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# Linear Lengthening Intonation in English on Croker Island: identifying substrate origins<sup>1</sup>

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## Abstract

*The topic of this paper is a striking intonation contour which is found in English on Croker Island, NT, Australia, which is labelled Linear Lengthening Intonation. This contour is formally characterized by a prolonged stretch of high pitch, either in a plateau or rise, concluded by a high boundary tone, typically with lengthening of the final syllable nucleus. The meaning attached to this tune is essentially quantificational, and appears to apply mostly to the run traces of events. While this contour is not found in other varieties of English in this form, it is common in many northern Australian Aboriginal languages, among them languages spoken on Croker Island which have been in contact with English for several generations. In this paper we compare the form and meaning of this tune in Iwaidja, one of the main languages in contact with English on Croker Island, and in local English. Due to substantial parallels and due to the contact situation that is characterized by prolonged bilingualism in a long-term shift scenario, we propose that Linear Lengthening Intonation in English on Croker Island is probably due to language contact with Australian Aboriginal languages that have this tune, most notably Iwaidja.*

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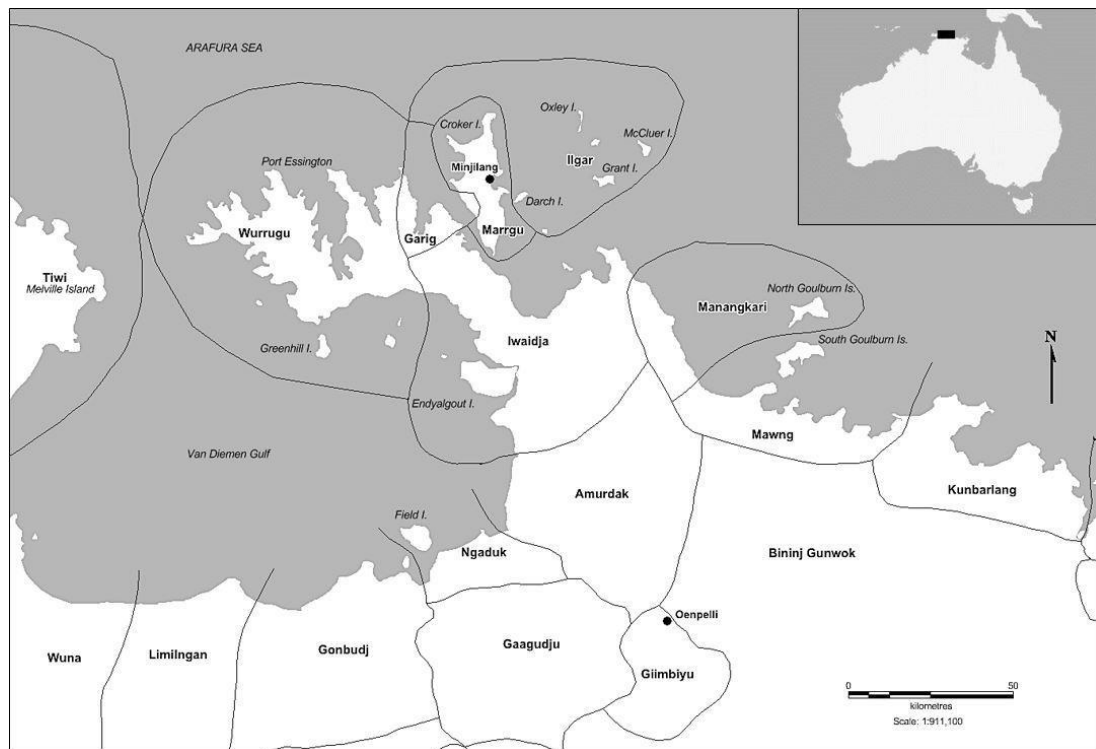
## 1 Introduction

English spoken on Croker Island, Northern Territory, Australia (see Map 1), shows a striking intonation contour that has not been reported for other varieties of Australian English. In this paper we call this contour *Linear Lengthening Intonation* (LLI).

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<sup>1</sup> We first of all would like to express our heartfelt gratitude to our Iwaidja consultants and teachers for sharing their insights and discussing these examples with us as well as sitting through the experiments. We also thank Bruce Birch for long discussions on Iwaidja from which many insights resulted, and for his support in the field. We would like to thank the audience of the workshop “Australia Languages in Contact Since Colonisation” (Canberra, 6–7 March 2014) for their valuable feedback, Jeff Siegel and Harold Koch and especially Felicity Meakins, Judith Bishop, Carmel O’Shannessy and two anonymous reviewers for helpful comments. Needless to say, none of the above bear any responsibility for any remaining errors.

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Map 1: Croker Island and Indigenous languages spoken historically in Northern Arnhem Land (Mailhammer & Harvey 2018)

LLI is formally characterised a prolonged stretch of high F0 or high pitch – either in a plateau or as a rise – concluded by a high boundary tone, typically with lengthening of the final syllable nucleus. The meaning attached to this tune is essential quantificational. For instance, in example (1), Linear Lengthening Intonation on *it* indicates that the looking event was prolonged or that it was a particularly close inspection.

- (1) *Baki, they bin look'it. Karlu, they bin throw'im away.*<sup>2</sup>  
 tobacco they looked at it no [Iwaidja] they threw it away  
 ‘They inspected the tobacco [code switch from Iwaidja] for a while. [Then they said:]  
 “No” [code switch from Iwaidja]. They threw it away.’  
 [AbE\_Narratives\_Eng\_CM\_140914\_01, 4:03]

Tunes that are similar to this are found in English and also in Australian English (see general overview on English intonation patterns in Wells (2006) and Adams (1969), Burgess (1973) on Australian English, and e.g. McGregor & Palethorpe (2008) specifically on High Rising Tunes in Australian English). Wells (2006) describes a couple of high plateau tunes, but his stylized high–mid pattern (p. 240) comes close to the tune discussed in this paper, although it does not include the lengthening that we found in our data. In addition, repeated high plateaus with a final downstep are also characteristic features of list intonations (see Steindel Burdin & Tyler 2018).

