Pitch Accents and Prosodic Properties of the Clitic in Yukulta (Tangkic)

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Abstract

A new analysis of field recordings from 1968-70 is the first instrumentally based, AM-theorised investigation of intonation in Yukulta (Tangkic). Yukulta's inventory of phonological tones contains three simple pitch accents, including a tone with a delayed pitch peak and tones with distinctive expanded pitch range. Clitics can sometimes bear accent independently of their stems. Lexical stress assignment in clitics is discussed in the context of competing morphological analyses of the Yukulta clitic [1], [2]. Additionally, Yukulta appears have clitic groups, defined in part prosodically, as proposed by Hayes [3] and Nespor & Vogel [4].

Index Terms: intonation, Yukulta (Tangkic), pitch accents, delayed pitch peak, clitic, clitic group, lexical stress

1. Introduction

This paper makes some observations about pitch accents and the prosodic properties of clitics in Yukulta (Tangkic), a language of North West Queensland. The findings presented in this paper are based on the first study to use modern instrumental techniques to analyse Yukulta intonation. For an endangered Australian language, Yukulta is relatively well known, but the last full treatment [1] is over thirty years old. Consequently, its treatment of intonation is limited to impressionistic observations. Furthermore, it was prepared before the advent of the Autosegmental-Metrical theory widely subscribed to today; thus, the present study is also the first to approach Yukulta intonation within this framework.

Yukulta is an Australian language of the non-Pama-Nyungan Tangkic family. It was traditionally spoken in the coastal Gulf Country of North West Queensland opposite the Wellesley Islands [1]. Inflectional and derivational affixation is suffixing. Yukulta is agglutinating and entirely dependent-marking, and verbal suffixes mark mood only [1]. Argument alignment operates according to three case paradigms. Nominal (noun and adjective) alignment is ergative-absolutive. Free pronouns do not inflect for core case functions. Bound pronouns occur as clitics of the 'affix-transferring' type *sensu* Capell. In the non-singular, bound pronoun alignment is nominative-accusative, whereas the singular distinguishes A, S and O [1]. This clitic also marks transitivity, tense and aspect, and attaches to the right of the first constituent of a clause [1]. Particles always occur first in a clause, but word order is otherwise variable [1].

The literature on phonology of the clitic and clitic group and the properties of the clitic as described in [1] are reviewed in the rest of §1. The corpus and method of analysis are described in §2. Finally, in §3, findings are presented and discussed.

1.1. Phonology of the clitic and clitic group

The clitic has long been recognised to have a liminal morphological and phonological status arising from the fact that it is neither a word nor a suffix. Edward Sapir noted more than eighty years ago, "Enclisis is neither true suffixation nor juxtaposition of independent elements. It has the external characteristics of the former, [and] the inner feeling of the latter" [4].

Phonological tests to distinguish clitics from independent words are frequently unreliable [5]. The clitic element tends to be treated in one of two ways in phonology: as belonging either to a phonological word or a phonological phrase for the purposes of stress assignment [4]. Zwicky [5] terms the element in the former as a true clitic, and the element in the latter as an independent word. Yet both criteria can be at work in a single language: particle clitics in Ngiyambaa attach to words at the lexical level [6] to form phonological words, but pronominal clitics attach post-lexically to form phonological phrases. Accentually, clitics are supposed to be dependent on their hosts and ordinary words are meant to be independent [5]. Even so, in some languages clitics do bear accent in certain situations [5]. At the same time, many independent words also usually occur without accents [5], confusing the issue.

Nevertheless, the status of the clitic in the prosodic hierarchy is important for intonation. This is because the assignment of markers of intonation is sensitive to the prosodic level of a unit [5]. Nespor & Vogel [4] promote Hayes's [3] concept of the 'clitic group' as a constituent of the prosodic hierarchy, at a level immediately dominating the word. This prosodic constituent is not isomorphic with any morphosyntactic constituent, but is a domain of phonological rule application in several languages [4].

