This paper examines the interaction between stress and vowel harmony in the Dravidian language Telugu. I discuss previous accounts of the interaction in the literature and present evidence that *only* a metrical structure-based analysis provides the closest fit to data. That is, following Kolachina (2016), potential target vowels of vowel harmony resist alternation if they are in metrically prominent syllables of the word i.e., vowels in the heads of *moraic trochaic* feet in the metrical structure resist harmony. Majors (2006), in his survey of stress-dependent harmony, notes that harmony is generally triggered by a stressed vowel and manifested on unstressed vowels. Telugu differs from these commonly known harmony systems in that stress does not trigger harmony and in fact it is often an unstressed vowel that triggers harmony as suffixal vowels, which occur in bound morphemes and do not generally carry stress, are usually the triggers of harmony in Telugu and root vowels harmonize to suffixal vowels. A stressed root vowel resists harmony and blocks the spread of harmony from proceeding further. In other words, the effect of stress on vowel harmony is reflected in Telugu in the *opacity* of a stressed vowel to a harmonic alternation. Thus, this paper brings to light a cross-linguistically unusual interaction pattern between metrical structure and vowel harmony.

The vowels that alternate in different patterns of vowel harmony in Telugu are /i/, /a/ and /u/. Target vowels in Telugu do not just copy features from a trigger vowel but they completely harmonize to the target vowel. Thus, Telugu displays a "vowel copy harmony" (Rose and Walker 2011:256). That a potential target vowel resists harmonic alternation if it carries the primary stress of the word was pointed out by Sailaja (1985). She posits that the vowel /u/ in the initial syllables of the verbs in (1) resist harmony triggered by the suffixal vowel /i/ while the unstressed instances of /u/ in the medial syllables do harmonize. (The stem-final /u/ is deleted under hiatus when followed by another vowel.)

(1) Vowel harmony in verb roots. Target: /u/; Trigger: /i/ in the perfective suffix *-i*

úruku	'to run'	uriki, *iriki
kúduru	'to be arranged'	kudiri, *kidiri
múrugu	'to go bad'	murigi, *mirigi

Kolachina (2016) further proposes that Telugu also has secondary stress and that even a vowel carrying secondary stress resists harmony. He also shows that stress can account for vowel alternations in both verbal and nominal systems and that there is no need for different lexical classes or under-specification (contra Sailaja 1985). He argues that secondary stress in a word is assigned to every other mora after primary stress unless it is the final mora of the word and that no two adjacent moras can carry stress. He also assumes that in a heavy syllable, which contains two moras, stress is always assigned to the first mora. That is, he proposes that a mora, instead of a syllable as a whole, carries stress in Telugu. (2) shows a harmony pattern in which the plural suffix *-lu* induces harmony in the high front vowel /i/ in the stem.

(2) Vowel harmony in nominal stems. Target: /i/; Trigger: /u/ in the plural suffix *-lu*

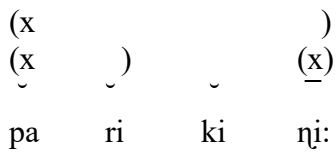
gíri	'hill'	girulu, *gurulu, *girulu
pílli	'cat'	pillulu, *pillilu, *pullulu
párimìti	'limit'	parimitulu, *parimitilu, *parumutulu

I argue in this paper that this analysis runs into issues in predicting the stress pattern of words of certain syllable structures. However, I demonstrate that another proposal in Kolachina (2016) i.e., a metrical analysis of stress in which words are parsed into *trochaic feet* with End Rule Left following Hayes (1995), which he assumes is equivalent to the above mora-based analysis, predicts stress correctly in words of all syllable structures. (3) shows some words for which a mora-based analysis does not predict secondary stress on the final heavy syllables as alternate moras are assumed to carry stress and the final mora cannot carry stress. However, the final syllables resist harmony. Metrical structure, on the other hand, correctly predicts secondary stress on these syllables.

(3)

dé:vìɖi:	'fort-gate'	de:viɖi:lu, *de:viɖu:lu, *de:vuɖu:lu
rá:jìti:	'discount'	ra:jiti:lu, *ra:jitu:lu, *ra:jutu:lu
párikìɳi:	'frock'	parikiɳi:lu, *parikiɳu:lu, *parukuɳu:lu

(4) Metrical structure of *parikiɳi:* 'frock'



I also discuss theoretical problems associated with a mora-based analysis of stress as theories of stress generally disallow stress-bearing units smaller than the syllable (Hayes 1995). Further, the crucial difference between the mora-based and foot-based analyses concerns the stress pattern itself. While stress is strictly alternating in the mora-based analysis, in a metrical analysis stress falls on all heavy syllables as well as on the light syllables that occur in the head position of *moraic trochee* feet, irrespective of the distance between syllables or moras. Further, I show that non-finality is not a feature of Telugu stress (contra Kolachina 2016). Metrical structure thus facilitates an accurate statement of stress in Telugu i.e., all metrically prominent syllables carry stress in Telugu with the leftmost of them carrying primary stress and others, secondary stress.

References

Hayes, B. (1995). *Metrical stress theory: principles and case studies.* Chicago: University of Chicago Press.

Kolachina, S. (2016). *Stress and vowel harmony in Telugu.* Master's thesis, Massachusetts Institute of Technology.

Majors, T. (2006). The development of stress-dependent harmony. *Southwest Journal of Linguistics 25*(1), 59-83.

Rose, S. and Walker, R. (2011). Harmony systems. In: John Goldsmith, Jason Riggle and Alan C.L. Yu (Eds.), *The handbook of phonological theory* (pp. 240-290). Malden, MA: Wiley-Blackwell.

Sailaja, P. (1985). *Some aspects of the vowel phonology of Telugu and Telugu-English*. M.Litt. thesis. Hyderabad: Central Institute of English and Foreign Languages.

Sitapati, G.V. (1936). Accent in Telugu speech and verse. *Journal of Indian Linguistics 6*(5) 201-211. Pune: Linguistic Society of India.