

Echo Reduplication in Kannada and the Theory of Word-formation¹

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According to the Lexicalist Hypothesis, morphological structure is built in the lexicon by processes distinct from those that build syntactic structure. The structure of morphologically complex words is erased upon insertion into a syntactic phrase-marker and hence, is invisible to sentence-level operations and descriptions (Chomsky 1981; DiSciullo and Williams 1987; Kiparsky 1982; Mohanan 1981). On this view, the rules of morphology provide the input to the syntax and so cannot apply to structures larger than the word. Hand in hand with this morphosyntactic hypothesis are the following morphosemantic and morphophonological claims. First, some structure-meaning correspondences are created in the lexicon and hence are idiosyncratic, as in (1a, b), while others are created in the syntax and hence are transparently compositional, as in (1c).

- 1) a. /kæt/ = CAT
- b. /trans+mit+ion/ = PART OF A CAR
- c. a cat sleeps = SLEEP(CAT)

Second, some phonological rules apply in the lexicon, and hence can have idiosyncratic properties (e.g., English trisyllabic laxing: (2a) vs (2b)), while others apply postsyntactically (or everywhere) and hence are exceptionless (e.g., English flapping: (3a) vs. (3b)).

- 2) a. ser[ij]n : ser[ɪ]nity
- b. ob[ij]s : ob[ij]sity
- 3) a. sea[D]ed

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- b. Have a sea[D]. I'll be right back.

A corollary of the lexicalist hypothesis is that there should be converging criteria which distinguish words from constituents of larger size. We expect various measures of wordhood to lead us to the same object. The domain of semantic idiosyncrasy should be the same as the domain of phonological idiosyncrasy. Recent work in the framework of Distributed Morphology challenges lexicalism by showing that there is no single object that is defined by these various criteria (Marantz 1997, Noyer 1998). The elements with idiosyncratic meaning are not the same as the elements defined phonologically as words. Neither of these, in turn, correlates with the domain of non-productive morphological rules. Hence, these authors conclude that there is no well-defined category of word, and so a lexicalist grammatical architecture in which idiosyncratic semantic, syntactic and phonological properties are stored together in a single lexicon becomes less plausible.

This paper adds to the arguments against lexicalism by focusing on the syntactic properties of a morphological rule in Kannada traditionally referred to by Dravidianists as Echo Reduplication (Emenau 1938).² I will show that Echo Reduplication (ER) in Kannada applies equally to words, subparts of words and entire syntactic phrases.³ Such a rule is problematic for the lexicalist architecture outlined above. Because ER can apply to phrasal categories, we must conclude that it applies post-syntactically; it takes syntactic structures as input and returns morphological forms. Given that it also applies to morphological units which form subparts of words, we conclude that these units are also visible post-syntactically. That is, the internal, sub-word, structure must be visible at the same point as the phrasal structure. Hence, a theory like lexicalism in which word-internal structure is erased prior to the construction of phrases becomes more difficult to maintain. The alternative to the lexicalist theory is one in which syntax provides the input to the

² This kind of rule is usually called “fixed melody reduplication” in the generative phonological tradition. See, for example, McCarthy 1982, Marantz 1982, Yip 1992, Jha, Sadanand and Vijayakrishnan 1997 for morphophonological analysis.

³ Unless noted otherwise, all Kannada data were collected in 1998 and 1999 from R. Armitavalli, S. Chandrashekar and S. Vedantam. Special thanks to R. Armitavalli for her time and careful assistance in the construction of these data.

morphological component, as in the Distributed Morphology framework. On this view all structure composition takes place in the syntax, which in turn is read by the morphological module.

It is important to observe, however, that there are morphological structures which do not allow ER to apply inside of them, suggesting that some morphological structure is not phrase-structurally represented. Hence, we have evidence that some amount of morphological structure can be seen as syntactic structure and that some amount of morphological structure cannot. This leaves us with the question of how to distinguish those pieces of morphological structure that allow ER to apply inside of them from those that do not in a theory without a traditional lexicon such as Distributed Morphology. I propose that the relevant distinction is between apparent “morphemes” which are added to the root inside a postsyntactic morphological component and those which are added to the root by syntactic composition (Marantz 1997).

