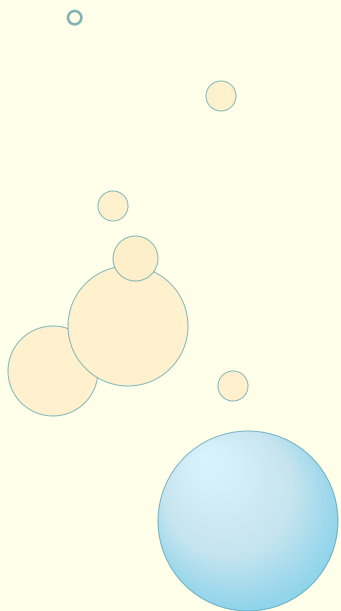




Stress, Rhythm, Tone And Intonation

Ching Kang Liu
National Taipei University
ckliu@mail.ntpu.edu.tw
<http://web.ntpu.edu.tw/~ckliu/>



1. **Rhythm** (suprasegmental stress patterns) (time)
 - a. The relationship between stressed and unstressed syllables
 - b. Patterns of combination of stressed and unstressed syllables
 - c. The liaison or other phonological structures (assimilation, deletion, etc.)
2. **Intonation** (suprasegmental melody) (time + **space**)
 - a. Pitch contours; break indexes (time)
 - b. The intonation units; the pitch accent (time + **space**)
3. **Declination** (suprasegmental melody) (time + **space**)
 - a. Declination of statements (time + **space**)
 - b. Down-step slopes (time + **space**)

1. Stress & rhythm
2. Intonation units
3. Pitch accents
(The invariable quality of the stressed syllable/sound)
4. The break index
5. Mismatched patterns
(The relations between the adjacent syllables)
6. Declination

A. Stress (words and phrases)

- a. Primary stresses
- b. Secondary stresses, etc.
- c. Other subtle things about stress

B. Rhythm (suprasegmental stress patterns)

- a. The relationship between stressed and unstressed syllables
- b. Patterns of combination of stressed and unstressed syllables
- c. The liaison or other phonological structures (assimilation, deletion, etc.)

C. Intonation (suprasegmental melody)

- a. Patterns of pitch contours
- b. More scientific ways to understand the intonation of English

D. Intonation units and break index (suprasegmental melody)

Patterns of IU, break index, mismatch patterns and declination

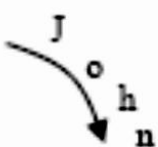
E. Practice the intonation units & contours

1. Are you living hére? (Prator, 1985, etc.)
2. WHAT'S he **LOOKing** for? (Targeting Pronunciation; Focus on Pronunciation, etc.)
3. The combination of 1 and 2. (Celce Mercia, et. al.)
4. Highlighting important words (Focus on Pronunciation)

My name isn't TAM MY --it's SAN DY.

5. Thought groups (Focus on Pronunciation)

My flight is arriving at nine o'clock. I'll call you from the airport.

6. 

(Pronunciation by Christiane Dalton & Barbara Seidlhofer)

7.

Let's go out,
For a change.

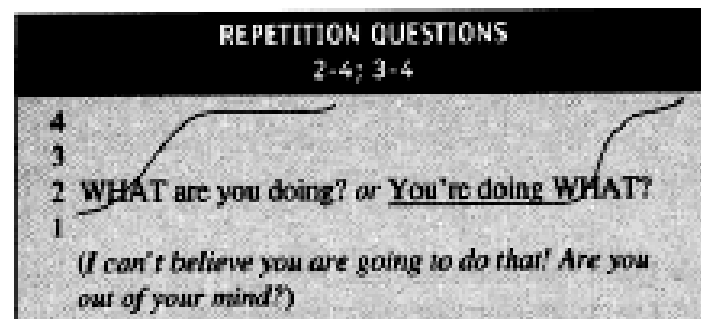
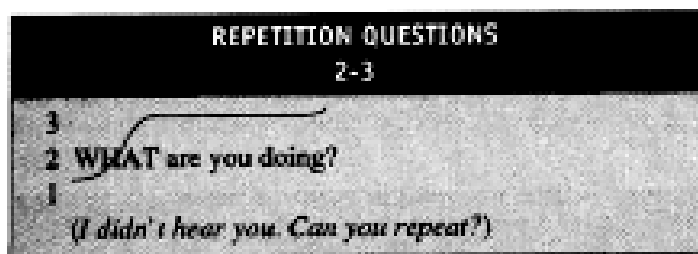
(Bolinger, 1986, p. 6)

1. Pitch contours
2. Generalized patterns
3. Possible sample presentations of different patterns
(Sixteen possible varieties in utterances:

<http://web.ntpu.edu.tw/~ckliu/pronunciation/intonation2/intonation2.htm>)

(Celce Mercia, et. al., 1996. *Teaching Pronunciation*)

8.




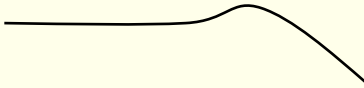
- 4 = extra high
- 3 = high
- 2 = middle
- 1 = low


Normal conversation moves between middle and high pitch, with low pitch typically signaling the end of an utterance. The extra high level is generally used to express a strong emotion such as surprise, great enthusiasm, or disbelief, and is the pitch level often used in contrastive or emphatic stress.”


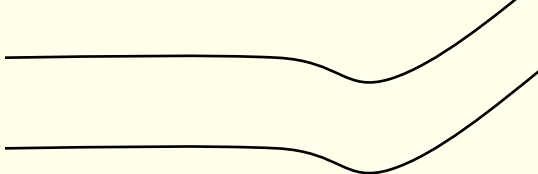
(Celce Mercia, et. al., 1996. *Teaching Pronunciation*)


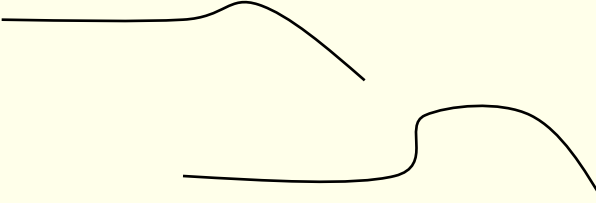


The traditional approach

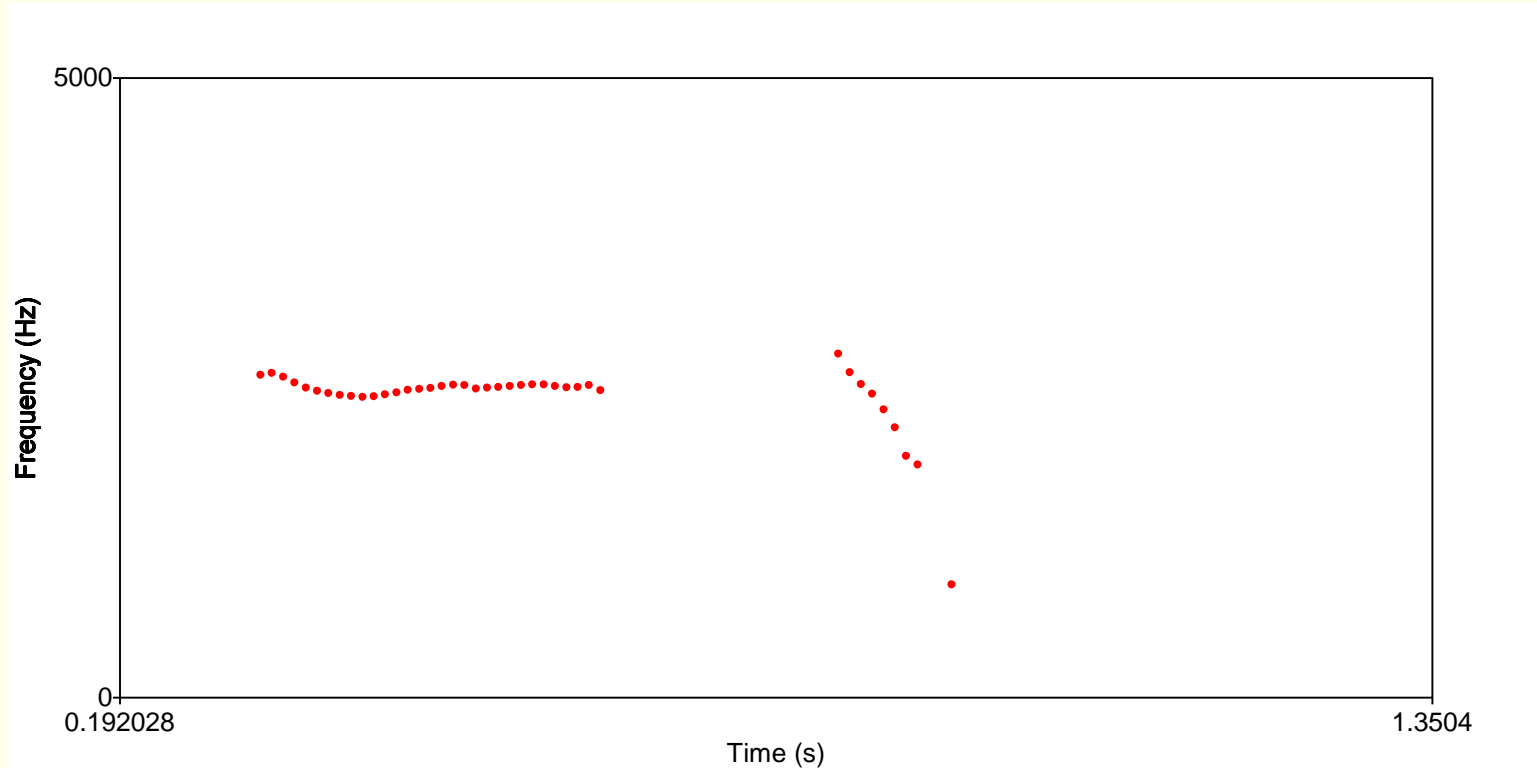
 John's sick. 

He's taken an aspirin 

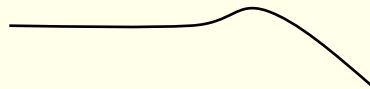
 Have you got a minute?
Can I ask you a question? 

 Who will help?
What about Jonathan? 

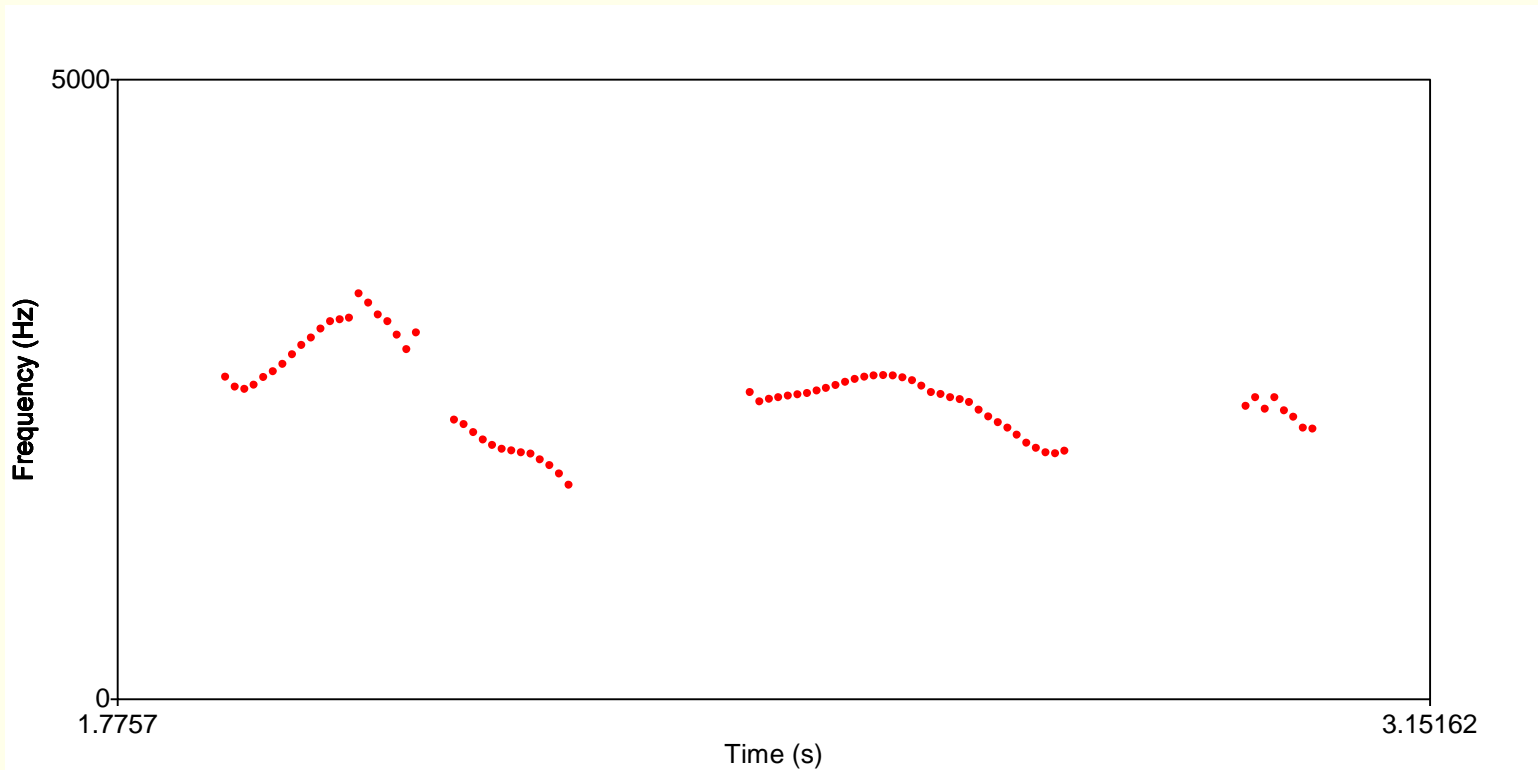
The acoustic approach



John's sick.



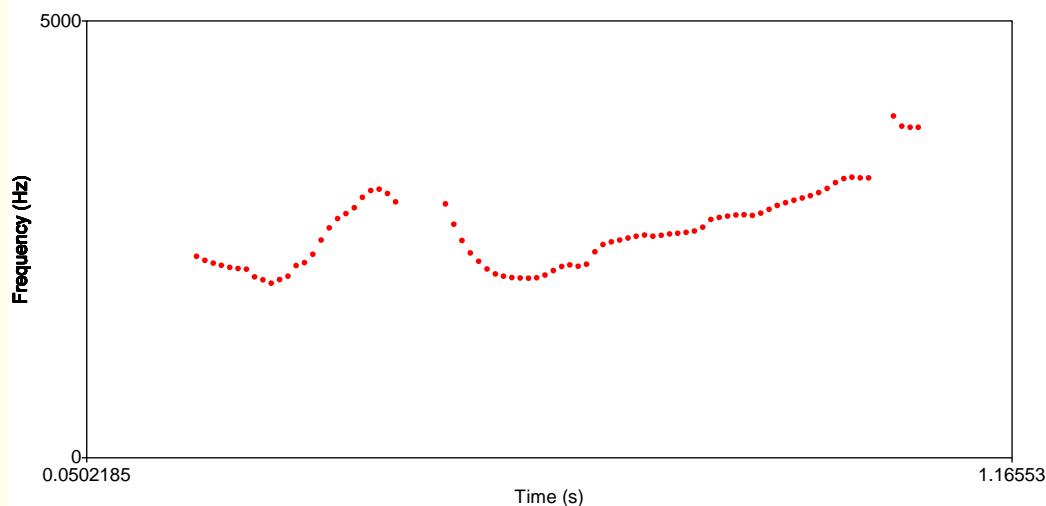
The acoustic approach



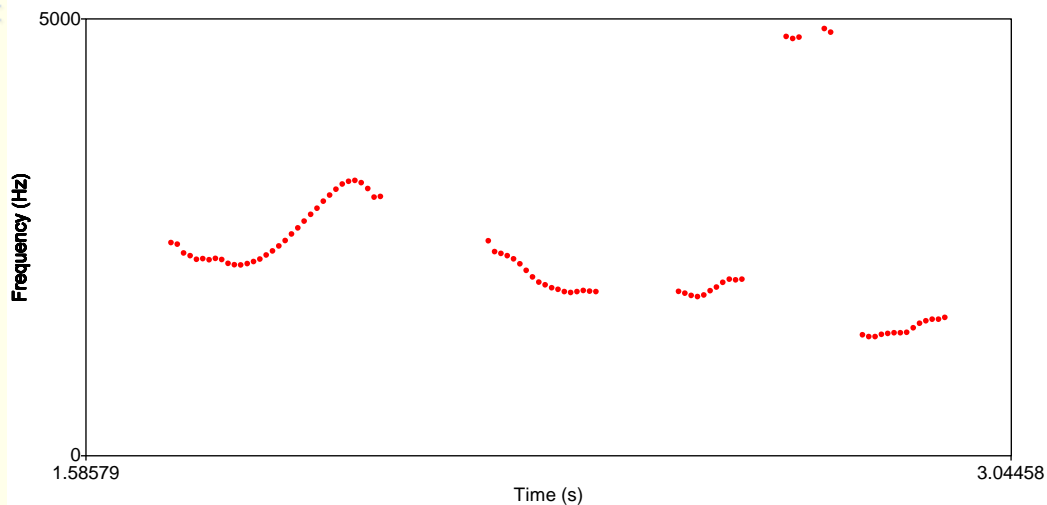
What about Jonathan?



