CHAPTER SIX

SEGMENTED SPEECH UNITS AND THEIR FUNCTIONS
IN DISCOURSE

6.1 Introduction

While Chapter 5 examines issues of segmentation and present a theoretical framework that will somewhat ease segmentation, chapter 6 attempts to apply the proposed framework to continuous speech and thereon examine the functions of these segmented chunks in the development of the selected discourse. In 5.4 several sample extracts were analyzed for the purpose of highlighting the difficulty that one encounters in attempting to divide a stretch of speech into tone groups whose identification is not only determined by their internal criteria, i.e. the presence of obligatory nucleus but also by the presence of audible prosodic cues at their boundaries. As illustrated in the given section, one frequently comes across segments whose boundaries are marked prosodically, yet the absence of nucleus does not qualify them as tone groups.

In analysing natural data one cannot ignore the presence of prosodic cues which break the prosodic flow of a stream of speech and results in the realisation of segmented chunks whose boundaries are
rosodically marked. This prosodic break, which distinguishes the receding segment from the subsequent one, could be a consequence of non-fluent speech or could be used by the speaker as a communicative strategy to fulfil his communicational and interactional requirements.

i.2 Segmentation and Continuous Discourse

The prosodic cues which contribute to the realisation of segmented chunks may bound a unit containing a prominent lexical item whose realisation as such is brought about by the presence of a single most prominent point commonly referred to as nucleus, tonic, primary stressed, etc. The lexical items which contain this prominent syllable are indicated in the data by capitalisation. At times due to planning or production problems, the speaker pauses or changes the tempo of his speech by decelerating or prolonging a syllable before reaching the most prominent point, thereby resulting in intonationally incomplete speech units. Despite this, the break in prosodic flow is important pragmatically since it allows the speaker time to find the word he wants or marshal the information he wishes to present.

Prosodically bound units which are the consequence of non-fluent speech such as slips of the tongues, abandoned chunks, false starts, incomplete syntactic construction, etc. are usually intonationally insignificant in the sense of lacking a nucleus. Often the boundaries
between speech units do not neatly coincide with the boundaries between syntactic constituents. In natural spoken discourse speakers group together what they feel needs to be grouped together for the purpose of the moment, a purpose which is constrained in part by language and in part by context.

The preliminary investigation in Chapter 5 provides the impetus for examining the segmentative function of prosody within the context of question and answer sequences as well as extended turns. The present chapter attempts to go beyond the traditional framework by not restricting the description to individual segmented units. The examination of the segmentable parts in discourse presupposes a consideration of stretches of speech larger than the segmented units themselves. Such an examination necessitates one to regard the sequences of speech segments as a gestalt, i.e. as an organised whole which is made up of segmentable portions whose boundaries are audibly marked by prosodic cues. Although examination will proceed by identifying individual segmented parts and the prosodic features involved in such realisations, the identified segment will not be considered as an isolated segment but as part of a whole. This will enable the researcher to understand not only the reasons why that particular stretch of speech is segmented but also more importantly what each segmented part plays in the development of discourse.
Segmentation into divisible parts will be done auditorily at first and will be presented below using the notational convention set up in Chapter 4 of this thesis. The pitch contour of the segmented portion will be captured by an instrumental analysis using Mac Speech Lab II for the purpose of determining the end pitch of the prior segmented portion and the beginning pitch of the subsequent one. Listening to the data auditorily is important as it enables the analyst to hear where the break in the prosodic flow of utterance occurs, particularly when the break is brought about by a change in tempo. Van Leeuwen (1992: 236) who supports the use of auditory analysis states that the analysis of a prosodic break, which he calls juncture "based as it is on perceptual subjective phenomenon, needs to be auditory". The duration of the segmented part, pauses and the length of the final syllable in the unit will be measured using Mac Speech Lab II as well as a sound card.

6.3 Short Sequences

In this section, the portions of discourse selected for examination are adjacency pairs of question-answer type and a short response to a prior talk. The examination of the segmentative function of prosody in question-answer sequence of this type not only allows the examination of how the speaker segments speech within a turn but also across turn boundaries. It
will thus enable the researcher to examine the hearer's response particularly with regard to the presentation of his answer, i.e. whether it is presented as an uninterrupted stretch of utterance or as being made up of prosodically identifiable chunks.

6.3.1 Extract 1

Extract 6.1 below is a good example of fluent speech. The absence of hesitation phenomena in it could be attributed to the kind of topic talked about (i.e. road condition) and the type of question asked, i.e. a tag question which requires a brief answer. Each segmented chunk corresponds with a syntactic constituent and its boundary is clearly demarcated by prosodic cues such as a pitch shift, or a pause or both or a latched response from the co-participant. The development of topic moves from talking about the condition of the road which is not congested to the reason why the road is clear.

EXTRACT 6.1

1A1 a:: jalan tak `JAM

< H  H >

<CRES >

< >(0.73)
A2  ýya DOKTOR

2B1 (0.32) a::ýnampak pagi `NI

B2  ýBAGUS

3A  ýBAGUS eh hari ni=

4B  ýMUNGKIN kerana hari sabtu
5A = hari `SABTU:

<L   L>

<f   f>

<>(.02)

<   >(.061)

A The road is not congested, is it doctor?

B eh it looks good this morning

A Good eh today?

B Probably because it's Saturday.

A Saturday

Segments 1A1 and 1A2 are parts of a tag question: "Jalan tak jam" (The road is not congested) is the stem and "ya doktor" (yes doctor) is the tag. In Malay writing, they are separated by a comma: "jalan tak jam, ya doktor". Although in this instance, the speaker does not separate the main statement from its tag by a pause, which is the usual case, the speaker indicates separation by a pitch change. The statement "jalan tak jam" is marked by a pitch obstruction, i.e. a low fall on "jam", and this is followed by a step up in pitch in the production of "ya" the initial syllable of the tag.
The presence of these pitch characteristics made the speech units hearable as separate chunks. This is clearly reflected in the pitch contour display of "jalan tak jam ya doktor" in Figure 1A (all figures in this can be found in Appendix B) whereby "ya" is uttered at about 120 Hz while the end pitch of "jam" is at about 80 Hz, i.e. a jump of about 40 Hz.

After uttering "ya" the speaker produces an address form "doktor" which is uttered relatively high in his pitch range. The end pitch rises slightly to contextualise the utterance as a request for confirmation.

B's delayed response (see segment 2B1) contextualised as so by an initial pause of 320 msec and a filler of 600 msec gives the impression that the speaker is planning ahead his answer to the question. Thus when "nampak pagi ni" is produced, it is presented as one segment with no prosodic break and as shown in Figure 1B, the end is marked by a fall on "ni" (this) a reference word referring to "pagi" (morning). The change in pitch direction on "bagus" (good), the interviewee's comment about the road condition makes it hearable as a separate chunk.

"Bagus" uttered with a rise-fall tone is bounded by A's latched question "Bagus eh hari ni" (good eh today) which seeks confirmation about the information produced in the prior talk. The transition from a
relatively high endpoint of "bagus eh hari ni", which contextualises it as a question, to a fall on "mungkin" is a clue to a break. Thus even in the absence of a pause, the break is fairly well cued by intonation to help demarcate the two as prosodically different segments.

The tag question prompts B to supply the possible reason for the clear road. B makes his contribution before the completion of A's question. Information-wise "hari ini" (today) does not contribute any new information for B already knows that A is referring to "the road condition today". Prosodically, the decrescendo loudness, relatively fast tempo and low pitch of "hari ni" communicate that A is approaching the end of his utterance and does not want to continue. The overlapping of A's "hari ni" and B "mungkin kerana hari sabtu" (probably because today's Saturday) results in a no clear turn boundary demarcation. "Mungkin kerana hari sabtu" is uttered low with relatively fast tempo, i.e. 789 msec. A's latched response marks the end of the topic with no additional information but merely echoes B's final phrase "hari sabtu". This fading away at a lexical level is reflected prosodically by dropping low in his pitch range and fading away in amplitude.
6.3.2 Extract 2

In contrast to Extract 6.1, Extract 6.2 contains a type of speech which presents grave difficulties to the analyst. It is an example of unfluent speech which is replete with hesitation phenomena such as pauses, fillers, syllable lengthening whose occurrence has a disrupting effect on the organisation of syntax and intonation. The speaker is obviously facing difficulty in producing what he wants to say and this is reflected in the inappropriate positioning of the pauses which divides close-knit syntactic constituents into two. For example, in 7B1 the speaker pauses after a preposition "di" (in) separating it from its noun "Shah Alam". In 11B1 "dalam" (in), a preposition is separated from its noun "sepuluh minit" (ten minutes), etc. This non-fluent speech (e.g. Extract 2 below) has the features of spontaneous speech which according to Laver (1970: 45):

is normally far from errors and often, contains slips of the tongue ... It is also nearly always far from completely continuous, almost invariably containing a variety of hesitation signals, such as pauses, repetitions, and vocalizations of 'er', 'ah' and 'um'...