The paper proceeds as follows. In section 1, I will introduce ER, describing the environments in which it can apply and the problems that these data pose for various versions of the lexicalist hypothesis. In section 2, I present some other possible analyses of ER that maintain the lexicalist hypothesis and I show why these fail to account for the data adequately. In section 3, I present an additional argument from affix ordering against a lexicalist analysis of ER. Finally, in section 4, I outline an analysis of the apparent exceptions to the rule of ER.

1 The Facts:

ER in Kannada repeats an element, replacing the first CV with *gi-* or *gi:-* (depending on the length of the input vowel), and yields a meaning of “and related stuff” (reduplicant glossed as “RED”):⁴

⁴ Although this paper is not concerned with giving a phonological analysis of ER, phonologically minded readers will want to know what happens when a word beginning with *gi* undergoes ER. Four informants gave four different answers to this question. One speaker said that ER applies to such words just as it would to any other word. Hence, we find: *giDa* ‘plant’ → *giDa-giDa*. A second speaker said that the first consonant of the reduplicant must change to either *b* or *v*: *giDa-biDa*, or *giDa-viDa*. The third speaker agreed with both of the other two speakers in allowing either substitution or not and

- 4) a. pustaka
book
'book'
- b. **pustaka-gistaka**
book- RED
'books and related stuff'

ER can apply to all classes of words except interrogative pronouns and demonstrative adjectives (Sridhar 1990). In (4) we see ER applying to a noun; in (5), a verb; in (6), an adjective; and, in (7) a preposition:

- 5) a. ooda
run
'run'
- b. **ooda-giida** beeDa
run- RED PROH
'Don't run or do related activities.'
- 6) a. doDDa
large
'large'
- b. **doDDa-giDDa**
large- RED
'large and the like'
- 7) a. meeLe
above
'above'
- b. **meeLe-giile**
above- RED
'above and the like'

ER may apply either inside (8a, 9a) or outside (8b, 9b) of inflectional elements:⁵

- 8) a. baagil-annu **much-gich-id-e** anta heeLa-beeDa
door-ACC **close-RED-PST-1S** that say-PROH
'Don't say that I closed the door or did related activities.'
- b. baagil-annu **much-id-e-gichide** anta heeLa-beeDa
door-ACC **close-PST-1S-RED** that say-PROH
'Don't say that I closed the door or did related activities.'
- 9) a. **baagil-giigil-annu** much-id-e
door-RED-ACC close-PST-1S
'I closed the door and related things.'
- b. **baagil-annu-giigilannu** much-id-e
door-ACC-RED close-PST-1S
'I closed the door and related things.'

Entire phrasal categories may be reduplicated by ER:

also said that some speakers may simply be unable to reduplicate such a word at all. A fourth speaker said that the first CV of the reduplicant changes to *pa*: *giDa-paDa* (see Bleam, Han and Lidz 2000). See Jha et al. 1997 for a phonological analysis of ER in various Indian languages. Also see Trivedi 1990 for a typology of ER in India.

⁵ K.G. Vijayakrishnan (personal communication) reports that Tamil, a closely related Dravidian language, does not allow ER to apply inside of inflectional elements. See Vijayakrishnan (1994).

- 10) a. nannu **baagil-annu much-id-e giigilannu muchide** anta heeLa-beeDa
 I-NOM **door-ACC close-PST-1S RED** that say-PROH
 ‘Don’t say that I closed the door or did related activities.’
- b. pustav-annu **meejin-a meelee giijina meelee** nooD-id-e
 book-ACC **table-gen on RED** see-PST-1S
 ‘I saw the book on the table and in related places.’

The data in (8-10) are problematic for the strictest variant of the lexicalist hypothesis, namely one in which all morphological composition takes place in the lexicon. To my knowledge, no one has ever explicitly held such a position (but see Chomsky 1995 which may hold it implicitly). The reason such data are problematic for the staunch lexicalist is that the rule applies equally to subword and phrasal constituents, an impossibility if the internal morphological structure is erased upon insertion into the syntactic phrase-marker.

