

A Formal Definition of LOCALITY

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The following is a possible formalization of LOCALITY-IO, which is referred to in Yip (2002). Tone studies in OT have been hindered by the fact that tone languages often spread a tone to a single TBU, and no further, which effect is not easily derivable through constraint interaction. LOCALITY prevents tones from spreading by more than one TBU, but how such a constraint might be formalized is not a straightforward matter. The following correspondence-theoretic (McCarthy & Prince 1995) definition provides a formalization of the faithfulness constraint necessary OT analysis of tonal phenomena.

LOCALITY-IO

Let $T_I \in S_1, T_O \in S_2, T_I \text{ \# } T_O$

Let E_I be the exponents of T_I .

Let E_O be the exponents of T_O .

Let $D = E_I \cap E_O$.

Then $x \in D \rightarrow \exists y : \text{Adj}(x, y), y \text{ \# } z, z \in E_I$

Less Formal:

Given that T_I is in the input and T_O is in the output, and that the tones correspond. Define E_I as the set of all of the TBUs associated with T_I , and E_O as the set of all TBUs associated with T_O . D is the intersection of these two sets, which identifies the new association lines in the output. Then, for every member x of D , there must be some y which is adjacent to x , and y must be a correspondent of some z which is in E_I .

Informal:

All TBUs which are newly associated to a tone must be adjacent to a correspondent of a TBU which was associated to the tone in the input.

Illustration:

	L	H	L	L	
	⌋	⌋	⌋	⌋	LOCALITY-IO
	σ	σ	σ	σ	
a.		⌋	⌋	⌋	
		σ	σ	σ	
b.		⌋	⌋	⌋	
		σ	σ	σ	
c.		⌋	⌋	⌋	
		σ	σ	σ	*

References

- McCarthy, John and Alan Prince. 1995. "Faithfulness and Reduplicative Identity." University of Massachusetts Occasional Papers in Linguistics 18: Papers in Optimality Theory. Ed. by Jill Beckman, Suzanne Urbanczyk and Laura Walsh Dickey. pp 249-384.
- Yip, Moira. 2002. Tone. Cambridge University Press.