1.2. The Yukulta clitic and lexical stress

Yukulta has a well-developed system of clitics. Keen's analysis in [1] states that a clitic begins with one or more bound pronoun forms, referencing the person, number and clusivity of an agent/subject, and optionally an oblique (object). This is followed, where applicable, by the transitivity marker *=ga*, and finally by a fused marker coding for tense, realis/irrealis aspect and transitivity [1]. The clitic is usually obligatory, but complete absence of a clitic in a Yukulta sentence is found in tenseless constructions referencing permanent or timeless states [1].

Yukulta has three levels of lexical stress, primary, secondary and unstressed; stress assignment is predictable. Generally, primary lexical stress falls on the first syllable of a word and secondary stress falls on the penultimate syllable [1]. Exceptions include words in which primary stress is associated with a long vowel in a non-initial syllable and words with compound stems, amongst others [1]. Keen found

in [7] that phonetically, lexical stress is associated with a slight rise in pitch; this detectable rise is a reliable marker of word boundaries.

A new analysis of the Yukulta clitic complex may have implications for its role in intonation and lexical stress assignment. Round [2] proposes that the clitic is comprised of three main constituents, encoding: obliques (Goal), A/S/O, and tense/mood/transitivity, respectively. A comparison of the two analyses is illustrated in Figures 1-2.

A/S	oblique (O)	transitivity	tense, aspect
=gul =1PL.INCL	*=ø* (N/A)	*=ga* =TR	*=rri* =PRS.REAL

Figure 1: *The clitic complex* =gulgarri *analysed according to Keen [1].*

G(oal)	A/S/O	tense, mood, transitivity
=ø (N/A)	*=gul* =1PL.INCL.S	*=garri* =TR.PRS.REAL

Figure 2: *The clitic complex* =gulgarri *analysed according to Round [2].*

2. Methodology

2.1. The corpus

The corpus used in this project is based on the 1968-1970 field recordings of linguist Sandra Keen: [8], [9], [10], [11], [12] and [13], all archived at the Australian Institute for Aboriginal and Torres Strait Islander Studies (AIATSIS) in Canberra, Australia. The recordings were made in Queensland in the localities of Doomadgee, Burketown and Mornington Island. Although several Yukulta consultants participated, the primary consultant was Mrs Alice Gilbert, an elder who passed away in the early 1970s. Apart from a few short narratives, all speech in the recordings is composed of interaction between Keen and the consultants in an elicitation genre.

Transcription of Keen's recordings is an ongoing project at The University of Queensland, funded in part by a UQ New Staff Research Start-Up Fund awarded to Dr Erich Round. Transcriptions are in ELAN format.

2.2. Analysis

Appropriate tokens were identified through the use of AIATSIS audition sheets and the search function in ELAN. Time point data from the ELAN transcriptions was then used to locate sequences in sound files using Praat computer software [14]. Text grids containing aligned tiers were created for each token. In addition to tiers for Yukulta orthography and English gloss tiers, tiers were also constructed and annotated for an interlinear gloss; morpheme transcription; words, syllables and segments; contour description; tones; microprosody and other phonetic peculiarities; and other notes. Various ToBI-style, Autosegmental-Metrical-theoretic analyses [15] were experimented with.

In my analysis of Yukulta intonation I assume every word has primary lexical stress on its initial syllable, as described in [1]. There are three reasons for this. Firstly, it reliably correlates with impressionistic observations. Secondly, pitch peaks reliably align with word-initial syllables. Thirdly, in Kayardild, a closely related Tangkic language in which lexical stress patterns have been worked out extensively, primary lexical stress occurs on initial syllables [16].

Yukulta clitics also have the ability to carry lexical stress. I infer the existence and position of lexical stress on clitics based on perception of dynamic correlates of stress as well as on alignment of pitch peaks shown instrumentally.