1.1 Variants of Weak Lexicalism

1.1.1 Derivation = Lexical. Inflection = Syntactic

One step back from the staunch lexicalist is the weak lexicalist, who would hold that derivation and inflection are distinguished with respect to the lexicon. On this view, derivational morphology applies inside the lexicon while inflectional morphology applies outside the lexicon (Anderson 1984, 1992). The weak lexicalist would expect a syntactic rule of ER to be able to capture the facts given in (8-10), but would predict that ER would not be able to reach into complex words formed by rules of derivational morphology.

In (11-13) we see that ER can apply either inside or outside of valency changing morphology, prototypically considered to be derivational/lexical (Grimshaw 1982, Lieber 1980, Selkirk 1982, Di Sciullo & Williams 1987):⁶

- 11) anticausative use of reflexive
- | | | | |
|----|------------------|----|--------------------|
| a) | muchu | b) | muchu-koLLu |
| | close | | close-REFL |
| | 'to close (tr.)' | | 'to close (intr.)' |

⁶ See Lidz (1998, to appear) for arguments that the reflexive and causative morphology of Kannada is not added to a root inside the lexicon.

- c) baagilu **muchi-gichi-koND-itu** anta heeLa-beeDa
door-NOM **close-RED-REFL.PST-3SN** that say-PROH
'Don't say that the door closed or did related things.'
- d) baagilu **muchi-koND-itu-gichikoNDitu** anta heeLa-beeDa
door-NOM **close-REFL.PST-3SN-RED** that say-PROH
'Don't say that the door closed or did related things.'

12) reflexive use of reflexive

- a) hogaLu b) hogaLi-koLLu
praise praise-REFL
'to praise' 'to praise oneself.'
- c) rashmi tann-annu **hogaLi-gigaLi-koND-aLu** anta heeLa-beeDa
Rashmi self-ACC **praise-RED-REFL.PST-3SF** that say-PROH
'Don't say that Rashmi praised herself and did related activities.'
- d) rashmi tannannu **hogaLi-koND-aLu-gigaLikoNDaLu** anta heeLa-beeDa
Rashmi self-ACC **praise-REFL.PST-3SF-RED** that say-PROH
'Don't say that Rashmi praised herself and did related activities.'

13) causative

- a) kaTTu b) kaTT-isu
build build-CAUS
'to build' 'to make build'
- c) naanu mane-yannu **kaTT-giTT-is-id-e** anta heeLa-beeDa
I-NOM house-ACC **build-RED-CAUS-PST-1S** that say-PROH
'Don't say that I had a house built and did related activities.'
- d) naanu mane-yannu **kaTT-isi-giTTis-id-e** anta heeLa-beeDa
I-NOM house-ACC **build-CAUS-RED-PST-1S** that say-PROH
'Don't say that I had a house built and did related activities.'
- e) naanu mane-yannu **kaTT-is-id-e-giTTiside** anta heeLa-beeDa
I-NOM house-ACC **build-CAUS-PST-1S-RED** that say-PROH
'Don't say that I had a house built and did related activities.'

Similarly, ER can occur inside or outside of category changing morphology, such as the verbalizing use of the causative morpheme or the deadjectivalizing pronominal affixes.

14) verbalizing use of causative

- a) patra b) patr-isu
letter letter-CAUS
'letter' 'to write a letter'
- c) Rashmi Vijay-ige **patra-gitr-is-id-aLu** anta heeLa-beeDa
Rashmi Vijay-DAT **letter-RED-CAUS-PST-3SF** that say-PROH
'Don't say that Rashmi wrote Vijay a letter and did related activities.'

- d) Rashmi Vijay-ige **patr-is-gitris-id-aLu** anta heeLa-beeDa
 Rashmi Vijay-DAT **letter-CAUS-RED-PST-3SF** that say-PROH
 ‘Don’t say that Rashmi wrote Vijay a letter and did related activities.’

15) deadjectival nouns

- a) cikka b) cikk-avanu
 small small-he
 ‘small’ ‘one who is small.’
- c) avanu **cikk-gikk-avanu** alla
 he-NOM **small-RED-he** NEG
 ‘It’s not as if he’s a young etc. man.’
- d) avan-annu **cikk-avanu-gikkavanu** anta heeLa-beeDa
 he-ACC **small-he-RED** that say-PROH
 ‘Don’t say that he’s a young man and such.’

