

## Cyclicity and stress

The **phonological cycle** (Chomsky et al. 1956 et seq.) claims phonology applies to successive nested constituents, and predicts sensitivity to **relative scope of prefixes and suffixes**, i.e., that processes can distinguish the following two cases:



**Typological claim:** stress patterns **can be** sensitive to relative scope, but **do not** show the kinds of interactions predicted by the phonological cycle

**Theoretical claim:** the typological gap is accounted for if phonology has access to only **finite-state computations** (Kaplan and Kaye 1994), and phonological processes to only **subsequential** computations (Chandlee 2014).

## Chamorro stress: height- but not content-sensitive

The phonological cycle is a natural way to describe prefix–suffix interactions that are sensitive to the **relative height** of the affixes, as in Chamorro (Chung 1983):

### Primary stress in Chamorro

Default penultimate  
kitan → **kítan**

Lexically marked accent on leftmost prefix gets primary stress  
**[mí [mantika]]** → **mímantika**

Default stress if an accented prefix is outscoped by a suffix  
**[mí [mantika]] ña** → mimantikáña

**[ǎ [kwentus] i]** → **ǎkwentusi**

## Chung's cyclic analysis of Chamorro stress

Lexical accent marked with +, primary stress marked with ´

UR	[[mi+ [mantika]] ña]	[ǎ+ [[kwentus] i]]
Cycle 0	[[mi+ [mantika]] ña]	[ǎ+ [[kwentus] i]]
	[[mí+ [mantíká]] ña]	[ǎ+ [[kwéntus] i]]
Cycle 1	[[mi+ mantíká] ña]	[ǎ+ [kwéntus] i]
	[[mí+ mantika] ña]	[ǎ+ [kwentús] i]
Cycle 2	[mí+ mantika ña]	[ǎ+ kwentús i]
	[mi+ mantiká ña]	[ǎ+ kwentus i]
	mimantikáña	ǎkwentusi

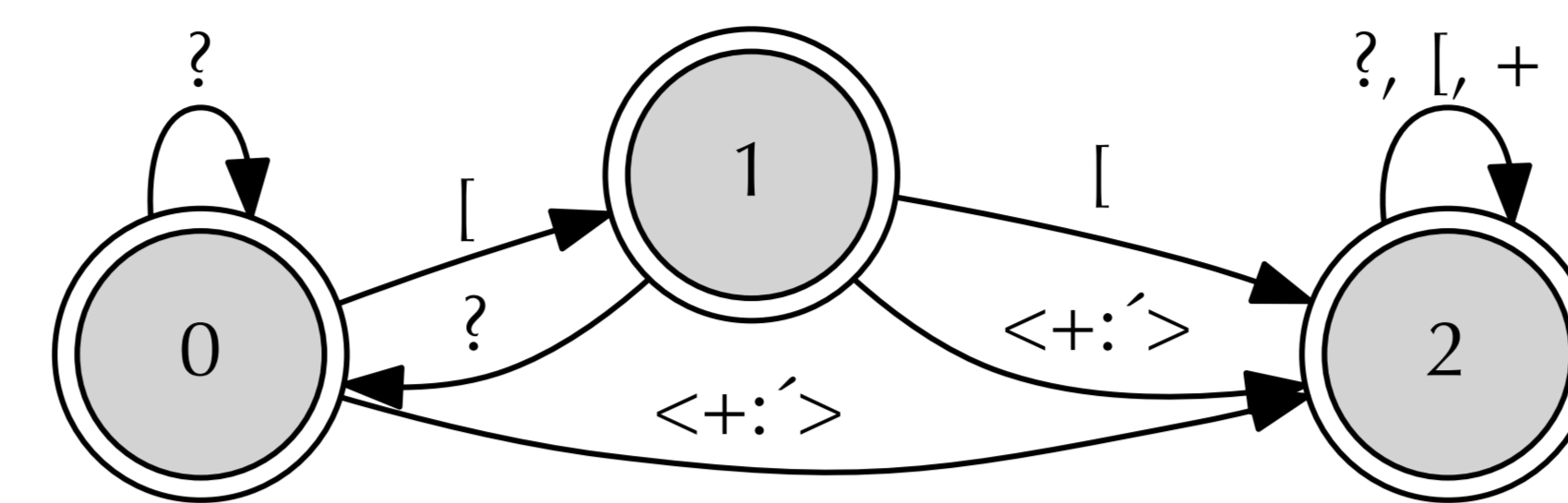
**References:** Chandlee, J. (2014). *Strictly Local Phonological Processes*. Chomsky, N., Halle, M., and Lukoff, F. (1956). On accent and juncture in English. Chung, S. (1983). Transderivational relationships in Chamorro phonology. Crook, H. (1999). *The Phonology and Morphology of Nez Perce Stress*. Kaplan, R. and Kay, M. (1994). Regular models of phonological rule systems.