A initiates the discourse by asking a wh-question "doktor tinggal mana" ((Where do you live, doctor?), marked 6A) which is intonationally, syntactically and semantically well-formed. It is uttered fast with a duration of 550 msec and presented as as one unsegmented stream of speech. The
beginning is appropriately marked by a relatively high pitch (i.e. 180 Hz) and the post-positioned question word "mana" (where) which is the most prominent word is marked by a falling pitch (see Figure 2A). The fall is followed by a pause of 420 msec which clearly demarcates the end of utterance.

Although the utterance is a question, the presence of a wh-word "mana" a marker of question already marks it as a question and thus need not be indicated as such by a rising pitch. Being a syntactically marked position for a question word, "mana" is made prosodically prominent by a combination of falling pitch and forte loudness.

**EXTRACT 6.2**

6A doktor tinggal `MANA

<al al>

< >(0.55)

7B1 (0.42) saya `TINGGAL di::

<> DEC

<> creaky

<> LL

< >(0.43)

<> (0.51)
B2 \( \uparrow \) SHAH alam sebenarnya =
\[
\begin{align*}
&<f \quad f> < \ DEC > \\
&<al \quad al> \\
&< > (0.38) \\
&< > (0.34)
\end{align*}
\]

8A1 =a:: tak tak tak tak `SESAK
\[
\begin{align*}
&<L \quad L> \\
&< > (0.85) \\
&<l \quad l> (0.85)
\end{align*}
\]

A2 di \( \uparrow \) JALAN eh
\[
\begin{align*}
&< > (0.44)
\end{align*}
\]

9B a:`BIASANYA:
\[
\begin{align*}
&< > creaky \\
&< > (0.24) \\
&< > (0.34)
\end{align*}
\]

[ 1

10A ya lebuhraya
\[
\begin{align*}
&<L \quad L> \\
&< > creaky
\end{align*}
\]
11B1 dalam

\[
< L \ L >
\]

\[
< \ > \ creaky
\]

\[
<||> (0.50)
\]

\[
< \ > \ creaky
\]

B2 \^sepuluh `MINIT je daripada:

\[
<f f>< \ DEC >
\]

\[
< \ > \ creaky
\]

\[
< \ > (0.28)
\]

\[
< \ > (0.78)
\]

\[
< \ > (0.87)
\]

\[
< \ > (0.63)
\]

B3 ` RUMAH kepejabat=

\[
< L \ L >
\]

\[
< \ > \ creaky
\]

\[
< \ > (0.71)
\]

12A = ya

\[
<> f
\]

\[
<> L
\]

\[
<> (0.44)
\]
13B1 pasal

< ral >

< > (0.29)

< > (0.40)

B2 pejabat pun di Shah `ALAM juga

< > DEC

< > L

<al al> (0.24)

< > (0.90)

14A (0.19) ya hari ni ...

< > (0.50)

A Where do you live doctor?

B I live in Shah Alam, actually.

A yes

B The road is not usually congested is it?

A highway

B It takes only ten minutes from the house to the office

A yes

B because the office is in Shah Alam too
Although the question asked by A is not a demanding one, B does not reply immediately but pauses for about 420 msec. This prepositioned pause indicates that the speaker is planning ahead the subsequent speech. Despite this, his answer "saya tinggal di Shah Alam sebenarnya" (I live in Shah Alam) is not uttered as a smooth unbroken discourse. It is broken up into two separate units 7B1 and 7B2 by tempo and pitch parameters. The change from lento tempo on "di" to a relatively allegro tempo on "Shah Alam" and the accompanying step up in pitch from low "di" to "Shah Alam" are cues to division (see Figure 2B). Syntactic discontinuity indicated by the separation of preposition "di" from its noun "Shah Alam", and the pitch characteristic of "di" which neither rises nor falls are clues to a non-final break. Pragmatically, a lengthening of non-final syllable between close-knit syntactic constituents is a good turn-keeping strategy because the incomplete syntactic constituent clearly indicates that the speaker has not finished yet.

When the interviewee breaks the prosodic flow of his utterance by lengthening "di", it is unlikely that he needs time to think of "Shah Alam" the place where he lives. It is assumed that this is done for rhetorical effect, presumably with the intention of increasing its impact when it comes. After the prolongation, B rushes off to produce "Shah Alam" which is uttered noticeably faster than "di", i.e. at a rate of 380 msec. "sebenarnya", an adverbial which describes how the speaker's view the preceding talk is
uttered low with decrescendo loudness to signal the relinquishing of turn by the current speaker.

A (marked 8A1) takes the floor immediately. His hasty entry may have contributed to the difficulty which he faces in formulating his question "tak sesak di jalan eh" (No congestion on the road, eh?). The repetition of "tak" (not) is a surface indication of production difficulties. The utterance is divided into two by pitch parameters. The first segment ends with a fall on accented "sesak" (congested); the change in pitch direction on "di" demarcates a boundary which separates "sesak" from the latter. "dijalan eh" (on the road eh) has a peak of prominence on "lan" which has a high rising tone (see Figure 2C). The rising terminal on "eh" contextualises it as a request for confirmation.

In written language "di jalan" a prepositional phrase belongs with "tak sesak" the adjective which describes the condition of the road to form the stem of the tag and "eh" the tag is separated from the stem by a comma. However, in this instance "tak tak tak tak sesak" and "dijalan eh" are heard as separate units.

B’s answer which is replete with hesitation phenomena such as pauses and syllable lengthening is segmented into chunks which defy syntactic cohesion. The utterance begins with a frequency adverb
"biasanya" ((usually), marked 10B) whose marked lengthened end syllable makes it hearable as not belonging with "dalam" (see Figure 2D). A's interruptive "lebuhraya" ((highway), marked 10A) sets it off from the other segments of the utterance.

Likewise a fluctuation in rate also marks division between "dalam" and "sepuh minit" a group of words which belong together syntactically and semantically. After the deceleration on "lam" the speaker quickens on "sepuh" as if he cannot wait to get to the subsequent group of words, i.e. "minit je daripada", that provides information on the duration of journey. It is likely that the lengthening of "lam" which causes the break in prosody is produced for effect in order to stress the fact that he does not face the problem of congestion. The boundary is also cued by a change in pitch direction in the production of "sepuh" ((ten), see Figure 2D).

"daripada" ((from), see 11B2) the last word in the prior unit is heard as separated from "rumah" (because) because of the noticeably slow tempo of "daripada" whose final syllable is lengthened to 630 msec and accompanied by creakiness. The change in pitch direction on "rumah" the subsequent word is another reliable cue to separation.
Speaker B presents "rumah ke pejabat" (marked 11B3) as one segment whose boundary is demarcated by a pause of 130 msec., following which is A's low pitched "ya" which prompts B to continue.

Subsequent to A's "ya", B gives a reason for the assertion he makes in his prior talk whose function as such is lexically marked by marker of cause and effect, "pasal" (because). The utterance "pasal pejabat pun di Shah Alam juga" is heard as broken up into two segments: "pasal" (13B1) and "pejabat pun di Shah Alam juga" ((because the office is in Shah Alam also),13B2) "pasal" is realised as a separate segment by a fluctuation in tempo from lento on "pasal" to relatively allegro on "pejabat" and by virtue of a slight step up in pitch to the beginning of "pejabat" (see Figure 2E). Auditorily, the break in the prosodic flow is well cued by the marked change in tempo. The momentary slowing down of pitch on "sal" gives the speaker time to marshall the information he wants to present. The subsequent quickening rate on "pejabat" makes it heard as belonging with "pun di Shah Alam juga" which contains the content message and whose boundary is demarcated by a pause of 190 msec. The speaker signals the end of topic by a prosodic fade-away which is realised by low pitch and decrescendo loudness on "juga".
6.3.3 Extract 3

The following exchange is also a question-answer sequence. The question is heard as containing seven divisible segments (marked 15A1-A7), each marked by various prosodic cues.