These data are problematic for the weak-lexicalist because in them, ER treats the substructures of words with derivational morphology as equivalent to the substructures of words with inflectional morphology and entire syntactic phrases. Hence, a view in which derivation is lexical but inflection is syntactic will not divide the world in a way consistent with the demands of ER.

It is important to note at this point that there are some domains in which ER may not apply. Consider the examples in (16-20), in which ER cannot apply inside of certain affixes.

- 16) a. toor-ike
 show-NMNL
 ‘appearance’
- b. * toor-**giir**-ike
 show-RED-NMNL
- c. toor-ike **giirike**
 show-NMNL **RED**
 ‘appearances and related things’
- 17) a. tooru-vike
 show-GER
 ‘showing’
- b. * toor-**giiru**-vike
 show-**RED**-GER
- c. tooruvike **giiruvike**
 show-GER **RED**
 ‘showing and related activities’
- 18) a. ooD-aaTa
 run-play

- ‘running around’
- b. * ooD-**giiD**-aaTa
run-**RED**-play
 - c. ooD-aaTa **giiDaaTa**
run-play **RED**
‘running around and related activities’
- 19) a. hoogu-vudu
go-GER
‘going’
- b. * hoog-**giig**-uvudu
go-**RED**-GER
 - c. hoogu-vudu **giiguvudu**
go-GER **RED**
‘going and related activities’
- 20) a. doDDa-tana
large-NOMNL
‘largeness’
- b. * doDD-**giDDa**-tana
large-**RED**-NOMNL
 - c. doDDatana **giDDatana**
large-NOMNL **RED**
‘largeness and related properties.’

The fact that ER cannot apply inside of certain derivational affixes suggests that weak lexicalism may be right in saying that some morphological operations are syntactically represented while others are not, but wrong in making the division correspond to the division between derivation and inflection (perhaps suggesting that such a distinction is not real). We return to this question below.

1.1.2 Idiosyncratic = Lexical. Compositional = Syntactic

An alternative variant of weak lexicalism might say that the distinction between lexicon and syntax is not reflected in the difference between derivation and inflection, but rather in the difference between the idiosyncratic and the compositional. On this view, we might expect ER to be able to reach only inside of semantically compositional structures, but not inside of noncompositional structures. This hypothesis is immediately called into question by the fact that ER can apply to the internal elements of idiomatic expressions, as demonstrated in (21) and (22).

- 21) a. Hari kannu much-id-a
 Hari eye close-PST-3SM
 ‘Hari died.’ (lit. Hari closed his eyes)
- b. Hari **kannu-ginnu** much-id-a
 Hari **eye-RED** close-PST-3SM
 ‘Hari died and did related things.’
- c. Hari **kannu much-id-a ginnu muchida**
 Hari **eye close-PST-3SM RED**
 ‘Hari died and did related things.’
- 22) a. Rashmi Hari-ge maNNu tinn-is-id-aLu
 Rashmi Hari-DAT mud eat-CAUS-PST-3SF
 ‘Rashmi ruined Hari.’ (lit. Rashmi made Hari eat mud)
- b. Rashmi Hari-ge **maNNu giNNu** tinn-is-id-aLu
 Rashmi Hari-DAT **mud RED** eat-CAUS-PST-3SF
 ‘Rashmi ruined and did related things to Hari.’
- c. Rashmi Hari-ge **maNNu tinn-is-id-aLu giNNu tinnisidaLu**
 Rashmi Hari-DAT **mud eat-CAUS-PST-3SF RED**
 ‘Rashmi ruined and did related things to Hari.’

The existence of phrasal idioms like (21a) and (22a) are potentially problematic for the lexicalist hypothesis by themselves because they show that the domain of semantic idiosyncrasy does not correspond to the morphophonological word (Fillmore, Kay and O’Connor 1988; Jackendoff 1997; Nunberg, Sag and Wasow 1994). This problem is exacerbated by the observation that ER treats the subparts of syntactic idioms on a par with the subparts of syntactic phrases. The fact that ER treats the subparts of semantically non-decomposable chunks on a par with the subparts of semantically decomposable chunks suggests that a grammar which separates the lexicon from the syntax on the basis of semantic idiosyncrasy embodies the wrong architecture.