3. Findings

Yukulta's inventory of phonological tones contains three simple pitch accents, and tones can have features such as delayed pitch peak and expanded pitch range. Furthermore, clitics in Yukulta can bear accent independently from their stems. Prosodic evidence also suggests Yukulta has clitic groups as proposed in [3] and developed in [4].

3.1. Yukulta pitch accents

Yukulta minimally has simple high pitch accent (H*), downstepped pitch accent with expanded pitch range (!H*) and simple upstepped (^H*) pitch accents.

The simple high (H*) pitch accent is generally non-prominence lending. When it associates with the first unit of an utterance (Figure 3), it consists of a rise from the onset of the initial lexically stressed syllable to a pitch peak within that syllable or the next (a delayed high, marked as "<" in Figure 4, following [17]). It typically follows pitch reset and its initial pitch is in the middle of the speaker's pitch range. The target of the pitch peak is high in the speaker's range.

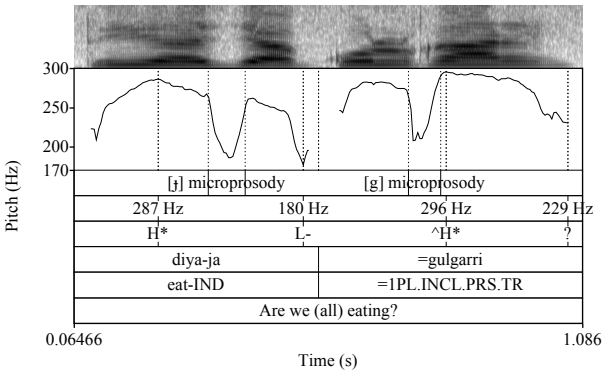

Figure 3: Diyaja=gulgarri? *'Are we (all) eating?' KEEN_S03-001788A, 1123.8s, spect. 0-5000 Hz.*

As shown in Figure 4, although the pitch peaks in Yukulta pitch accents always associate phonologically with a word's lexically stressed syllable, the phonetic pitch peak is not always timed concurrently with that syllable. Sometimes the pitch peak occurs within the following syllable: timing aligned not *with* but *relative* to the lexically stressed syllable. The rise begins in the phonologically accented syllable and smoothly continues through to a late peak in the next syllable. This phenomenon is found in many Australian languages [18], including Kayardild [16] and Bininj Gun-wok [17], as well as other world languages, such as Korean and English [17].

In non-initial position, the simple high pitch accent is downstepped (!H*). Its prototypical realisation is similar to that in initial position, except that its initial pitch depends on the final pitch of the preceding pitch accent, and that its high

tone target is lower than that of the preceding high tone (Figure 5).

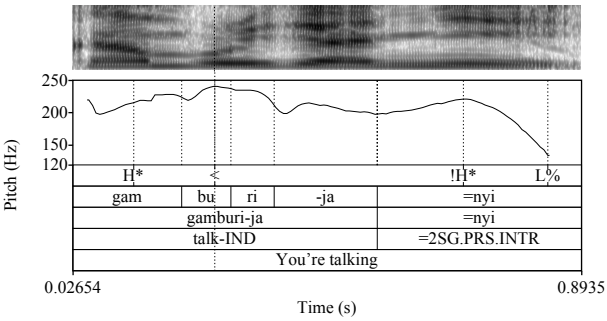

Figure 4: Gamburija=nyi. *'You're talking.' KEEN_S06-001701A, 29.4s, spect. 0-5000 Hz.*

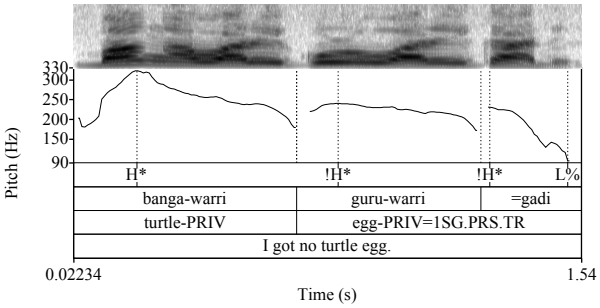

Figure 5: Bangawarri guruwarri=gadi. *'I got no turtle egg.' KEEN_S05-001916A, 3401.1s, spect. 0-5000 Hz.*