<sup>2</sup> When glossing Aboriginal English, we employ Standard English. When glossing Australian Aboriginal languages, we follow the Leipzig Glossing Rules with the following additions: ANT = anterior (generally past) aspectually underspecified past tense. We use the standard practical orthographies for Iwaidja and Anindhilyakwa that represent IPA as follows: <r|> = [ɺ], <rt> = [t], <rd> = [ɹ], <rn> = [n], <ng> = [ŋ], <ny> (Iwaidja) and <nj> (Anindhilyakwa) = [ɲ], <r> = [ɹ], <rr> = [ɹɹ], <ld> = [l̥], <rd> = [l̥], <h> = [ɥ], <j> = [c].

There are two principal differences between LLI and similar tunes in varieties of English. First, the quantificational meaning is applicable to more different types of words, including verbs and nouns. Second, the contour can be extended in length without limit, whereas similar tunes in English tend to be iterated. Closest in terms of form and meaning comes a pattern that has not been described in the literature but that is common in cases where the continuation of an event is encouraged until a stop point. Commonly, the continuation is indicated by a high plateau intonation, usually iterated with optional lengthening of the final word, whereas the stop indication is expressed with a downstep, see (2).

(2) *Keep going, going, going, stop.*

In contrast to English on Croker Island and in contrast to Iwaidja, this tune is usually iterated and limited to imperatives.

In this paper we present a hypothesis for why English on Croker Island possesses this particular contour. We suggest that it is the result of transfer from at least one local Aboriginal language, Iwaidja, which has a contour that is identical in form and meaning. Iwaidja is a major language on the island, historically spoken by most community members, and still spoken by around a fifth of the population.

Our paper enhances the description of English spoken by Aboriginal people in Australian remote areas. In particular, there is no description of English on Croker Island or an investigation of the intonation of Aboriginal English in general (Butcher 2008). We also advance the knowledge about the origins of English in remote Aboriginal communities in Australia by explaining the existence of a peculiar and unexplained feature through contact influence from local Aboriginal languages. Claims about substratum features in Australian English are frequent (see e.g. recently Malcolm 2018), but convincing accounts are rare. For example, the claim that a neutralisation of voicing in stops in Aboriginal English more generally is due to substratum influence (Malcolm 2008; Butcher 2008) has not been substantiated with evidence. By contrast, an instrumental case study shows that in the conditions that are described as being the reason for such a neutralisation – local Aboriginal languages with only one series of stops – the voicing distinction in Aboriginal varieties of English is maintained (Mailhammer/Sherwood/Stoakes 2016; Mailhammer/Sherwood/ Stoakes forthcoming). Finally, we contribute to the description of Iwaidja, an endangered and underdescribed Australian language, building on earlier work (Birch 1999 et passim).

This paper is structured as follows. In section 2 we give an overview of the language contact situation. Section 3 contains information about the data and the methods used in this paper. Section 4 gives the results of our investigation, which are discussed in section 5. In section 6 we draw some general conclusions.

## **2 Language contact situation and hypotheses**

English in various forms has been a contact language for Aboriginal languages in all of Northern Arnhem Land since the late 19<sup>th</sup> century (Harris 1986). Today, English is spoken on Croker Island in the community of Minjilang (population ca. 300) as one of several languages. Almost all community members speak a form of English regularly as one of their early or natively acquired languages. Practically everyone who is younger than 80 and grew up on Croker Island has been exposed to English at least from school age onwards. In fact, a significant number of Aboriginal and non-Aboriginal community members speak English only; it is the *de facto lingua franca* in the community even though most Aboriginal community members have at least a passive command in at least one of the main Aboriginal languages, and even though

many are functionally multilingual. There is no question that the diachronic trajectory is towards a long-term shift to English, and to a lesser degree also to more widely used Aboriginal languages, such as Mawng and Kunwinjku.

English on Croker Island cannot be described as one variety. In this sense it is quite unlike what has been labelled Aboriginal English in the literature for which a significant degree of homogeneity is claimed. In terms of Schneider's (2007) Dynamic Model, English on Croker Island, as far as its phenomenology is concerned, appears to be in a pre-nativisation stage (stage 3), except that it is an L1 for most speakers. For this reason, English on Croker Island is better described as partially overlapping repertoires, the sum of which form a community repertoire whose elements are often of disparate and unclear origin. For example, many speakers sometimes use past tense formed with *been* (<bin>) and an unmarked verb stem, e.g. *bin go* 'went', but the same speaker may produce a perfectly standard past tense in the same text. At the same time, there are features that appear to be part of most people's repertoires. One example is the use of *where* as a preposition in examples such as *we go where beach* 'we went to the beach'.

It is not clear what conditions this kind of variation. In a pilot study, Mailhammer et al. (2018) identified some standard linguistic factors, such as verb type, but the largest part of variation appeared to be individual variation. It is also likely that there are social factors, such as interlocutor, text type and context. For example, many speakers can use forms that are more standard if they speak to outsiders. In addition, there has been considerable fluctuation and mobility among the community, and certain features, such as the past tense constructed with *bin* + verb stem, which is the standard past tense of the most widely used creole in Northern Australia, *Kriol* (see e.g. Munro 2004), may be explicable through exposure to other forms or English or creole languages. A working hypothesis is that this degree of variation is due to a lack of stabilisation or focusing due to variable input and usage so that a community norm has not formed yet. It is not clear whether this variation is a more recent phenomenon (suggesting destabilisation) or whether this has been the situation for quite some time.

LLI is a feature that is pervasive in English on Croker Island more generally, but our investigation is confined to speakers of Iwaidja. It is, however, likely that speakers of other languages, and possibly English monolinguals, exhibit this phenomenon as well, as tunes that are similar to LLI have also been described for other local Aboriginal languages (see §4.1 below).