The problems for a variant of lexicalism that takes idiosyncrasy to be the hallmark of the lexicon can also be seen by examining the distinction between “word-level” and “stem-level” affixation. Aronoff and Sridhar (1983) (henceforth, A&S) show that the distinction between word-level and stem-level affixation in Kannada is diagnosed by a correspondence between epenthetic [u] (Bright 1972) and semantic transparency. They demonstrate the correlation by examining the properties of the nominalizing suffix *-ike*. When attached at the stem-level, there is no epenthetic [u] and the meaning of the derived form is idiosyncratically related to the base. On the other hand,

when this affix is attached at the word-level, there is an epenthetic [u] and the derived form is transparently a gerund. Moreover, there are some verbs for which there is no stem-level variant, whereas all verbs have a word-level, gerundive variant.

23)	verb	gloss	+ike (stem)	gloss	#ike (word) ⁷	gloss
a.	beeDu	‘beg’	beeDike	‘plea’	beeDuvike	‘begging’
b.	jaaru	‘slide’	jaarike	‘slipperiness’	jaaruvike	‘sliding’
c.	keeLu	‘ask’	kaaLike	‘request’	kaaLuvike	‘asking’
d.	tooru	‘show’	toorike	‘appearance’	tooruvike	‘showing’
e.	horaDu	‘leave’	*hooraDike	*	horaduvike	‘leaving’

Now, if we take a variant of the lexicalist hypothesis to hold that productive morphological rules with transparent meaning are syntactic while nonproductive morphological rules with idiosyncratic meaning are lexical, then we would expect to find ER able to apply inside of gerundive *-ike* but not inside of the stem-level variant of this affix.

The data come out otherwise. ER is not possible inside of either variant of *-ike*, a problem to which we will return.

- 24) a. toor-ike
show-NMNL
‘appearance’
- b. * toor-**giir**-ike
show-**RED**-NMNL
- c. toor-ike **giirike**
show-NMNL **RED**
‘appearances and related things.’
- 25) a. tooru-vike
show-GER
‘showing’
- b. * tooru-**giiru**-vike
show-**RED**-NMNL

⁷ The [v] occurring between the epenthetic [u] and the case morpheme is regularly inserted between two vowels when the first vowel is low. See Sridhar 1990:309ff.

- c. tooruvike **giiruvike**
show-NMNL **RED**
'appearances and related things.'

Even worse for this variant of lexicalism is that there are both stem-level and word-level affixes that ER can apply inside of, such as the causative *-isu* and the plural *-gaLu*, respectively:

- 26) a. beeD-isu
beg-CAUS
'to cause to beg'
- b. * beeDu-visu
- c. beeD-**giiD**-isu
beg-**RED**-CAUS
'to cause to beg and related activities'
- d. beeD-isu-**giiDisu**
beg-CAUS-**RED**
'to cause to beg and do related activities'
- 27) a. kaalu-gaLu
leg-PL
'legs'
- b. * kaali-gaLu
- c. kaalu-**giilu**-gaLu
leg-**RED**-PL
'legs and stuff'
- d. kaalu-gaLu-**giilugaLu**
leg-PL-**RED**
'legs and stuff'

We can conclude that neither the distinction between stem-level and word-level affixation, nor the related distinction between semantically idiosyncratic and semantically transparent affixation gives us a way to determine which affixes ER can apply inside of and which it cannot.

2 Some less plausible lexicalist solutions:

2.1 Two rules:

One possibility for maintaining lexicalism given that ER applies equally to subparts of words and entire phrases would be to posit two rules of ER. On this view, there are two separate but

identical rules of reduplication, one applying in the lexicon (to sublexical material) and a second applying in the syntax (to lexical and phrasal material).