The acoustic approach



Have you got a minute?

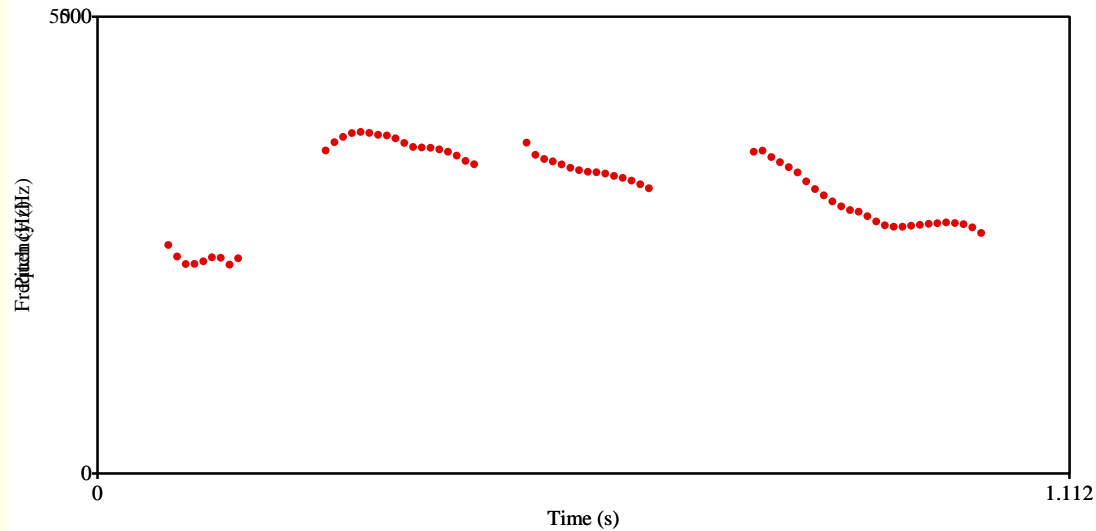
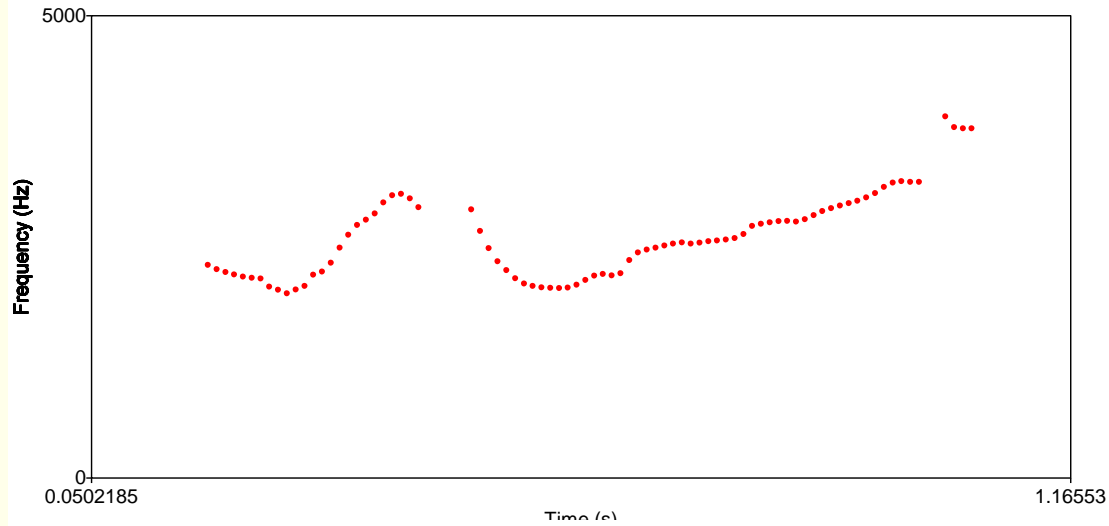


Can I ask you a question?



Contrast

Are they different?



Have you got a minute?



你攀得上去嗎？

Stressed sounds vs. Unstressed sounds

1. **English speakers** focus very much on stressed vowels and usually “blur” unstressed vowels in their speech.
Mandarin speakers focus more on the tone than on the stress.
2. **English speakers** focus very much on the relationship between the local stress and the global stress in an utterance.
Mandarin speakers focus more on each individual “word.”

1. Iambic (Pentameter)

To **strive**, to **seek**, to **find**, and not to **yield**. (Alfred Tennyson, "Ulysses")

A **horse**! A **horse**! My **king**dom for a **horse**! (William Shakespeare, Richard III)



2. Trochee

Peter, **Peter** **pumpkin-eater**

Had a **wife** and **couldn't keep** her (Children's rhymes)





Tyger, **Tyger**, **burning bright**


In the **forests** of the **night** (William Blake)




Read the following expressions (containing different number of syllables) in about the same length of time

1.  broad view
broad re**view**
broad_{er} re**view**


4.  quick call
quick re**call**
quick_{ly} re**call**

2.  strong taste
strong_{er} taste
strong_{er} dis**taste**

5.  new vice
new de**vice**
new_{est} de**vice**

3.  slow turn
slow_{ly} turn
slow_{ly} re**turn**

Read the following expressions (containing different number of syllables) in about the same length of time

1.  fire kitchen
fire in kitchen
fire in the kitchen
a fire in the kitchen
It's a fire in the kitchen



2

snow expected Friday

snow is expected Friday

snow is expected on Friday

some snow is expected on Friday

Practice:



a. I can understand.



b. Give me the book.



c. He wants to leave.



d. I did it as quickly as possible.



e. He was sick.



	MAN	LEAVE _s	HOME.
The	MAN	LEAVE _s his	HOME.
The	MAN will	LEAVE his	HOME.
The	MAN's gonna	LEAVE his	HOME.



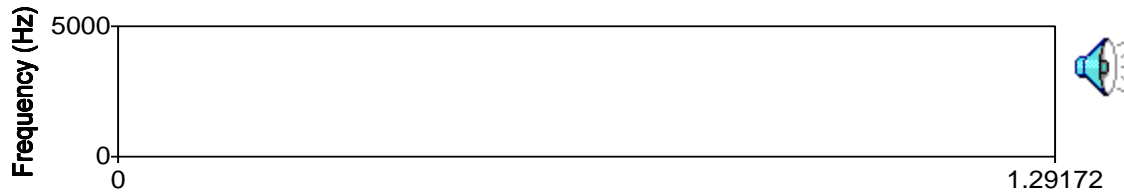
Old MacDonald had a farm, E-I-E-I-O.
And on his farm he had some cows, E-I-E-I-O.
With a moo, moo here and a moo, moo there,
Here a moo, there a moo, Everywhere a moo-moo,
Old MacDonald had a farm, E-I-E-I-O.



	MAN	LEAVE _s	HOME.
The	MAN	LEAVE _s his	HOME.
The	MAN will	LEAVE his	HOME.
The	MAN's gonna	LEAVE his	HOME.



Old MacDonald had a farm, E-I-E-I-O.
And on his farm he had a cow, E-I-E-I-O.
With a moo, moo here and a moo, moo there,
Here a moo, there a moo, Everywhere a moo-moo,
Old MacDonald had a farm, E-I-E-I-O.

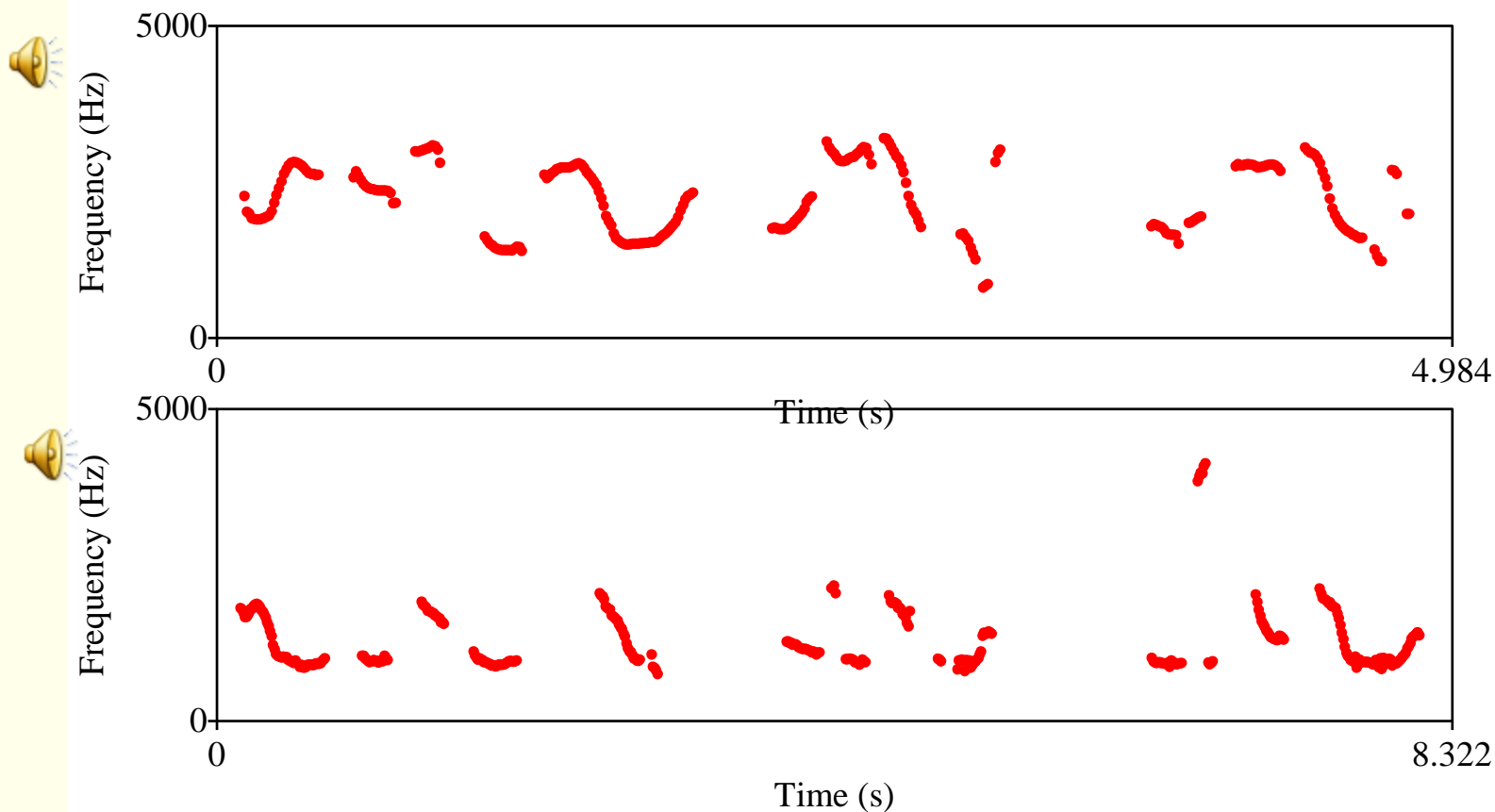


The **man's** going to **leave** his **home**.





你要去機場接人，別搭地鐵，我的車借你。





Lexical stress can be easily found in any dictionary right now. But lexical stress can be very complicated if a word is used in different speech contexts. For example,

- 1. Fourteen people were killed last night.
- 2. The number of the victims is fourteen.
- 3. I have sixteen patients waiting for me.
- 4. The last patient is only sixteen.

Most of the time, the lexical stress serves as different “accented stresses” in an utterance. For instance,

- 1. Armani knew the millionaire.

S_{stress} **S**_{stress} **S**_{stress}



Three blind mice.

Please sit down.

Come back soon.

John can't go.

Don't drive fast.

S_{Stress}W_{Weak}W_{Weak}S_{Stress}W_{Weak}W_{Weak}S_{Stress} / wSwSwS



Hickory dickory dock.

Do it according to plan.

Give me a burger with cheese.

Who is the man I should see.

The mouse ran up the clock.

I'd like to cash a check.

He'd rather take the bus.

I'll have her call you back.

SwSwSwS



Twinkle, twinkle little star.

Let me help you find your keys.

Don't forget the bread and milk.

Tell me why you don't agree.

How I wonder what you are.

Find a space and park your car.

Thanks a lot for all your help.

Don't forget to leave a tip.

Rule 1: Compound nouns—AIRport



deadline

establish a deadline

classroom

a noisy classroom

software

software packages

steakhouse

a Japanese steakhouse

Rule 2: Noun-noun combinations—TOOTH decay



air conditioner

repair the air conditioner

shoe polish

some brown shoe polish

convention center

the downtown convention center

Rule 3: Reflexive pronouns—herSELF



myself

went by myself

themselves

finished it themselves

Rule 4: -teen and -ty—eighTEEN vs. EIGHty



thirteen years old

vs. thirty years old

sixteen dollars

vs. sixty dollars

Rule 5: Verbs consisting of a prefix—underSTAND



outrun

outrun his teammate

overlook

overlook the error

withdraw

withdrew fifty dollars

overhear

overheard the argument

Rule 6: two-word verbs—give UP



print out

print out the document

shut down

shut down the factory

put off

put off the meeting



Rule 7: Compound adverbs indicating location or direction—outSIDE



overseas

go overseas

downtown

drove downtown

northeast

in the northeast

Rule 8: Two-syllable words used as both nouns and verbs—INsult / inSULT



Noun

Verb

conduct

conduct

present

present

project

project

rebel

rebel

Practice:



1. Can you project our profits for the next quarter?



2. You will need a permit to do the construction.

1. -cv- or -ccv-



look at me

pick it up

I couldn't figure it out.



I wouldn't accept it.

He looked at me.

2. -cc-



a big girl

walks slowly



Kiss me.

It's a great book.



hand it in

hand them in now

throw them out

throw it away

call him up

figure it out

clean it up

pick her up

look them up

turn them off

1. Vowels that follow /i/ [Chart 1](#); [Chart 2](#)



reality

be active

playoff

pay off

triangle

my ankle

annoyance

the boy and me

2. Vowels that follow /u/ [Chart 1](#); [Chart 2](#); [Chart 3](#)



fluid

do it

snowy

go out

flour

how is it

newest

a few apples



1. I can't see **e** it
three **e** others
stay **a** awake
pay **e** everything
tea **a** and coffee



2. too **o** often
there is no **a** answer
Who **o** is it?
two **a** apples
let's go **o** out
so **e** easy



- 3.
1. He's stud**y**ing with the radio **o**n.
 2. This section of town was prev**i**ously an industrial are**a**.
 3. His exper**i**ence in politics makes him a super**i**or negot**i**ator.
 4. The p**i**anist quickly realized the p**i**ano needed tuning.
 5. He's ob**v**iously a cre**a**tive person.

1. Progressive assimilation

look looks

love loves

like liked

love loved

2. Regressive assimilation

input have to


3. complete assimilation

cupboard

4. Coalescent assimilation

this year; would you...; set you up

When “s” and “es” are suffixes (sibilants)

- 
1. a **rose** /z/ two **roses** /ro-zəz/ or /ro-zɪz/
 2. **Josh** /ʃ/ **Josh's** brother /dʒɔ-ʃəz/
 3. The **judge** /dʒ/ the **judge's** decision /dʒə-dʒəz/
 4. they **watch** TV /tʃ/ he **watches** TV /wa-tʃəz/
 5. the **boss** /s/ The **boss's** been here /bɔ-səz/.