Iwaidja is one of several Australian Aboriginal languages spoken on Croker Island. Other major languages are Mawng, Kunwinjku and Kunbarlang, in addition to languages that are less well represented in terms of speaker numbers and usage, such as Amurdak and Burarra. However, the only Aboriginal languages with long-term viability on Croker Island are Mawng and Kunwinjku. Other languages may be viable elsewhere, e.g. Burarra, but they lack sufficient use on Croker, and a significant number of languages are endangered (e.g. Iwaidja, Kunbarlang), moribund (e.g. Amurdak) or practically extinct (e.g. Marrku, the traditional language of Croker Island). Though until fairly recently, Iwaidja was considered to be the main language of the island, deaths of key speakers in the last ten years have shaken the speaker base considerably, and it is currently unknown if or to what degree Iwaidja is transmitted to children. There are probably less than 50 proficient Iwaidja speakers on Croker Island.

The general linguistic situation is characterised by polyglossia. Most community members are at least passively multilingual, but everyone knows English well enough to make themselves understood. Although Iwaidja still occupies many official domains, for example community announcements, English must be seen as the H language. Any government business is generally conducted in English, as the main regional government personnel does not speak any Aboriginal language. Moreover, the School on the island is officially English-dominant and leaves little

space for Aboriginal languages. And English is of course the key to participation in the wider Australian society. Consequently, it is to be expected that the dominance of English will increase even more in the future.

To sum up, English on Croker Island is heterogenous and not describable as one or even several varieties but more as partially overlapping repertoires of speakers who are often multilingual. The English repertoires contain elements of different origins, but it is likely that at least some owe their existence to bilingual interference or substratum influence. The aim of this study is to ascertain the origin of LLI in the English of some community members. Our hypothesis is that LLI in the English of the speakers we investigated is a case in which bilingual speakers of Iwaidja transferred a tune and its meaning to English where a similar tune already existed (see (2) above).

### 3 Data and Method

The data for our investigation comes from two sources. First, we used a corpus of natural language data from over 40 sociolinguistic interviews and narratives in English collected from a variety of community members. In addition, there is a large corpus of Iwaidja collected by several researchers located in *The Language Archive* (<https://tla.mpi.nl>), which we accessed and supplemented with further naturalistic data collected on Croker Island. Second, in order to specifically investigate the distribution and interpretation of LLI in Iwaidja and English, we adopted two distinct elicitation procedures, an essentially experimental method, based on visual stimuli and a more classical questionnaire-based elicitation method. The second method was only used for Iwaidja.

The experiment involved eleven participants. Nine were native speakers of Iwaidja (5 male, 4 female ranging between 40 and 75 years old). Of these, seven completed the experiment in Iwaidja only, and two participants also completed it in English. The remaining two participants were proficient speakers of Iwaidja who acquired the language as teenagers or adults (late bilinguals). They completed the experiment in English only. The participants were shown a series of 34 video clips, specifically targeting different event types and aspectual configurations in general. Simplex event types comprised: (a) simple stative, positional stimuli (such as those expressed in English by the positional, stative meanings of ‘sit’ (as in ‘be sitting’), *stand* (as in ‘be standing’); (b) simple activities; (c) iterated events; (d) simple telic events (both achievements and accomplishments) and (e) various complex combinations of the above simplex events. Complex stimuli included iterated simplex events, sequences of one or several simplex events, temporal embedding of a simplex, telic event into a complex or simplex event, and even sequences of distinct iterated simplex (= complex) events.

In addition to these *Aktionsart* parameters, the clips also imposed *viewpoint* parameters, notably when temporal ordering vs. overlapping events were shown; indeed, strict temporal ordering is known to favour so-called *perfective viewpoint* interpretations, whereas temporal overlap favours *imperfective viewpoint* interpretation, cf. Smith (1991), Caudal (2012). It was important to control for viewpoint as a key condition of our experiments.<sup>3</sup>

After having been shown each individual clip, participants were asked to produce descriptions following the three following contextual patterns, with explicit contextual cues being provided, especially temporal adverbials both in English and Iwaidja (e.g. *nanguj* ‘yesterday’, *wularrud*

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<sup>3</sup> Iwaidja possesses two tense affixes marking aspectual differences: the first of these can be described as a general imperfective, with both single event background readings, and habitual/iterative readings (similar to e.g. Romance imperfectives); the second tense affix can be best described as a temporally and aspectually underspecified anterior tense (most commonly interpreted as a past tense), capable of both perfective and imperfective interpretations (similar to the German *Perfekt*).

‘a long time ago’ or ‘for a long time’) or explicit scenarios being set up to accommodate the desired event description:

1. simple, non-iterated descriptions of the events perceived (‘X did Y (once)’)
2. iterated past descriptions of the events perceived (‘X did Y for a long time’)
3. past habits (‘X used to do Y’)

From these data we created a formal profile of the intonation contour in English and Iwaidja (see §4), and subsequently described the range of meanings of LLI in both languages. We then focused on specific overlaps in form and function to determine whether there was any reason to assume a transfer from Iwaidja to English. We concentrated on a qualitative investigation as a first step.

## 4 Results

### 4.1 Linear Lengthening Intonation in Iwaidja

#### 4.1.1 Formal characteristics

This tune is characterised by a linear progression of F0 – either in a plateau or as a rise – concluded by a high boundary tone, with lengthening of the final syllable nucleus. This is illustrated in Figure 1.<sup>4</sup>

