

PROSODY AND THE SEGMENTATION OF MALAY DISCOURSE

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1 Introduction

The aim of this paper is to examine the issues of segmentation in continuous discourse and present a theoretical framework that somewhat eases its segmentation into fragmented parts. The difficulty encountered in segmenting a stretch of speech into separate tone groups provides the impetus for carrying out research of this nature. The paper presents arguments for segmenting discourse into units of speech whose boundaries are defined by audible prosodic cues. The conclusion is that this less restrictive framework enables the identification of prosodic cues in segmentative work and the roles they play in discourse development.

The standard approach to the description of intonation, especially in the British tradition of intonation, is to establish a unit of phonological organization within which the nucleus or focus can be defined. The assignment of tonal features in turn depends on the necessity of having appropriate information points pre-established. The recognition of this central unit in the study of intonation is described succinctly by Scuffil (1982:34) as follows:

All analyses of intonation postulate a unit which is central in the sense that it provides the framework within which intonational features can be described.

These units share a theoretical orientation and characterize some units of intentional description, the neutral and unmarked case coinciding with a clause. The intimate relationship between prosody and segmentation of speech is expressed in the words of Gardiner (1977:4) who postulates that intonation segments utterances into 'phrases signaling to what extent the phrases are related to one another and element within the phrase is the center of attention.'

The fact that it is impossible to utter an extended stretch of speech without some kind of break, and that it is impossible for the hearer to interpret what is said unless what is perceived is chunked into manageable units makes segmentation into divisible unit obligatory. Nevertheless, the decision as to how the verbal content of his discourse should be segmented is optional in the sense that it lies with the speaker. The belief that segmentation of discourse is prosodically identifiable and that often (but not always) segmentation is based on speaker decision in pursuit of a purpose provides the impetus for the investigation into the relationship between segmentation and the role that the segmented chunks play in discourse development.

2 A proposed theoretical framework

Bolinger (1989) regards segmentation as ‘universal’ such that ‘all languages use intonation, rate, and pause to mark divisions’ (p.82). For example in Cayuvava, ‘a fall and a trail off after the final accent signals the wish not to continue and a maintenance of the level of the final accent indicates incompleteness’ (1982:82). According to Bolinger a speaker indicates a break in the discourse by a shift in pitch, in particular a drop in pitch. Likewise Brazil (1975, 1978), Lehiste (1975) and Bolinger (1989) note that the speaker indicates the beginning of a new utterance or topic by a change in prosody, i.e. raising the pitch height and/or increasing loudness.

The difficulties encountered when trying to segment Malay discourse using a definition of the nucleus and its domain which was finely tuned for English have led to the abandonment of dividing stretches of speech into tone groups. In practice, however, tone-group boundaries are sometimes not set off by audible prosodic cues and that segments which are demarcated by audible breaks may not contain a nucleus (Knowles: 1991). Crystal (1969) himself admits that he sometimes takes recourse to syntactical or semantic criteria to place boundaries. What seems to make segmentation difficult is the presence of hesitation phenomena brought about by planning and production difficulties. The very high proportion of performance errors in Brown et al’s (1980) data of spontaneous informal conversations, e.g. false starts, hesitation, slips of the tongue, overlapping and incomplete utterances contribute to making segmentation problematic.

When a speaker encounters problem in producing what he wants to produce he may be forced to pause or lengthen a syllable at an inappropriate place, thereby disrupting the prosodic flow of the utterance. This break in the prosodic flow causes a stream of speech to be realized as consisting of fragmented chunks whose boundaries may not coincide with syntactic boundaries. A speaker may, for example, pause before reaching the nucleus resulting in segments which have no nucleus. Although intonationally insignificant, these planning units are important in the sense that they fulfill the speaker’s interactional purpose, i.e. gaining him time to prepare his subsequent contribution.

