Verbal Reduplication and Minimal Words in Kaytetye

Forrest Panther[1], Mark Harvey[1], Harold Koch[2], Myfany Turpin[3], Michael Proctor[4]

[1]University of Newcastle, Australia
[2]Australia National University, Australia
[3]University of Sydney, Australia
[4]Macquarie University, Australia

`ForrestAndrew.Panther@uon.edu.au, Mark.Harvey@newcastle.edu.au, Harold.Koch@anu.edu.au,`
`Myfany.Turpin@sydney.edu.au, Michael.Proctor@mq.edu.au`

Abstract

This paper examines one type of reduplication in Kaytetye, a Pama-Nyungan language of central Australia, which raises important questions for phonological theory. Kaytetye has a reduplication construction, which expresses associated motion, where the final VCV of verb roots is reduplicated to form a second prosodic word: e.g. *alarre* "hit", *alarre-lp-arre* "hit on the way". This reduplication construction provides key evidence for the shape of the minimal word in Kaytetye, and for current analyses of reduplication.

Index Terms: Reduplication, Australian Phonology, Arandic

1. Introduction

A distinction has been proposed between morphological reduplication and syntactic reduplication [1-3]. This distinction is primarily based on the morpho-syntactic category of the overall base + reduplicant construction: word level vs. phrase level or higher. Morphological reduplication is word level, whereas syntactic reduplication is phrase level or higher. That is, in morphological reduplication, the reduplicant compounds or affixes with the base, whereas it does not in syntactic reduplication. Several authors also argue for a second criterion, that while morphological reduplication must produce a well-formed phonological unit, syntactic reduplication must produce a well-formed grammatical unit [1-3]. The proposed distinction between these two types of reduplication is not supported in Morphological Doubling Theory, which is explored in section 4.1 [4, 5]. We examine here a type of reduplication pattern that addresses this distinction, found in Kaytetye, an Arandic (Pama-Nyungan) language of Central Australia [6, 7].

Most of the literature on reduplication examines morphological reduplication, which involves affixing a partial or total reduplicant to the base [2, 8-11]. The literature on syntactic reduplication is more limited, but it is discussed by several authors [1, 15-16]. (1) is an example of syntactic reduplication, showing reduplication of the verb "come" in Lango [4]:

> 1) àbíno àbínə àwó'ró
> 1SG.come.PERF come.GER yesterday
> "I did come yesterday" [4]

This construction in (1) is analysed as syntactic reduplication because the reduplicant is delimited by syntactic and not phonological criteria. The reduplicant is a verb, and the tense/aspect inflections of the base and reduplicant are distinct. These are considered to have separate lexical inputs, and represent two different words. Reduplication at this level is considered to be of whole, grammatical units (Fongbe is a possible exception to this, with optional truncation of the reduplicant in some speakers. See [4, 5]). There is, as of yet, no description of obligatory partial reduplication at a syntactic level.

The Kaytetye reduplication construction we describe here patterns in this way: it is reduplication at the phrasal level. We show this pattern to be strictly partial reduplication, and demonstrate that the partial reduplicant is a minimal word (see [14] for a similar pattern in Eastern and Central Arrernte). We examine the structure of the minimal word in Kaytetye in Section 2. In Section 3, we examine the reduplication pattern in detail. Section 4 will discuss this pattern in light of current models of reduplication and prosodic structure.

2. Minimal Words in Kaytetye

The *minimal word* is a restriction on the minimum phonological structure required for words in a given language [8, 18, 19]. Phonological theory posits that minimal words must be at least bimoraic, and this can be satisfied by either a heavy monosyllable or a disyllabic foot [9, 17]. There is variation in Australian languages on what kind of minimal word they permit, but many Pama-Nyungan languages require a disyllabic minimum [20-22]. This disyllabic minimum – CV(C)CV(C) – is described as the "prototypical phonological word" of Australian languages [21]. The edges of this prototypical word are marked, with several phonological contrasts neutralized and a lack of clustering at the initial and final positions [20, 21].

Kaytetye conforms to the general Pama-Nyungan pattern in that no prosodic word is smaller than disyllabic, and almost all lexical roots are minimally disyllabic (There are very few exceptions). However, approximately 75% of Kaytetye words begin with an unstressed vowel (often /ɐ/) [23]. All Kaytetye words also end in a non-contrastive vowel which shows considerable variation in realisation [24]. This raises questions about the utility of the consonant-initial prototypical word template CV(C)CV(C) for Kaytetye. Given the tendency for vowels to occupy word edges, the Kaytetye minimum word may be better analysed as VC(C)V (hereafter summarized as VCV for convenience).