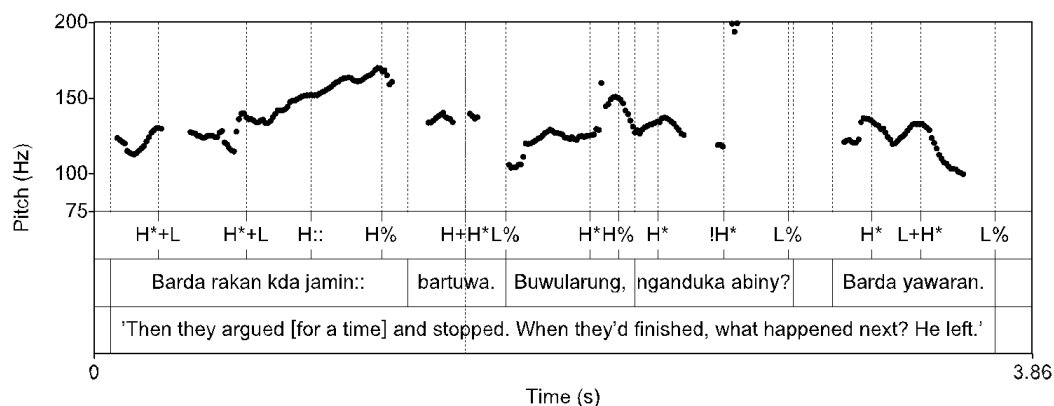


Figure 1: Linear Lengthening Intonation on the second syllable of *jamin* ‘3sg.contr.’

Linear lengthening occurs on the last syllable of the word *jamin* (ca. 340 ms, i.e. more than 3 times longer than a normal /i/, cf. averages in Shaw et al. ms), which is a contrastive pronoun used in reciprocal constructions. The lengthening is indicated by the symbol H(:): (lengthened high tone) and the final high tone at the end of the intonation phrase, which are the two core criteria for identifying this phenomenon in Iwaidja, by H% (high boundary tone). This example also shows that Linear Lengthening Intonation in Iwaidja need not show a plateau contour.

This tune exhibits interesting distributional, ‘syntactic’ features. First, in terms of context, as in other languages (see e.g. Simard 2013: 67 for Jaminjung), the following Intonation Phrase can show a falling contour (see e.g. Figure 1), but it is also possible that there is no immediately following Intonation Phrase or a pause of up to ten seconds. Second, Linear Lengthening is not

<sup>4</sup> We cannot provide a detailed explanation of the phonetic annotation system we use to describe Iwaidja intonation, but it is basically similar to existing description systems used for other Australian languages, i.e. a ToBi-style system (see e.g. Bishop & Fletcher 2005, Fletcher 2014).

distributed equally over the locus it occurs in. That is, while the linearity of F0 progression can precede the last nucleus by a considerably time, lengthening usually occurs only on the last vowel of the final word, which need not be the stressed vowel. Thus, it would appear that lengthening demarcates the end of a prosodic unit, possibly an intonational phrase. There are some examples in our corpus that appear to be exceptional in that they show lengthening of the verb-final vowel as well as the final vowel of the external argument NP without giving reasons for interpreting this as two separate intonational phrases, though they are clearly marginal.

Third, although in many cases the location of the lengthened vowel is the verb, there are good examples in which the verb is followed by a particle-like word, such as *kirrk* ‘all/completely’, or an external argument NP, such as *mayubarl* ‘potato’, whose (final) vowel is affected by the lengthening rather than the verb. In most of these instances, however, the linear intonation contour extends to the verb as well. We also found that isolated NPs, especially demonstratives or space/time/quantification expressions, could be the locus of LLI. This is, for instance, the case in the Iwaidja distal deictic *baki*, over there, which is realised with obligatory Linear Lengthening Intonation (speakers rejected made-up examples without LLI), approximating something like lexical tone (contrasts with *baki* ‘tobacco’), and then translates as ‘long way over there’.

It is still somewhat unclear, however, under which circumstances an element in the right periphery of the verb complex receives phonetic lengthening of the final nucleus. For the Gunwinyguan language Bininj Gun-Wok, Bishop (2002: 82) asserts that verb and the nominal in question must “form a tight semantic unit” (see Bishop 2002 for cases of lengthened post-verbal nominals in Bininj Gun-Wok). It is possible that this can be defined more rigorously as strong syntactic cohesion in the sense that the element must be an argument of the verb (i.e. a valent rather than an adjunct).

In Anindhilyakwa, which is also a Gunwinyguan language, LLI is most commonly borne by a special clitic =*wa*, possibly derived from the adverbial *ngawa* (‘still’), cf. (3), which generally attaches to the verb, and less commonly to a valent of the verb.

- (3) *nanga-luku-lukwa-mærrkaju-wa*      *d-adə-m-aləka-langwiyu...wa*  
 3m/3f-RDP-tracks-follow-PAST      3f-f-INALP-foot-ABL.PRG...XTD  
*yingə-ləkarrki-lyəmada*  
 3f-tracks-disappear-Ø  
 ‘he kept following her tracks until they disappeared’ [*Search* (Egmond 2012: 275)]

Interestingly, *ngawa* itself can bear LLI as an isolated word:

- (4) *Engka na-rndarrka.*                      *Na-lawurrada*      *ebina-langwiya,*  
 NEUT.other NEUT/NEUT-grab-Ø      NEUT-return-Ø      NEUT.that.same-ABL.PRG  
*nga...wa*  
 still...XTD  
 ‘It [the she cat] grabbed another one [another kitten], then it brought back, going along the same way (= all the way back)’. [*Bujikeda* (Egmond 2012: 220)]

This strongly suggests that LLI is a distinctly grammatical feature of languages, with elaborate morpho-phono-syntactic constraints governing its distribution.



### 4.1.2 Meaning of Linear Lengthening Intonation

Previous accounts of intonation patterns across Australian languages have so far generally focused on their role either as sentence-type markers (Nordlinger 1998: 213; 236), i.e. as declarative vs. interrogative sentence type markers, or as discourse-structuring items, (see e.g. McGregor 1986; Bishop 2002), relating the propositional content of an utterance to that of other utterances, and/or some model of speakers' beliefs, expectations and shared knowledge (including constructs such as 'Question Under Discussion', etc.). This embraces by and large the view that intonational phonology can have meaning, either 'compositionally', i.e. by ascribing separate meanings to single tonal events like pitch, an idea notably pioneered by (Pierrehumbert/Hirschberg 1990), or 'non-compositionally', i.e. meaning should rather associate with the nuclear stretch of an intonation phrase, cf. (Gussenhoven 1984).<sup>5</sup>

It should be noted that ascribing an inter-clausal/discursive/context-structuring role to some intonation does not preclude it having an intra-clausal, propositional-content level contribution as well; similarly, discourse connectives, evidentials or modals are known to be capable of contributing to both levels of linguistic interpretation (see e.g. Faller 2002; McCready 2008; Murray 2010; Murray 2014; Faller 2014).