The researcher has therefore adopted a less restrictive approach to segmentation; division into segmented parts is based on the presence of the prosodic cues which causes a break in the prosodic flow of utterances. The methodology for identifying the segmented parts thus rests on identifying the audible prosodic features whose presence contributes to making the units they bound hearable as segmented chunks. The question of whether these segmented parts contain a nucleus or not is not at issue here because the aim is not to describe the intonation patterns of Malay. After the identification of these segments, the contribution they make to discourse development will be examined. These segmented parts which I refer to as ‘speech units’ can be realized as follows:

1. a unit of information containing an item of information which is made prominent by a combination of prosodic cues, i.e. a speech unit containing a nucleus. The study interprets the term ‘information’ broadly so as to include not only content-information but also information of a social, pragmatic and interactional in nature.
2. a unit of performance such as a slip of the tongue, a false start, an incomplete lexical item, etc.

Although most linguists recognize the tone group as the basic intonational unit only Crystal (1969:204-7) gives the most complete discussion of the phonetic cues which signal the boundaries of the tone group. He claims that in most cases its boundaries can be determined by the following phonetic/phonological cues:

1. audible change in pitch at the level of boundary depending on the direction of the nucleus,
2. the presence of audible pause, final syllable lengthening or aspiration at the end of tone-group. (1969:204-7)

Crystal further adds that in the absence of these phonetics cues one can then resort to relying on 'grammatical or semantic criteria to place the boundary' (p. 207), but such cases are few. Couper-kuhlen (1986) and Cruttenden (1986) list out the following external criteria for boundary identification: pause location (either real or potential), final syllable lengthening, rhythmic discontinuity and the presence of anacrusis. Another boundary signal is the relative tempo of unstressed syllables.

To overcome the problem of segmentation, Ladd (1986) proposes the recognition of two types of intonational phrasing: Major Phrase (MP) and Tone Group (TG). The former is delimited by the presence of overt phonetic cues such as pause, anacrusis, syllable lengthening, pitch change, change of tempo, etc. whose presence is agreed upon by most linguists. Tone group is 'merely a structural unit of phonology – the domain within which the nucleus is defined', whose existence is identified solely on the basis of tonal structure (i.e. the presence of nucleus). These two types of domain form hierarchical structure and that they are recursive in the sense that a constituent is allowed to dominate a constituent that is higher in rank, parallel to the situation in syntax. In Ladd's opinion this theoretical framework will help overcome problem in cases where no phonetic cues bound segments whose internal structure satisfies the minimum requirement of an independent tone group.

Pike (1962) presents a detailed description of how the boundaries of phonological units can be identified using rhythmic criteria. According to Pike while prenuclear unstressed syllables are characterized by crescendo loudness and faster tempo due to the relative shortness of the syllable, post nuclear syllables are marked by decreasing level of loudness (decrescendo), lenis articulation (including devoicing) and relative lengthening of the syllable. O'Connor (1973) adds that one can distinguish prenuclear syllables from post nuclear unstressed syllables by relative tempo such that the former is uttered relatively faster than the latter.

Table 1 below draws together the various observations that linguists have made as regards the phonetic criteria that contribute to making continuous stretches of speech realized as separate units of prosody.

Table 1: *External Cues to Tone group boundaries*

Linguists	Pitch parameters	Tempo parameters	Other parameters
Crystal/ Cruttenden/ Couper- Kuhlen	change of pitch level or pitch direction	pause; final syllable lengthening; anacrusis; rhythmic discontinuity	semantic/ syntactic criteria
Pierrehumbert	boundary tones	pause; final syllable lengthening	
Pike		relative allegro tempo of pre-nuclear unstressed syllables; relative lengthening of post nuclear unstressed syllables	crescendo loudness of pre-nuclear unstressed syllables; decrescendo loudness of post nuclear unstressed syllables; lenis devoicing
Ladd	pitch change	anacrusis; final syllable lengthening; pause	major group-marked by audible prosodic cues; minor group- marked by the nucleus
O'Connor		prenuclear unstressed syllables uttered faster than post nuclear unstressed syllables	

3 Truncated segments

Based on the external cues described above, a preliminary analysis of the data reveals the occurrences of the following truncated segments whose audible prosodic cues at the boundaries give them the auditory effect of being cut off or incomplete. This incompleteness is brought about by the fact that these speech units are syntactically, semantically and/or intonationally incomplete. They can be categorized as follows:

1. incomplete speech units whose boundaries are set off by prosodic cues. Syntactically and semantically they are part of the subsequent chunk of speech from which they are separated
2. abandoned speech units whose realization is the consequence of unfluent speech. Unlike the former, the speaker leaves the segment incomplete and starts fresh. The boundaries are demarcated by audible prosodic cues. They do not cohere syntactically or semantically with the segment following them
3. parenthetical speech units which interrupt the prosodic flow of the primary utterance. The boundaries of these 'wedged in' segments are set off by prosodic cues

3.1 Incomplete Segments

Extracts 1 through 3 present a dilemma in intonation analysis. It does not require a very close examination to notice that the highlighted truncated segments of speech (arrowed) in Extracts 1, 2 and 3 below share similar characteristics such that they are marked off from the segments following them by a pause, and they are intonationally incomplete in the sense they lack a nucleus. The speaker breaks off before reaching the nucleus, a point that is illustrated by the absence of the nucleus (noted by the absence of capitalization).

Extract 1

1B kita more `INDIVIDUALISTIK (0.23)

< >(0.76)

< >(0.63)

→ dia: (0.42) daripada (0.43)

<>(0.55) < >(0.35)

<>(0.41)

< >L

< >p

↑ AWAL lagi `TADI: didik secara berkumpul

< >(1.15)

<>(0.46)

< >(1.2)

B WE are more individualistic. From young, they have been brought up in groups.

Extract 2

2A how is it different

< >(0.93)

→ ataupun ada (0.29) `KESAMAAN

< >(0.58)

<>(0.27)

A How is it different or is there any similarity?

Extract 3

→ 3B kita (0.36) pun tukar MODEL

<>(0.25) < >(1.2)

<>L < >L

B So we change the model

Although the lack of nucleus contributes to making the highlighted segments intonationally insignificant, they are significant in the sense that the pause which bounds them affects the prosodic flow of the discourse and causes discontinuity. Pauses of this type are generally regarded as hesitation phenomena whose occurrences are quite common in the corpus analyzed. The relative lengthening of the final syllable further supports the assumption that the speaker is planning what to say next.

Despite the break, the speaker maintains a link with what follows by producing the final syllable of *dia* ‘they’ with a level pitch which neither falls nor rises, thereby communicating the intention to continue. Although the overall pitch of *dia* is low, the speaker signals the wish to continue by keeping the pitch level and lengthening the final syllable. One can easily detect that the speaker is facing planning difficulties by his relatively slower speech rate, i.e. 550 msec. in producing a two syllable utterance in comparison with 350 msec. that he takes to utter a four syllable utterance located subsequent to it. The rush to produce *daripada* ‘from’ causes the speaker to pause to replan what he wishes to say. Again he indicates incompleteness by producing the final syllable with a non-low pitch level. Besides the pause which causes *daripada* to be broken off from the subsequent talk, the speaker also distinguishes the latter from the former by a step-up in pitch when producing *awal* ‘young’, the initial word in the subsequent segment.

Likewise in Extracts 2 and 3 *ada* ‘there is’ and *kita* ‘we’ respectively are separated from the subsequent segments by a brief pause, yet are prosodically bound to them by their terminal pitch which stays non-low. This cue is used by the speaker as a floor keeping strategy while planning his utterance. Gumperz (1992:235) calls this type of pitch that suggests completeness ‘a holding intonation’. In a recent study on the management of talk, Local (1992:275) observes that these pitch characteristics along with loudness are used by speakers to hold turn or project more talk by the current speaker (cf. Zuraidah Mohd Don: 1996, 1998, 2006).

It is inevitable that in producing spontaneous speech speakers may produce segments whose prosodic boundaries do not coincide with syntactic-boundaries. This is so because unlike the latter, a phonetic entity is basically some unit of performance. Speakers, for example, pause in the middle of noun phrases, verb phrases and other close knit syntactic constituents, changing pitch height and direction on syllables for the purpose of keeping the floor while planning what to say next. In Extracts 4 and 5 below, a close knit noun phrase *dua ketul besi* ‘2 pieces of iron’ is separated from each other by a pause, defying syntactic cohesion, and in Extract 6 a modal *boleh* ‘can’ is separated from its verb *membawa* ‘bring’.