EXTRACT 6.3 (1)

15A1 ah `SEMALAM dilaporkan

< >(0.38)

< > (0.21)

< >(0.66)

A2 ^JUGA (0.47)

< > (0.23)

A3 ni `AIDS (0.11)

< > (0.46)

A4 sekarang ^NI_ yang meningkatnya:

< al >(0.17)

< >(0.22)

< > (1.27)

A5 ada `PENINGKATAN terhadap a: (0.21)

< > (0.60)

< > (0.32)

< >(0.30)
A6 seks `RAMBANG doktor
<f f> <DEC>
< > (0.70)
< > (0.30)

A7 (0.46) BETUL ya
< > (0.40)

A  

A eh yesterday it was also reported that the increase in AIDS cases is due to the increase in promiscuous sex doctor. Right, eh?

The first segment "ah semalam dilaporkan" ((eh yesterday it was reported, marked 16A1) is set off from "juga", the subsequent segment, by a change in pitch direction (see Figure 3A). "juga" (also), an additive adjunct, is separated from the subsequent talk by a pause of 470 msec. After making reference to what was reported yesterday the speaker pauses to plan how he is going to present his following discourse. In the subsequent segment (marked A3), A introduces his topic, i.e. AIDS which is heard as a segmented portion by a perceptible change in pitch (see Figure 3A). The segment begins with a step up to "ni" (this) following which is a fall on "AIDS" which is uttered forte. The rush to produce the subsequent segment "sekang ni yang meningkatnya" ((nowadays there has been an increased), marked 16A3) has resulted in the production of a false start which B immediately repairs (marked 15A4). The false start is set off from "ni AIDS" by step up to "sekarang", the item located initially.
The corrected segment "ada peningkatan terhadap a." ((there is an increase), marked 15A5) contains the comment about the topic "seks rambang" (promiscuous sex). The former (marked 15A4) is prosodically separated from the false start (marked 15A3) which precedes it by two prosodic cues, i.e. a change in pitch direction and a fluctuation of speech rate. The beginning of "ada peningkatan terhadap" is marked by a change in pitch. From the endpitch of "nya" the final syllable of the prior talk, pitch steps up slightly and falls on "ada" the initial item in the subsequent segment. From the pitch contour display in figure 3A one can see the gradual stepping down in pitch from a relatively higher initial pitch. The low level pitch of the filler "ah" is a turn-keeping strategy used by the speaker to indicate an intention to continue.

After a filler and a pause 210 msec, pitch steps up to the beginning of "seks rambang doktor" (promiscuous sex), the topic of the utterance. Prosodically, this segment ends low on "doktor" the final lexical item whose features of low pitch and decrescendo loudness indicate that the speaker intends no further utterance (see Figure 3B). The peak of prominence is on "bang" which is uttered relatively loud and long with a low falling tone. This segment is bounded by a pause of 461 msec following which is "betul ya" (right, eh?) whose fall-rise pitch, syntactic structure and semantic content mark it as a request for confirmation.
B's response to A's question can be divided into two connected parts, the first is the cause, presented in Extract 6.3 (2) and the second is the result, presented in Extract 6.3 (3). This cause-effect relationship is marked by "jadi" the marker of result which signals the beginning of the second part of the discourse (see extract 6.3(3)).

The first half of B's response to A's elicitation move is segmented into 7 portions altogether (numbered 16B1-B7). The segmented stretch of discourse is caused by the occurrence of pauses, fillers and syllable lengthening which have a disrupting effect on the organisation of the syntax and of prosody.

**Extract 6.3 (2)**

16B1 (0.51) he a: (0.32)

<> (0.39)

< > (0.55)

B2 apa yang 'DIKATAKAN oleh (0.21)

<ff> < CRES >

< > (1.10)

B3 TIMBALAN

< > (0.61)
B4 ah mentri 'KESIHATAN
  < > (1.10)
B5 ↑ BERGANTUNGGAN
  < > (0.81)
B6 bergantung 'PADA dek (0.24)
  < > (0.98)
B7 da data 'YANG
  < > (0.46)
    < > (0.43)
B8 benar YA =
  < > (0.35)
17A = mhm
  < L >
A what was said by the Deputy Minister was based on reliable data,
yes?
B mm

In the above portion of the discourse, the pause of 510 msec after
A's "betul eh" (right eh) suggests that B accepts the turn and will reply, but
needs time to plan the reply. In this respect "he a" can be considered as a
planning unit, the presence of a pause of 300 msec. makes it hearable as a
separate segment.
On examining the discourse one can see that the speaker is having planning problems. To gain time, B punctuates her discourse with pauses, fillers and syllable lengthening resulting in the realisation of segmented chunks which although belong together syntactically and semantically are set apart prosodically. At times pauses occur at a syntactically inappropriate place causing close-knit syntactic constituents to be separated (e.g B3 and B4, see also Figure 3D).

B2 is set off from B3 by a pause of 210 msec. The occurrence of a pause here is syntactically inappropriate for in a less hesitant speech "oleh" will not be separated from "timbalan" its noun. The step in pitch from the the end of "oleh" to the beginning of "timbalan" is another cue to segmentation. This segment forms the beginning of B's response to A's request for comment on the statement made by the Deputy Minister of Health.

The occurrence of a filler after "timbalan" here highlights the problem which of the two immediate segments claims "ah". Based on the perceptible change in pitch, "ah" is heard as belonging to "mentri kesihatan" rather than "timbalan". The end pitch of "lan" rises to 280 Hz and then pitch drops to just below 200 Hz at the beginning of "ah", thus making them audibly heard as separate segments. The word "mentri" which
follows the filler is grouped together as one segment with "kesihatan" which ends with a falling tone.

The step up in pitch to the beginning of "bergantungkan", a false start, makes it hearable as a separate segment whose ending is marked by a rising pitch. The drop to a relatively low pitch, which is a clue to segmentation, marks the beginning of "bergantung kepada dek" and this chunk is separated from "da da data yang benar ya", the subsequent segment by a pause of 235 msec.

The slip of the tongue "da da" signals that B is having difficulty in continuing her utterance. After overcoming her difficulty the speaker utters a low pitched "data yang benar ya" as two segmented chunks: "data yang" and "benar ya" where boundaries are marked by a step up in pitch from a 'falling " yang" to "benar".

The second part of B's answer presents what she thinks about the report mentioned by A in his prior talk (see Extract 6.3 (3) below). "jadi" (so) which initiates this stretch of speech is set off from the subsequent segment by a pause of 690 msec. The occurrence of a prepositioned pause suggests that the speaker is planning ahead what he is going to say next. The presence hesitation phenomena indicates that the speaker is having difficulty to put across her view. She pauses for 450 msec after a
having difficulty to put across her view. She pauses for 450 msec after a
cfiller identifying it as a segmented part. Although "ah" does not contain
content information, it serves as a turn-keeping device signalling to the
hearer that the speaker wishes to continue. The next segment "benarlah
apa yang dikatakan tu" (what is said is true) states what the speaker thinks
about the report. In this instance the prosodic break coincides with a
complete syntactic constituent, i.e. a sentence. The speaker marks the end
of her discourse by a prosodic fade-away, i.e. lowering her pitch span and
decreasing loudness. This is followed by A's low murmur which marks the
end of the exchange.

Extract 6.3(3)

18B1 (0.48) 'JADI a: (0.69)
< > (0.67)
B2 a: (0.45)
<> (0.37)
B3 'BENARLAHapa yang dikatakan tu
< > (1.80)
< | >
< DEC > [
B: so what was said is true
A: mhm

6.3.4 Extract 4

Extract 6.4 contains B's response to A's comment about how consumers end up buying new things because manufacturers keep on producing new products. B disagrees with A and presents his viewpoint as follows:

Extract 6.4

'20B1 tapi kita RASA: a: (0.63)
< > (1.62)
B2 consumer 'TASTE=
< CREA >
< > (0.61)
21A =mhm=
23B1='SUDAH (0.20)
< >CRES
< > (0.44)
B2 ni apa (0.31)
    < > (0.32)
B3 BERUBAH (0.23)
    < > (0.61)
B4 daripada DULU=
    < > (0.72)

24A = 'AGAKNYA
B  But we feel consumer taste
A  mhm
B  what do you call that has changed from then
A  probably

The above utterance is uttered slow, i.e. the speaker takes approximately 490 msec. to utter a ten-word utterance. The presence of hesitation phenomena like syllable lengthening, filled and unfilled pauses contribute to making the utterance hearable as slow and hesitant, and results in the segmentation of the utterance into six segmented speech segments, i.e. "tapi kita ghasa: a:", "consumer taste", "sudah", "apa ni", "berubah" and "daripada dulu".
The rather hesitant speech of the interviewee is understandable as he is presenting an opinion which is somewhat different from that holds by the interviewer. Thus he requires time to plan his utterance and presents it in the best possible way.