Try to read the following expression:

Someone **else's** book

When “s” and “es” are suffixes (non-sibilants)

1. When voiceless consonants are followed by “s” or “es”



a ship /p/

they visit /t/

Dick /k/

clock /k/

two ships /ps/

he visits /ts/

Dick's house /ks/

The clock's broken /ks/.

2. When voiced consonants are followed by “s” or “es”



a job /b/

Sam /m/

Buy the book /bay/.

He /hiy/

good jobs /bz/

Sam's friend /mz/

He buys books /bayz/.

He's here /hiyz/.

3. When /s/ is clustered with other sibilants:



one month

the earth

two months

the earth's circumference

1. construct constructed (after /t/)
decide decided (after /d/)
graduate graduated (after /t/)
2. install installed
save saved
delay delayed
3. talk talked
laugh laughed
process processed
4. Read the following expressions:
- a. He filled out the application
b. I checked in this morning.

When fricatives are followed by /j/



p ₁	p ₂	p ₃	Examples
/s/	/j/	ʃ	this re year miss ss you
/z/		ʒ	How is re your day? He loves ss you.
/t/ or /ts/		/tʃ /	next t year last t year Who set t you up? That's ss your problem.
/d/ or /dz/		/dʒ /	Did d you do that? What would d you do? My dad's ss your partner.



- 1. In the near future
- 2. The next century

- 3. I assure you
- 4. blood pressure

- 5. a precise measurement
- 6. Leisure-time activities

- 7. individual rights
- 8. A recent graduate



1. Loss of /h/ sound
ask him
did he
2. Loss of /ə/ sound
tell them
something
3. Loss of /t/ or /d/ before /ən/
sudden
sentences
4. Loss of a syllable
family temperature
camera potato...

Intonation Units



...so we had to know these tendons, and ligaments, and the, all the bones, and, you know, all the way up, from the shoulder down, and then from the hip down. You know, all the way down to the hoof, and then, the bone in the hoof, and, then all the wall, and you know, of the hoof, and what everything was called there, and then, he went over on how to trim it, and where you...there's a white line, that you go by, and a horse has this little white line, and you clean it out with the...



131.39 131.59 LENORE: yeah,
 131.59 131.93 [I bet].
 131.59 131.96 LYNNE: [(H) and <X then X>],
 131.99 133.19 so we had to know these tendons,
 133.19 133.87 and ligaments,
 133.87 134.66 (H) and then,
 134.66 135.75 all the bones,
 135.75 136.88 ... and,
 136.88 137.41 .. you know,
 137.41 139.09 all the way up- from the shou=lder down,
 139.09 140.31 and then from the hip down.
 140.31 140.81 .. You know,
 140.81 141.96 all the way down to the hoof,
 141.96 142.61 (H) and then,
 142.61 143.91 % the bo=ne in the hoof,
 143.91 144.09 and,
 144.09 145.87 (H)= .. then all the .. wall,
 145.87 146.09 and,
 146.09 146.70 % you know,
 146.70 147.42 of the hoof,
 147.42 147.59 and,
 147.59 149.08 what everything was called there,
 149.08 149.38 and then,
 149.38 151.53 (H) he went over on how= to trim it,
 151.53 152.07 and where you- –
 152.07 153.27 th- there's a white line,
 153.27 153.83 that you go by,
 153.83 155.47 and a horse .. has this little white line,
 155.47 157.12 (H) and you clean it out with the –

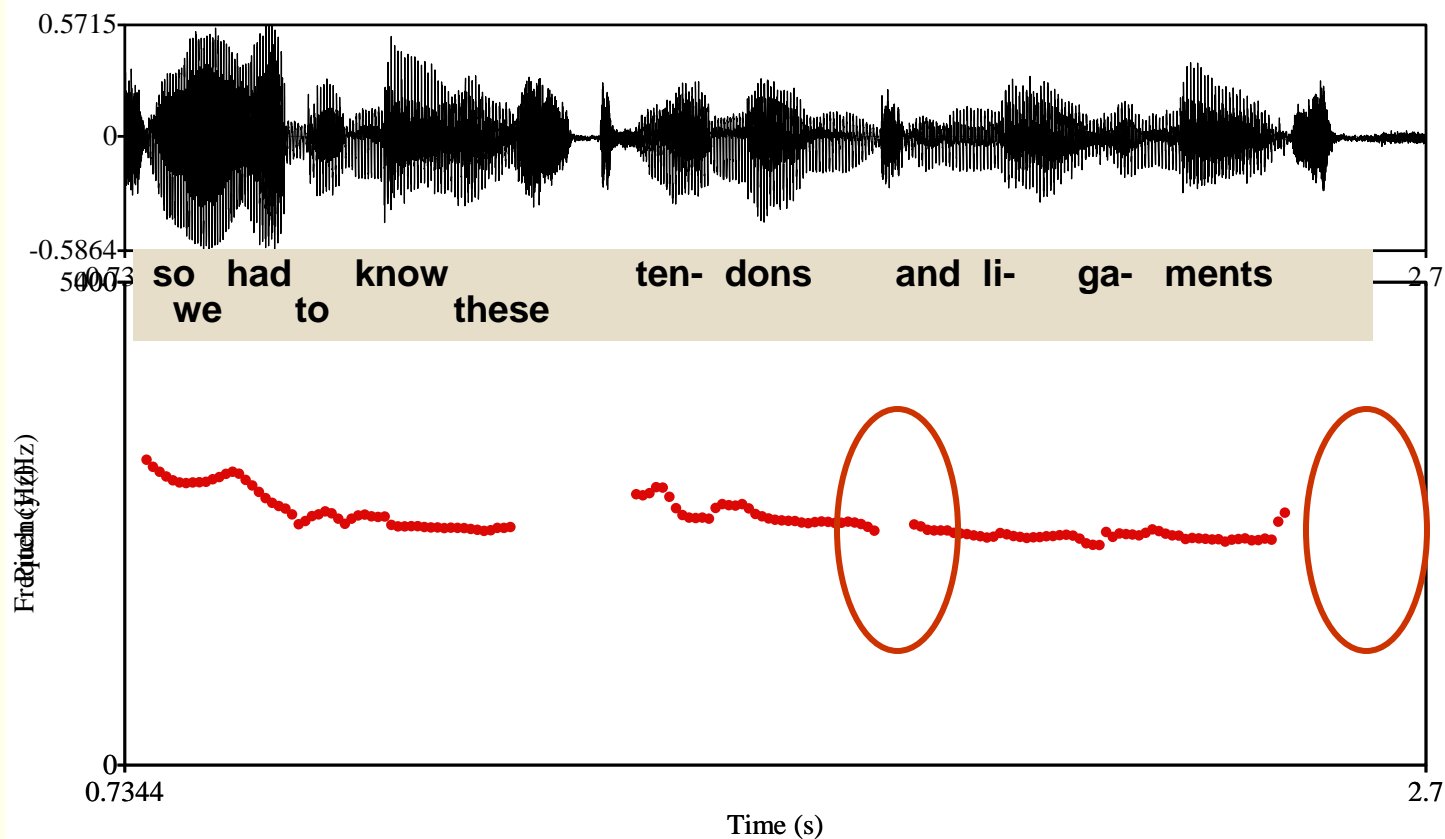
An intonation unit (IU) is a “thought group” or “intonation group” or “tone unit.”

Criteria suggested for the delimitation of an IU are:

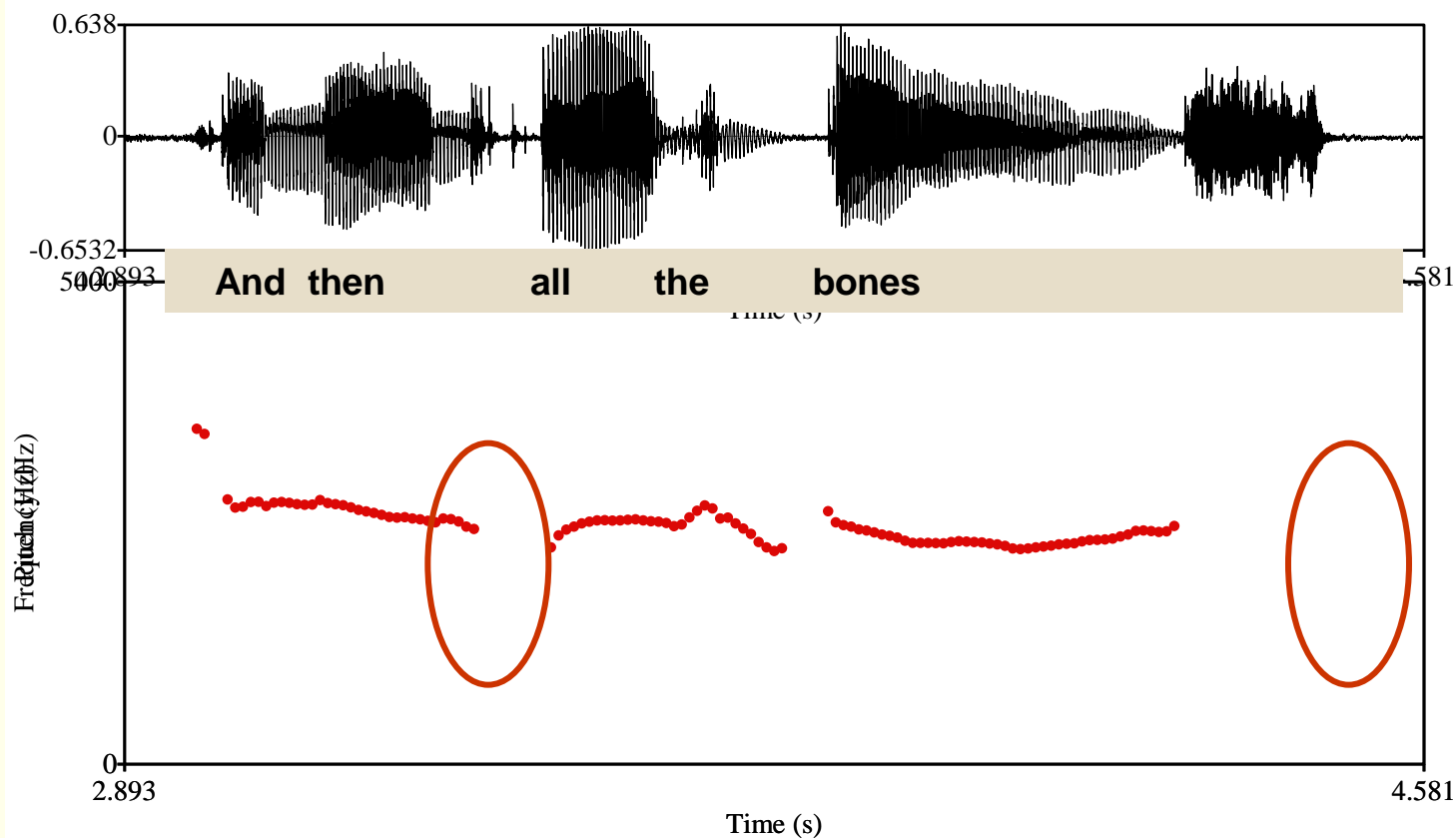
- (1) pause;
- (2) final syllable lengthening or slow speech rate at the end of an IU,
- (3) a following fast speech rate at the beginning of the next IU;
- (4) pitch reset.

Hirschberg & Pierrehumbert (1986)
Avesani & Vayra 1988 and Ayers (1992)