Extract 4

4B kalau kita `AMBIK (0.32)
 → a: `DUA (0.24) ketul `BESI
 < >CRES
 B If we take two pieces of iron

Extract 5

5B dan yang `TUA baru `DARJAH (0.28)
 < >(1.46)
 < >f
 `EMPAT
 < >(0.34)
 < >H
 < >CRES
 B and the eldest is only in standard four

Extract 6

6B maknanya kalau saya `BOLEH (0.34)

< >f

a: `MEMBAWA (0.32) a:

< >(0.56)

seorang `JEPUN (0.28)

< >f

ke `MALAYSIALAH

< >f

B Meaning if I can bring back a Japanese to Malaysia

In Extract 4, *dua* ‘two’ is separated from a quantifying noun by a brief pause. The final syllable is relatively high signaling completion and the word is uttered with crescendo loudness. Likewise in Extract 5 the last syllable of *darjah* ‘standard’ is uttered with a pitch higher than the preceding one and accompanied by forte loudness. In Extract 6 the speaker’s short utterance is segmented into four prosodically marked segments. The separation of the prior segment from the subsequent one indicated by a brief pause is done at a syntactically inappropriate point. The word ‘boleh’ (can) is uttered loud and with a non-low pitch height signaling incompleteness. The occurrence of ‘a:’ whose level pitch seems to serve no function other than to maintain the speaker’s turn while he plans his utterance further supports the assumption.

These ‘planning units’ as Cruttenden (1986) calls them are the realizations of planning problems which often occur in natural spoken data and are usually separated from the corrected utterance by a brief pause. According to Brown et al (1980:68) these ‘search pauses’ which are brief in duration (i.e. usually between 0.28 and 0.38 seconds) are the results of planning problems and such an assumption is correct since the units whose boundaries they demarcate are incomplete syntax.

3.2 Abandoned Segments

Abandoned segments are actually made up of incomplete syntax. What is observed in the data is that the speaker usually goes back to the beginning of abandoned segments and reproduces them again, this time more fluently, e.g. *mama jum* in 7A, *maksud sa* in 8A and *bukanan* in 9A:

Extract 7

7A `MAAFLAH (0.15)

< >(0.43)

gurau sikit `DOKTOR (0.3)

< >(1.03)

a→ mana jum

< >(0.39)

< >L

< >p

b→ ↑mana jumpa `JEPUN tu

< >(0.41)

< >(0.59)

< >f

A Sorry. Just kidding doctor. Where did you meet the Japanese?

Extract 8

a→8A maksud sa (0.40)

< >(0.43)

< >DEC

< >L

↑`MAKSUD saya:

< >(0.51)

< >f

sekarang ni kereta `PROTON

< >(0.40)

< >(0.39)

A What I mean is that nowadays PROTON cars

Extract 9

9A bukannya (0.21)

< >(0.43)

↑bukan nak congkil `PERIBADI

< >(0.36)

< >(0.97)

A Not that I want to inquire into your private life

In Extracts 7, 8 and 9, each of the speakers produces an incomplete utterance, pauses briefly and proceeds to repair the preceding contribution by repeating it, and thereon continues with the utterance. In Extract 7, the speaker distinguishes the speech 'error', *mama jum* (arrowed a) 'where' from the 'corrected' segment *mana jumpa Jepun tu* 'Where did you meet the Japanese' by uttering the repair with a pitch-step up and producing the latter relatively louder than the former. This prosodic marking is also accompanied by a shift in tempo whereby the corrected utterance is uttered at a faster pace than the prior talk, i.e. the speaker takes 410 msec. to utter a seven- syllable utterance as compared to 390 msec. to produce a three- syllable utterance.