Each of the segmented parts (eight altogether) has a role to play in the development of the above discourse. The first speech unit (marked 20B1) which forms the beginning of B’s response to A’s prior talk, tells the hearer that whatever is said subsequently reflects what B feels and that this may be in contrast to what A has said earlier. Before producing his subsequent talk, B buys planning time by lengthening the prepausal syllable of "tapi saya rasa", producing a filler and a pause after the segment. The presence of these hesitation phenomena causes "tapi saya rasa" to be broken off from "consumer taste" the topic of the talk. Although segmented, the speaker prosodically signals incompletion uttering the last syllable with a level pitch accompanied by forte loudness. "Consumer taste" is bounded by A’s low pitched "mhm" which prompts B to proceed.

B continues with "sudah", an aspectual marker separated from its verb "berubah" by "apa ni", an expression indicating that the speaker is in search of words. The presence of pause before and after "apa ni" contextualises it as separate from the primary utterance in which it is embedded. The adverb "berubah" (change) is separated from an adverbial
phrase of time "daripada dulu" by a brief pause of 200 msec. The end of this utterance is indicated by a low fall on "dulu".

6.3.5 Extract 5

In the following extract the interviewer responds to the interviewee's discourse by requesting the interviewee to confirm whether the general election is going to be held soon. The interviewer presents his discourse in four segmented parts, "bermaknalah ha", a discourse marker which indicates this is what the interviewer understands from the interviewee's prior talk, "sudah hampirlah" (soon), which contains the comment about the topic, "pilihanraya" (election), which is the topic and "nampaknya" (it seems). Consider Extract 6.5(1) below:

Extract 6.5(1)

24A1 BERMAKNALAH ha (0.25)

< f >

A2 sudah 'HAMPIRLAH

< al >

A3 PILIHANRAYA

<f f>
A4 `NAMPKNYA
< >DEC

A Meaning that the election is near, it seems.

The interviewer presents "bermaknalah" (meaning) as a separate item marking its boundary with a pause of 250 msec. This is followed by his projection about when the election is going to be held, i.e. "sudah hampirlah pilihanraya nampaknya" (the election is near, it seems). Based on pitch parameters, "sudah hampir pilihanraya nampaknya" is segmented into three separate chunks. The fall on "hampirlah" and the subsequent rise on "pilihanraya" separates the former from the latter. Likewise the rise at the end of "pilihanraya" and the subsequent step down to "nampaknya" is a clue for division (see Figure 4A).

Semantically, the interviewee's response can be divided into two parts. The first contains the answer to the interviewee's question which is "mungkin hampir mungkin tidak" (perhaps soon perhaps not) and the subsequent one contains factors which influence when the election will be held, i.e. "semuanya bergantung kepada keadaan dan penilaian kerajaan" (it all depends on the situation and the government's assessment).
As seen below, the discourse is prosodically segmented into seven portions, each is well demarcated by a combination of prosodic cues.

Extract 6.5(2)

25B1 (0.12) m: ITU

B2 ↓ tak boleh ditentu JUGA (0.33)
B3 a: mungkin `HAMPIR

<f f>
B4 ^MUNGKIN tidak (0.59)
B That cannot be determined too. It might be soon, it might not be so.

"itu" a reference item is heard as one segment by a marked change in pitch at the boundary. There is a pitch drop from the rising endpitch of "tu" to the beginning of the next segment "tak boleh tentu juga" (cannot be determined also). The allegro tempo on "tak boleh" is another cue to segmentation. The slight end rising pitch indicates that this is a non-final break. The break of 330 msec separates segment B2 from B3 which contains the first half of the answer, i.e. "mungkin hampir" (probably soon) which is separated from the second half of the answer, i.e. "mungkin tidak" by a change in pitch (see Figure 4B). The beginning of "mungkin tidak" is marked by a rise-fall pitch, and it ends with a step up to the end syllable of "tidak".
The second semantic portion of the answer which is presented below is separated from the first by a pause of 590 msec.

Extract 6.5(3)

25B5  a: semuanya bergantung KEPADA (0.56)
      < > (0.99)

      < > (0.62)
B6  a: keadaan 'DA::N
      <al al> < > (0.73)
B7  'PENILAIAN
      < > (0.68)
B8  yang dibuat 'OLEH kerajaan
      <al al> (0.38)
B  It all depends on the situation and the
government's assessment.

The first segment which is the beginning of a short justification of the opinion expressed in the prior talk is separated from B6, the subsequent segment by a pause of 560 msec. The slight rising end pitch indicates a non-final break. The interviewee indicates that the following talk, i.e. B6 is a continuation of B5 by maintaining the end pitch of B5 in the production of the filler "a". B6 is separated from B7 by pitch and tempo parameters. There is a step up in pitch to the beginning of "penilaian" from the endpitch
of "dan". The fluctuation in tempo from lento on "dan" to relatively allegro tempo on the beginning syllables of "penilaian" is another clue for segmentation. The end of "penilaian" is marked by a low fall. The subsequent segment "yang di buat oleh kerajaan" is marked by a slight step up in pitch to its beginning and a relatively fast tempo in producing "yang dibuat", the beginning syllables.

6.4 Extended Turn

This section will analyse one extended stretch of turn for the purpose of finding out how the speaker segments it into prosodically demarcated portions while at the same time indicating that they belong together. The notion of discourse adopted here has been rather narrow, being limited to long utterances by a single speaker. The selection of this stretch of discourse is based on the fact that it forms an uninterrupted development of one speaker’s discourse. Although the interviewer does come in at certain points in the discourse, these responses do not in any way disturb the flow of discourse.

The discourse begins with the interviewer requesting the interviewee to describe the kind of work carried out by SIRIM (extract 6.6(1)). The interviewer’s eliciting move is prosodically segmented into seven speech units marked 26A1-A7 respectively.
EXTRACT 6.6(1)

26A1 ^JADI: (0.32)

< f >
< >(0.41)
< >(0.47)

A2 sekang Ni: (0.21)

< >f
< >(0.55)
< >(0.33)

A3 kita nak `MINTAK doktor

< l l>
< >(0.82)
< >(0.35)

A4 ↑sikit critakan TENTANG

< L L>< H >
< >(0.11)
< >(0.6)

A5 ini apa

< L L>
< p p>
< al > (0.25)
A6 ^teknologi LOGAM ni doktor

\[
\begin{align*}
\text{<L} & \text{ L>} \\
\text{<DEC>}
\end{align*}
\]

\[
\begin{align*}
\text{<l} & \text{ >}(1.2)
\end{align*}
\]

A7 'MACAMANA

\[
\begin{align*}
\text{<L} & \text{ L>} \\
\text{<p} & \text{ p>} \\
\text{<} & \text{ >}(0.42)
\end{align*}
\]

A So now we would like to invite you to tell

us a little about metal technology, doctor.

How?

In this context "jadi"(so), which is broken off from the following adverb by a pause of 320 msec, marks a boundary between what comes before, i.e. introducing the guest speaker and what comes after, i.e. requesting the interviewee to talk about metal technology. The pause together with a rise fall pitch movement is a sufficient cue to segmentation.

Subsequent to "jadi" is an adverbial of time "sekarang ni" (now) which is separated from the segment following it by a pause of 210 msec. The speaker indicates the wish to continue by keeping his endpitch level. The lengthening of "ni" and the pause give him time to plan his subsequent contribution.
In Malay writing, "sekarang ni" (now, a discourse marker) is usually separated from the main clause by a comma. One can see that some sort of planning is going on by comparing the speech rate of "sekarang ni" with that of "kita nak minta doktor sikit" (we would like to invite you) whereby the former is uttered noticeably slower than the latter to allow time for planning.

