Evidence for conjoined constraint disjunction in Creek

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Creek has an unusual instance of metathesis with infixed reduplication. I show that given constraint conjunction and constraint disjunction that the process in Creek can be captured in OT (Prince and Smolensky 1993). Creek has an infixed reduplicant that is placed within a root-final CC cluster, as shown in (1).[1] The final cluster is typically Ck, harking back to when the reduplicant was a suffix and -*k* was a (usually intransitivizing) suffix (Martin and Munro 2005). After the reanalysis of [k] as part of the root, the placement of the reduplicant was generalized to an infix even in the absence of a final [k], as in (1c) and (1d). When the final two consonants are [kl], [km], [kn], or [ks], they metathesize in the presence of a reduplicant (Haas 1977), as shown in (2). Building on the suggestion of Martin (to appear) that metathesis occurs to match the common placement of the reduplicant preceding a [k], I propose that metathesis occurs when it would both achieve the RED-[k] pattern and result in a better (more sonorous) coda adjacent to the reduplicant. Cases where only one of these results would be achieved do not undergo methathesis, as shown in (3).[2]

Two evaluations of conjoined constraints have been proposed: the 'classic' evaluation in which both conjuncts must be violated for the conjoined constraint to be violated (Smolensky 1993), and an alternative evaluation in which the conjoined constraint is violated as long as one of its conjuncts is violated (Hewitt and Crowhurst 1996). I call the latter type a "disjunction", following Myers 1997. The theory of constraint conjunction actually predicts that we should find joined constraints entering into larger joined constraints. I show that this prediction is borne out in Creek, where metathesis occurs if it avoids a fatal violation of a disjoined constraint where one of the parts is itself a conjoined constraint.

Some phonological processes apply only in derived environments (e.g. Kiparsky 1982). Łubowicz (2002) shows that these can be captured in OT by conjoined faithfulness and markedness constraints. The requirement posed by the markedness constraint is only enforced when the faithfulness constraint is violated. Metathesis commonly occurs only when two criteria are met (Hume 2001), as is true in Creek. However, the metathesis in Creek is unusual in that it occurs to gain a preferred sequence, rather than to avoid a marked sequence. As such, it requires a "disjoined" constraint since the violation of LINEARITY is only justified when a candidate employs metathesis to avoid a violation of both constraints.

This double requirement can be implemented with a language-particular analogy constraint ALIGN (RED, R; *k*, L), disjoined with a conjoined constraint. We find the requirement of a sonorant coda in the domain of the infixed reduplicant, which can be captured by the conjoined constraint [CONTIGUITYIO ∧ SONORANTCODA]$_{seg}$, the latter requiring codas to be sufficiently sonorant.[3] The alignment constraint, which refers to the reduplicant, will motivate metathesis only when a reduplicant is present. The ranking [ALIGN (RED, R; *k*, L) ∨ [CONTIGIO ∧ SONCODA]$_{seg}$]$_{word}$ ≫ LINEARITY makes the right predictions, as shown in (4). The form in (A) shows we correctly get metathesis, (B) shows it fails to occur if only one of the conditions is met (showing the need for the disjoined constraint), and (C) shows that it will not occur without a reduplicant. Thus, an unusual pattern is shown to be captured with an unusual combination of joined constraints, a possibility that is predicted by the theory and shown to be needed in Creek.

[1] Riggle 2004 gave an analysis of reduplicant placement. The metathesis phenomenon has not been formally analyzed to my knowledge.

[2] The sonority line must be drawn so that [s] groups with the sonorant consonants, and indeed sibilants have been proposed to be more sonorant than other fricatives (Bloomfield 1933, p 120).

[3] This raises interesting issues, which are discussed, for how the domain of a CONTIG violation should be defined.