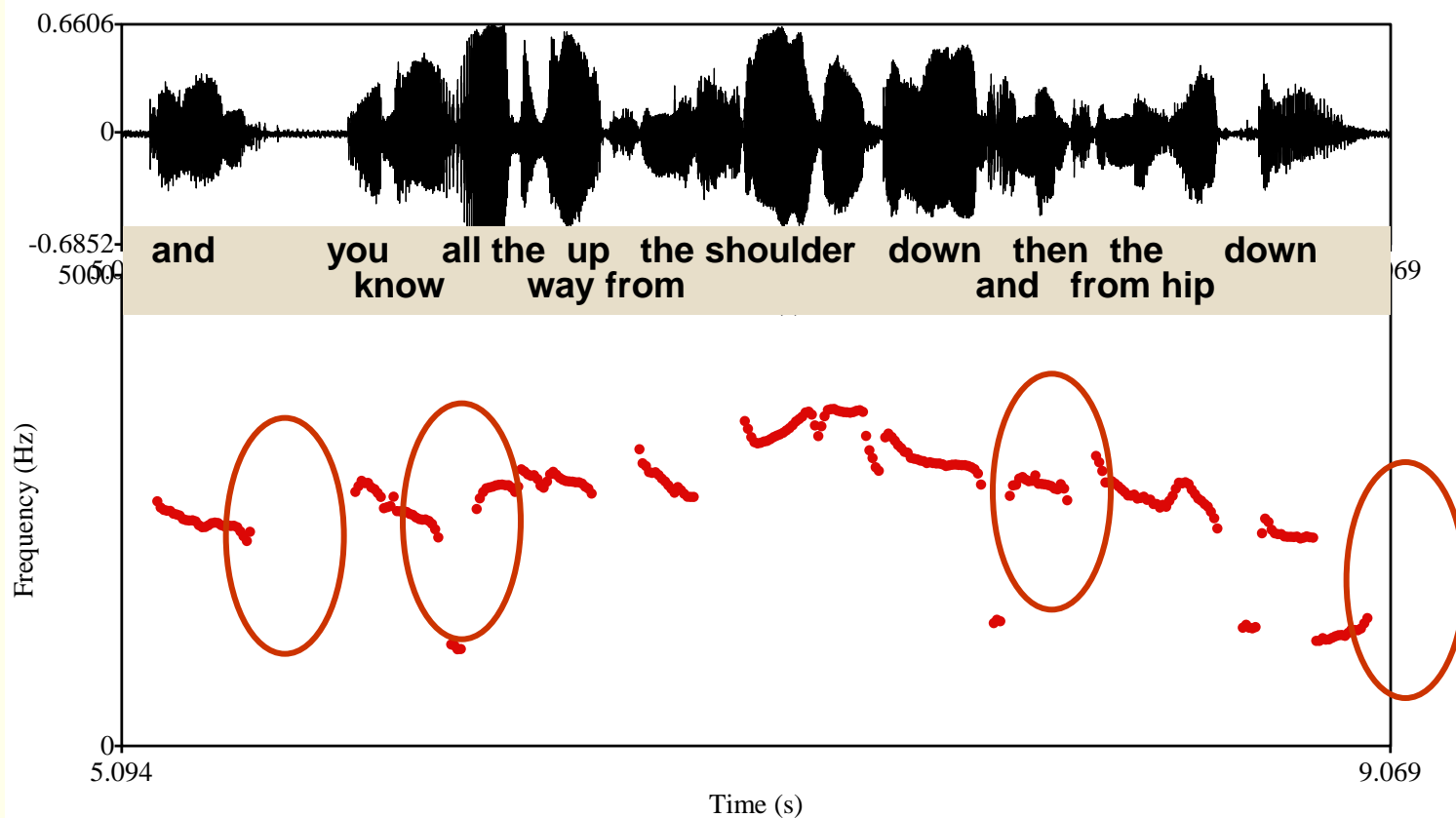
Try to identify the following sample 1



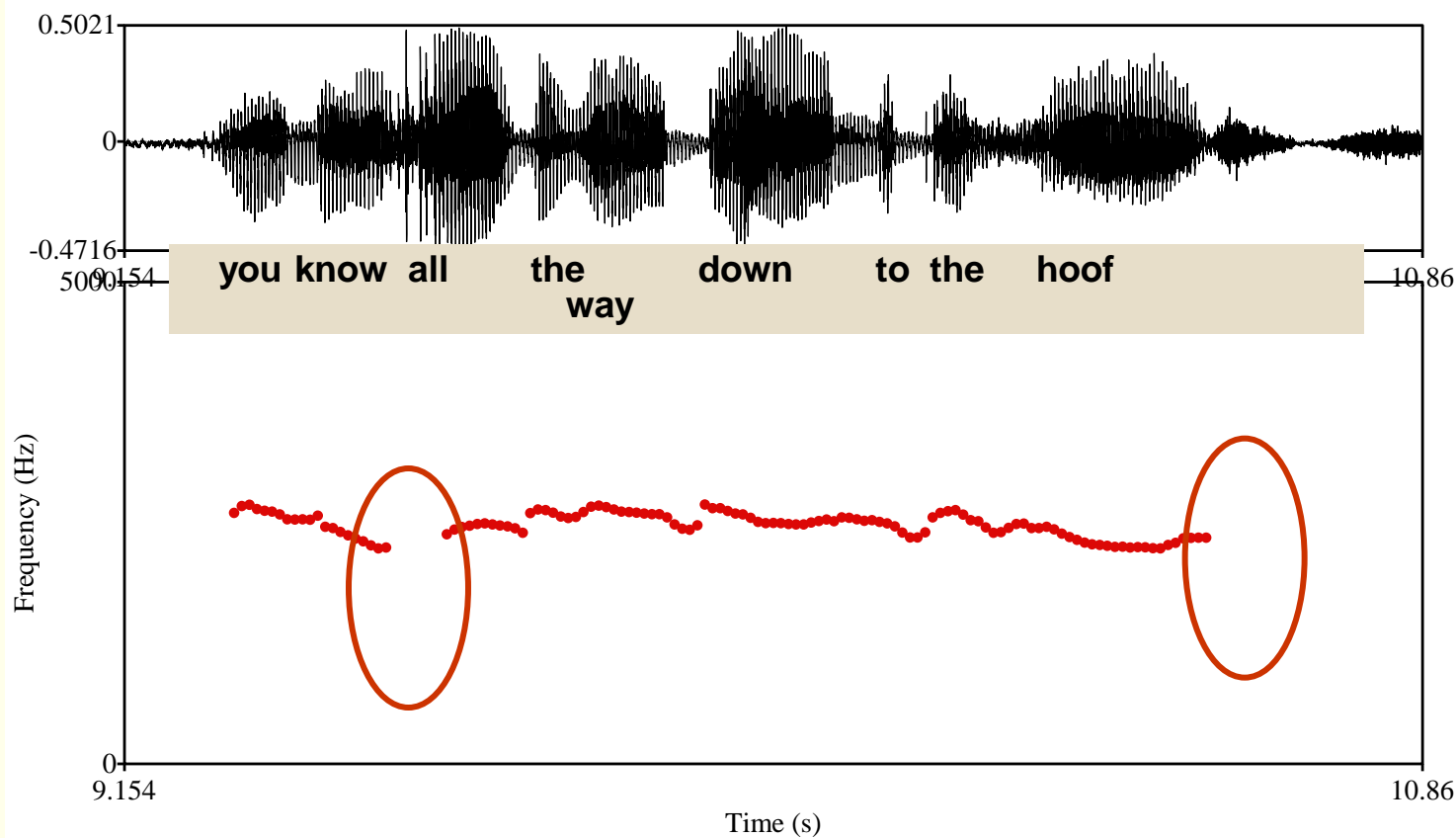
Try to identify the following sample 2



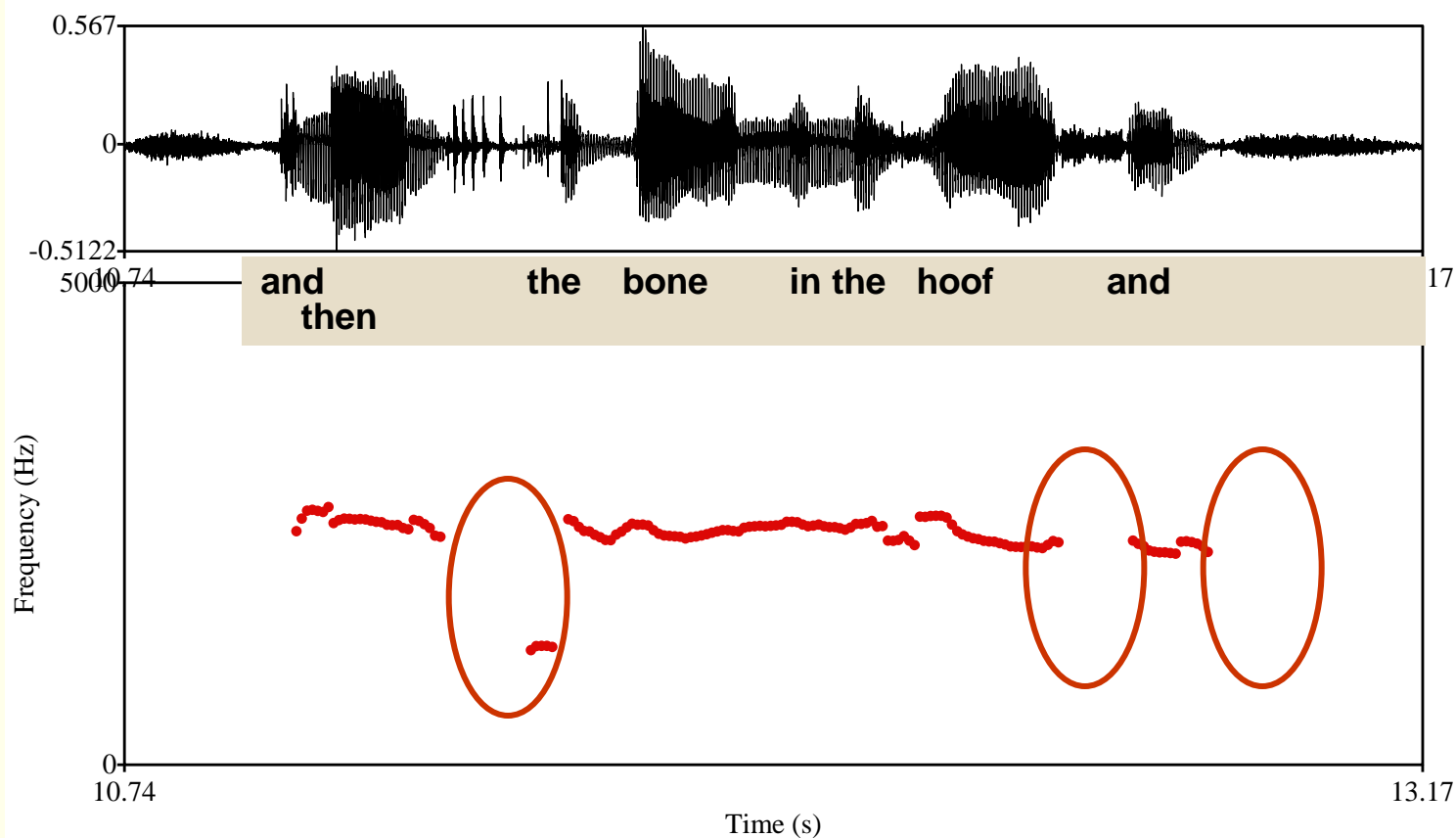
Try to identify the following sample 3



Try to identify the following sample 4



Try to identify the following sample 5





因為那時候校長就是變，哦，院長變成校長，所以就是我要在那邊，就是幫忙這樣子，我說好，然後之後98年2月的時候，秘書室問我要不要去那邊幫忙，我說好，所以我就從教育學院到秘書室，大概一直做到98年……

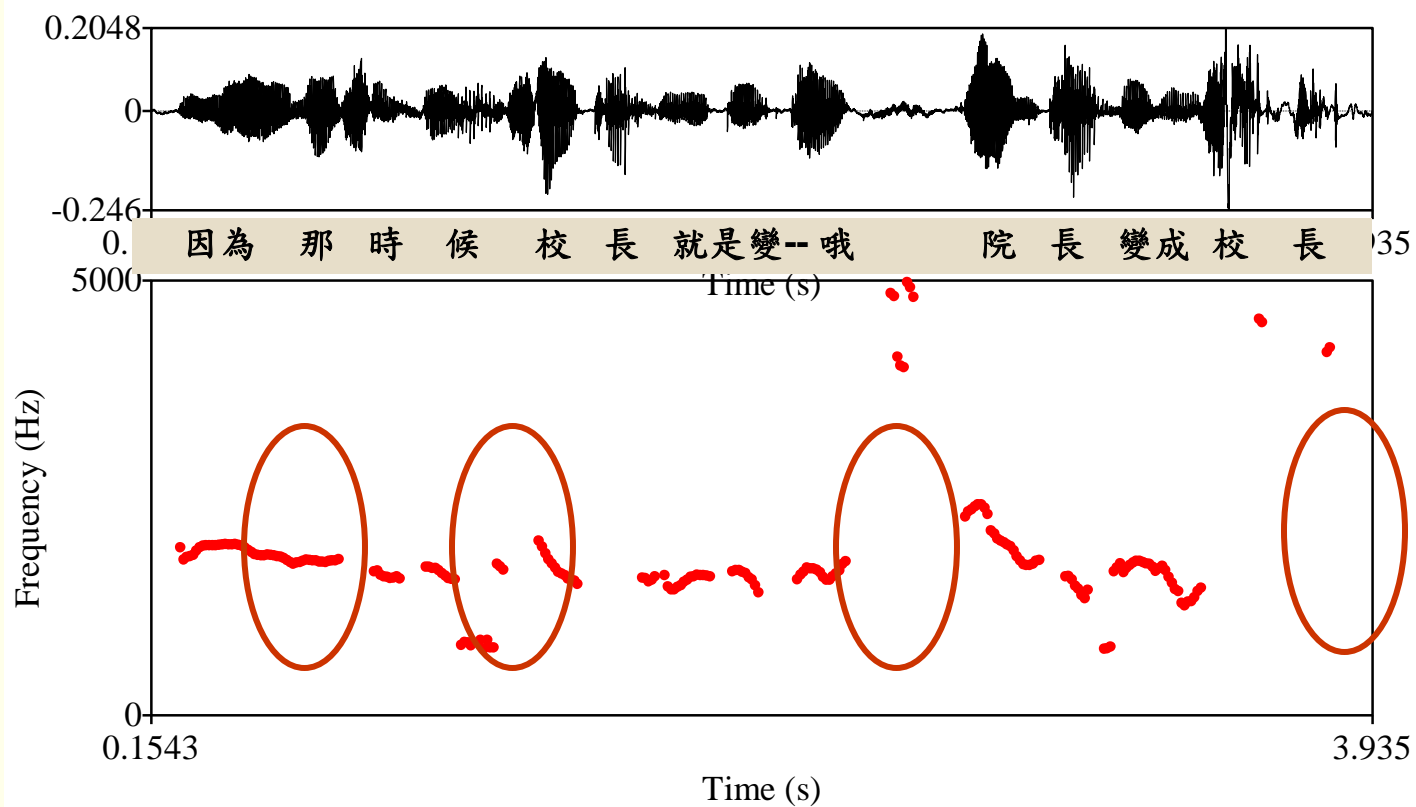


對於學生這一塊我是接觸的比較少，對，所以就是，還在適應，不過我覺得還好，就是至少還有另外一位助教就是Zoe會，反正就是帶著我，然後學校同仁也都認識，就是不懂都可以問，就是……

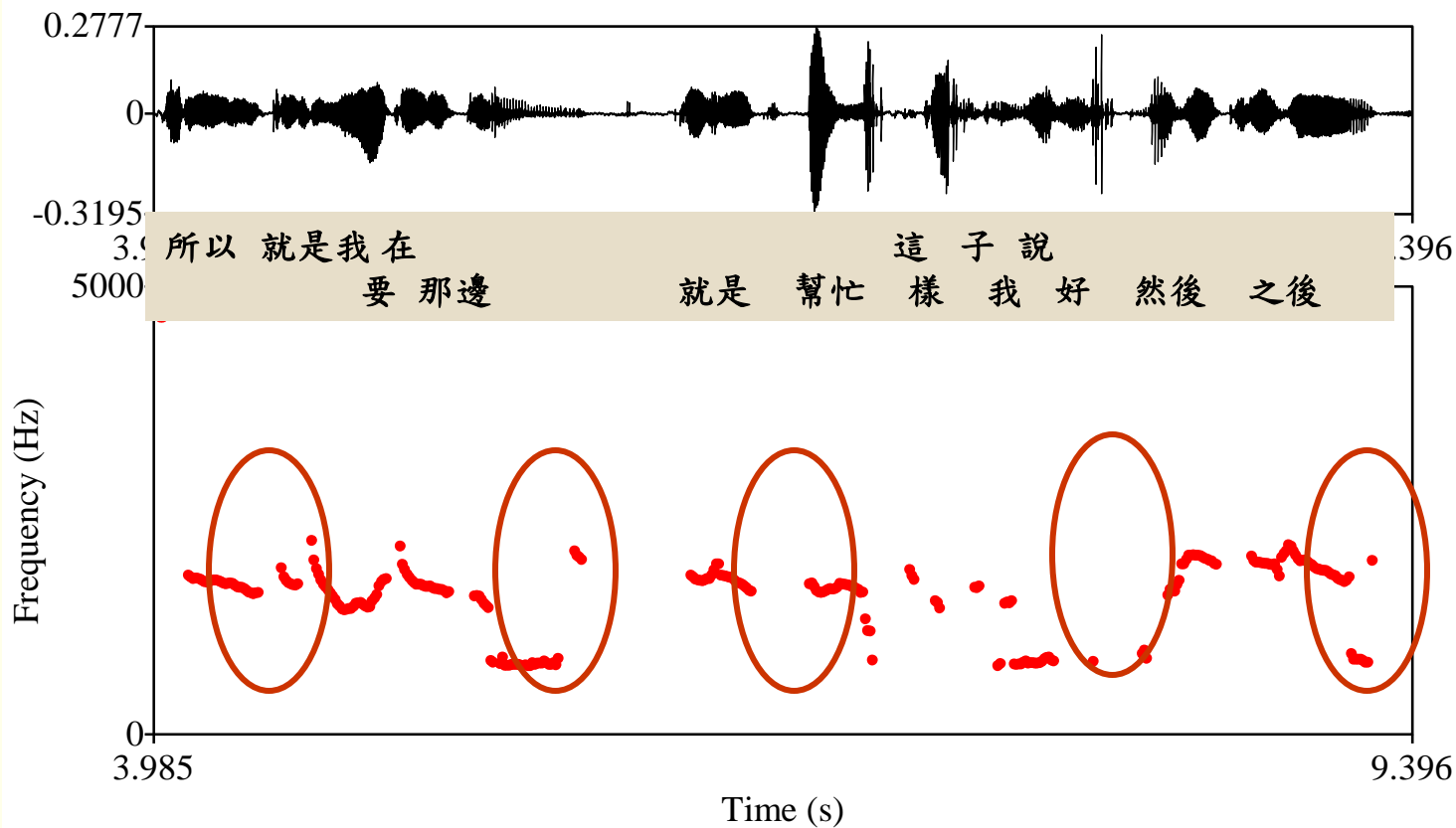


0.225	0.586	因為
0.586	1.245	那時候
1.245	2.331	校長就是變--哦
2.660	3.872	院長變成校長
3.872	4.471	所以
4.471	5.873	就是我要在那邊
6.223	6.698	就是
6.698	8.134	幫忙=這樣子我說好
8.134	9.250	然後=之後
9.848	10.935	98年
10.935	11.718	2月的時候
11.718	13.036	秘書室問我要不要
13.036	14.286	去那邊幫忙我說好
14.690	16.260	所以我就從教育學院
16.260	16.696	到
16.696	17.331	秘書室
18.502	19.153	大概
19.153	20.671	一直做到
20.671	23.420	9=8年

