What Counts as Vowel Harmony?

Synchrony, Diachrony, and Epenthesis in Telugu

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Rumor Has It

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- This was news to me...
- What are they all talking about?

The Source of the Rumor

- Kelley (1963) appears to be the source from which the `vowel harmony' rumor started…
- Kelley mentions `vowel harmony' once, in a casual way, and then proceeds to talk about `sandhi.'
- Kelley's claims, given in a structuralist framework, included:

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   /pi:ʈa/ + /ʅu/ > [pɪ:ʈʅʊ] `bench, stool' (plural)
3. Fronting on a following vowel, across a word boundary, is triggered by a high front vowel [i]. Progressive assimilation.
   /baɳɖi/ /anta/ > [baɳɖænta] `all the cart, the entire cart'

   /idi/ /u:ru/ > [idü:ru] `this is a village'

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- Wilkinson labels the (regressive) laxing process, `tense/lax harmony (TLH)'

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- On the other hand, Subbarao uses `vowel harmony' to characterize the behavior of medial and final syllable vowels in trisyllabic verb roots when certain suffixes are added.
- Unlike Kelley and Wilkinson, Subbarao does not treat anything from the nominal system under his vowel harmony discussion

The Subbarao (1971) data and analysis

- Verb root behavior is as follows, according to Subbarao:
- The addition of the imperative suffix *-u*, the absolutive suffix *-i*, and the negative imperative suffix *-aka* triggers full assimilation of vowels in non-initial syllables

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- Subbarao notes that not all verbs which fit the pattern he discusses --- (C)VCVCV --- undergo vowel harmony. He cites as some of the exceptions [ʧemarʧu] `become wet' (cf. [kudurʧu] `arrange' which does show the assimilation), [vardhillu] `prosper', and [telusu] `know.'

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- Subbarao also states that 'not more than two elements that undergo vowel harmony can occur in a string in Telugu' (551)

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- He notes that the nominal suffix (marking the genitive) *-i* does not induce harmony but the verbal suffix *-i* (absolutive) does.

Ra:muḍu (nom.) (personal name) -- Ra:muḍi (gen.)

[ʧaduvu] `read' -- [ʧadivi] `having read'

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- In addition, in trisyllabic forms where the medial *and* final vowels are *i*, both change to *u*.

Singular	Plural	Gloss
ba:vi	ba:vulu	well
pilli	pillulu	child
sangati	sangatulu	circumstance
kolimi	kolumulu	forge
muliki	mulukulu	point

Sastry (1994)

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- Examples of this include dative and accusative case markers which have the alternants *-ku/-ki* and *-nu/-ni*, respectively.
- Some noun forms that permit either suffix form:

Noun (citation form)	Dative	Accusative	Gloss
u:ru	u:ruku/u:riki	u:runu/u:runi	village
ka:lu	ka:luku/ka:liki	ka:lunu/ka:lini	leg

Sastry (1994)

- Other noun forms that permit only *-ki/-ni*:

Noun (citation form)	Dative	Accusative	Gloss
ko:ḍi	ko:ḍiki	ko:ḍini	hen
pilli	pilliki	pillini	cat
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- K.M Sastry (1975) (awkwardly, not the same Sastry) notes that the dative form `ki' has become generalized in colloquial speech.

Added Attractions

- Krishnamurti (1998) has rules for vowel assimilation including:
  1. High, non-root vowels in multisyllabic forms must agree in rounding
  2. In trisyllabic stems, medial vowels become low if a following vowel (over a morpheme boundary) is low.
  3. Medial vowels go to [i] if the vowel in the following syllable is [-back].

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- Prabhakara Babu (1976) calls patterns of successive identical vowels in monomorphemic roots `vowel harmony'. He cites, for example, the following nouns:

Form	Gloss
kalimi	riches
cilipi	naughty
pidapa	later
padaka	bed
erupu	redness
mogudu	husband

Rounding of Front Vowels

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- Unable to replicate the production of any long or short front rounded vowels under any circumstances.
- Other than Kelley, I have found no source that states that Telugu has rounded front vowels and no informants or observation of casual conversation has revealed the presence of such vowels.

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- Unable to replicate existence of word-final lax vowels under any circumstances.
- Unable to replicate laxing of long high vowels (cf. forms like /i:ga/ `fly')

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- Forms like [rɛɳɖu] `two' are completely ignored
- There is no mention of or motivation for the many other lax vowels that do not fit the environmental statements of the various analyses.
- These appear to be the result of closed-syllable laxing but more detailed and systematic examination is required.

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- However, the analysis of virtually every one of these phenomena rests crucially upon the nature of the vowels (underlying or epenthetic) of the forms in question.

- Epenthetic [u] is well-documented for Telugu, appearing:
  1. word-finally after a consonant in both native words and loanwords;
  2. medially to break up consonant clusters;
  3. as a `prop vowel' in the realization of Sanskrit syllabic r̥.

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- In spite of valiant efforts to explain away this more marked vowel [u] as the epenthetic vowel (see De Lacy (2006)), no amount of discussion of Malayalam or `Dravidian' will erase the very clear empirical evidence that Telugu has a high back vowel as its epenthetic vowel.

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- There is evidence from speakers' behavior with nonce forms for a productive plural suffix which *may* be /-lu/, but in native vocabulary we see more exceptional forms than `regular' forms.
- The `harmony' process forms which show final [i] in the singular and [u] in the plural are simply one small set of forms that co-exists alongside a number of other sets which show different outcomes for medial and final [i].