In 8, again the change in prosody contributes to the hearing of a stretch of speech as two segmented chunks. The speaker signals the start of a new contribution by a marked increase in loudness and a pitch step-up from a low-pitched *sa* to a relatively high-pitched *maksud* 'mean'. The brief pause which contributes to the abandoned segment hearable as a segmented portion gives the speaker time to reformulate his utterance. In 9 the contribution which initiates repair *bukan nak* is separated from a prior segment by a brief pause and a noticeable shift in prosody. The repair begins with a correction of the mispronounced *bukanan* in combination with a marked increase in pitch height and loudness.

The self correction gives the impression that the speaker is consciously aware that he has not got right what he was trying to produce and repaired it. The speaker contextualizes the repair with certain prosodic cues in order to indicate its status as a new contribution. Sometimes instead of correcting the false start by repeating it, the speaker abandons this incomplete segment and proceeds to make a fresh start with a new utterance.

3.3 Parenthetical Segments

Parenthetical segments are brought about by the insertion of a secondary utterance within a primary one causing the latter to be divided into segmented chunks. Parenthesis requires clear prosodic chunking so that the embedded portion can be distinguished from the segmented primary portions. A preliminary analysis of the data reveals a number of these disruptive segments whose boundaries are clearly demarcated by audible prosodic cues.

A common example of this type of 'wedged in' segment found in our data is one that is introduced for the purpose of ensuring that the turn is kept yet allowing the speaker time to plan what to say next. This 'turn-keeping' and 'buying-time' strategy is clearly reflected in the following extracts whereby the speaker uses 'wedged in' phrases like *apa ni* 'what's this' in Extract 10, *apa tu* 'what's that' in Extract 11 to signal that he is in search of words to complete his prior talk and he still intends to continue.

Extract 10

10A jadi: masa saya:

< >(0.55)
 < >(1.22)
 ↓apa ni: (0.32)
 <>(0.44)
 < >(0.76)
 <H><>L
 ↑attachment `TRAINING
 < >H
 < >f
 disalah `SEBUAH a:
 < >(1.41)
 < >L
 syarikat DISANA:
 <l l>(0.93)
 < >L

A So when I .. what's this ... attachment training in one of the firms ... a firm there

Extract 11

11A bila dah masuk dua kali salam dia sebutlah (0.21)

↓apa tu (0.41)
 <l l>(0.51)
 < >p
 dia punya nama: khulafah arrasyidin
 <al al>(0.29)

A After giving two greetings, he mentioned, what's that, the name of Khalifah Arrasyidin

Extract 12

12A saya diberitahu:

< >(0.95)
 bahawa apabila kita membaca
 < > (1.27)
 walaupun satu huruf (0.23)
 < >(1.16)
 kita akan dibagi: a:
 < >(0.85)
 <>(0.26)
 ↓apa nama ni (0.23)
 < >(0.30)
 < >L
 < >p
 sepuluh kali ganda pahalalah
 < >(0.17)

apa ni (Extract 10), *apa tu* (Extract 11) and *apa nama ni* (Extract 12) which are ‘wedged into’ the main utterance do not only disturb the syntactic and semantic cohesion of speech but also its prosodic flow. These parenthetical segments are incomplete by themselves. In these instances, they are set off from the primary utterance by a pause and their overall low pitch. In Extract 10, the speaker distinguishes the first segment *jadi masa saya* ‘so when I’ which is syntactically and semantically incomplete, from the embedded segment *apa ni* ‘what’s this’ by a shift in speech rate and pitch. The *lento tempo* of the first segment gives the impression that the speaker is facing some sort of planning difficulty. The lengthening of *ya* allows him planning time; however, the speaker still needs planning time as a result of which he produces an utterance which not only breaks the prosodic flow of the prior talk but also its syntactic and semantic flow. This inserted segment which is uttered relatively fast and begins with a step up in pitch gives him planning time as well as allows him to keep his turn. The subsequent segment, i.e. ‘attachment training’ is set off from the inserted segment by a pause and a shift in pitch, i.e. with a pitch step up from low and level pitched ‘ni’. It is also marked by a high overall pitch and *forte* loudness.