"kita nak mintak doktor" (we would like to invite you) is separated from the subsequent segment "sikit ceritakan tentang" (tell us a little about) by pitch and tempo parameters. "doktor" the final lexical item continues the fall on "mintak", thereon pitch steps up slightly at the beginning of "sikit ceritakan tentang". The fluctuation in tempo from relatively lento on "doktor" to relatively allegro on "sikit ceritakan" provides a second cue to segmentation.

The change in pitch that occurs at the beginning of "ni apa", an inserted utterance, distinguishes it from the primary utterance that it segments. The rise at the end of the first chunk of utterance which "ni apa" segment, i.e. "sikit ceritakan tentang" makes this speech unit hearable as incomplete, unfinished, i.e. that "this is not the whole of it". "ni apa" begins low and continues to be low until a slight rise on "pa" to signal the link-up with the following utterance. The step up in pitch from low "apa" signals the beginning of a continuation of the previously curtailed talk.
whose end is bounded by B's latched response. A continues his utterance with a question word "macamana" whose general lowering of pitch and low termination indicate that the speaker has reached the end of his utterance.

The interviewee's segmented discourse suggests that a lot of planning goes into the presentation of his reply. The speaker's unpreparedness for the question can be inferred from the presence of a lengthy pause of 720 msec. and a filled pause before the interviewee's response. "ah" indicates that B accepts the turn but needs time to plan the reply.

The interviewee divides his response into five thematically related parts whose beginnings and endings are marked prosodically and lexically as follows:
### Thematic Division of Interviewee's response

<table>
<thead>
<tr>
<th></th>
<th>PROSODIC CUES</th>
<th>LEXIC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ONSET</td>
<td>END</td>
</tr>
<tr>
<td>1. Stating how he is going to reply (Extract 6.6(2))</td>
<td>^</td>
<td>DEC</td>
</tr>
<tr>
<td>2. talking about the group involved in metal technology (Extracts 6.6(3)-(6.6(5)))</td>
<td>^</td>
<td>DEC</td>
</tr>
<tr>
<td>3. describing the kind of work SIRIM does (Extracts 6.6(6)-6.6(7))</td>
<td>^</td>
<td>DEC</td>
</tr>
<tr>
<td>4. listing the kind of service SIRIM offers (Extracts 6.6(8) and 6.6(11))</td>
<td>^</td>
<td>DEC</td>
</tr>
<tr>
<td>5. describing areas of specialisation (Extracts 6.6(11) and 6.6(12))</td>
<td>^</td>
<td>DEC</td>
</tr>
</tbody>
</table>

- step up in pitch
- step down in pitch

DEC - decreasing loudness

The prosodic flow of the first thematic chunk presents 6.6(2) below which states how B is going to proceed with interrupted by several brief pauses. The presence of this causes the discourse to be segmented into separate speech are intonationally complete as each contains a peak of p nucleus (indicated by capitalisation). The end of this thematic off by A's latched "ya" which communicates to B that his wish such is acknowledged and accepted.
Extract 6.6(2)

27B1 (0.72) a: yang ^SEBENAR (0.38)
< CRES >

B2 baik saya ceritakan yang ada `DISIRIMLAH (0.21)
< H       H>  
<(1.67)

B3 lebih `SENANG=
<L       L>
<CRES>
<        >(0.54)

28A =ya

B  eh actually let me relate what there is at SIRIM, it's easier.

A  yes

In the above extract, the first speech segment "yang sebenar", an expression that signals a change in stance is separated from the subsequent utterance by a brief pause of 380 msec. The speaker marks the segment as incomplete by keeping his end pitch level.

The falling contour of "baik saya ceritakan yang ada diSIRIMlah" and the pause that bounds it make it hearable as a complete utterance. The other prosodic cue which distinguishes it from "lebih senang", the subsequent segment, is the overall pitch height of the latter which is
relatively lower than the former. In this instance, the words that are grouped together by prosody belong together semantically and syntactically. While 
"Baik saya cerita yang ada disirimlah" tells the interviewer what the speaker wants to focus on, "lebih senang" expresses what the speaker feels.

The next content chunk (presented in Extracts 6.6(3) through 6.6(5) below) which describe the division involved in metal technology is a fairly long utterance which is segmented into eight speech segments. The discourse progresses from the general to the specific. B begins by identifying the division concerns with metal technology (see Extract 6.6(3)) followed by naming the group that is directly involved in metal technology (see Extract 6.6(4)), to stating the number of staff that makes up the group (see Extract 6.6(5)).

The prosodic flow of this portion of his discourse (Extract 6.6(3) below) is interrupted by the presence of a number of hesitation phenomena whose presence indicates that some sort of planning is taking place.

**EXTRACT 6.6(3)**

29B1 (0.44) a: ^ maknanya:: (0.69) a:: (1.62)

< > (1.2) < >(0.73)

< >(0.88)
B2 di di SIRIM 'DIBAWAH a: (0.48)
   < CRES >
B3 'RESEARCH and
   < CRES >
   < >(0.25)
   > (0.75)
B4 ^technology development DIVISYEN=
   <al      al> (0.61)
   < ral    > (0.61)
   < > (0.43)
   >>(0.68)
30A =ya
   <>l
   <>p
B Meaning that at SIRIM under research and technology
development division
A yes

"maknanya" (meaning that, marked 29B1) is a false start whose
realisation as a separate segment is brought about by the presence of
various hesitation phenomena such as pauses, a filled pause and
prepausal syllable lengthening. B who starts fresh with "di di SIRIM
dibawah a:"
" (marked B2) faces difficulty to proceed. To gain time he
produces a filler and a pause of 480 msec. after "dibawah" (under), thereby separating it from the subsequent stretch of speech "research and technology development division". The level and non-low filler "ah" indicates this breaks as non-final.

Instead of presenting "research and technology development division", the division involved in metal technology as one uninterrupted unit of discourse, it is heard as being segmented into two chunks: "research and" (marked 29B3) and "technology development division" (marked 29B4). The break between "research and" and the subsequent segment is marked by a change in pitch (see Figure 5A). The former ends with a fall, thereon pitch steps up to the beginning of "technology development division" whose pitch ends with a fall on "division". The slowing down of rate in the production of "research and", and the accompanying forte loudness make this group of words sound more emphatic than the subsequent unit.

"technology development division" is bounded by A's fall-rise "ya" which when produced with little amplification and low pitch as in this case has the obvious expectation that the previous speaker will take back the turn and continue to speak on the topic. The non-low end pitch of "division" signals non-finality and provides the link-up with the subsequent portion of the discourse (see Extract 6.6 (4), below) produced after A's "ya" which
provides additional information about the group involved in metal technology.

**EXTRACT 6.6 (4)**

31B1 (0.19) ah ada satu 'KUMPULAN yang

<\( L \) \( \quad L \)>
<\( l \) \( \quad l \)>(1.34)

B2 dinamakan kumpulan teknologi LOGAM (0.41)

<\( \text{CRES} \) n-f

<\( a_{l} \) \( a_{l} \> (0.50)
< \> (0.49)

B There is a group which is known as Metal technology group.

Auditorily, the above discourse is presented as two separate segments: "ah ada satu kumpulan yang" (marked 31B1) and "dinamakan kumpul teknologi logam." (marked 31B2). The relatively allegro tempo in uttering "dinamakan kumpulan" brought about by the shortening of the syllables caused the two lexical items to be heard as belonging with "teknologi logam" rather than "satu kumpulan yang" whose tempo is relatively lento. The lengthening of "yang" could be brought about by planning needs. The syllables following it, i.e. "dinamakan kumpulan
'teknologi' are uttered fast as if the speaker cannot wait to produce "logam" the lexical item with the peak of prominence. The non-low end pitch indicates that the pause of 410 msec which bounds the speech unit is a non-final break (see Figure 5B).

After pausing, the interviewee gives information about the number of people that makes up the group signalling this chunk of information syntactically with "yang" a relative word (see Extract 6.6(5) below). The end of this discourse is lexically marked by repetitions (see 36B and 39B) where B merely echoes what A says previously. Prosodically, B marks finality by lowering pitch span and reducing amplitude.