- Non-harmonic plurals:

Singular	Plural	Gloss
ra:tri	ra:trill u	night
poyyi	poyyilu	hearth
ru:payi	ru:payilu	rupee
da:ri	da:rlu	passages
baḍi	baḷḷ u	schools
puṭṭ i	puṭḷ u	measure of grain
enimidi	enimidulu	eights

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nalugu	nalgu	`four'
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- Skewed distributional patterns where medial vowels, when present, almost invariably `match' the vowel of the following syllable, e.g., [naɖuʈʃu] `walk' (citation form).

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- Vowels determine deictic vs. interrogative category in the pronominal and adverbial systems.
- Type of deictic, distal or proximate, is also determined by the vowel. (Note that vowel length is determined by the root template.)

Distal	Proximate	Interrogative	gloss
a:me	i:me	e:me	3rd sg non-masc
atanu	itanu	etanu	3rd sg masc
akkaḍa	ikkaḍa	ekkaḍa	there/here/where
a:	i:	e:	that/this/which
va:ḍu	vi:ḍu		`he'`this guy'/`that guy'

Characteristics of Vowel Harmony

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- a synchronic computation
- typically only involves a subset of features, total harmony unusual
- typically bounded by the (prosodic) word
- can be stem or suffix-driven, progressive or regressive
- vowels may be transparent/neutral to harmony (not blocking but not participating)
- vowels may be opaque to harmony (blocking and not participating)
- there may be lexical exceptions

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- Speakers' production of nonce forms. (Data collected by Catherine Dworak.)

Singular	Plural
mapi	mapilu
sisi	sisilu
moni	monilu
rudi:	rudi:lu
ʧinda	ʧindalu
mota	motalu
tuvu	tuvulu
ʤoggu	ʤoggulu

Predictability with Plural Suffix

- The set of plural forms that look as if they have some sort of vowel assimilation is overshadowed by many sets of non-assimilating forms, including near minimal pairs like [ba:vi/ba:vulu] `well' and [ra:yi/ra:yilu] `stone.'

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- The situation is parallel to English plurals that show the historical intervocalic voicing pattern (*leaf/leaves*; *house/houses* vs. beef/beefs).
- In English, an intervocalic voicing process can no longer be deduced from these alternations as its environment has disappeared through sound changes.

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- Establishing the existence of any synchronic computational process requires much more detailed argumentation than anyone has offered to date.
- An explanation for the current distributional patterns of vowels with the plural may be found without appeal to any historic vowel harmony process. (And there is no evidence for such a process.)

Productivity with Verbal Suffixes

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- Speakers tend to replicate the verbal patterns above, by root shape as just described, with nonce forms.

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- Verbs with non-identical medial and final vowels do not show agreement with suffix vowel

Conclusion for Verbal Suffixes

- Compare below the typical traits of vowel harmony with the Telugu facts.

Property	Harmony Systems	Telugu
suffix-controlled, `dominant' system	rarely	yes
full-copy, `total', harmony	rarely	yes
bounded by root syllable	never?	yes

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- Additionally, the suffixes which participate are limited in number and have to be lexically specified.

More Questions

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- If it isn't vowel harmony, what is it?

Wherefore the distribution?

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  2. the apparent regular variation between di- and trisyllabic forms (eɖʧu/eɖuʧu)
  3. the deictic/interrogative system

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- Note that the `Future' column in the table below lacks any harmony-like effect.

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aɖugu	aɖugu	aɖ igi	aɖagaka	aɖuguta:nu	ask
toɖugu	toɖugu	toɖ igi	toɖagaka	toɖuguta:nu	wear

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- the medial [a] (`harmonized vowel') of the Neg. Imperative does not lax a preceding root vowel

Conclusion for Verbs

- Wilkinson (1974) states that 'Verb stems are best analyzed as having no underlying vowels other than those of initial syllables; the vowels which appear in phonetic noninitial syllables are predictable as to quantity, quality, and position.' (p. 254)

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- In a footnote, Wilkinson goes on to say 'The insertion of vowels into verb stems is basically very simple: *u* appears everywhere if the first vowel in the first inflectional suffix is back and nonlow,*i* appears everywhere if the conditioning vowel is front, and *a* appears everywhere if the conditioning vowel is low.'

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- Wilkinson was on the right track. The analysis which fits all the facts is one where there is an empty V slot in medial position which comes to be associated to whatever V is in final position.
- In the default case, the final V is epenthetic *u*. The imperative may be the bare stem or may be a non-epenthetic [-u], of course.
- When the final vowel is supplied by a vowel-initial suffix, *a* or *i*, we see the suffix vowel features associated with medial position as well.
- Vowel spread from CV suffixes is blocked, indirectly by the C in the sense that the epenthetic vowel will be the default in that case, breaking up the stem-final consonant and the initial consonant of the suffix.

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- Epenthesis of [u] in OT can be seen between roots and derivational suffixes, as well as after final consonants
- The same patterns in verbal roots, stems, and suffixes are found in OT.

Vowel Laxing by *a*

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- Not surface true because precedes sandhi (and can lose its environment through sandhi deletion processes)
- Often conflated with closed-syllable laxing, the existence of which is supported by loanword phonology (Jagannath 1981) e.g., <pit> is borrowed as [pɪʈʈu]

Conclusion for Vowel Laxing

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- To call Telugu a vowel harmony language based on this would be like calling OHG a vowel harmony language.

Conclusions

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5. So don't believe everything you hear...

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