Thus, when Bishop (2002:76) describes non-stylised high-level contours (i.e. without vowel lengthening) as conveying incompleteness within a discourse sequence, corresponding e.g. to 'and' conjunctive multi-clause sequences – the meaning of said contour being highly dependent on the contours of the following discourse units – she effectively depicts a grammatical element whose contribution is both at the propositional content-level (adding referents to the discourse context by means of an assertion-like update) and at the context-structuring level, e.g., it must relate the listed elements to some at-issue content under the 'Question Under Discussion' (see e.g. Benz/Jasinskaja 2017).

According to existing accounts, LLI appears to play a clear sentence-internal semantic role (Bishop 2002; Simard 2010; Simard 2013; Fletcher 2014), and should therefore be seen as contributing to the at-issue, propositional content of a clause (or constituent, at least, depending on scope phenomena – see below) – in the spirit of e.g. Clifton et al. (2002). The most salient semantic content it is generally endowed with is that of a durational adverbial; its semantics is generally compared with that of a 'for + definite temporal duration' adverbial (as in *for some time*). However, there are some complexities in the actual data that need to be addressed before such a view can be definitely adopted.

Bishop (2002: 82) puts forth the first published survey of the semantics of LLI in Australian languages. She specifically claims that:

- when used with a verb, LLI conveys “durative aspect (ongoing or continuous action)”, and “iconically ‘dramatises’ the ongoing nature of the action”.
- when used with a nominal, the vowel lengthening associated with LLI “dramatises the ‘extent’ of the referent: for example, the amount of a material substance, or the extent of a geographical region”.

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<sup>5</sup> See (Ladd 2008: 41) for some general consideration (and further references) of what can be dubbed 'the linguist's theory of intonational meaning' (see also Bergmann 2007; Portes/Beyssade 2014) for more recent developments. However, unlike Ladd (2008), we do not endorse the view here that intonational meaning should be regarded as crucially 'morpheme-like'; from the semanticist's point of view, this comparison is not illuminating in that it obviates the need for distinguishing between several types or intonational interpretative role. We certainly believe that the kind of meaning exemplified by LLI in Australian languages can probably be compared to that of an affix, clitic or other word class, but we do not see that this particular propositional-content level kind of meaning should be the only interpretative function accessible to e.g. intonation contours in general ; see e.g. (Murray 2014) for a brief typology of sophisticated but common ways for linguistic expressions to contribute to various levels or 'layers' of interpretative content, both semantically and pragmatically.

Simard (2010; 2013) offers a similar review of meanings, obviously following Bishop (2002) in using the descriptor “dramatisation”.

These characterisations may need to be revised in several respects, especially in the light of the Iwaidja data. First, with regard to verbal uses of LLI, if one assumes a classic two-layered theory of aspectual meanings (see e.g. Smith 1991), it is unclear whether Bishop (2002) and Simard (2013) assume that the notion of ‘aspect’ here involved pertains to the realm of event structure aspect (so-called ‘Aktionsart’, typically associated with the contextual interpretation of a verb), that of viewpoint aspect (as typically conveyed by inflectional morphology; this is at least a plausible consequence of Bishop (2002) using the word ‘continuous’), or some kind of periphrastic, non-viewpoint aspect (which represents some kind of lexico-grammatical, intermediary aspect). Second, although existing works appear to assume that LLI can affect the interpretation of an NP, it rather seems to be the case that even when an NP is the phonological locus of LLI, the verbal head of the clause is the element really targeted. In other words, it appears that LLI can take wider scope than its locus might suggest. Thus, in (5), it is clear that the object *mayubarl*, though marked with linear lengthening, is not ‘dramatised’ – rather, it merely seems to offer an appropriate ‘anchoring spot’ for linear lengthening as the last element of the VP. (6) offers a similar setup, again with the object receiving LLI – without any quantificational effect being achieved. Note that *mayubarl* is an incremental theme argument in the sense of Dowty (1991), and could potentially be measured out by LLI, or at least interact with its scalar/quantificational content – but it is clearly not the case here, which seems inconsistent with suggestions made e.g. in Bishop (2002). Clearly *jurra* is not an incremental theme in (6), and yet is also the locus of LLI.<sup>6</sup>

(5) *A-r-ngan rajirra-n mayubarl:*  
 3SG-stand-ANT 3sg.M.A>3SGO-peel-ANT potato.  
 ‘He was standing there peeling a potato’. [TAIM20130712M-JC, 22:10]

(6) *A-ri-ng r-arnaka-ng jurra:*  
 3SG-stand-IPFV 3SG-M.A>3SGO-poke-IPFV paper.  
 ‘He poked the paper bag [context : over and over again until the sun went down]’  
 [TAIM141124JCRNKMededIw, 28 :40]

By and large, the following empirical generalisations appear to hold:

GENERALISATION (1): when stimuli involved multiple occurrences of an event description, perceptually durative states or activities (both with or without iteration – cf. e.g. *rimajbungkung* ‘lift (repeatedly)’ in (10), vs. *rimajbungkung::* ‘lift/hold high’ in (8), and within iterated elicitation contexts (‘for a long time’ context) even when simple telic event descriptions had been elicited in the prior the ‘once’ context, LLI was almost systematically triggered, often (though not always) in addition to the use of explicit reduplication verbs forms, full reduplication of the verb itself, or other pluractional/continuative marking (cf. English ‘keep on, continue’)

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<sup>6</sup> It should also be noted that the Anindhilyakwa data discussed above offers strikingly converging comparative evidence, in the sense that LLI appears to systematically be related to some verbal head, regardless of its exact locus. However, it remains uncertain what triggers these positional variations. We must leave it as an open issue for future research.