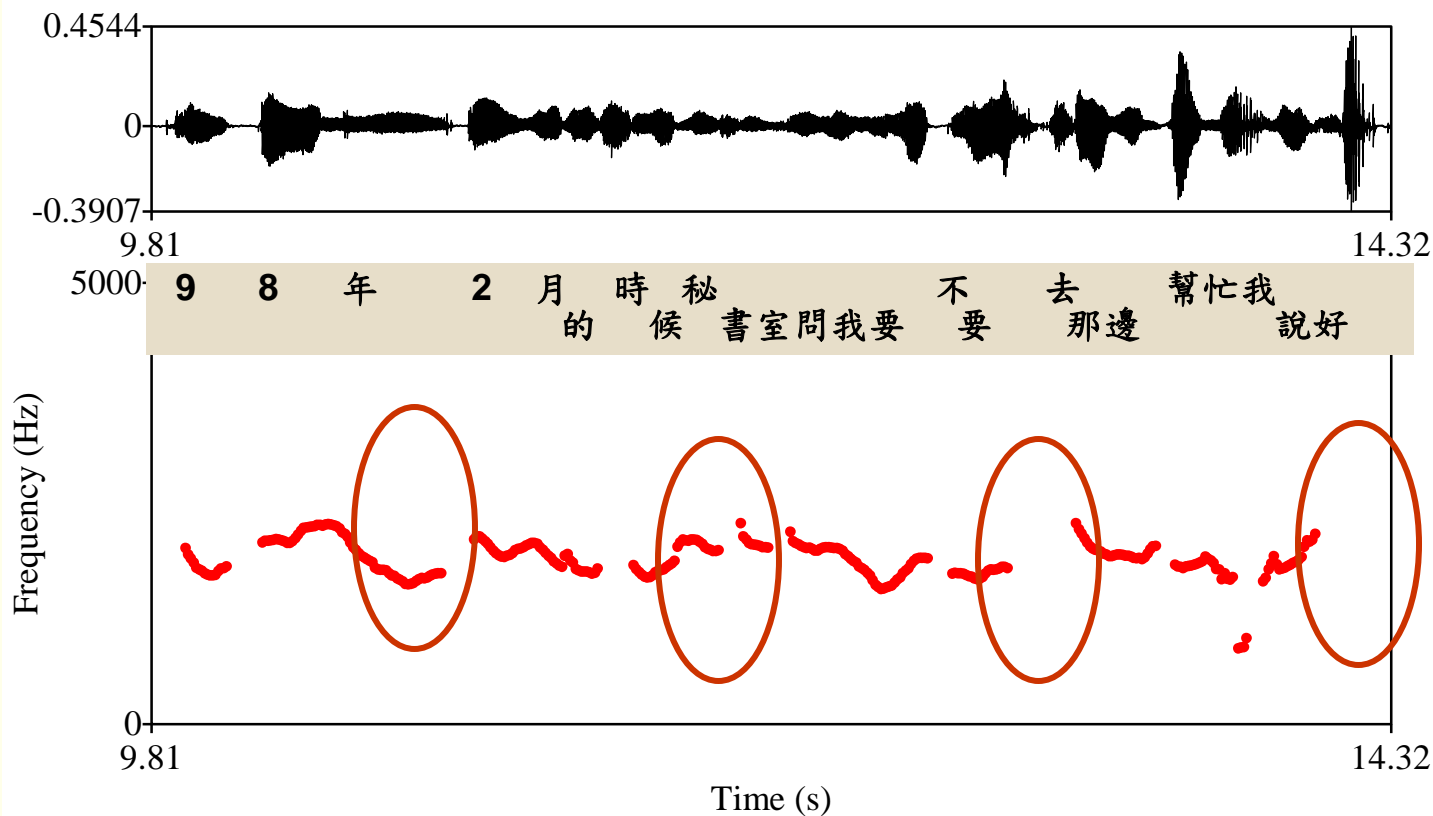
Try to identify the following sample 1



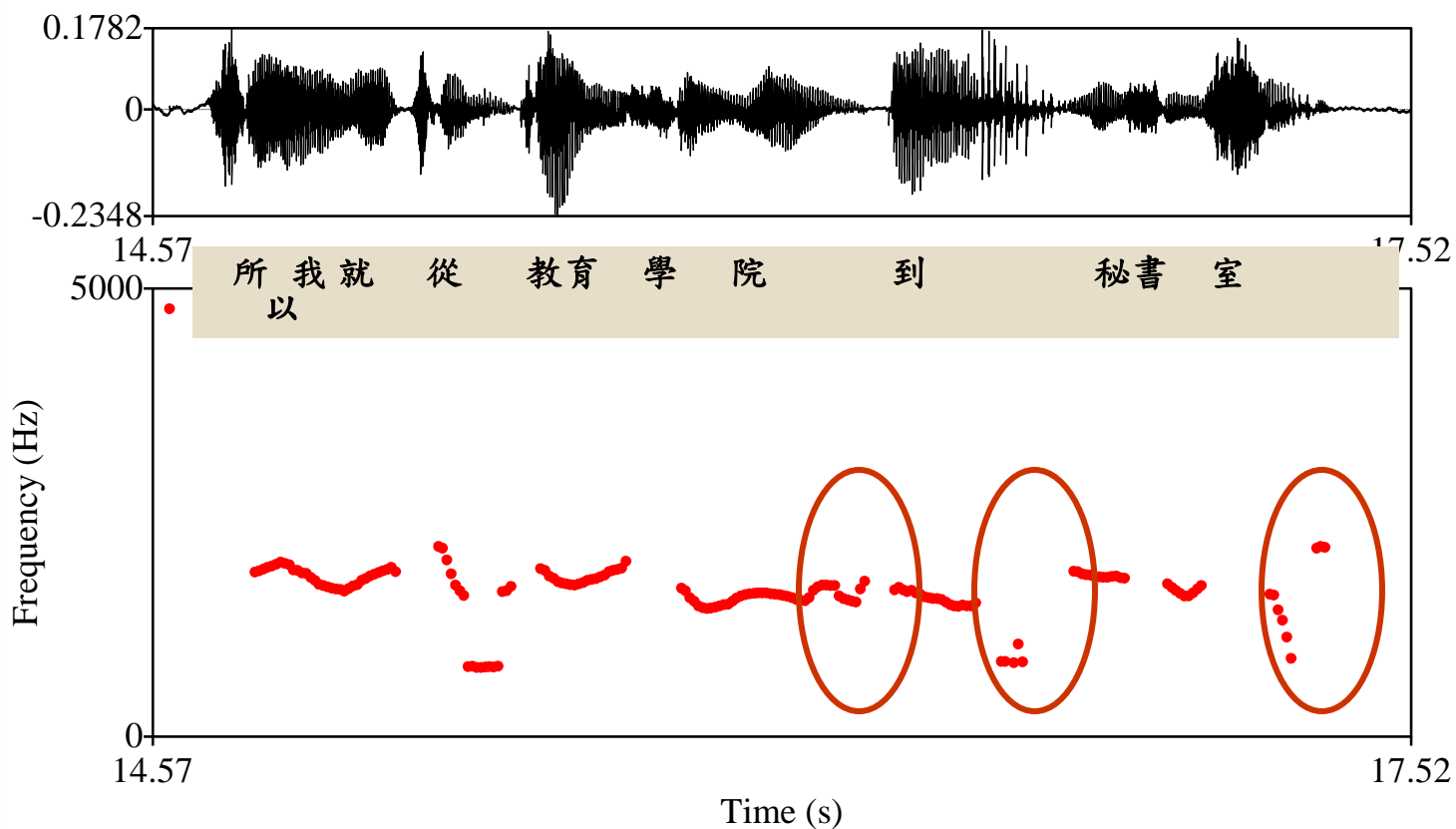
Try to identify the following sample 2



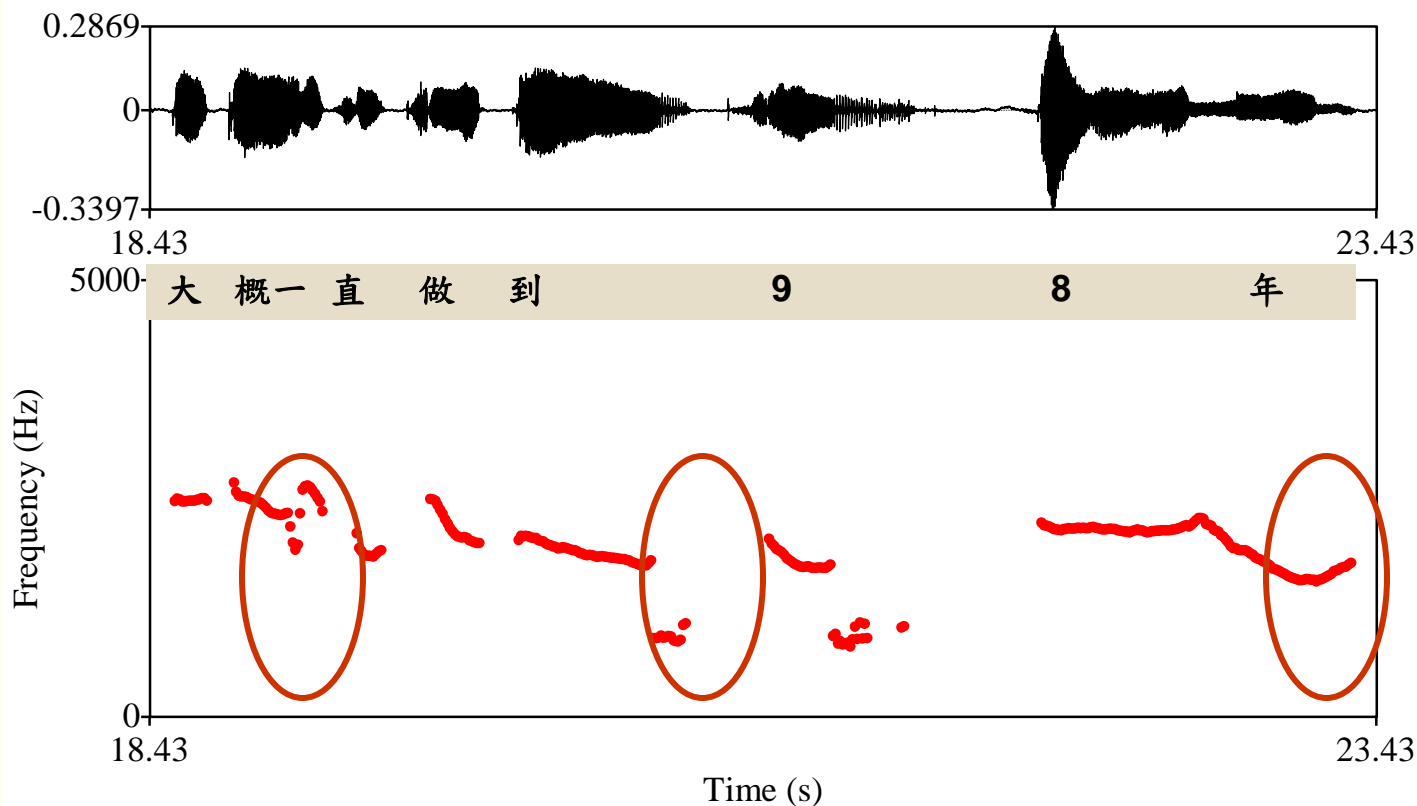
Try to identify the following sample 3



Try to identify the following sample 4



Try to identify the following sample 5

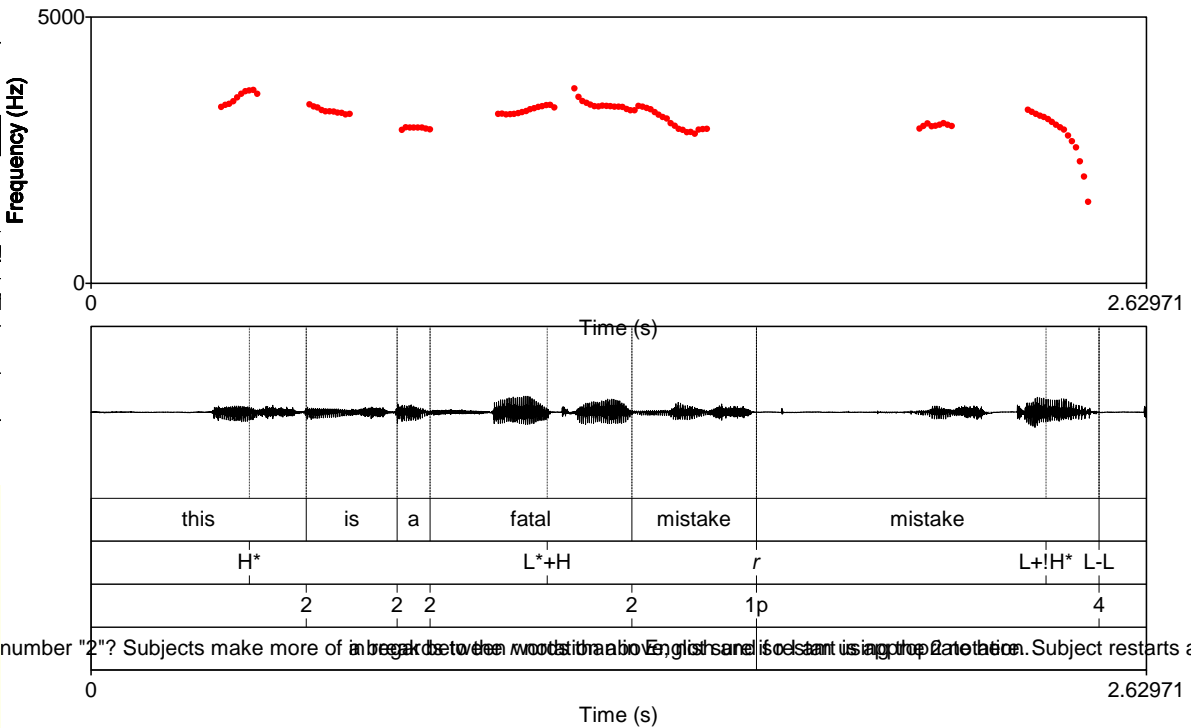
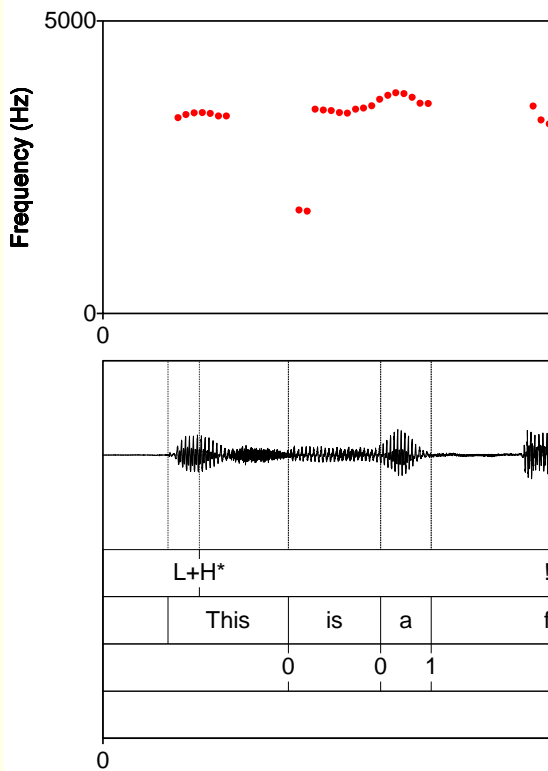