(1) Reduplicant placement (forms given with durative *-iː*) All data from Martin (to appear)

a. fan-fa-k-iː ‘sticking out’ (of two or more)
b. lis-li-k-iː ‘old (of a thing)’ (of two or more)
c. fam-fa-p-iː ‘stinky’ (of two or more)
d. las-la-t-iː ‘black’ (of two or more)

(2) Metathesis of final root CC under reduplication

a. wipi**kl**-iː wipi**l**-wi-**k**-iː ‘furry’ (of two or more)
b. tili**km**-iː tili**m**-ti-**k**-iː ‘fine (as of a blanket)’ (of two or more)
c. ʧafi**kn**-iː ʧafi**n**-ʧa-**k**-iː ‘healthy’ (of two or more)

(3) No metathesis for alignment of RED to *k* alone or for a more sonorant coda alone

a. ʧikf-iː ʧik-ʧi-f-iː ‘thick (as of paper, cloth, etc.)’ (of two or more) *ʧi**f**-ʧi-**k**-iː
b. pafn-iː paf-pa-niː ‘fast’ (of two or more) *pa**n**-pa-**f**-iː

(4) Evaluations shown individually, overall evaluation given directly under operators

(A)		/RED+ʧafikn+iː/	[ALIGN (RED, R; *k*, L)	∨	[CONTIGIO	∧	SONCODA]$_{seg}$]$_{word}$	LINEARITY
	a.	ʧafi**k**-ʧa-**n**-iː	(∗)	∗!	(∗	∗	∗)	
☞	b.	ʧafi**n**-ʧa-**k**-iː			(∗		)	∗
(B)		/RED+ʧikf+iː/						
☞	a.	ʧi**k**-ʧi-**f**-iː	(∗)	∗	(∗	∗	∗)	
	b.	ʧi**f**-ʧi-**k**-iː		∗	(∗	∗	∗)	∗!
(C)		/wipikl-iː/						
☞	a.	wipi**kl**-iː					(∗)	
	b.	wipi**lk**-iː						∗!

References

Bloomfield, Leonard. 1933. *Language*. New York: Henry Holt and Company.

Haas, Mary. 1977. Nasals and nasalization in Creek. In *Proceedings of the third annual meeting of the Berkeley Linguistics Society*, ed. Kenneth Whistler and et al., 194–203. Berkeley, CA: University of California, Berkeley.

Hewitt, Mark, and Megan Crowhurst. 1996. Conjunctive constraints and templates in Optimality Theory. In *Proceedings of the North East Linguistic Society 26*, 101–116.

Hume, Elizabeth. 2001. Metathesis: Formal and functional considerations. In *Surface syllable structure and segment sequencing*, ed. Elizabeth Hume, Norval Smith, and Jeroen van de Weijer, HIL Occasional Papers, 1–25. Leiden: HIL.

Kiparsky, Paul. 1982. *Explanation in phonology*. Dordrecht: Foris.

Łubowicz, Anna. 2002. Derived environment effects in Optimality Theory. *Lingua* 112:243–280.

Martin, Jack B. to appear. *A grammar of Creek (Muskogee)*. University of Nebraska Press. With the assistance of Margaret McKane Mauldin and Juanita McGirt.

Martin, Jack B., and Pamela Munro. 2005. Proto-Muskogean morphology. In *Native languages of the Southeastern United States*, ed. Heather K. Hardy and J. Scancarelli, 229–320. University of Nebraska Press.

Myers, Scott. 1997. Expressing phonetic naturalness in phonology. In *Derivations and constraints in phonology*, ed. Iggy Roca, 125–152. Oxford University Press.

Prince, Alan, and Paul Smolensky. 1993. Optimality theory: Constraint interaction in generative grammar. Ms., Rutgers University, New Brunswick and University of Colorado, Boulder.

Riggle, Jason. 2004. Nonlocal reduplication. In *Proceedings of the North East Linguistic Society 34*. Amherst, Mass.: GLSA, University of Massachusetts, Amherst.

Smolensky, Paul. 1993. Harmony, markedness, and phonological activity. Paper presented at Rutgers Optimality Workshop at Rutgers University: New Brunswick, NJ, October 1993. ROA 87.