**Extract 6.6(5)**

31B3 'YANG

< > (0.46)

B4 ^dianggotai KIRA-KIRA:

< > (0.37)

< > (1.12)

B5 lima puluh enam ^ORANG

< > CRES

<al al> (0.39)

< > (0.42)
32A  (0.24) lima puluh enam \^ORANG=

<\text{CRES}>

<

> (0.73)

33B1 =lima puluh enam \^ORANG

<al al> (0.57)

<

> ral

B2 TERMASUK pegawai dan juga

<l l> (1.07)

< \text{DEC}>

<

> creaky

<l l>

B3 ^kumpulan SOKONGANLAH

< \text{CRES} >

<l l>

34A  (0.25) ah kumpulan teknologi LOGAM=

<l l>

<l l> (1.73)

<

> (0.70)

37B =teknologi logam

<al al> (0.57)

36A (0.20) SI\text{RIM} ya

<l l>

<

> (0.42)
37B = SIRIM ya=

<L L>

<p p>

< > (0.46)

38A = ha (0.44)

39B ha

[ ]

40A ya doktor

<L L>

<DEC>

< > (0.44)

B ah There is a group called metal technology group which is made up of about fifty people

A fifty people

B fifty people including the officer and also the supporting group

A metal technology group

B metal technology

A SIRIM yes

B SIRIM yes

A yes doctor
"yang" (marked 31B3) is set off from the subsequent segment by pitch and tempo parameters. It is lengthened and uttered with a fall. The step up in pitch to the beginning of "dianggotai kira-kira" (which is made up of about) makes "yang" (which) hearable as a segmented chunk. The clue for segmentation is also provided by the relative shortening of the syllables that make up "dianggotai". Prosodically, the beginning pitch level of "yang" is the same as the end pitch of the preceding (marked 31B2) segment. This signals that 31B3 is a continuation of B2, even though the two is separated by a pause of 410 msec.

"dianggotai kira-kira lima puluh enam orang" is heard as being made up of two segmented chunks. "dianggotai kira-kira" is set off from the subsequent stretch of speech by a tempo break. The duration that the speaker takes to produce "ra", i.e 370 msec as compared to 390 msec to produce "lima puluh enam" (fifty six) makes "kira-kira" and "lima puluh" hearable as belonging to different groups of lexical items. The acceleration on "lima puluh" seems to suggest that B is rushing off to produce "orang" a word which is made prominent by rise-fall pitch, forte loudness and lengthening (see Figure 5C ). The slight rising endpoint pitch indicates that the break of 240 msec which bounds it is a non-final break.
A responds with a mere repetition of "lima puluh orang" (marked 32A) which is uttered as a single unsegmented chunk with a rise-fall tone on "orang" (see 5D). B who takes this utterance as request for confirmation confirms by repeating "lima puluh orang" (35B1) which is uttered relatively fast. The slight terminal rise indicates that he is not finished yet.

B continues with "termasuk pegawai dan juga kumpulan sokonganlah" (see 33B2 and 33B3) which gives information about the people that make up the group. This stretch of speech is heard as being segmented into two: "termasuk pegawai dan juga" dan "kumpulan sokonganlah" (see fig 5D and 5E). The slight step up to the beginning of "kumpulan sokonganlah" separates it from the prior segment. "kumpulan sokongan" is bounded by a pause of 250 msec, following which is A's response (marked 34A1) which does not add any new information for it merely mentions again the name of the group involved in metal technology.

"kumpulan teknologi logam" is uttered as a single unbroken segment bounded by B's latched response which merely repeats A's prior contribution. The speaker takes only 570 msec to echo A's contribution whose duration is relatively long, i.e. 1030 msec (see Extract 6.6(5)). B continues with a brief unbroken chunk "SIRIM ya" (marked 36A) following which is B's echo "SIRIM ya" whose low pitch and diminuendo loudness signal the wish to terminate this topic.
The next thematic chunk (Extract 6.6 (6) below) is prompted by A's "ya doktor" (yes doctor) which begins high in his voice range and ends low, marked by creakiness (see figure 5F). The decrease in pitch span, decrescendo loudness and pausing prompt B to proceed. B continues by providing information on the kind of work that SiRIM is engaged in marking the beginning of this discourse with "jadi" a marker which serves to mark a shift in topic and begins relatively higher in pitch.

Consider the extract below:

**Extract 6.6(6)**

41A  `YA doktor
   < > creaky

42B1 (0.43) ↑JADI

B2 kita `BANYAK terlibat (0.28)
   <f f><p p>

B3 ah di dalam ah
   <L L>
   < > creaky
   < > (0.35)
   < > (1.12)
B4 kerja-kerja (0.23)
  < > (0.71)
  < > (0.49)

B5 'R&D

B6 ataupun PENYELIDIKAN (0.46)
  < > (1.12)

B7 uh ah khusus kepada pembangunan ^BAHAN (0.25)
  <I I> (2.36)

B8 dan juga teknologi 'LOGAM

  <L L>
  <I I> (1.01)

43A (0.23) ya
  <>I
  <>p
  <> creaky

A yes doctor

B so we are very much involved in R&D work or research especially in material development and also metal technology

A yes
Prosodically, "jadi" is separated from the beginning of B's description on the kind of work SIRIM does by a slight change in pitch whereby the fall on "di" is followed by a slight but noticeable step up to "kita" (we) the initial word of "kita banyak terlibat", the subsequent chunk. The end boundary is marked by a non-low endpitch following which is a pause of 280 msec which audibly separates it from "ah didalam ah" (in). Despite the break, the speaker indicates continuation by maintaining the pitch level of the prepositioned filler "ah" the same level as the end pitch of the prior chunk. The marked slow speech of "ah di dalam ah" distinguishes it from "kerja-kerja" whose beginning is marked by a noticeably fast tempo. The slightly higher pitch on "kerja-kerja" is also another clue to division. (see figure 5F)

A pause of 230 msec divides a close knit noun phrase, i.e. "kerja-kerja R&D" which belongs together syntactically and semantically, into two: "kerja-kerja" (B4) and "R&D" (B5). The pause and prepausal lengthening of the final syllable of "kerja-kerja" are presumably introduced for effect rather than for a real need for verbal planning. Nevertheless the speaker indicates that "R&D" is a continuation of "kerja-kerja" by producing the beginning pitch of the former the same as the end pitch of the latter (see Figure 5F).
Following this is a chunk which contains a Malay translation of R&D, lexically marked by "atau" (or) and bounded by a beginning pause of 190 msec and an end pause of 460 msec. The rising end-pitch of "ataupun penyelidikan" provides the link up with the subsequent stretch of speech which provides information on the specific kind of research that SIRIM does (see Fig 5G). Lexically, this portion of speech is marked by "khusus" an expression denoting specificity.

"ah khusus kepada pembangunan bahan dan juga teknologi logam" is heard as consisting of three segmented portions: "khusus kepada pembangunan bahan" (specifically for material development), "dan juga" (and also) and "teknologi logam" (metal technology). This division is syntactically and semantically appropriate. The step up in pitch to the beginning of "dan juga" from a low endpitch of "khusus kepada pembangunan bahan" is a clue to segmentation (see Figure 5G). The relatively high end-pitch of "dan juga" and the relatively low endpitch of "bahan" is a clue for segmentation. The rising end pitch of "dan juga" which is non-low and the relatively low beginning pitch of "teknologi logam" separates the former from the latter (see Figure 5H).

B's low and piano "ya" prompts A to continue. The pitch level of "ya" is the same as the endpitch of "logam", B's prior talk.
In the next thematic chunk, B gives a list of services offered by SIRIM: contract research (Extract 6.6(7)), analysis and testing (Extract 6.6(8)), and consultancy work (Extract 6.6(9)).

In Extract 6.6(7) below, B presents the first service offered by SIRIM, the end of which is demarcated by A's low and piano "ya".

**Extract 6.6(7)**

44B1 (0.23) ah dan `JUGA

\(< \quad > (0.74)\)

\[ B2 \uparrow \text{dari segi `ITU} \]

\(< \quad > (0.54)\)

\[ B2 \uparrow \text{kita banyak MEMBERI: (0.55)} \]

\[ \langle \quad \rangle (0.43) \]

\(< \quad > (1.03)\)

\[ B4 \text{ ah khidmat-khidmat ah (0.22)} \]

\[ \langle \quad \rangle (0.47) \]

\[ \langle \quad \rangle (1.07)\]

\[ B5 \text{ kontrak `RESEARCH} \]

\(< \quad > (0.82)\)
ah and also in this respect we render many contract research services

A yes

B begins his discourse with a marker of addition "dan juga" (and also) whose marked slow rate indicates that some sort of planning is taking place. The forte loudness which accompanies this lento speech makes it heard as being "emphatic". The prolongation of "ga" the final syllable of "juga" (also) and the rush to produce "dari segi itu" (in this respect) mark a break in the prosodic flow causing a division of the two. The step up in pitch to the beginning of "dari segi itu" is another cue to segmentation.