- (7) *Nanguj a-ri-ngan:: k-artbirru-ny::*  
 yesterday 3SG-stand-ANT 3sg.M.A>3SGO-throw- ANT  
 ‘Yesterday he threw it [the stone] [context: until the sun went down]’  
 [TAIM141124JCRNKMededIw, 46 :14]
- (8) *Ri-majbungku-ng:: kartbirruny*  
 3SG.M.A>3SGO-lift- ANT 3SG.M.A>3SGO-throw- ANT  
 ‘He held it high [the stone] for a while... then he threw it.’  
 [TAIM141124JCRNKMededIw, 45:03]
- (9) *A-ri-ngan [wardyad] k-artbirru-ku-ny:: [until the sun went down]*  
 3SG-stand- ANT 3SG.M.A>3sgO-throw-ITR- ANT  
 ‘He threw [the stone] repeatedly.’  
 [TAIM141124JCRNKMededIw, 47:08]
- (10) *Nanguj aringan ri-majbungku-ku-ng::*  
 yesterday 3SG-stand- ANT 3SG.M.A>3SGO-lift-ITR- ANT  
 ‘He kept lifting it [the crate]’.  
 [TAIM141124JCRNKMededIw, 51:32]

GENERALISATION (2): by contrast, when stimuli had driven informants to produce telic predicates, LLI was rarely elicited in the ‘once’ context, irrespective of whether or not the stimuli had perceptual duration. With respect to LLI, no consistent difference was found between so-called ‘punctual’ vs. ‘non-punctual’ telic predicates (achievements vs. accomplishments).

When we tried to elicit LLI with telic event descriptions in single-event (‘once’), non-iterated / non-habitual contexts, most informants rejected LLI with achievements verbs, except (and only marginally) when clearly ‘coerced’ real-time stimuli were produced (e.g. by mimicking a slow-motion action of giving something to someone). They also tended to reject LLI with accomplishment descriptions; the use of imperfective morphology seemed to improve acceptability judgements; instead, informants generally insisted on using some lexical alternative with inherent pluractional meaning (e.g. with reduplication). Still with respect to *Aktionsarten*, it should be noted that LLI does not interact with scalarity as a verbal semantic parameter (cf e.g. (Kennedy/McNally 2005)): in spite of systematic attempts with inherently scalar verbs such as so-called ‘degree achievement verbs’, or change-of-state verbs with particles possessing a scalar meaning (e.g. *kirrk*), LLI was only ever found to cause an increase in temporal duration (not an increase in scalar intensity).

GENERALISATION (3): the use of LLI with imperfective aspect marking was biased towards telic event descriptions (it seemed to improve the acceptability of LLI with sentences denoting telic event predicates), and vice versa, the use of LLI with underspecified (but potentially perfective) aspect marking was biased towards atelic, stative.

These empirical generalisations strongly suggest that in the verbal domain, LLI is highly sensitive to aspectual parameters and not merely temporal parameters. In particular, LLI appears to require some kind of event mereological complexity (the event predicate conveyed by the utterance should either be inherently cumulative in the sense of Krifka (1992), i.e. atelic, or be associated with a gradual though telic change-of-state – for instance with a verb possessing a so-called incremental theme argument in the sense of Dowty (1991), or with a

predicate inherently associated with a gradual yet bounded development/ ‘change–of–state’ scale, cf. *cool down* in English).<sup>7</sup> In turn, this suggests that the semantics of LLI is not that of a *for* adverbial phrase, but rather that of some kind of subjective measurement function, involving a non–absolute standard of comparison (something along the lines of a quantifier like ‘some’).

This intuition is further supported by the fact that LLI is also found with some non–verbal categories (i.e. neither a verb nor a verb modifier), i.e. distal spatial deictic *baki* ‘over there, out of sight’ (an intrinsically scalar item, arguably), or with *mardan* ‘a little bit, a small quantity of’ or even *mardan mardan* – the latter being used with LLI to convey the idea that one would like to get a little bit more food than one’s expected share of food. The isolated nature of this clearly scalar item contrasts with the observation made above about degree achievement verbs, and other scalar change–of–state verbs; this suggests, we believe, that we are here facing an idiomatic case of lexification, the origin of which is a mystery to us.<sup>8</sup>

By itself, LLI thus appears to have a semantics akin to that of predicate modifier (i.e. of type  $\langle\langle e,t \rangle \langle e,t \rangle\rangle$  for a single–argument predicate); it does not appear to be a quantifier *stricto sensu* ; see for instance so–called “quantity adjectives”, such as *many* and *few* qua expressing predicate modifiers (cf. Solt 2014).

## 4.2 Linear Lengthening Intonation in English on Croker Island

The phonetic features of Linear Lengthening in the variety of English examined here are in principle identical with those found in Iwaidja. However, the phonetic lengthening is not always as extreme (see Figure 3). In the following example (Figure 2) the Linear Lengthening is on *bit* (333 ms compared to ca. 95 ms for the same word without LLI).

