:

- a. SPREAD[+round]-highV >> CRISPEGE(σ, [+round])
- b. IDENT[±round]_{σ1}, SPREAD[+round]-highV >> IDENT[±round]

Importantly for our comparison to the bisyllabic trigger languages, the spreading constraint outranks tautosyllabicity for [+round]. Recall also that the licensing constraint does not play a crucial role in realizing the necessary outcomes.

³ There is some overlap in the work that may be performed by initial syllable licensing constraints and by positional faith constraints. On eliminating this redundancy, see Walker (in prep.).

4.3 Analysis of bisyllabic trigger round harmony

Next I examine the rankings for bisyllabic trigger RH (Classical Manchu, Oroqen). Recall that in this pattern [+round] spreads to subsequent syllables only when the first two syllables contain round nonhigh vowels. In addition, a licensing effect is apparent for round vowels in the second syllable, e.g. in Manchu, CoCo, CaCa, and CoCa words are well-formed but *CaCo is excluded.

I suggest that the primary difference between the bisyllabic trigger languages and the canonical ones lies in the ranking of spreading and tautosyllabicity. In the canonical RH languages, spreading dominates the crisp edge constraint. In the case of bisyllabic triggers, the reverse ranking holds. RH is thus unable to spread [+round] from a single round syllable:

(26) CRISPEDGE(σ , [+round]) >> SPREAD[+round]-highV

	tʃoban	CRISP(σ , [+round])	SPREAD[+rd]-highV
a.	[tʃo]rdban		
b.	[tʃobon]rd	*!	

On the other hand, the demand of licensing can force violations of round tautosyllabicity. This is clear from an example where the first two syllables are underlyingly round, e.g. /botʃo/ (Classical Manchu). This kind of form will surface with a single [+round] feature linked to both syllables, satisfying licensing and violating CRISPEDGE(σ , [+round]). Note that in contrast to the canonical RH cases the multiply-linked outcome here cannot be attributed to the spreading constraint (note ranking in (26)), because licensing of [+round] in the second syllable is independent of RH in bisyllabic trigger languages.

(27) LICENSE([+round, -high], σ_1) >> CRISPEDGE(σ , [+round])

	botʃo	LICENSE[+rd, -high]	CRISP(σ , [+round])
a.	[botʃo]rd		
b.	[bo]rd[tʃo]rd	*!	

The ranking for licensing in bisyllabic trigger languages becomes a bit more detailed when we consider the role of faith. Like the canonical cases, initial syllable faith for [+round] is undominated, since round is not restricted in this position. Yet in the second syllable, [+round] must be dependent on an initial [+round] specification (*CaCo). The ill-formedness of *CaCo roots results from licensing dominating IDENT[+round]. The high-ranked spreading constraint achieved this outcome in the canonical languages (compare (23)).

(28) IDENT[±round] σ_1 , LICENSE([+round, -high], σ_1) >> IDENT[+round]

	CaCo	IDENT[±round] σ_1	LICENSE[+rd, -high]	IDENT[+round]
a.	CaCa			
b.	Ca[Co]rd		*!	
c.	[CoCo]rd	*!		

In forms such as /botʃo/, where [+round] in the second syllable is parasitically licensed by the first syllable, the [+round] specification is preserved rather than simply realizing the second vowel as [-round] and avoiding a tautosyllabicity violation. This indicates that IDENT[+round] must dominate CRISPEDGE(σ, [+round]) along with licensing:

(29) LICENSE[+rd, -high], σ1 >> IDENT[+round] >> CRISPEDGE(σ, [+rd])

	botʃo	LICENSE[+rd, -high]	IDENT[+round]	CRISP(σ, [+rd])
☞	a. [botʃo] _{rd}			*
	b. [bo] _{rd} [tʃo] _{rd}	*!		
	c. [bo] _{rd} tʃa		*!	

Faith for [+round] contributes to driving violations of tautosyllabicity when licensing an underlying [+round] specification in a postinitial syllable. On the other hand, IDENT[-round] is lower ranked. It is violated when [+round] spreads to a unrounded vowel, and thus is placed below the spreading constraint.

The ranking pattern that has been established for the bisyllabic trigger languages is one in which licensing and IDENT[+round] dominate CRISPEDGE(σ, [+round]), which in turn outranks spreading and IDENT[-round]. Putting this together in (30), we find a remarkable result: the bisyllabic trigger effect arises simply from constraint interaction (undominated initial syllable faith is not shown here). In a form where the first two syllables are underlyingly [+round], the force of licensing causes a single [+round] feature to be linked to the first two syllables, as in (a) and (b) — alternatives lose to higher ranked constraints. (a) and (b) both satisfy licensing but violate CrispEdge(σ, [+round]) (see highlighted box). The question is now that tautosyllabicity has been violated in order to satisfy licensing, will [+round] spread to the suffix vowel? The answer is yes. The winner is (a), which satisfies spreading, rather than (b), which violates it.

(30) LIC[+rd, -hi] >> IDENT[+rd] >> CRISP(σ, [+rd]) >> SPREAD[+rd]-highV >> IDENT[-rd]

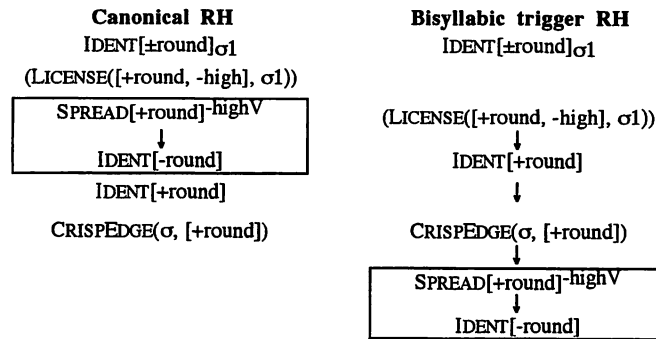
	botʃo-ŋga	LICENSE	IDENT[+rd]	CRISP(σ, [+rd])	SPREAD	IDENT[-rd]
☞	a. [botʃo-ŋgo] _{rd}			*		
	b. [botʃo] _{rd} -ŋga			*	*!	
	c. [bo] _{rd} [tʃo] _{rd} -ŋga	*!			****	
	d. [bo] _{rd} tʃa-ŋga		*!		**	

What (30) shows is that spreading can occur only when tautosyllabicity violations are independently caused by some higher ranked constraint, namely licensing. Because the minimal conditions under which licensing violates CrispEdge(σ, [+round]) are when the first two syllables are underlyingly round, we actually derive the bisyllabic trigger condition. Note that for this result it is essential that CrispEdge(σ, [+round]) is formulated so that it is violated equally by a [+round] feature linked to two syllables or to three (see formulation in (18)). Otherwise, candidate (a) would lose to (b) on crisp edge violations, yielding an undesirable outcome. This point supports Zoll's (1996) observation that assessment of constraint violation needs to be made explicit.

5. Conclusion

A summary of the rankings for bisyllabic trigger languages versus those for canonical languages is given in (31). The important difference is that spreading is above tautosyllabicity in the canonical languages, but for bisyllabic trigger patterns, it has moved with IDENT[-round] below CRISPEDGE(σ , [+round]). The demotion of spreading makes the force of licensing apparent, and this simple reranking is sufficient to explain the bisyllabic trigger condition in Tungusic RH.

(31) Bisyllabic trigger versus canonical RH:



References

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