

Foot Structure in Nuu-chah-nulth: Reconsidering Foot Typology within OT

INTRODUCTION: No full consensus has been reached on what kind of foot forms are possible cross-linguistically, and what the complete list of metrical parameters is, despite developments in metrical theory (Hayes 1980, 1985, 1987, 1989, 1995a,b; McCarthy and Prince 1986, 1990; Halle & Vergnaud 1978, 1987; van der Hulst 1984, 1990, 1992, 1996, 1998, 1999; Crowhurst 1990, 1991; Kager 1993). Nevertheless, the mainstream with respect to foot typology is that the foot inventory can be reduced to trochaic feet, excluding the iambic foot or a single language with free variation in foot structure (Hayes 1995 and van der Hulst 1999). **In this paper**, I claim that Nuu-chah-nulth foot structure poses interesting problems for Parametric Theory (Hayes 1995) both theoretically and typologically, and I show how to solve the problems using two diagnostics—stress and variable vowels—within Optimality Theory (OT).

DATA & PROBLEMS: Nuu-chah-nulth STRESS can be **diagnostic for locating the head of the foot**. Stress falls on the 1st syllable of the word, unless it is light and the 2nd is heavy, in which case stress falls on the 2nd syllable as seen in (1); there is no secondary stress; coda is non-moraic (Wilson 1986, Stonham 1994, Howe 1996, Fraser & Howe 1996, Kim 2003). *The first problem is what kind of parameter Nuu-chah-nulth employs under previous approaches: iambic or trochaic or both?* One possible answer might be that Nuu-chah-nulth is a trochaic language, making use of extrametricality to treat cases such as (1d), which is apparently iambic. This treatment would exclude the possibility of the existence of an iambic system following previous studies (Hayes 1995, van der Hulst 1999). However, as seen in (2), VARIABLE vowels, **diagnostic for presence/absence of the foot**, provide more evidence that Nuu-chah-nulth has an iambic foot. (See also Erwin 1994 for Yidiny and Kondo 2001 for Guahibo, both of which are reported to have both foot structures.) Variable vowels are long within the foot as in (2a), and short outside the foot as in (2b). If the 1st syllable is extrametrical and thus the 2nd syllable is the head of the foot, then we would expect the vowel /i/ in (2b) to be long, since it would be inside the foot. However, the vowel appears short on the surface, revealing that it is outside the foot. This means that the 1st syllable is within the foot rather than extrametrical, constituting an iambic foot. Consequently, this kind of example argues against previous studies in that there exists **an iambic foot AND a single language can have both iambic and trochaic foot structures**. *The second problem is related to the first problem and the inventory of foot structures: in particular the presence of a foot with two heavy syllables.* Most previous work does not accept the existence of a foot with two heavy syllables (but see Ishihara 1990, Hammond 1990 for arguments for such a foot form in Lenakel and in Okinawan Japanese, respectively). Nuu-chah-nulth provides another piece of evidence that such a foot exists. As seen in (3a), if the 1st heavy syllable itself constitutes a foot, then the variable vowel /i/ would be shortened, since it would be outside the foot, but it appears long on the surface. Also, as seen in (4), even when a lengthening suffix is attached to a stem and thus the 1st syllable is lengthened, the variable vowel /a/ still stands within the foot, surfacing as a long vowel. Very interestingly, these metrical patterns are also observed in reduplication triggered by suffixes (Kim 2003). Nuu-chah-nulth has 7 types of reduplication; in particular, with class IV suffixes, both the 1st syllable (RED) and the 2nd syllable (BASE) must be heavy, and with class VII suffixes, the 1st syllable must be light and the 2nd syllable heavy as seen in (5). The consequence of this is that both patterns provide another piece of evidence that Nuu-chah-nulth has i) a foot with two heavy syllables and ii) both iambic and trochaic foot structures.

PROPOSAL & IMPLICATIONS: I argue that we can solve such parametrical problems within OT by using universal constraints and their language specific ranking as in (6), and by allowing highly articulated feet inventories including a foot with two heavy syllables. This approach can *explain both the cross-linguistically unmarked status of trochaic over iambic feet* (cf. de Lacy 2002), *and the presence of both foot structures in a single language*. Furthermore, we can treat *cross-linguistic variation simply by the different ranking status of the constraints*. This study also provides another chance to examine possible foot forms: in particular, *a foot with two heavy σ s*.

DATA (‘ . ’ indicates a syllable boundary and ‘=’ a foot boundary)*

- (1) a. mú.waj ‘deer’ -both syllables light (Trochee)
 b. súu.til ‘somebody referring to you’ -the 1st heavy & the 2nd light (Trochee)
 c. míitx.míit.xva ‘turning around and around’ -both syllables heavy (Trochee)
 d. Ca.píis ‘unmarried woman’ -the 1st light & the 2nd heavy (**Iamb**)
 (Fraser & Howe 1996)

- (2) a..wik-s/i(i)/S hiixvatHi → wiks[ii]S= hiixvtHi (*wiks*̣*S ...)
 not-1sg/IND angry ‘I am not angry.’
 b. /u-kl aa-s/i(i)/S John → /ukl aa=s[i]S (*u=kl aas*̣*S)
 it-to be called-1sg/IND ‘I am John.’
 (3) a. /uuc-skv/i(i)/ → /uucskv[ii]= (*uuc=skv*̣*)
 to belong-must have been ‘it must be that (it) belongs to (her/him)’
 b. Suwis-/aap-skv/i(i)/ → Suwis=/apskv[i] (*Suwis/apskv*̣*)
 shoes-to buy-must... ‘it must be that (s/he) bought shoes’
 (4) CuS-/a(a)/p-sinHi → CuuS/[aa]p=sinHi (*CuuS/apsinHi)
 new-to buy-to try ‘trying to buy s.t. new’

(Kim 2003)

(5) Patterns of reduplication in Nuuchahnulth (Kim 2003: 194 (8))

Type	RED-BASE	Foot form	Type	RED-BASE	Foot form
Class I	CV(V)-CV(V)	Trochee	Class V	CV-CV	Trochee
Class II	CVV-CV(V)	Trochee	Class VI	CVV-CV	Trochee
Class III	CV-CV(V)	T/I	Class VII	CV-CVV	Iamb
Class IV	CVV-CVV	Trochee			

(6) **WSP, FtBin(σ) >> HeadLeft (Trochaic) >> HeadRight (Iambic)**

Selected references

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* Nuuchahnulth is a Wakashan language spoken in Vancouver Island, B.C., Canada.