There is evidence from affixal allomorphy that the minimal word in Kaytetye is VCV. The Ergative suffix distinguishes VCV roots from all other roots, including CVCV roots. With VCV roots, the Ergative is *-nge* (2), whereas with other roots, including CVCV roots, it is *–le* (3) [7: p.60]:

2) VCV roots:
   arrke-nge
   /aɾkə-ŋə/
   Sun–ERG
   "the sun"

3) CVCV and longer roots:
   relhe-le
   /ɹəɭə-lə/
   Woman-ERG
   "the woman"

The reduplicant in the associated motion construction also has a VCV shape. We propose that it has this shape because the reduplicant is constrained to conform to a minimum word.

3. Phrase Level Reduplication in Kaytetye

Phrase-level constructions in Kaytetye differ from word-level constructions, such as compounds. A key test for distinguishing phrase-level from word-level constructions is the placement of clitics. In word-level constructions, such as compounds, clitics cannot be placed in a medial position (= indicates a clitic boundary):

4) akelperr-elperre=rtame
   /ɐkəlpəɾ-əlpəɾə=ʈɐmə/
   head-flat=EMPH
   "a big head"

   *ake=rtame=elperre (unattested)

However, phrasal constructions do allow medial clitics, as illustrated in (5):

5) weye=lk=aherre
   /wijə=lk=ɐɻɐɾə/
   meat=then=kangaroo
   "then kangaroo meat"

The reduplication construction patterns in the same way as phrasal constructions. Examples (6) and (7) illustrate the reduplication construction with medial clitic placement.

6) ile-lpe=lk=ile-nye
   /ilə-lpə=lk=ilə-ɲə/
   get-LIG=then=RED-PST
   "then (someone) got it on the way"

7) atnywe-lpe=lk=atnywe-ye
   /ɐˤɲu-lpə=lk=ɐˤɲu-jə/
   enter-LIG=then=RED-FUT
   "Then (it) will go down (into)"

As previously discussed, proposed models of syntactic reduplication predict the reduplication of syntactic units. This would mean the reduplication of whole grammatical words, as in (8), or the total reduplication of roots, as in (9):

8) *ile-lp-ilelpe-nye
   /ilə-lp-iləlpə-ɲə/
   get-LIG-RED-PST
   "then (someone) got it on the way"

9) *alarre-lp-alarre-nye
   /ɐlɐɾə-lp-ɐlɐɾə-ɲə/
   hit-LIG-RED-PST
   "hit on the way"

These predicted forms are not attested. Rather, the attested forms show reduplication only of the final VCV of the root.

VCV Roots
10) alwe-nke
    /ɐlu-nkə/
    Chase-PRES
    "chase(s)"

    alwe-lp-alwe-nke
    /ɐlu-lp-ɐlu-nkə/
    Chase-LIG-RED-PRES
    "catch(es) up with something"

CVCV Roots
11) kwathe-nke
    /kwɐʈə-nkə/
    drink-PRES
    "drink(s)"

    kwathe-lp-athe-nke
    /kwɐʈə-lp-ɐʈə-nkə/
    drink-LIG-RED-PRES
    "drink(s) on the way"

Longer Roots
12) alarre-nke
    /ɐlɐɾə-nkə/
    hit-PRES
    "kill(s); hit(s)"

    alarre-lp-arre-nke
    /ɐlɐɾə-lp-ɐɾə-nkə/
    hit-LIG-RED-PRES
    "kill(s) (something) on the move"

It is important to note that CVCV roots do not show reduplication of the initial C, as shown in (11). Given the prototypical Pama-Nyungan word template CVC(C)V(C), the predicted reduplication for CVCV roots would be that in (13).

13) *kwathe-lpe-kwathe-nke
    /kwɐʈə-lpə-kwɐʈə-nkə/
    drink-LIG-RED-PRES
    "drink(s) on the way

4. Discussion

The reduplication construction provides evidence bearing on two important questions: First, how to current models of reduplication account for this pattern? Second, what is the nature of the minimal word in Kaytetye, and what are the implications of this for prosodic theory more generally?