"dari segi itu" which makes reference to B's talk prior talk in 2B7 and B8 is presented as one unsegmented unit whose boundary is marked by a falling contour on "ITU" (see Figure 5l). The next segment " (44B2) kita banyak member" (we render a lot of) is contextualised as a separate segment by a step up in pitch to the beginning of "kita banyak member" whose level end pitch indicates incompletion (see Figure 5l). The prolongation of the final syllable and a pause of 550 msec. which bounds it
gives B time to plan his subsequent utterance. The presence of another filler "ah" following the pause further indicates that the speaker needs planning time.

Although separated from the prior talk by a pause, the speaker marks "ah khidmat-khidmat" as a continuation of "kita banyak member" by producing the beginning pitch of "ah" the same level as the end pitch of the prior talk.

"ah khidmat-khidmat kontrak research" which is the first item in a list of services which SIRIM provides is divided into two by a pause of 220 msec (see Figure 5J). It is highly likely that the pause which divides a close-knit noun "khidmat-khidmat contract research" into two is caused not by verbal planning problems but is probably produced deliberately for rhetorical effect with the intention of increasing its impact when it is uttered. The non-low end pitch of "khidmat-khidmat" provides the linkup with the subsequent chunk, i.e. "kontrak research" which is bounded by a pause of 190 msec. A responds with "ya" whose low pitch and decreased amplitude prompts B to continue which he does after a pause of 140 msec.

Consider Extract 6.6(8) below which presents the second service offered by SIRIM subsequent to A's prompt. The discourse is broken up into five segmented chunks: the first (47B1), the fifth (47B5) are bounded
by a pause of 830 msec. and 690 msec. respectively, the second (47B2) by a change in pitch speech rate, the third (47B3) by a change in pitch and tempo parameters and the fourth (47B4) by pitch shift.

Extract 6.6(8)

47B1(0.14)ah ^dan juga `khidmat-khidmat ah (0.83)

< CRES >

< ra >

< > (0.29)

<> (0.45)

<> (0.75)

< > (0.97)

B2 `ANALISA dan

< > creaky

B3 ^PENGUJIAN kepada:

< ral > (0.65)

< > creaky

B4 BARANGAN-BARANGAN

< ral > (0.59)

B5 INDUSTRI: (0.69)

< ral > (0.77)

and also analysis and testing services for products from industries
In this instance prosody has caused a division between a close-knit syntactic unit, i.e. "ah khidmat-khidmat analisa dan penguian" which in writing will not be separated by a comma. The presence of pauses and fillers which bound the beginning and end of "dan juga khidmat-khidmat" indicate that B is having planning problems. The first "ah" whose pitch is a continuation of the endpitch of "research" signals that "dan juga khidmat-khidmat" is a continuation of the former. The level pitch of "ah" is a good turn-holding strategy while B plans what he is going to say next (see Figure 5K).

After a lengthy pause of 830 msec., B proceeds to produce the subsequent segment, i.e. "analisa dan penguian kepada" which is segmented into two, i.e. "analisa dan" and "penguian kepada" by a change in pitch direction. "analisa dan" ends with a falling pitch. The change in pitch direction in producing the beginning of "penguian kepada" is a cue to division. After a rise-fall on "penguian", the pitch is kept level in the production of "kepada" whose end is marked by creakiness.

The slowing down of pace on "kepada" brought about by its final syllable lengthening sets it off from "barang-barangan industri" whose beginning tempo is noticeably fast. This marked fluctuation of speech rate together with a slight step up to the beginning of "barang-barangan" contributes to making "kepada" hearable as belonging with the prior stretch
of speech. "barangan-barangan industri", is divided into two chunks by pitch parameters. The non-low endpitch of "barangan-barangari" and the subsequent drop in pitch in the production of "industri" separates the former from the latter. B ends "industri" with a rising terminal marking it as incomplete and the pause of 480 msec following demarcates its end boundary (see Figure 5L).

The following stretch of speech (Extract 6.6(8)) presents the third kind of work that SIRIM does, which is consultancy work. The phrase "dan juga" (and also) syntactically and semantically signal that the following discourse provides an additional information to the prior one. Prosodically, the segment is heard as containing three separate chunks all demaracted by certain prosodic cues: "dan juga", "kita ada juga membuat" "kerja-kerja" and "konsultansi".

Extract 6.6(9)

48B1 dan JUGA

< > rall

< > (0.76)
B2 kita ada juga "MEMBUAT"

< > (0.39)

< > (0.99)

B3 KERJA-KERJA:

< al >

< ral >

< > (0.69)

< > (0.40)

B4 "KONSULTANSI (0.57)

< > rallentendo

< > (0.22)

< > (0.66)

B and also we also do consultancy work

"juga" (marked 48B1) is heard as belonging with "dan" rather than "kita juga..." (marked 48B2) based on a marked change in tempo from being relatively slow on "juga" to being relatively fast on "kita ada" as well as change in pitch height. These features are also accompanied by a slight decrease in volume at the beginning of "kita ada ..."(see Figure 5M). The next segmented chunk occurs after "MEMBUAT" where the change in pitch from a relatively low end pitch of "MEMBUAT", caused by a fall, to a step up at the beginning of "KERJA-KERJA" marks division. Again here a close knit noun phrase "KERJA-KERJA KONSULTANSI" is heard as being segmented into two
by two cooccurring prosodic cues: pitch shift and tempo shift. The lengthening of the final syllable of "kerja-kerja" which could be brought about by production problems causes a break in the prosodic flow and the slight step up in pitch at the beginning of "konsultansi" further supports the presence of a break. "konsultansi" is bounded by a pause of 570 msec (see Extract 6.6(8)).

B's following discourse (Extract 6.6(10)) which specifically identifies the kind of consultancy work that SIRIM provides, i.e. to overcome current problems, is set off from the prior discourse by a pause of 570 msec (see 48B4) and is lexically signalled by "mengaknanya" which is a mispronounce of "makananya". B continues his utterance without repairing the false start.

Extract 6.6(9)

49B1 a: `MENGAKNANYA:

< > (0.85)

B2 untuk mengatasi MASALAH-MASALAH (0.69)

< > (0.65)

B3 a: `TERKINI (0.35)
B4 daripada INDUSTRI

<<L

50A (0.35) ya

<<p

B meaning to overcome current industrial problem

B indicates that this stretch of utterance is a continuation of the previous one by continuing the pitch level of the endpitch of the prior talk when uttering "ah" the prepositioned filler. The utterance, "mengaknanya untuk mengatasi masalah-masalah terkini daripada industri", is presented as four segmented chunks marked 49B1, B2, B3 and B4 respectively. The first chunk "mengaknanya" is separated from "untuk mengatasi masalah-masalah" by pitch parameters. The endpitch of the former is relatively low; the fall on "mengaknanya" and the subsequent step-up in pitch to the beginning of "untuk mengatasi..." are clues to segmentation (see Figure 5N).

The pause of 685 msec which occurs after "masalah-masalah" separates it from its close-knit constituent "terkini", which in a less hesitant speech would have been uttered as one chunk. The presence of a filler before "terkini" indicates that B has momentary coding problems difficulty perhaps in finding the words he wants. By retaining the end pitch of the
previous segment on "ah" B indicates that the stretch of speech after it is a
continuation of the one before. "terkini" is separated from "daripada
industrn" by a pause of 347 msec. After the pause, there is a step up to the
beginning of the latter; thereon there is a declination of pitch until a fall on
"industrn" following which is a pause of 350 msec. A's low and piano "ya"
prompts B to continue (see Figure 50).

The following thematic portion (Extract 6.6(10)) ends the discourse
list out SIRIM's area of specialisation. It is heard as being made up of
twelve segmented chunks. The presence of a pause and filled pause "ah"
at the beginning of the discourse indicates that the speaker is facing
difficulties to proceed with this portion of his discourse. The stretch of
speech below which presents the first area of specialisation is replete with
hesitation phenomena. This sort of speech makes segmentation difficult for
the hesitation phenomena have a disrupting effect on the organisation of
the syntax and of intonation.