In Extract 11, ‘*apa tu*’ is separated from the prior talk by a brief pause of 210 msec. And the subsequent talk by a pause of 420 msec. There is also a step down in pitch from ‘lah’ the last syllable of the prior talk to ‘a’ the first syllable of the embedded segment ‘*apa tu*’. The overall pitch is lower than the prior and subsequent segments. Likewise in Extract 12 the speaker introduces a new utterance ‘*apa nama ni*’ (what that is) before completing his earlier utterances and indicates a break in syntactic and semantic cohesion by demarcating the embedded segment with pauses. The overall loudness is relatively softer than the prior or subsequent talks. It is also uttered with an overall low pitch and a relatively faster tempo than the segments which bound it. The embedded segment in Extract 11 ‘*apa tu*’ and in Extract 10 ‘*apa ni*’ serve the same function respectively.

Another type of parenthetical segment found in our data is what is defined as ‘... a dependent satellite part of the utterance, wedged into a non-compact primary (frame) reference from which it differs’ (O’Connor (1973)). Parenthesis expresses a secondary communication. The parenthetical segments in Extracts 13 and 14 are introduced for the purpose of communicating secondary information. For example in 13 the speaker inserts ‘*yalah kata orang tu*’ (yes that’s what people say), and ‘*tak silap saya*’ (if I’m not mistaken) to communicate something other than what is communicated in the primary utterance. The ‘secondary communication’ realized in the data below is prosodically distinguished from the segmented chunks of the primary utterance.

Extract 13

- 13B yang sebenarnya saya: (1.12)
 ↓yalah kata orang tu:: (0.74)
 < >(1.15)
 berminat pada dia:
 ataupun jatuh cinta pada dia
 B Actually I ... yes like what people say, a: was attracted
 to her or fell in love with her.

Extract 14

- 14A semalam dilapurkan a: (0.43)
 ↓tak silap saya (0.39)
 ↑timbangan menteri kesihatan agaknya mengumumkan
 akan mengadakan perang terhadap AIDS
- A Yesterday it was reported that, if I'm not mistaken,
 perhaps the Deputy Minister of Health will have
 campaigns against AIDS

In Extract 13, the segment *yang sebenarnya* 'actually' is broken off from the subsequent segment *yalah kata orang tu* 'yes like what people say' of the utterance by a lengthy pause of 1120 msec. The latter is often used by a speaker when he wants to qualify that whatever is said in the subsequent utterance is described by some people as such. Although *ya* the final syllable of *saya* has a level pitch which neither rises nor falls, its loudness seems to trail off until it reaches inaudibility. There is a slight pitch step-up at the beginning of *yalah kata orang tu* to indicate the beginning of a new utterance. Although the final syllable *tu* uttered low, the pitch is level indicating that the speaker has not yet finished. Thus although the embedded segment is separated from the subsequent talk by a pause of 740 msec., the level pitch *tu* provides the link-up with the subsequent utterances which the prior segmented talk is part of. According to Bolinger (1986:82) the 'maintenance of the level of the final accent indicates the intention to continue'.

4 Conclusion

The findings show the advantages of corpus-based study. Many of the observations described here would never have been noticed without the use of a sample of natural spoken Malay. The difficulties encountered when attempting to analyze Malay using a definition of the nucleus and its domain led to the abandonment of dividing stretches of speech into tone groups.

It is inevitable that in segmenting utterances into phonetically defined units, one would come across instances where boundaries of phonetic entity do not correspond with boundaries of syntactic constituent. This is because unlike the latter, phonetic entity is basically some unit of performance. Pauses, for example, may break up close unit grammatical constituents or bound false starts, slips of the tongue, or incoherent segments. In so far as pauses or some other prosodic cues arise from a real need for verbal planning, their occurrence can be regarded as a direct result of the fact that speech is produced in real time and real settings. To ignore the presence of the audible cues between segments means to ignore the natural phenomena whose presence are welcome as overt indications of processing activity. Prosodic segmentation is a potential correlate of almost any syntactic unit and can be employed by the speaker in accordance with his encoding strategy. The study shows that the subjects segment utterances into segmented chunks of various grammatical units, each playing its role in the development of the discourse, however small or insignificant.

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