The vast majority of non-initial (downstepped) simple high pitch accents are non-prominence lending and have a very narrow pitch range. Two tokens (e.g., Figure 6) are distinctive, having a greatly expanded pitch range in comparison to neighbouring pitch movements. Both are utterance-final. Impressionistically, these tokens are different from normal downstep; moreover, the prosodic phrase with which each associates can be construed as in focus. It is likely the expanded pitch range of these two tokens is a phonologically distinctive feature marking relative prominence. I hypothesise these represent a distinctive pitch accent.

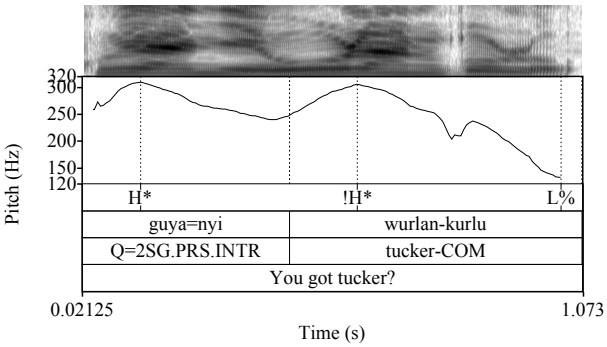

Figure 6: Guya=nyi wurlankurlu? *'You got tucker?' KEEN_S01-001154B, 1080.7s, spect. 0-5000 Hz.*

The simple upstepped (^H*) pitch accent can associate with any prosodic phrase in non-utterance-initial position. Its prototypical realisation is like that of the non-initial (downstepped) simple high pitch accent, except that its high tone target is higher than that of the preceding high tone (Figure 3).

In all known tokens of this pitch accent, there is only one of its kind in its utterance, and it always has an expanded pitch range in comparison to the other pitch movements within its utterance. Additionally, each token marks relatively high semantic weight: the prosodic unit with which each associates is in focus. This is a case of culminativity, suggesting that the simple upstepped pitch accent associates with the most prominent unit in the utterance, and that this prosodic unit is the head of the unit by which it is dominated.

There is complete correlation amongst upstepped pitch accents between the expanded pitch range feature and high prominence marking, suggesting that expanded pitch range is part of Yukulta's pitch phenomena inventory. This lends support to the proposal above that the expanded pitch range feature is phonologically distinctive amongst downstepped pitch accents, and serves to mark high relative prominence.

3.2. Clitics associate with pitch accents

Clitics can associate with simple downstepped pitch accents (Figures 4-5), with simple upstepped pitch accents (Figure 1), or no pitch accent (Figure 6). All the clitics that associate with a pitch accent are found in utterance final position. However, not all utterance-final clitics associate with a pitch accent. Tokens in which clitics associate with pitch accents involve clitic complexes of one (Figure 4), two (Figure 5) and three syllables (Figure 3).

3.3. Clitics and lexical stress assignment

The example in Figure 3 is a particularly interesting case and has the potential to inform a theory of stress assignment in clitics. The clitic in question is *=gulgarri,* which encodes first person plural inclusive, present tense and transitivity. Intonationally, the clitic associates with an upstepped simple high pitch accent, ^H*, whose pitch peak aligns with the syllable /ga/.

The stress assignment rules for clitics are not clear, but here are some tentative insights. Firstly, it is possible that clitics do not have their own stress assignment rules. Instead, the syllable /ga/ could receive secondary stress as the head of the final trochaic foot in the phonological word consisting of the clitic and its stem. This would require that pitch accents be allowed to associate with words such that the pitch peak aligns with a syllable bearing secondary lexical stress. However, such an analysis leaves open the question of foot alignment, given that the definition of the head of a foot is that it is the syllable within the foot associated with phonological stress.