**Extract 6.6(10)**

51B1 (0.48) a: dari SEGI:

\[
\begin{align*}
< & > \text{ al} \\
< & > \text{ ral} \\
< & > (0.32) \\
< & > (0.78) \\
< & > (0.52)
\end{align*}
\]
B2 tu ki ka kami 'PUNYA:: (0.11)

< >(0.23)

< >(0.52)

< > (0.84)

B3 spesialisasi ialah dari segi METALLURGY (0.57)

< ral > (0.69)

< > (0.95)

< >(2.35)

B4 dari 'SEGI::

< > creaky

< > ral

<> (0.35)

< > (0.71)

B5 CORROSION:: (0.44)

< > ral

<al al> (0.16)

< > (0.16)

< > (0.58)

B6 a: 'NDE

<> (0.33)

<> (0.35)

B a: from that aspect we specialise in metallurgy, corrosion, a: NDE
The speaker begins fast but slows down on "gi" (51B1) whose lengthening of 520 msec allows him time to plan what to say next and results in a prosodic break. The quickening of pace in uttering "itu" (that) and the slip of the tongue "ki" makes the two hearable as belonging together and not part of the prior chunk. The step up in pitch to "itu" is an additional cue to segmentation (see Figure 5P). Syntactically and semantically the reference word "itu" belongs with "dari segi" but the break in prosody sets them apart. "itu" belongs together with "ki ka kami punya" (our), the beginning of a discourse which lists out SIRIM's areas of specialisation. This piece of information, i.e. "spesialisasi ialah dari segi metallurgy" (specialisation is in metallurgy), which presents the first item in the list, is separated from the preceding talk by pitch and tempo parameters (see Extract 6.6(10) and Figure 5P). B ends the segment with a rising end pitch on "metallurgy" whose end is demarcated by a pause of 571 msec.

B continues with the second item in the list "dari segi corrosion" which is heard as being made up of two segments separated by a marked change in tempo and pitch shift. From the pitch contour display in Figure 5R one can see that there is a slight pitch step up from the end pitch of "dari segi" to the relatively higher beginning of "corrosion". The slow tempo at the end of the prior segment caused by a lengthening of "gi" changes to a noticeably fast tempo at the beginning of the subsequent segment. The speaker only takes 161 msec to utter "corro" as compared to 854 msec in
uttering "segit". The end pitch of "corrosion" rises slightly to indicate incompleteness. Following the rise is a pause of 440 msec which separates it from "NDE", SIRIM's another area of specialisation. Although it ends with a slight falling contour the end pitch is kept level to indicate that this is not the end of the utterance.

The final item that comes in the list is syntactically indicated by "dan juga", an expression denoting addition and is presented below in Extract 6.6(11). Prosodically "NDE", the prior talk in Extract 6.6(10) above is separated from "dan juga" by a change in tempo and pitch (see Figure 5R).

**Extract 6.6(11)**

52B1  dan `JUGA: (0.57)

<   ral   >

< > (0.46)

B8 a:: `COATING

< >(0.62)

<     >(0.42)

53A (0.37) mm ya

<L  L>

<     > (0.23)
54B10 atapun `ELECTROPLATING (0.13)

< >(0.87)

B2 in in `PARTICULAR

<> creaky

<| |> (1.09)

<p p>

B3 mm ya

<|L L>

<p p>

< >(0.47)

B and also a: coating

A mhm yes

B or electroplating in particular

The end boundary of "NDE" is marked by a syllable lengthening of 352 msec. This prolongation makes the tempo hearable as lento and the change from lento speech rate to allegro speech rate at the beginning of "dan juga" contributes to making the two segments hearable as separate segments(see Figure 5R). This is further supported by a slight step down in pitch on the beginning of "dan juga" after a fall on "NDE".
The next area of specialisation, i.e. "coating" is preceded by a pause of 570 msec and a filler indicating some sort of planning is taking place. The end pitch is marked by a fall on "ting" following which is a pause and A's "mm ya" whose beginning pitch level matches the end pitch of the preceding talk. The segment after B's response gives a more specialised word for coating, i.e. "ataupun electroplating" which is bounded by a pause of 122 msec. The segment following this, i.e. "in in particular" ends B's response to A's question. The segment begins with a step up in pitch to "nǐ", thereon the speaker gradually depresses his pitch span sinking lower in his pitch range (see Figure 5S). This drop in pitch level is also accompanied by amplitude fade-away which signals the end of the interviewee's lengthy discourse.

6.5 Summary and Conclusion

Findings from the detailed examination of the above extracts support the postulation that the prosodic cues that contribute to making Malay stretches of speech hearable as consisting of segmented chunks in are pause, pitch and tempo parameters. The occurrence of these features break the prosodic flow of the utterance and results in the realisation of chunks whose boundaries are clearly demarcated by these cues. The majority of these speech units contain a peak of prominence.
The combination of pitch drop for finality and pitch step up for a new beginning is a double cue for separation, in addition to a prepausal lengthening, a pause and quickened rate. Likewise the change in pitch from a rising contour or non-low level contour to a pitch step down at the beginning of another segment is a good clue to a break. The lengthening of the syllable brought about by planning or production difficulties which slows down speech rate and the noticeable acceleration at the beginning of the subsequent segment are a good indication of divisions too. Although these segments are prosodically set off as separate chunks they belong together syntactically and semantically. The speaker usually signals this connectedness by a pitch rise or keeping the pitch level. Even when there is a fall, the fall does not reach the bottom of the speaker's voice range. The speaker indicates the wish not to continue by prosodic "\textit{fade-out}" which is realised by decreased amplitude and reduced pitch span.

Findings from the analysis also show that speakers use pitch height to signal that the subsequent talk, which is set off from the preceding talk by a pause, is a continuation of the latter. They do this by matching the beginning pitch of the subsequent segment with the endpitch of the prior segment.
Since the data analysed are natural data, inevitably one may come across chunks which are broken off before the occurrence of the most prominent syllable identified as nucleus, tonic, etc. and results in chunks which are intonationally incomplete. In this thesis they are identified as separate chunks. Likewise, the planning and production problems which the speaker faces when presenting his discourse has resulted in the occurrence of prosodic cues which disrupt not only the intonational organisation of the discourse but also its syntactic organisation producing chunks which may not be in agreement with grammatical structure.

Common in the data are stretches of segmented speech whose final syllables are prolonged. This prolongation when accompanied by a level pitch, which usually is the case with the data examined, is a good turn holding strategy. It has been suggested that speakers tend to prolong the final elements in an utterance, particularly the last vowel before a pause (French, English, German and Spanish (Delattre (1966), Italian ( Marcel: (1971), Finnish (Lehiste:1966)). The stretch of speech that is produced after the last syllable begins relatively faster resulting in a noticeable change in tempo, i.e. from slowing down at the end of the prior chunk to accelerating on the beginning syllables of the next chunk. Although in a few instances, this change in tempo may not be accompanied by any other prosodic cues, based on this cue alone one can distinguish that that portion of speech which is relatively slow is the end of a prior chunk and the other
is the beginning of the subsequent chunk. After a deceleration of rate the speaker rushes off quickly to produce the next chunk slowing down again when he reaches the next prominent syllable or when he encounters coding problems.

Another clue to segmentation is the change in pitch. It is observed that when the prior speech unit ends with a low terminal, the beginning of the following chunks is marked by a pitch step up to one of the beginning syllables, (i.e. within the first lexical item). From a visual inspection of Fo curve of segmented chunks whose boundaries coincide with a syntactic constituent and whose end is marked with a fall, it is observed that after the initial rise there is a tendency for Fo to decline, i.e. that Fo values tend to be lower near the end of a segmented chunk than at the beginning. In cases where a rising endpitch or a level pitch indicates incompletion, there is a tendency for the pitch level of the subsequent segment to continue from where the pitch ends. Usually in such cases, other prosodic features such as pauses and/or a change in speech rate are present as clues to division.

From the analysis it is observed that pauses do not only demarcate chunks which contain the most prominent syllable but also chunks with no prominent syllable such as fillers, abandoned chunks, slips of the tongue, false start, planning units, etc. At times the bounded chunks do not
coincide with grammatical constituents or that close-knits syntactic constituents are separated by a pause.