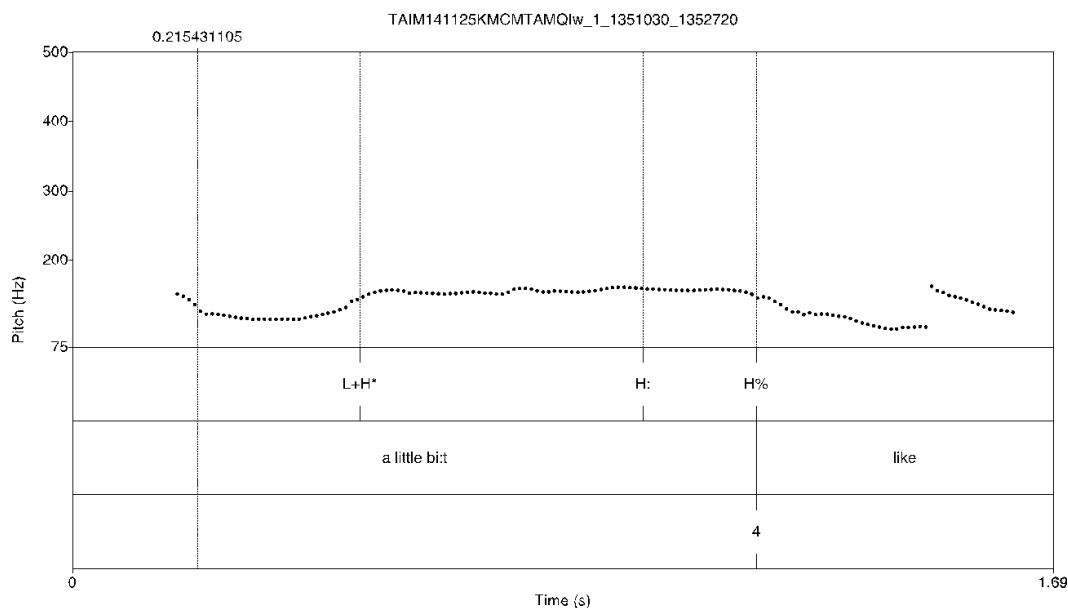


Figure 2: Phonetics of Linear Lengthening in Croker Island English

<sup>7</sup> See e.g. Kennedy/McNally (2005), Kennedy (2012) and Caudal/Nicolas (2005) for more on the importance of *scalarity* in the classification of event structures, going beyond the classical Vendler–style typologies of event structures.

<sup>8</sup> We have also recorded uses of LLI with stems meaning ‘call out’ and ‘throw’, which appeared to involve not an increased duration reading, but a distal/spatial reading (‘throw a long way away’, ‘call out at someone a long way away’) for which it was unclear to us whether these were entrenched uses, or reflected on a possible polysemy of LLI across the spatial and temporal domains. Further research is needed in order to clarify this point. See also our comments above about distal deictic *baki*, §4.1.1.

The meaning of Linear Lengthening Intonation shows some close parallels to that in Iwaidja (§ 4.1). Like in Iwaidja, it has quantificational effects, and is sensitive to scalarity parameters (in the sense of Caudal/Nicolas 2005; Kennedy/McNally 2005). One example is ‘bit’ in Figure 2, which incidentally was elicited as a translation for Iwaidja *mardan* ‘small, little’ with Linear Lengthening Intonation to mean ‘a really small quantity’. Also, like in Iwaidja, with stative verbs Linear Lengthening Intonation triggers markedly durative, perfective readings.

(11) *We bin camping there on top:: and getting down.*  
 [AbE\_narratives\_Eng\_CM\_140924\_01]

In addition, LLI also seems to attach to conjunctive adverbials, such as *then* in Figure 3.

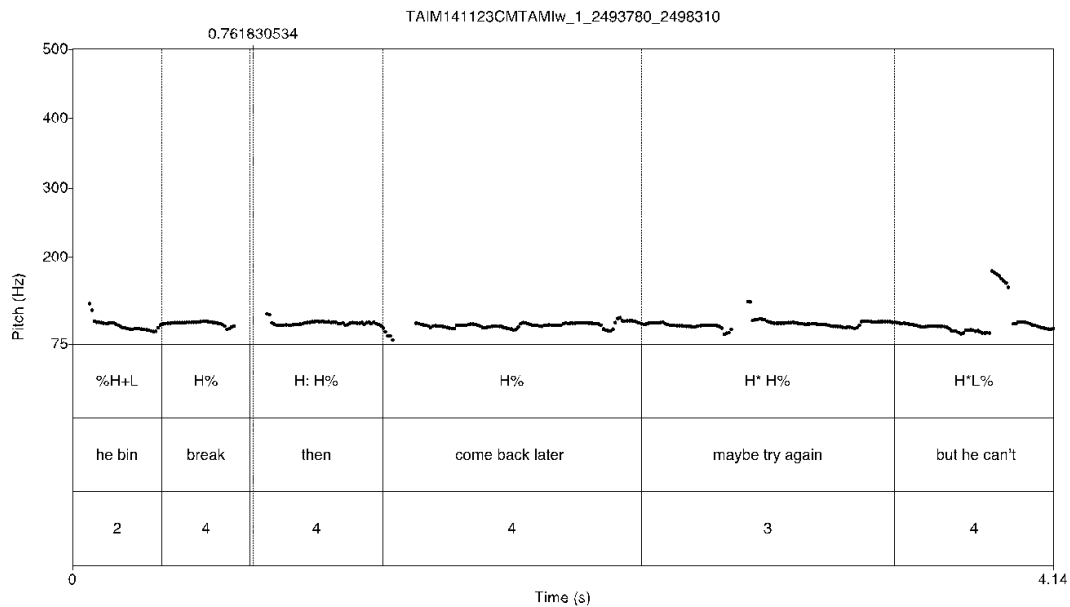


Figure 3: Linear Lengthening Intonation in Croker Island English on stative verbs and connectors

Although *break* in Figure 3 is not marked up as lengthened, it can be argued that the linear (i.e. plateau) intonation contour links it to the following intonation phrase, which exhibits Linear Lengthening Intonation, in the form of a sustained high plateau.<sup>9</sup> This pattern of a high sustained plateau stretching over several intonation units is common; it mars a sequence of event descriptions that are connected in a macro-, complex event description, stretching out over a longer period<sup>10</sup>.

<sup>9</sup> An anonymous reviewer asks what the “basis of the Break 4” on *break* is. It is the preceding downstep.