The break Index

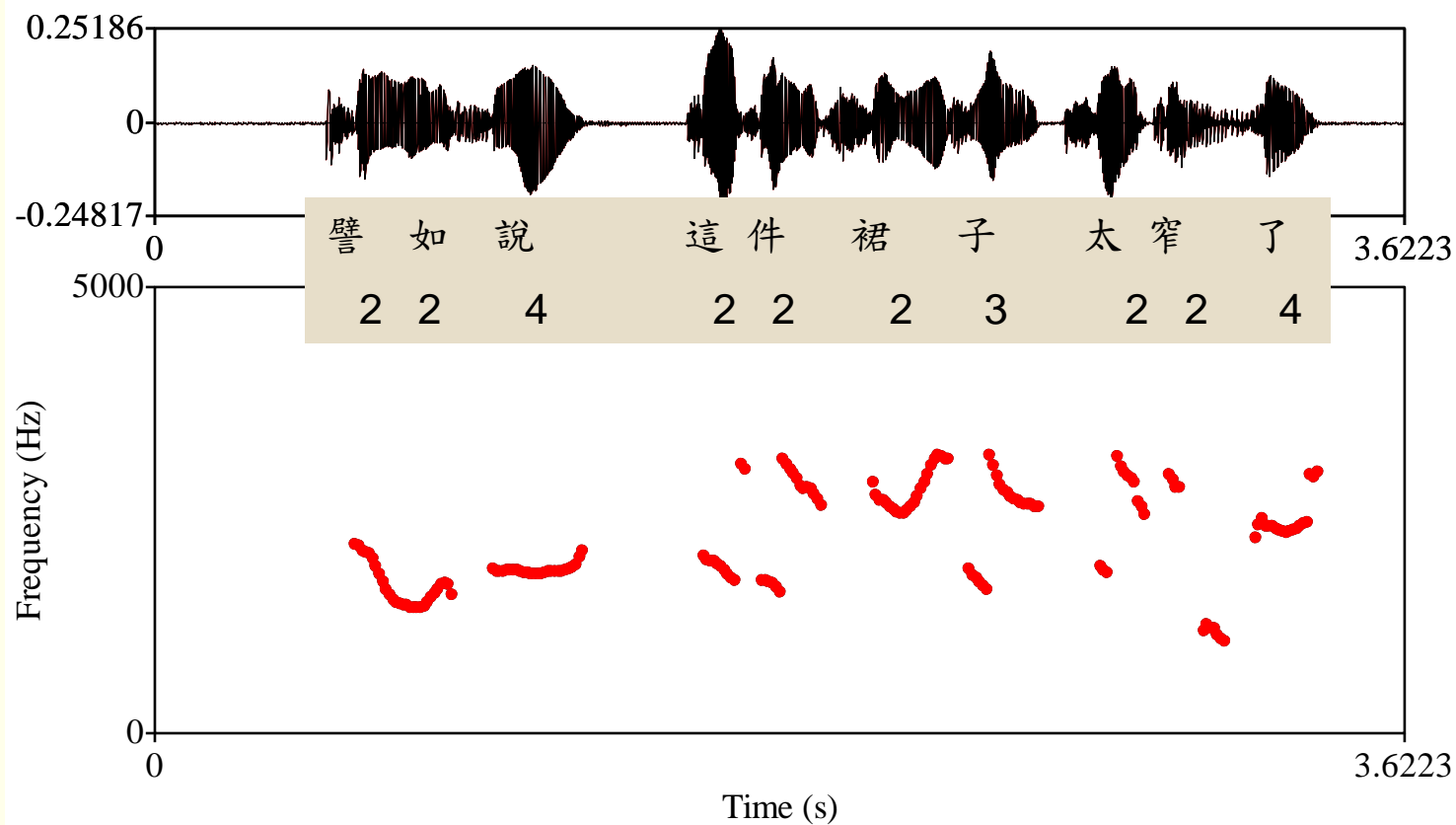
- 0 = no breaks;
- 1 = normal / tight breaks;
- 2 = unacceptable breaks;
- 3 = error;
- 4 = end of the IU (%)

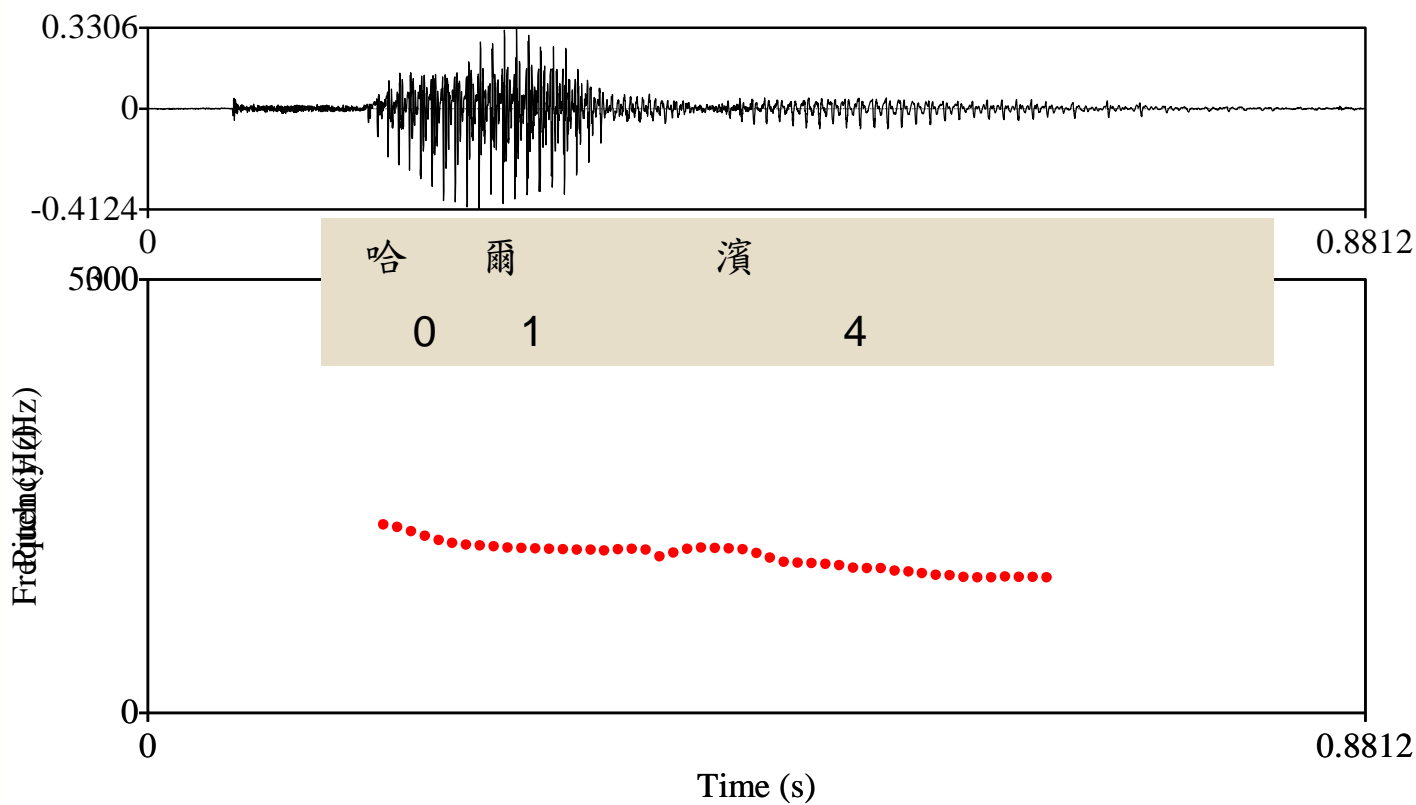
Break index

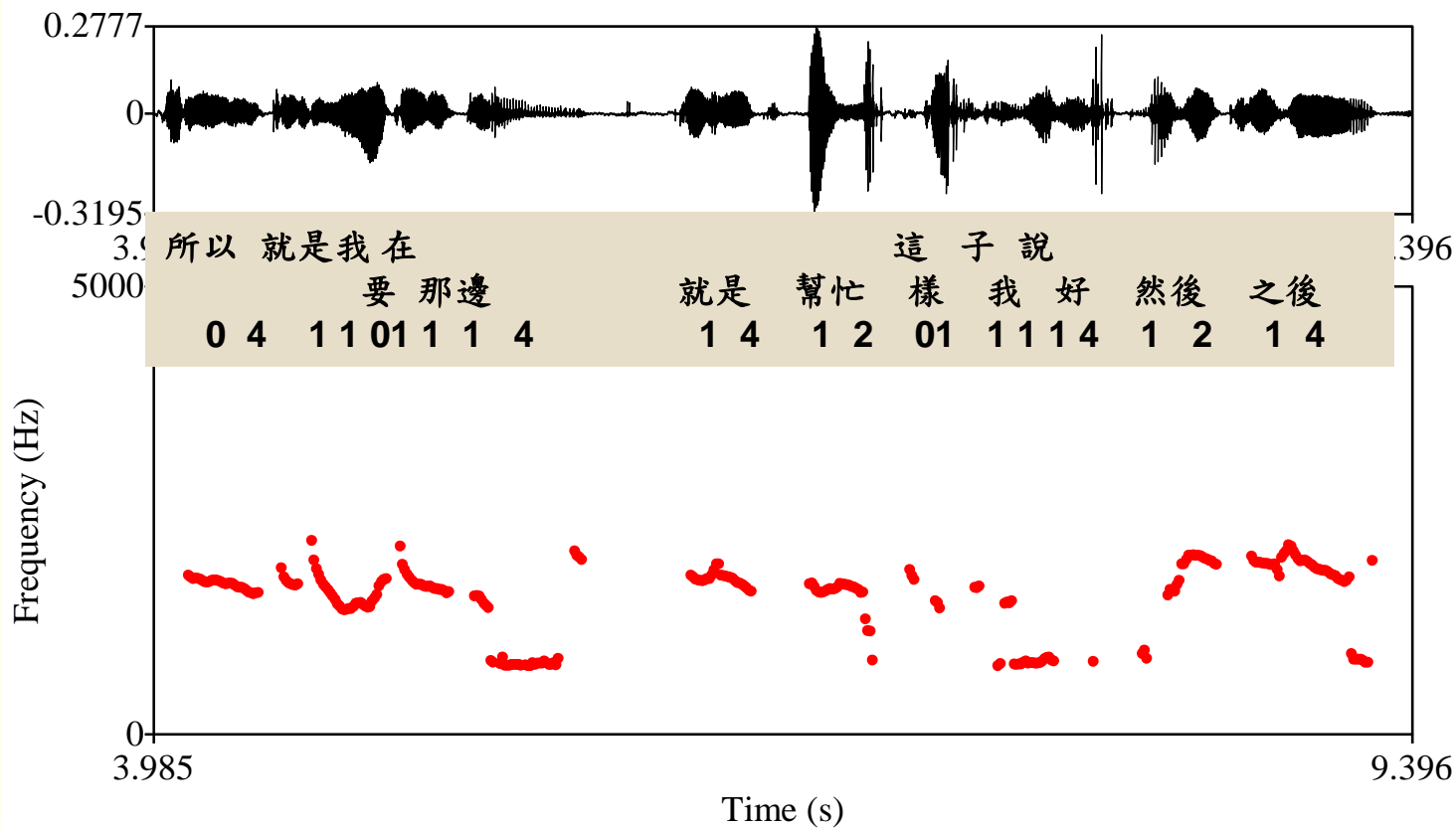
Contrasting the break indexes

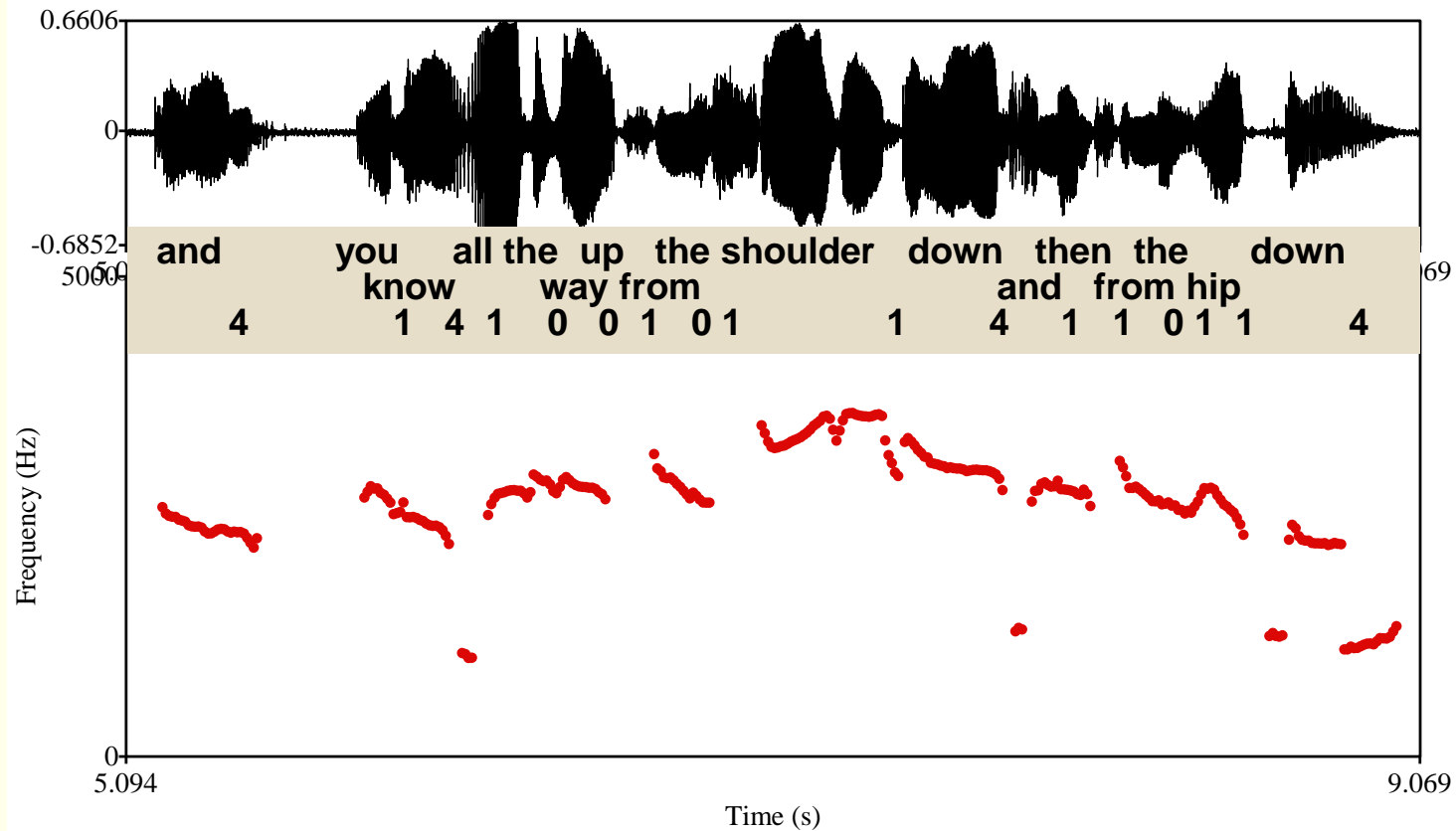


number "2"? Subjects make more of a break between words than in English and is not as important for the latter. Subject restarts at sar









1. Vowels that follow /i/ [Chart 1](#); [Chart 2](#)



reality

be active

playoff

pay off

triangle

my ankle

annoyance

the boy and me

2. Vowels that follow /u/ [Chart 1](#); [Chart 2](#); [Chart 3](#)



fluid

do it

snowy

go out

flour

how is it

newest

a few apples



1. I can't see **e** it
three **e** others
stay **a** awake
pay **e** everything
tea **a** and coffee



2. too **o** often
there is no **a** answer
Who **o** is it?
two **a** apples
let's go **o** out
so **e** easy



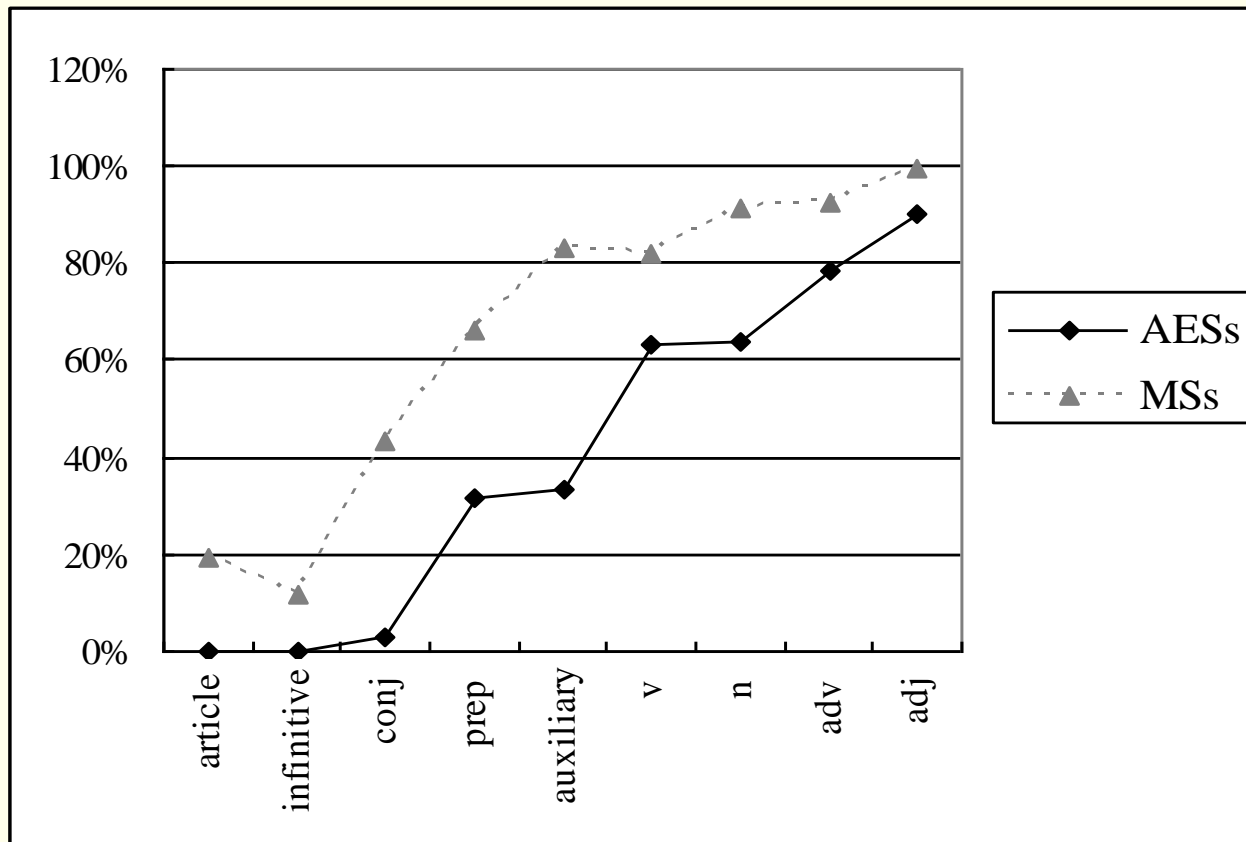
- 3.
1. He's stud**y**ing with the radio **o**n.
 2. This section of town was prev**i**ously an industrial are**a**.
 3. His exper**i**ence in politics makes him a super**i**or negot**i**ator.
 4. The p**i**anist quickly realized the p**i**ano needed tuning.
 5. He's ob**v**iously a cre**a**tive person.