4.1 Analyses of reduplication

The Kaytetye reduplication construction is syntactic, but the reduplicant is phonologically conditioned. This offers a challenge to theories which distinguish morphological from syntactic reduplication. The Kaytetye construction also offers a

challenge to theories which do not, such as Morphological Doubling Theory (MDT) [4, 5]. MDT proposes that reduplication is the doubling of a lexeme, and both the base and reduplicant have separate inputs, and are shaped by separate co-phonologies. Fig. 1 illustrates the relationship between base and reduplicant under this model:
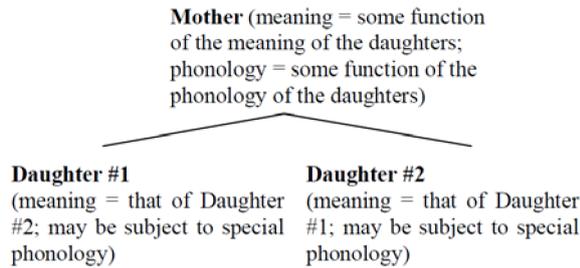
Mother (meaning = some function of the meaning of the daughters; phonology = some function of the phonology of the daughters)

Daughter #1 (meaning = that of Daughter #2; may be subject to special phonology)

Daughter #2 (meaning = that of Daughter #1; may be subject to special phonology)

Figure 1: *Illustration of reduplication under the Morphological Doubling Theory (from pg. 1, [4])*

Under an MDT analysis, the daughters of *kwathe-lp-athe-nke* 'drink-LIG-RED-PRES' are *kwathe-lpe* 'drink-LIG' [Daughter 1] and *kwathe-nke* 'drink-PRES' [Daughter 2]. The truncated output form for Daughter 2, *athe-nke*, must be specified by the co-phonology for Daughter 2. The truncation can be described as the right aligned truncation of the root to a minimal word. However, no phonology operating at the level of a complex word, such as *kwathe-nke*, can produce the right-aligned truncation of a left sub-constituent within that complex word. The right-aligned truncation can only be analyzed at the level of the root *kwathe*, which is not the level of Daughter 2 *kwathe-nke*. As such, MDT does not offer an analysis of the Kaytetye reduplication construction.

4.2 Minimal words and prosodic structure

We have shown in sections 2 and 3 that there are two independent patterns which identify the phonological shape VCV as a target in Kaytetye. The first is the allomorphy of the ergative suffix. The second is the reduplicant in the associated motion construction. The minimal word is commonly identified as a target in nominal allomorphy in Australian languages [19]. The minimal word is also commonly identified as a target in reduplication [8, 16]

The reduplicant attracts stress independently. In Kaytetye, the standard pattern for stress placement is that the first vowel preceded by a consonant is stressed, and thereafter every second vowel is stressed [23]. Given this standard pattern, the predicted stress placement for *antheyayte-lp-ayte-nke* 'climbs up on the way' is that in (14), with three stresses.

14) *$_{Wd}$[an$_{Ft}$[ˈtheyay]$_{Ft}$$_{Ft}$[ˈte-lp-ay]$_{Ft}$$_{Ft}$[ˈte-nke]$_{Ft}$]$_{Wd}$
    climb-LIG-RED-PRES
    "climbs up on the way"

However, the actual stress placement is that in (15), with only two stresses.

15) $_{Wd}$[an$_{Ft}$[ˈtheyay]$_{Ft}$te-lp]$_{Wd}$ $_{Wd}$[-ay$_{Ft}$[ˈte-nke]$_{Ft}$]$_{Wd}$
    climb-LIG-RED-PRES
    "climbs up on the way"

The sequence of two unfooted syllables in (15) is the standard outcome, if the construction is analyzed as consisting of two prosodic words.

The VCV shape satisfies the universal bimoraic requirement for a minimal word, and attracts stress. Therefore, we propose that the Kaytetye minimal word is VCV. This VCV minimal word shape is typologically interesting with its lack of word-edge consonants, particularly the onset. We note that this minimal word shape correlates with the preference for words of all lengths to be vowel-initial in Kaytetye (see [25, 26] for discussion on the diachronic loss of word-initial consonants). Of particular interest is the fact that CVCV does not pattern prosodically with VCV. Rather, CVCV patterns prosodically with VCVCV.

Current analyses of prosody, which posit that only rhyme constituents may be moraic, do not offer an obvious analysis for the Kaytetye data. Arrernte, a related language, shows very similar phenomena, and data from Arrernte has been an important factor in analyses of the syllable. Gordon posits that the syllable onset is moraic [27]. Breen and Pensalfini propose that syllabification is VC rather than CV: i.e. there are no underlying syllable onsets [28].