<sup>10</sup> It should be noted that many Australian languages excel at construing complex event structures through complex predicate/serial verb systems (cf. e.g. Schultze–Berndt 2000; Nordlinger/Caudal 2012, or complex spatial constructions (e.g. so-called ‘associated motion’ in Arandic, cf. Wilkins 1991). Iwaidja appears to offer related configurations, *qua* serial–verb construction, across which, unsurprisingly, LLI turned out to span. These constructions typically involve combinations of posture verbs and lexical verbs – regardless of the syntactic ordering, cf. e.g. (7) vs. (10) – and appear to offer a redundant, re–enforcing semantic signal that the event described by the lexical verb had a ‘long duration’. Cf. (Caudal/Mailhammer 2016) This sort of data point, we believe, reflects on a case of syntactic/semantic transfer from Iwaidja into English, where the kind of inherent complex structuring of event descriptions so characteristic of the substrate language, also surfaces.

- (12) *Leaf falling down, makin' lots of mess, rake it again, do that.*  
 [TAIM141123CMTAMIw\_1]

This is a kind of markedly durative<sup>11</sup> reading where an ongoing, iterative sequence of events are described. The leaves keep falling, making a mess and have to be raked up again repeatedly until the end of the activity, which in this case is the end of the day. Markedly durative readings are also found with activities, such as *go around, dance* and *pull*.

In some cases, intensity appears to be expressed at the same time. For instance, in the following example, in which Linear Lengthening occurs on the stressed vowel of *lookin'it*, it could denote an instance of closer looking, i.e. an inspection; however, this is a predictable side effect of a prolonged inspection event, cf. (1), repeated here. Given the general lack of connection between scalarity and LLI in Iwaidja (except with one lexical case, *mardan mardan*), cf. §4.1.2, we believe it preferable not to take such datapoints as indicative of an 'increased intensity' meaning *per se*.

- (13) *Baki, they bin look'it. Karlu, they bin throw'im away.*  
 tobacco they looked at it no [Iwaidja] they threw it away  
 'They inspected the tobacco [code switch from Iwaidja] for a while. [Then they said:] "No" [code switch from Iwaidja]. They threw it away.'  
 [AbE\_Narratives\_Eng\_CM\_140914\_01, 4:03]

## 5 Discussion

As §4 showed, both Iwaidja and English on Croker Island show an intonation tune that is both formally and semantically virtually identical. This tune has not been reported to exist in other varieties of English in Australia. We thus regard our hypothesis as confirmed, and suggest that Linear Lengthening Intonation in English has its origins in Iwaidja. The main argument for Iwaidja is the specifically quantificational meaning that appears to be absent from other Australian Aboriginal languages for which a similar tune has been discussed. We propose that bilingual speakers of Iwaidja and English transferred LLI from Iwaidja to English, as English has similar tunes available, even if the meaning is different. In particular we think of tunes typically found with utterances in which implicit measurements are performed, such as in (13) (see also (2) above).

- (13) *Keep going, keep going, that's it!*

In contrast to similar tunes in English (see §1), however, LLI can be used much more generally in quantificational terms (see §5).

In spite of this, we do not at present want to rule out other potential sources and influences. That is, we cannot rule out that Iwaidja as a contact language has nothing to do with the occurrence of Linear Lengthening Intonation expressing quantificational effects. Other potential sources are

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<sup>11</sup> Said marked duration exceeds the normal, expected duration of a similar event description without LLI; it is of a (contextually determined) comparative nature, i.e. involves a standard of comparison, very much like scalar expressions – cf. (Kennedy 2007).

- non-Aboriginal dialects of English, although there are no published accounts of Linear Lengthening Intonation in varieties of English;<sup>12</sup>
- Aboriginal dialects of English and contact languages;
- other Indigenous languages either in direct contact (e.g. Kunwinjku) or in indirect contact.

As Meakins (2014: 389) points out, excluding other potential sources is crucial for a compelling case. At present we cannot do this, which is also due to the lack of comparable data. That is, although there are e.g. detailed descriptions of intonational patterns and tunes that are phonetically the same as Linear Lengthening Intonation discussed here (see e.g. Bishop 2002, Bishop/Fletcher 2005 for Bininj Gun-Wok), the meaning of these tunes is not described with the same semantic detail, so that it is difficult to compare Iwaidja to these languages. We hope to be able to provide such a comparison in future work. For the present time, our argument rests on the striking phonetic and semantic parallels between Iwaidja and our sample of English on Croker Island. We find it extremely likely that even if Linear Lengthening Intonation originated in Croker Island English independently from influence from Iwaidja bilingual speakers of Iwaidja and Croker Island English would have been supporting this tune in a process of structural convergence, and thus increased its frequency. Hence, this would at least be a case of multiple causation, but it is clear that this remains somewhat speculative.

## 6 Conclusion

This paper investigated an intonational pattern of Iwaidja in terms of its phonetics and detailed semantics and a close parallel of this tune in a sample of English from Croker Island. The main findings are:

- Linear Lengthening Intonation in Iwaidja appears to convey a subjective measurement-based, quantificational or quantification-related semantic content, mostly restricted to temporal duration in event descriptions (plus some connections with spatial measurement in a few expressions we have able to identify, the extent of which remains to be explored); by and large, it does not appear to interact directly with scalarity in event descriptions; it is possibly different from similar intonation patterns in other languages, although there is also significant overlap between languages.
- Linear Lengthening is also found in Croker Island English with the same meaning pattern.
- It is likely that the occurrence of Linear Lengthening Intonation in Croker Island English is at least partly motivated by the co-existence of Linear Lengthening Intonation with quantificational meaning in Iwaidja, as bilingual speakers would probably show structural convergence as predicted e.g. by Muysken (2013).

However, we cannot at present rule out other influences, especially other Indigenous languages partly due to a lack of equally fine-grained semantic analyses, but also because it is clear that at least some meanings found in Iwaidja and Croker Island English are also found in other contact languages, such as Kunwinjku.

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<sup>12</sup> H-H% contours, which are somewhat similar to Linear Intonation, seem to be attested for Glasgow English, but apparently not in connection with a lengthened final nucleus, i.e. as Linear Lengthening Intonation (see Mayo 1996).

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