The pitch accent

- (1) Native speakers of English may have very different “concepts” or “habits” of where to put their pitch accents when they speak English.
- (2) Results of the study: AESs and MSs differ significantly in putting their pitch accents on different parts of the words ($t = -5.37$, $p < 0.01$).

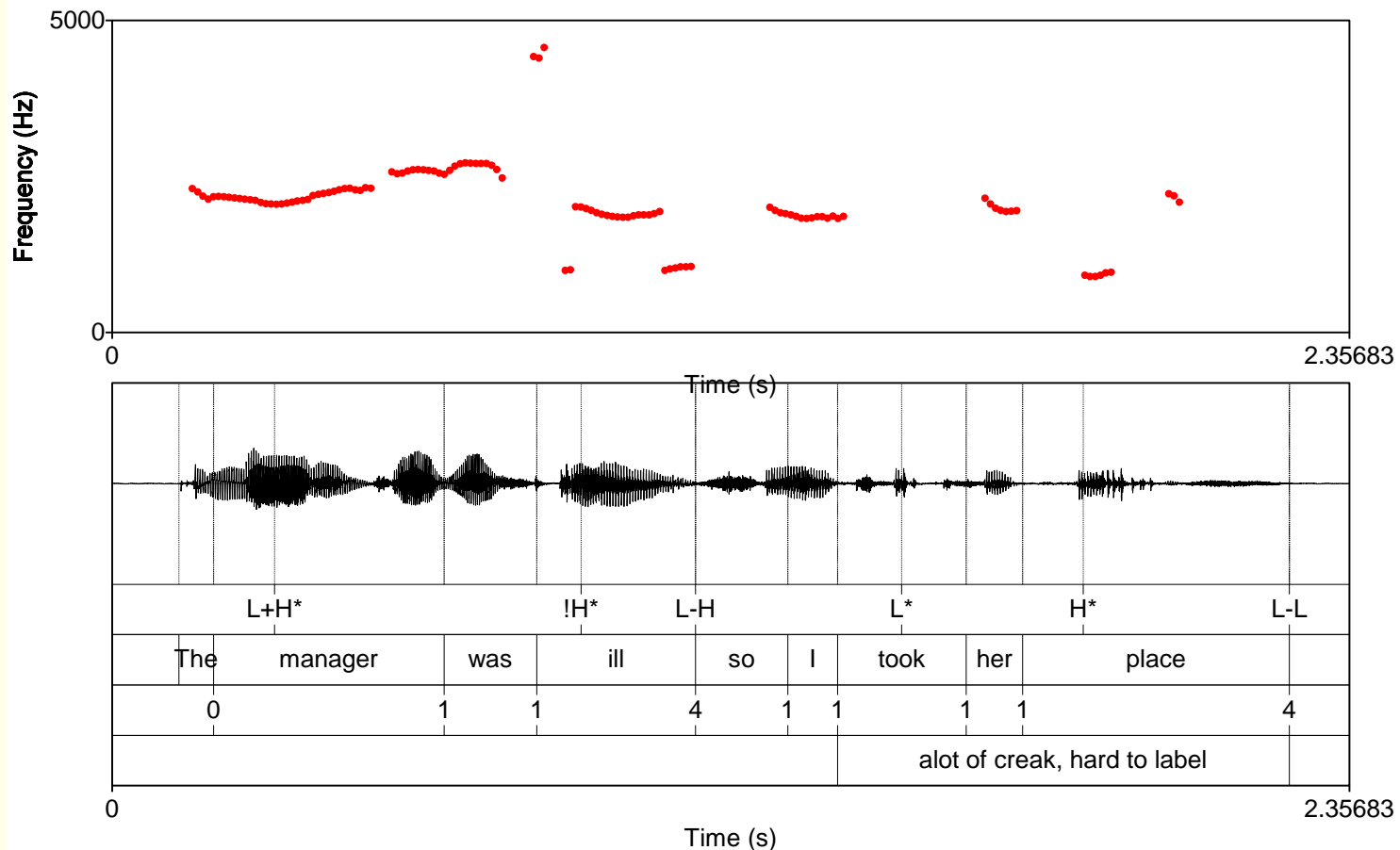
	AESs		MSs
article	0	infinitive	0.12
infinitive	0	article	0.20
conj	0.03	conj	0.43
prep	0.32	prep	0.66
auxiliary	0.33	v	0.82
v	0.63	auxiliary	0.83
n	0.64	n	0.91
adv	0.78	adv	0.92
adj	0.90	adj	1

This figure shows a clear discrepancy between American English speakers and Mandarin speakers in where to put pitch accents.



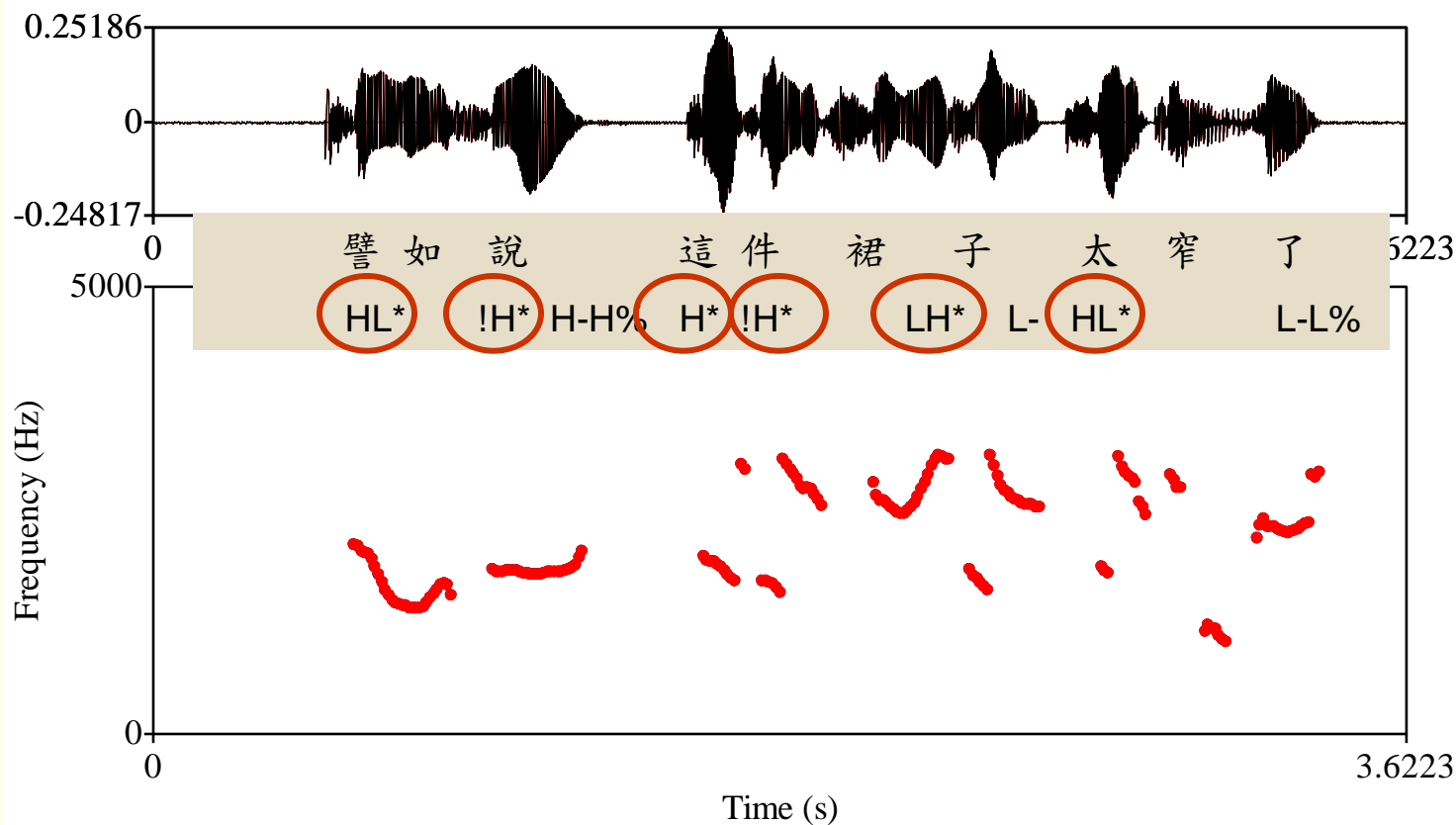
Pitch

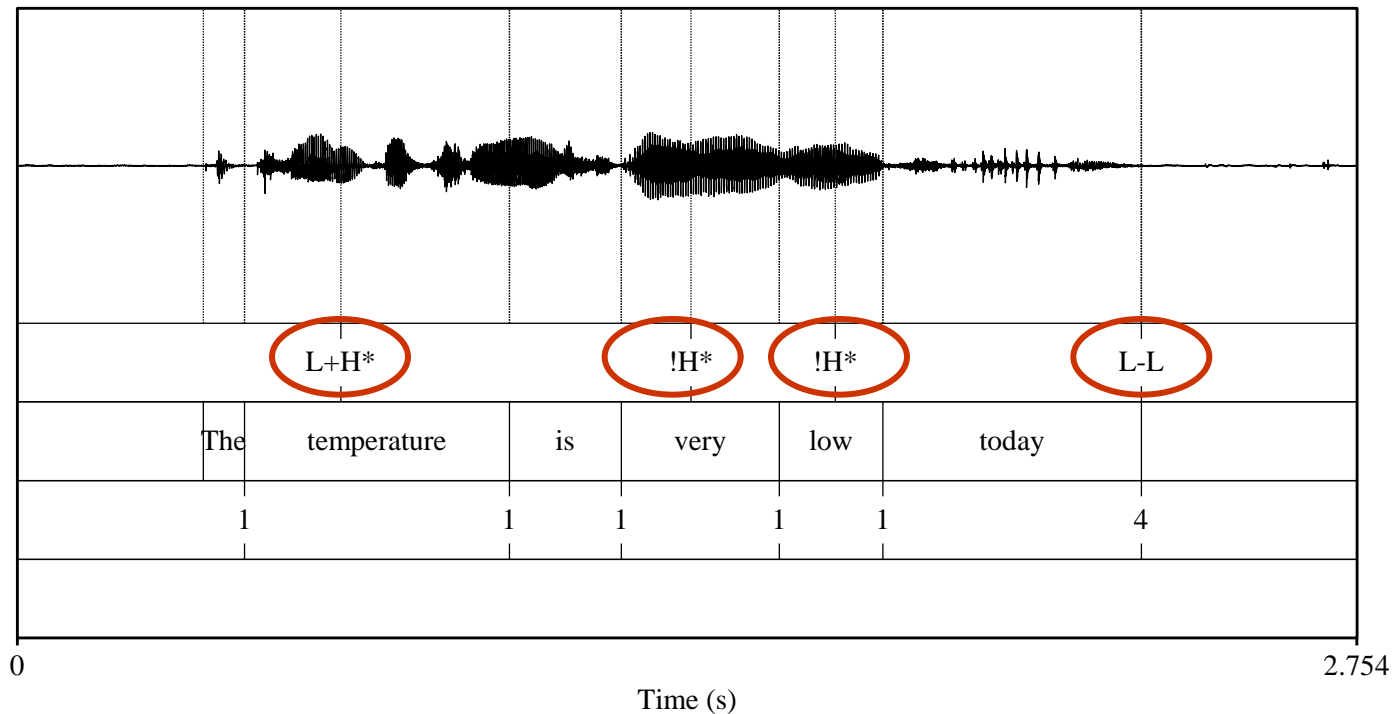
How to locate the pitch accent (English)

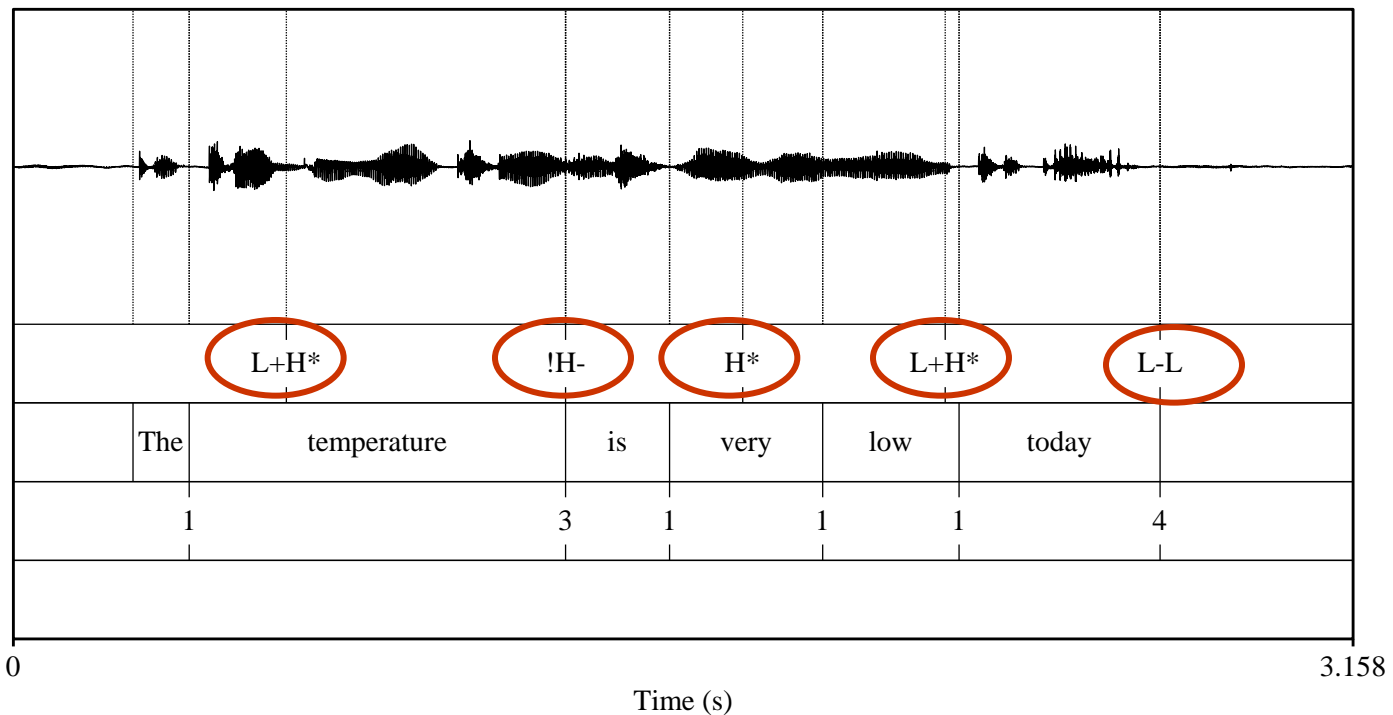


Pitch

How to locate the pitch accent (Mandarin)