Furthermore, the utterance-final, monosyllabic clitic *=nyi* in Figure 4 associates with a pitch accent, but does not make up a trochaic foot. In general, languages avoid assigning phonological stress to 'degenerate feet' of only one syllable, usually only allowing it in a monosyllabic word or phonological phrase [19].

Another possibility is that rules of lexical stress assignment in affixes in general are sensitive to the number of syllables in the suffix. In Warlpiri, for instance, disyllabic suffixes can receive lexical stress, but monosyllabic ones cannot [20]. Two competing analyses of the morphology of the clitic complex vary in their breakdown of the clitic *=gulgarri*, as shown in Figures 1-2. The two analyses agree that the first syllable is a separate morpheme, encoding person.

However, Keen's analysis would divide the second and third syllables into separate morphemes, while Round's analysis would interpret them as a single morpheme. If Yukulta phonology has constraints similar to those in Warlpiri, then lexical stress could not be assigned to a monosyllabic *=gul,* but could be assigned to *=garri* if it were indeed a single morpheme as suggested by Round's new analysis.

3.4. Clitic group

It appears that Yukulta has a unit meeting the criteria for a clitic group [4]. The utterance shown in Figure 7 begins with one such unit, *dathina=ngga.* A possible isomorphic prosodic unit, it associates with a single simple high pitch accent (H*). The second two morphological words (as described in [1]), also each constitute a clitic group, although in these cases the clitic group is presumably isomorphic with a word-level prosodic unit.

The first two clitic groups, *dathina=ngga* and *danggara*, are in a prominence relationship: the pitch peaks associated with each of the two clitic groups are in a downstep relationship. The downstep of the second pitch accent is sensitive to the first pitch accent; therefore, the first clitic group has the greater prominence.

The two clitic groups together make up a single dominating prosodic unit at the next higher level of the hierarchy, as predicted by the Strict Layer Hypothesis (SLH) [21].

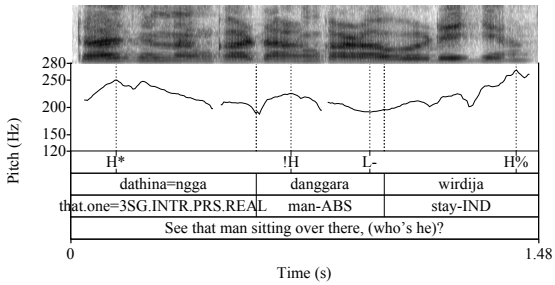

Figure 7: *Dathina=ngga danggara wirdija, (ngaga dathinma dangga)? 'That man sitting over there, (who's he?)' KEEN_S01-001153B, 0964.1s, spect. 0-5000 Hz..*

4. Conclusions

This paper reports findings to do with pitch accents and prosodic properties of the clitic in Yukulta. These finding are drawn from a new analysis of field recordings from 1968-70, the first instrumentally based, AM-theorised investigation of intonation in Yukulta. Yukulta's inventory of phonological tones contains at least three simple pitch accents, including a tone with a delayed pitch peak. Clitics can sometimes bear accent independently of their stems. Lexical stress assignment in clitics is discussed in the context of competing morphological analyses of the Yukulta clitic [1], [2]. Finally, evidence is presented for a partly prosodically defined clitic group in Yukulta.

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6. References

[1] S. Keen, "Yukulta," in *Handbook of Australian languages*, vol. 3, R. M. W. Dixon & B. J. Blake, Eds. Canberra, ACT: ANU Press, 1983, pp. 190-301.

[2] E. R. Round, "Introduction," In *Ganggalida Dictionary and Thesaurus: A Vocabulary of the Yugulda Language of the Ganggalida People, North-West Queensland*, C. Nancarrow (compiler), Burketown, Qld.: Carpentaria Land Council Aboriginal Corp., to be published.