The problem with the two rules gambit is that it is redundant. Giving up the Lexicalist Hypothesis in favor of a theory in which morphologically complex words are syntactically complex allows us to explain ER with one rule which applies to any syntactic constituent.⁸

2.2 ER is phonological:

A second possibility for maintaining the Lexicalist Hypothesis would be to say that ER is phonological. A phonological analysis of ER, in which the elements which can undergo reduplication are all of the same phonological category, would circumvent the lexicalist objection by showing that the rule has no morphosyntactic relevance.

This tack is problematic for three reasons. First, there is no single phonological constituent represented by the elements which can undergo ER. That is to say, given a single input like (28a), the rule produces three outputs.

- 28) a. kaTT-is-id-e
build-CAUS-PST-1S
'I built.'
- b. kaTT-**giTT**-is-id-e
build-**RED**-CAUS-PST-1S
- c. kaTT-isi-**giTTis**-id-e
build-CAUS-**RED**-PST-1S
- d. kaTT-is-id-e-**giTTiside**
build-CAUS-PST-1S-**RED**

ER can apparently decide to break the word at its any of its morpheme boundaries, irrespective of phonological constituency. This point is especially clear, when we examine a word whose

⁸ Mike Dickey (personal communication) points out that positing two rules poses a serious problem for learners. Since a child has no prima facie reason to assume that there is more than one rule and since the effects of both rules would be identical except in the domains to which they applied, the learner would have a hard time inducing the existence of two rules from the data provided.

morphological structure differs from its phonological structure. Consider (29), with the morphological structure in (29b) and the syllabification in (29c):

- 29) a. hogaLikoNDaLu
 'she praised herself.'
- b. [[[hogaLi]-koND] -aLu]
 praise -REFL.PST-3SF
- c. ho.ga.Li.koN.Da.Lu

The three possible outputs of ER given (29a) are those in (30).

- 30) a. hogaLi-**gigaLi**-koND-aLu
- b. hogaLi-koND-**gigaLikoND**-aLu
- c. hogaLi-koND-aLu-**gigaLikoNDaLu**

These correspond to the morphological constituents of (29). Impossible ERs of (29a) are given in (31).

- 31) a. * ho-**gi**-gaLikoNDaLu
- b. * hoga-**giga**-LikoNDaLu
- c. hogaLi-**gigaLi**-koNDaLu (=30a)
- d. * hogaLikoN-**gigaLikoN**-DaLu
- e. * hogaLikoNDa-**gigaLikoNDa**-Lu

The reduplications in (31) are the outputs of an ER rule applied to (groups of) syllables. For example, (31a) reduplicates just the first syllable, (31b) reduplicates the first two syllables, etc. None of these is a possible reduplication (with the exception of (31c) which corresponds to a morphological break as well as a phonological one), despite the fact that any of them could potentially occur if syllables (or larger prosodic units made up of syllables) were the units over which the rule applied. Rather, the rule applies at morphologically determined boundaries, which are not isomorphic to and often cross phonological boundaries.

A bigger problem for the phonological analysis is that the rule respects morphological and syntactic constituency. In the ungrammatical (32), just the nonroot elements of the verb are

reduplicated. These morphemes do not form a morphosyntactic constituent and so this reduplication is barred.

32) * hogaLi-koND-aLu-**giNDaLu** (cf. 29b)

In (33c), a hypothesized phrasal reduplication of (33a) (whose structure is 33b), we see that it is ungrammatical to reduplicate the subject and object to the exclusion of the verb, despite the fact that these elements are adjacent in the string. Only syntactic constituents can be reduplicated.

- 33) a. Rashmi avan-annu hogaL-id-aLu
 Rashmi he-ACC praise-PST-3SF
 ‘Rashmi praised him.’
- b. [_{Agp} Rashmi [_{TP} [_{VP} avan-annu hogaL-] id-] aLu]
- c. * **Rashmi avan-annu gishmi-avanannu** hogaL-id-aLu
Rashmi he-ACC RED praise-PST-3SF
 intended: ‘Rashmi and related people praised him and related people.’