**Acknowledgements:** This work was supported in part by the Banting Fellowship Program (Bronwyn Bjorkman), and in part by the European Research Council: ERC-2011-AdG-295810 BOOTPHON and the Agence Nationale pour la Recherche ANR-10-LABX-0087 IEC, & ANR-10-IDEX-0001-02 PSL\* (Ewan Dunbar). Thanks to Elan Dresher, Jeff Heinz, Donca Steriade, and Bert Vaux for helpful comments.

The full paper is available online, and can be found at: [http://ling.umd.edu/~ewand/cyclic\\_stress\\_121314.pdf](http://ling.umd.edu/~ewand/cyclic_stress_121314.pdf)

Comments and questions welcome.

## Finite state computability of Chamorro stress



## Nez Perce stress: content- but not height-sensitive

Some prefix-suffix interactions do **not** require height to be compared:

### Primary stress in Nez Perce verbs (Crook 1999)

Default penultimate  
piskis → **pískis**

Rightmost (non-final) accented root or suffix syllable  
[[páay núu] saaqa] → paynóosaqa

Leftmost accented prefix syllable  
[[sepée siléew [cúukwe]]] cee] → sepéesileewcuukwece

Accented suffixes always win  
[[hii [nées [sepée [[páay núu]]]]] cee] → hinasapapaynóoca

The placement of stress in Nez Perce verbs is **symmetrically sensitive to content** (lexical accent) but can be analyzed **without reference to relative height**.

## A typological gap?

The **phonological cycle predicts** patterns that combines the morphological sensitivities of Nez Perce and Chamorro:

### Winner by Height, If Special (WHIS)

Underlying accents compete symmetrically (Nez Perce)  
Winner is the outermost (Chamorro)

[[tú be] sa] → **túbesa**  
[[tú be] tá] → **tubetá**  
[rú [be tá]] → **rúbeta**

UR	[[tu+ [be]] sa]	[[tu+ [be]] ta+]	[ru+ [[be] ta+]]
Cycle 1	[[tu+ be] sa]	[[tu+ be] ta+]	[ru+ [be ta+]]
	[[tú+ be] sa]	[[tú+ be] ta+]	[ru+ [be tá+]]
Cycle 2	[tú+ be sa]	[tú+ be ta+]	[ru+ be tá+]
	[tú+ be sa]	[tu+ be tá+]	[rú+ be ta+]
	túbesa	tubetá	rúbeta

### Gentler Winner by Height, If Special (G-WHIS)

Winner is usually the outermost accented suffix (WHIS)

[[tú be] tá] → **tubetá**  
[rú [be tá]] → **rúbeta**

Accented prefixes win if the outermost accented suffix is not rightmost

[[[tú be] tá] to] → **túbetato**  
[[rú [be tá]] to] → **rúbetato**

Because two affixes at an arbitrary distance depend on each other as triggers, **G-WHIS is not subsequential**. G-WHIS also appears to be **unattested**.

## Conclusions

If phonology is sensitive to unbounded morphological structure, the structure it sees is likely **not true constituency**. Patterns needing it (WHIS) appear **unattested**.

Alternatively, if morphological sensitivity is **depth limited**, (Stratal OT), constituency may be used, subject to the same locality restrictions found in harmony systems (**subsequentiality**).