[3] B. P. Hayes, "A metrical theory of stress rules," revised version of 1980 Ph.D. dissertation, MIT, dist. by Indiana Univ. Ling. Club, Bloomington, Ind., 1981.

[4] M. Nespor and I. Vogel, *Prosodic Phonology,* Dordrecht, Holland: Foris Publications, 1986.

[5] A. M. Zwicky, "Clitic and particles," *Language,* 61(2):285-305, 1985.

[6] J. L. Klavans, "The morphology of cliticization," *Chicago Ling. Soc*., 15:103-21, 1983.

[7] S. L. Keen, "A description of the Yukulta language: An Australian Aboriginal language of north-west Queensland," M.A. thesis, Monash Univ., Melbourne, Vic., 1972.

[8] S. L. Keen, "Language elicitation from Burketown and Doomadgee, Qld" [Tape recording], Recorded Sound Arch., AIATSIS, Canberra, ACT, Item No. KEEN_S01-01153B, 1968.

[9] S. L. Keen, "Language elicitation from Doomadgee, Brookdale and Riversleigh, Qld." [Tape recording], Recorded Sound Arch., AIATSIS, Canberra, ACT, Item No. KEEN_S01-01154B, 1968.

[10] S. L. Keen, "Yukulta language elicitation with Alice Gilbert (Lardil and Yukulta language elicitation and songs from Doomadgee and Mornington Island)" [Tape recording], Recorded Sound Arch., AIATSIS, Canberra, ACT, Item No. KEEN_S06-001701A, FT31, 1969.

[11] S. L. Keen, (1970a). "Stories and songs in Yukulta with Alice Gilbert with explanations in English (Language elicitation and songs from Mornington Island)" [Tape recording], Recorded Sound Arch., AIATSIS, Canberra, ACT, Item No. KEEN_S03-001788A, FT47, 1970.

[12] S. L. Keen, "Language elicitation in Yukulta with Alice Gilbert (Yukulta and Waanyi language elicitation)" [Tape recording], Recorded Sound Arch., AIATSIS, Canberra, ACT, Item No. KEEN_S05-001916A, FT59, 1970.

[13] S. L. Keen, "Yukulta language elicitation with Alice Gilbert (Yukulta and Waanyi language elicitation)" [Tape recording], Recorded Sound Arch., AIATSIS, Canberra, ACT, Item No. KEEN_S05-001918B, FT64, 1970.

[14] P. Boersma and D. Weenink, Praat, vers. 5.3.03 [Computer software], Amsterdam: Univ. Amsterdam, 2011.

[15] M. E. Beckman, J. Hirschberg, and S. Shattuck-Hufnagel, "The original ToBI system and the evolution of the ToBI framework," in *Prosodic typology: The phonology of intonation and phrasing*, S.-A. Jun, Ed. Oxford: OUP, 2005, pp. 9-54.

[16] E. R. Round, "Kayardild morphology, phonology and morphosyntax," Ph.D. dissertation, Yale Univ., New Haven, Conn., 2009.

[17] J. Bishop and J. Fletcher, "Intonation in six dialects of Bininj Gun-wok," in *Prosodic typology: The phonology of intonation and phrasing*, S.-A. Jun, Ed. Oxford: OUP, 2005, pp. 331-361.

[18] A. Butcher, *The Sounds of Australian Languages*, Oxford: OUP, to be published.

[19] B. P. Hayes, *Metrical Stress Theory: Principles and Case Studies*. Chicago, Ill: Univ. of Chicago Press, 1995.

[20] D. G. Nash, "Topics in Warlpiri grammar," Ph.D. dissertation, MIT, Cambridge, Mass., 1980.

[21] S. Shattuck-Hufnagel and A. Turk, "A prosody tutorial for investigators of auditory sentence parsing," *J. Psycholinguistic Research,* 25(2):193-247, 1996.