An additional problem with the phonological analysis of ER is that ER is syntactically and semantically restricted when it involves a predicate (V or VP). A predicate may undergo ER only if it is embedded under certain modal elements⁹, such as prohibitive (negative imperative (=34)), negation (=35a,b), question-morpheme (=35b,c), etc.:

- 34) a. * baagil-annu **much-gich-id-e**
 door-ACC **close-RED-PST-1S**
 ‘I closed the door and did related activities.’
- a’ baagil-annu **much-gich-id-e** anta heeLa-beeDa
 door-ACC **close-RED-PST-1S** that say-PROH
 ‘Don’t say that I closed the door and did related activities.’
- b. * baagil-annu **much-id-e gichide**
 door-ACC **close-PST-1S RED**
 ‘I closed the door and did related activities.’
- b’ baagil-annu **much-id-e gichide** anta heeLa-beeDa
 door-ACC **close-PST-1S RED** that say-PROH
 ‘Don’t say that I closed the door and did related activities.’
- c. * naanu **baagil-annu muchide giigilannu muchide**
 I-NOM **door-ACC close-PST-1S RED**
 ‘I closed the door and did related activities.’

⁹ The precise characterization of the semantic contexts in which a verb or verb phrase may undergo ER is left for future work, although a first approximation is that ER is possible on a verb or verb phrase only in downward entailing contexts.

In (36c-d), both the [u] in the singular and plural forms and the [ɪ] in the dative are epenthetic. The [u] is added word finally to all consonant final stems, as can be seen clearly in borrowings of consonant final words:

- | | | |
|--------|---------|--------|
| 37) a. | ‘spoon’ | spuunu |
| b. | ‘car’ | kaaru |
| c. | ‘pen’ | pennu |
| d. | ‘bus’ | bassu |

From this A&S conclude that *-gaLu* is a word-level affix because the same epenthetic vowel occurs on stems to which it attaches as on whole words. The [u] of *-gaLu* is this same epenthetic vowel. This can be seen when we add casemarkers to a plural word. In such an environment the epenthetic [u] does not occur. Moreover, when we add a consonant initial casemarkers it is the epenthetic [ɪ] which occurs, signalling stem-level affixation.

- | | | |
|--------|--------------|----------------|
| 38) a. | ‘car-PL-ACC’ | kaaru-gaL-annu |
| b. | ‘car-PL-DAT’ | kaaru-gaLi-ge |

Now, the fact that the stem-level dative (and other casemarkers, as evidenced by the epenthesis facts) occurs outside of the word-level plural lead A&S to conclude that there is no level-ordering in the sense of Mohanan (1981) and Kiparsky (1982). They don’t deny that the levels exist but only claim that there is no ordering and no bracket erasure.

A&S’s conclusion is lexicalist in nature because it assumes that there are different levels of affixation in the lexicon. There is an alternative analysis, of course, which posits that the difference between the stem-level and word-level affixes is stated not in terms of levels, but in terms of boundary symbols, as in Chomsky and Halle (1968). The important finding of A&S is that there are two kinds of boundaries and that there are no ordering restrictions on these boundaries. They assume that these are types of *lexical* boundaries, though nothing they say forces this conclusion. The crucial result is only that the boundaries are visible simultaneously.

Now, given the observation that ER can apply to syntactic phrases as well as to sub-word constituents and the observation that word-level and stem-level boundaries must be visible simultaneously, we are led to the conclusion that these levels are syntactically represented. That is,

A&S tell us that the two types of boundaries are marked at the same level, but do not give us any basis for deciding whether this level is in the lexicon or in the syntax. Based on the facts that ER can (a) reach inside of these boundaries and (b) can apply to syntactic phrases, we are led to conclude that the two types of boundaries are syntactically, and not lexically, represented.

4 When Echo does not apply

This section provides a first step towards accounting for which affixes are syntactically represented. We have seen that certain affixes allow ER to apply inside of them whereas others do not. Given our observations that ER applies only to morpho-syntactic constituents and that ER fails to apply inside of certain words which appear to be morphologically complex, we must conclude that the latter do not have any morphosyntactic internal structure. Using ER as a test leads us to conclude that certain cases of apparent affixation do not represent the concatenation of morphemes (Aronoff 1976; Anderson 1992). To account for these facts, a view in which all morphology is postsyntactic, such as the Distributed Morphology framework, will require that some morphological structure is represented phrase-structurally and other morphological structure is due to nonstructural aspects of the syntax.

