

(4)	UR:	/halka:de/	/ja:ta:rna:jo/
	<u>Leftmost Heavy</u>	hál.ka:.de	já:.ta:r.na:.jo
	<u>Or Left</u>	_____	_____
	SR:	*hál.ka:.de	*já:.ta:r.na:.jo

To properly assign main stress in this dialect of Pulaar as in (5a), the first function, *Heaviest*, must proceed from the right to the left and mark every heaviest syllable it has encountered thus far in the computation. This is because, reading right to left, if the first function encounters a CVC, it cannot “see” the rest of the string and so has no way of knowing if something heavier is present elsewhere. Any CV syllable is a potential target until CVC, CV:, or CV:C is read, and any CVC syllable is a potential target until CV: or CV:C is read, and so on and so forth. The first function must stress the last syllable in the string, as this is the heaviest (only) syllable it has encountered. Unless this is the best target for stress, the second function will always need to remove this stress. Reading from left to right, the second function, *De-stress* preserves stress on the leftmost stressed syllable and removes it from other (i.e., lighter or more rightward) syllables. This is possible because the first function creates a string where the leftmost heaviest syllable is the first stressed syllable the second function encounters.

(5)	a.	UR:	/halka:de/	/ja:ta:rna:jo/	b.	UR:	/halka:de/	/ja:ta:rna:jo/
		<u>Heaviest</u>	hal.ká:.dé	ja:.tá:r.ná:.jó		<u>De-stress</u>	hal.ka:.de	ja:.ta:r.na:.jo
		<u>De-stress</u>	hal.ká:.de	ja:.tá:r.na:.jo		<u>Heaviest</u>	hal.ká:.dé	ja:.tá:r.ná:.jó
		SR:	[hal.ká:.de]	[ja:.tá:r.na:.jo]		SR:	*hal.ká:.dé	*ja:.tá:r.ná:.jó

Unlike the analysis of the Yana pattern, the function composition in (5) requires a particular ordering of the two contradirectional functions, as is evident from the incorrect output in (5b). If *Destressing* applies first, the input string will be unaffected, and *Heaviest* will incorrectly output multiple primary-stressed syllables. The necessity of the ordering in (5a) indicates that the two functions interact, making the total mapping non-deterministic. Thus, the analysis of Pulaar supports the case that a suprabinary scale in an unbounded process requires an interacting composition of functions, and so is non-deterministic (see Morén 2000 for a similar pattern in Kashmiri).

Two points are worth noting. First, increasing the number of distinctions in a suprabinary scale does not have the effect of increasing the expressivity of the total mapping. Any unbounded pattern with a suprabinary distinction will result in a non-deterministic/fully regular pattern. One famously complicated example comes from Nanti (Crowhurst & Michael 2005). In Nanti, stress placement is sensitive to four weight levels CV:N > CV: > CVN > CV and a three-level sonority distinction in vowels, low > mid > high. This results in a twelve-step scale for weight, with a Ca:N syllable being the best target, and a Ci syllable being the worst. A derivation for Nanti stress will look much that of Pulaar above, but in reverse – the first function reads left to right, stressing each most stressable target according to the Nanti scale. Proceeding from right to left, the second function preserves the first stress it encounters and deletes all others. So, despite the increased number of distinctions in Nanti, the input-output map operates in exactly the same manner in both Pulaar and Nanti.

Second, the relative expressivity of these mappings does not depend on the syllable inventory (in computational terms, the size of the alphabet). In Yana, CV: = CVC for weight (1b,c), but in Pulaar, CV: > CVC. Thus, the expressivity of these patterns falls out from the number of phonological contrasts these languages employ, not the kinds of syllables they permit.

In this class of stress patterns, the imperative to stress the *heaviest* syllable in the word along with the presence of a ternary or larger scale yields a fully regular input-output mapping. Unbounded weight-sensitive patterns targeting the heaviest syllable on a binary scale are subregular while patterns targeting the heaviest syllable on a suprabinary scale are regular. More generally, this finding supports the case that the number and types of contrasts present in a language may influence the computational expressivity of phonological input-output mappings.