Gordon's general analysis is based in perception. In connected speech, a consonant enhances the perception of a following vowel. The degree of enhancement depends on the manner of articulation of the consonant, with voiceless consonants providing a stronger cue than voiced consonants. Vowels not preceded by a consonant are not enhanced. Languages vary as to whether and how the enhancement is phonologized: i.e. as to whether and how onset consonants are moraic and therefore contribute to the determination of prosodic structure.

Gordon's specific analysis of Arrernte is based in vowel length. Vowels in onsetless syllables are significantly shorter than average, and vowels in open syllables with onsets are significantly longer than average. Together, these two factors enhance the effectiveness of onset-based contributions to the perception of prominence. Further research is required to fully evaluate Gordon's analysis in relation to Kaytetye. Current data indicates that, prima facie, it could provide a plausible analysis of Kaytetye stress placement [24].

Gordon's analysis does not involve a radical departure from standard syllabic structure. By contrast, the VC analysis does involve a radical departure from standard syllabic structure. Further, data from Arrernte reduplication constructions plays a critical evidentiary role in supporting the VC hypothesis.

Although the VC analysis is a hypothesis about syllable structure, its most immediately evident consequences are in the analysis of word structure. The VC analysis posits that all words are vowel-initial and consonant-final. As discussed in section 2, 75% of Kaytetye words are vowel-initial, and all words may involve a final non-contrastive vowel. In phonetic realization, Kaytetye words may begin with [ɐ, i] or a consonant. The VC analysis proposes that all consonant-initial words have an underlying initial schwa /ə/ segment. This segment is only realized in the environment:]$_{wdwd}$[_C. Given that all words are consonant-final, the VC analysis predicts that all phrases should be consonant-final. However, as previously demonstrated, all phrases are potentially vowel-final. Under the VC analysis, phrase-final vowels are analyzed as epenthetic. The alternative analysis, under standard CV syllabification, is that all words are vowel-final, and the sequence CV$_1$]$_{wdwd}$[V$_2$C, is reduced to C]$_{wdwd}$[V$_2$C, which is the most common pattern for hiatus resolution [29].

Under the VC hypothesis, the opposition in initial phonetics between [a, i, C] is phonologically /a, i, ə/. However, in all other environments, [ə] and [i] show a complementary distribution, arguing that they are allophones of a single phoneme [30]. If a

segmental opposition between /ə/ and /i/ is posited, then the sole environment establishing the opposition would be word-initial position, where the /ə/ is only contingently realized. Therefore, at the basic level of segmental analysis, the VC hypothesis encounters a significant problem in Kaytetye, and does not appear to offer significant advantages.

In their discussion of Arrernte, Breen and Pensalfini recognize that the VC analysis does not offer significant advantages in terms of the segmental inventory or word structure. Rather, they propose that the critical data supporting the VC analysis comes from reduplication and from Rabbit Talk, a language game. Arrernte has a number of reduplication constructions. Breen and Pensalfini analyse reduplication as a word-level phenomenon, and propose that all reduplicants have a disyllabic VC structure: VC(C)VC(C). Example (16) illustrates their analysis of Frequentative reduplication.

16) akemir-em   akemir-epir-em
    get.up-PRES   get.up-FREQ-PRES
    "is getting up"   "keeps getting up"

Under the VC analysis, the frequentative morpheme involves an /ep/ fixed segmentism and reduplication of the root-final syllable. Breen and Pensalfini point out that a CV syllable analysis with final vowels predicts an incorrect reduplicative form.

17) akemire-me   *akemire-pere-me
    get.up-PRES   get.up-FREQ-PRES
    "is getting up"   "keeps getting up"

The fixed segmentism would be /pe/ and final syllable is /re/. However, an analysis parallel to Kaytetye, with CV syllables, phrasal reduplication and hiatus resolution does generate the correct reduplication construction.

18) wɑ[akemire-pe]wɑwɑ[ire-me]wɑ
    > wɑ[akemire-p]wɑwɑ[ire-me]wɑ

Further research is required to evaluate the potential analyses of the Arrernte constructions.

5. Conclusion

We have shown that the Kaytetye partial reduplication construction is not an affixing or compounding construction. Rather it is a phrasal construction, with phonological conditioning of the reduplicant. The Kaytetye partial reduplication construction is equally problematic for theories, such as MDT, which do not posit a distinction between morphological and syntactic reduplication.

The associated motion reduplication construction, together with the Ergative allomorphy patterns provide key evidence that the shape of the minimal word in Kaytetye is VCV. The absence of word-edge consonants is typologically unusual, although within the language itself it is not unusual.

6. References

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