As an illustration, consider Marantz's (1997) reinterpretation of Chomsky's (1970) arguments about nominalization. Marantz's hypothesis takes it that the relation between a verb and its nominalization is based on syntactic category only. There is a single root whose pronunciation depends upon its syntactic category. In other words, a nominalization is simply what you get when you put a root of a certain type in the nominal environment; if you were to put this root in a verbal environment, you would have gotten a verb. There is no transformation from one to the other. For example, the root *destr-* in the verb context will be pronounced *destroy* and in the noun context will be pronounced *destruction*. On this view, it is not the case that *-tion* is an affix heading its own piece of phrase structure (or morphological structure). Rather, the environment of the root determines whether it will be pronounced with the *-tion* "affix." The simple fact of being dominated by an N node determines whether this affix is present. Here, the syntax determines the

pronunciation, but by feature, not by configuration. Stated formally, under the Marantz-Chomsky hypothesis, the root *destr-* has the following morphological properties:

- 39) a. *destr-* □ [_N destruction]
 b. *destr-* □ [_V destroy]

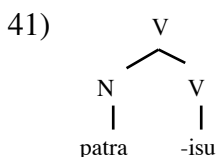
Hence, the factor determining how the root is realized is the syntactic category of the word, not its syntactic structure. In fact, it has no syntactic structure. The “affixes” which appear on the root arise because of the syntactic environment but are not explicitly represented as nodes in a nested tree structure.

Other affixes, of course, quite clearly are syntactic heads and the facts of ER give us a way to determine which ones these are in Kannada. ER can tell us which affixes are present because they correspond to independent heads in the phrase structure and which are present because of categorial properties of the context. In other words, given the conclusion that morphology applies postsyntactically and the fact that some affixes appear to be phrase-structurally represented while others do not, we are led to the conclusion that some apparent affixes occur because of aspects of the syntactic environment which are not part of the nested tree-structures we take to be the core of syntactic combination.

The two kinds of “affixation” are illustrated in (40).

- 40) a. *patr-isu* b. *patra-gitr-isu*
 letter-CAUS letter-RED-CAUS
 ‘to write a letter’
 c. *toor-ike* d. * *toor-giir-ike* (=24b)
 show-NMNL show-RED-NMNL
 ‘appearance’

Because ER can reach inside of a morphologically complex word like (40a), we take the boundary between the morphemes to be syntactically represented. The root and the affix each head their own pieces of phrase structure, as in (41):



ER cannot apply inside of the morphologically complex (40c), as we have seen, and so its syntactic structure is nonbranching:

$$\begin{array}{c}
 42) \quad \quad N \\
 \quad \quad | \\
 \quad \text{toor-}
 \end{array}$$

This root is listed in the morphological component as having two alternative pronunciations depending on its syntactic category, as in (43)

- 43) a. toor □ [_N toorike]
 b. toor □ [_V tooru]

The appearance of the “morpheme” [-ike] is determined by the morphological component and does not correspond to a piece of syntactic structure.

We can conclude that a theory of morphology which takes all cases of morphological complexity to correspond to syntactic complexity is too strong to account for the data. On the other hand, a theory which recognizes both an independent morphological module and a syntactic module of phrase-structure composition can make the appropriate discrimination to account for the observed pattern of facts in Kannada. Whether there is any systematicity to the set of affixes which do not correspond to pieces of syntactic structure and whether there is any relationship between these affixes and any other phonological, syntactic or semantic properties remains to be investigated.

5 Conclusions:

ER is a postsyntactic rule which, on the whole, does not distinguish between word-internal and word-external structure, suggesting that such a distinction is unnecessary. On this view, morphological complexity generally corresponds to syntactic complexity. We have noted, however, that certain cases of apparent affixation are not syntactically complex. A view in which all morphology is postsyntactic, such as Distributed Morphology, will require that some morphological structure is represented phrase-structurally and other morphological structure is due to nonstructural aspects of the syntax. This theory is superior to a lexicalist theory which treats the

word formation component as wholly distinct from the syntactic component. It is also superior to a theory which eliminates a morphological component altogether by subsuming the functions of morphology into the syntax.

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