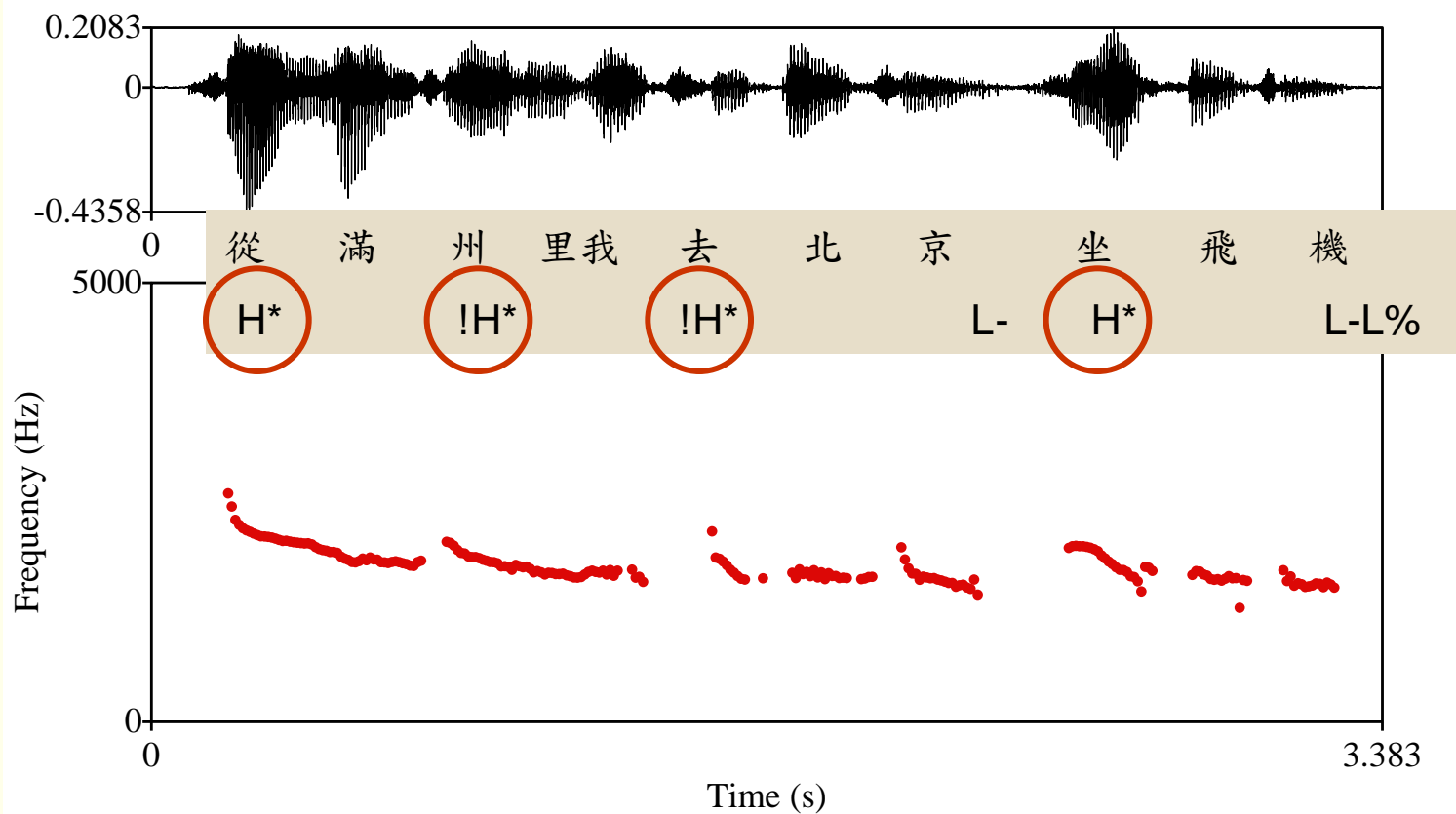






Pitch

An Mandarin learner's pitch accent

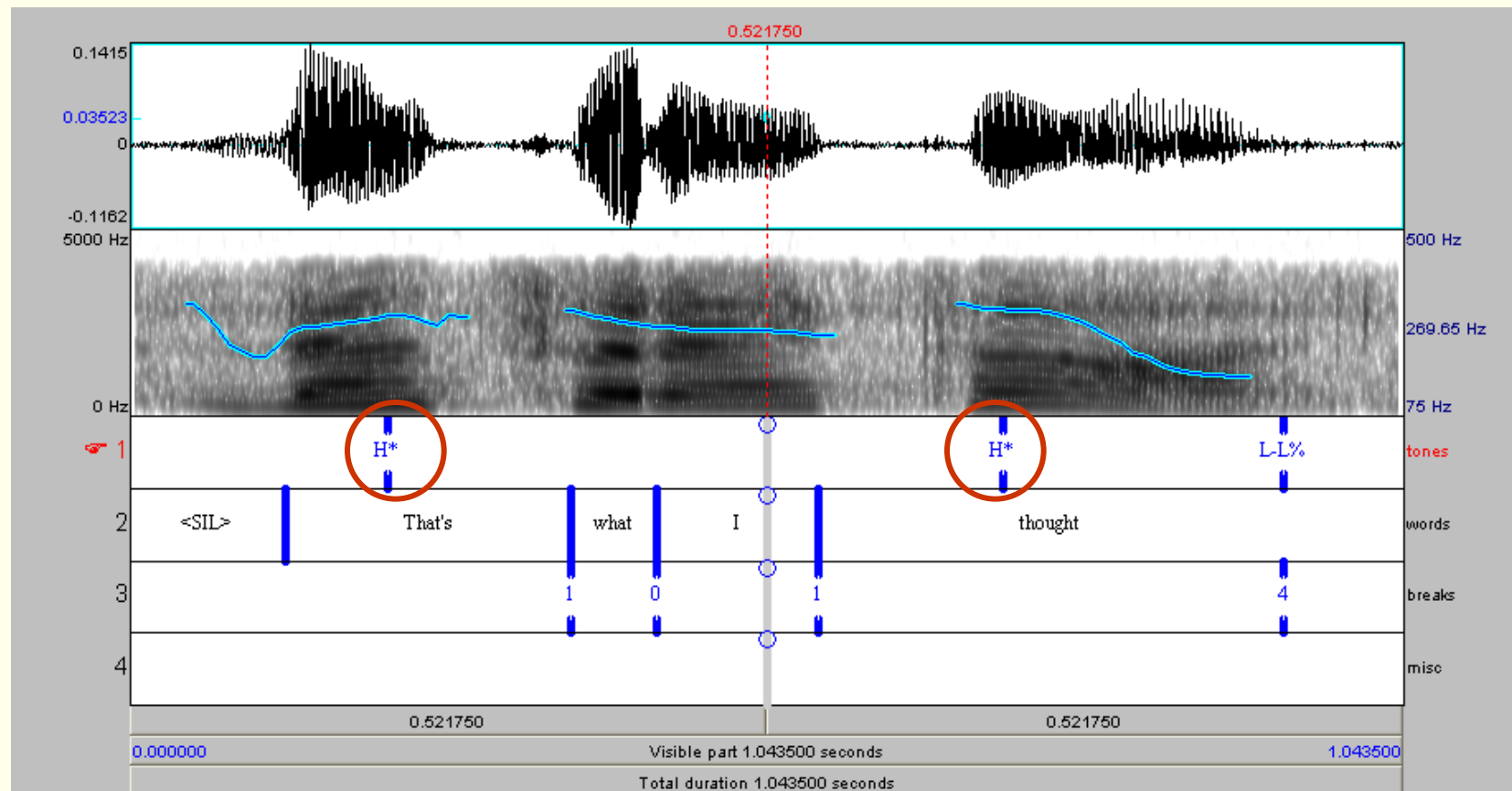


Speakers of English produce certain words in an utterance with special intonational prominence. These *pitch-accented* words typically are realized with increased duration, intensity, and/or fundamental frequency (F_0).

Duration > intensity / fundamental frequency

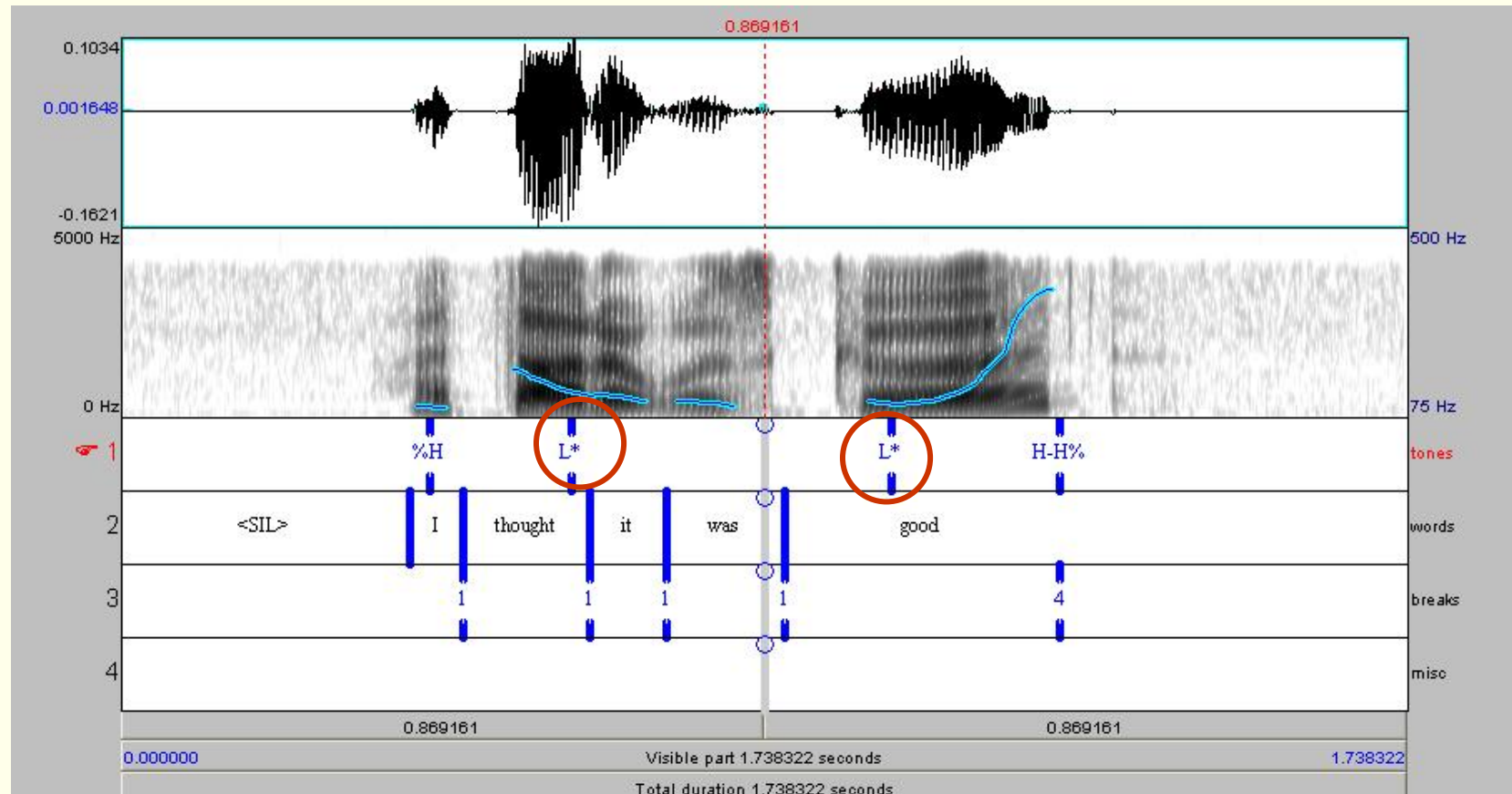
Pitch

Various types of pitch accents



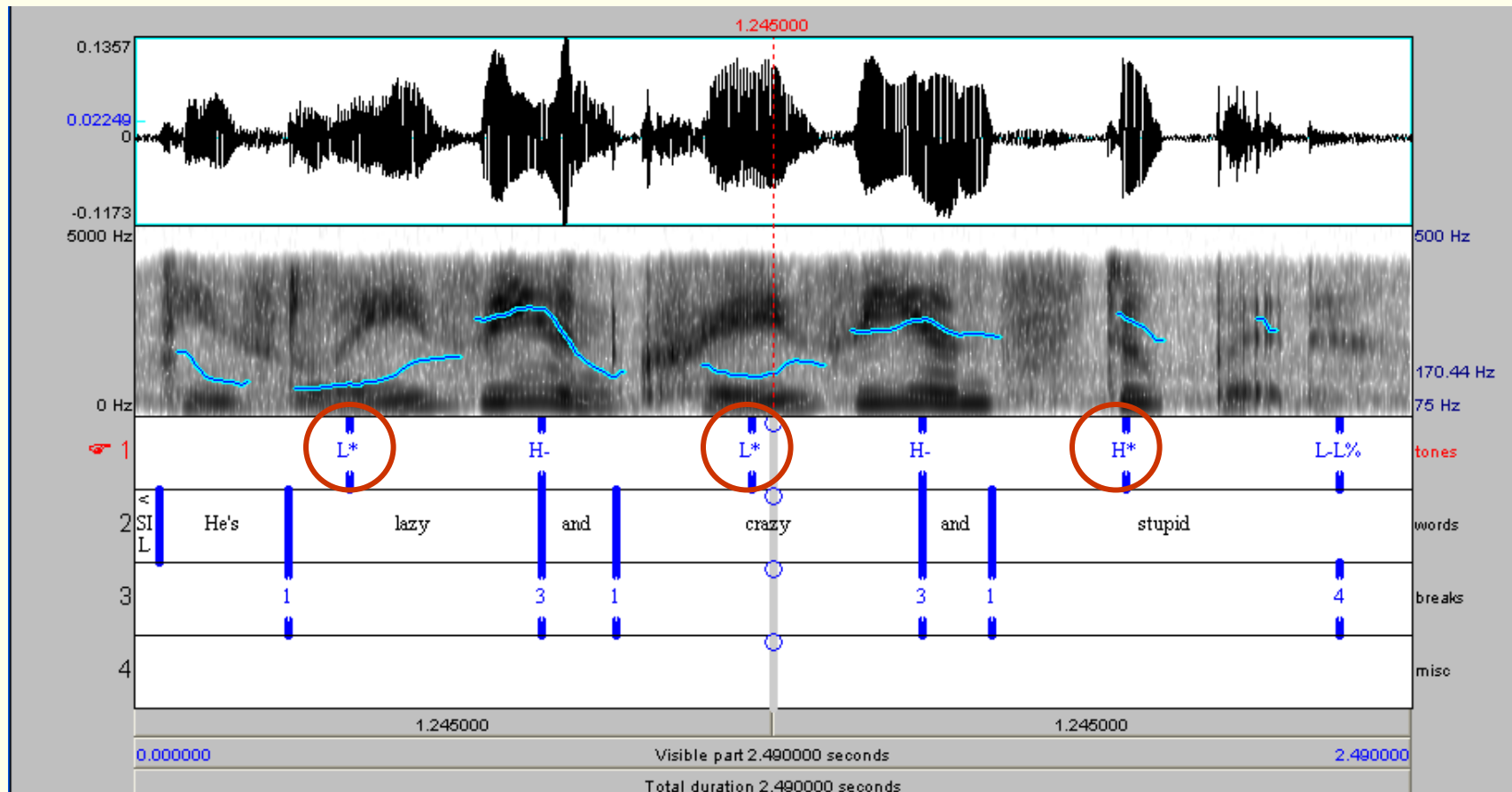
Pitch

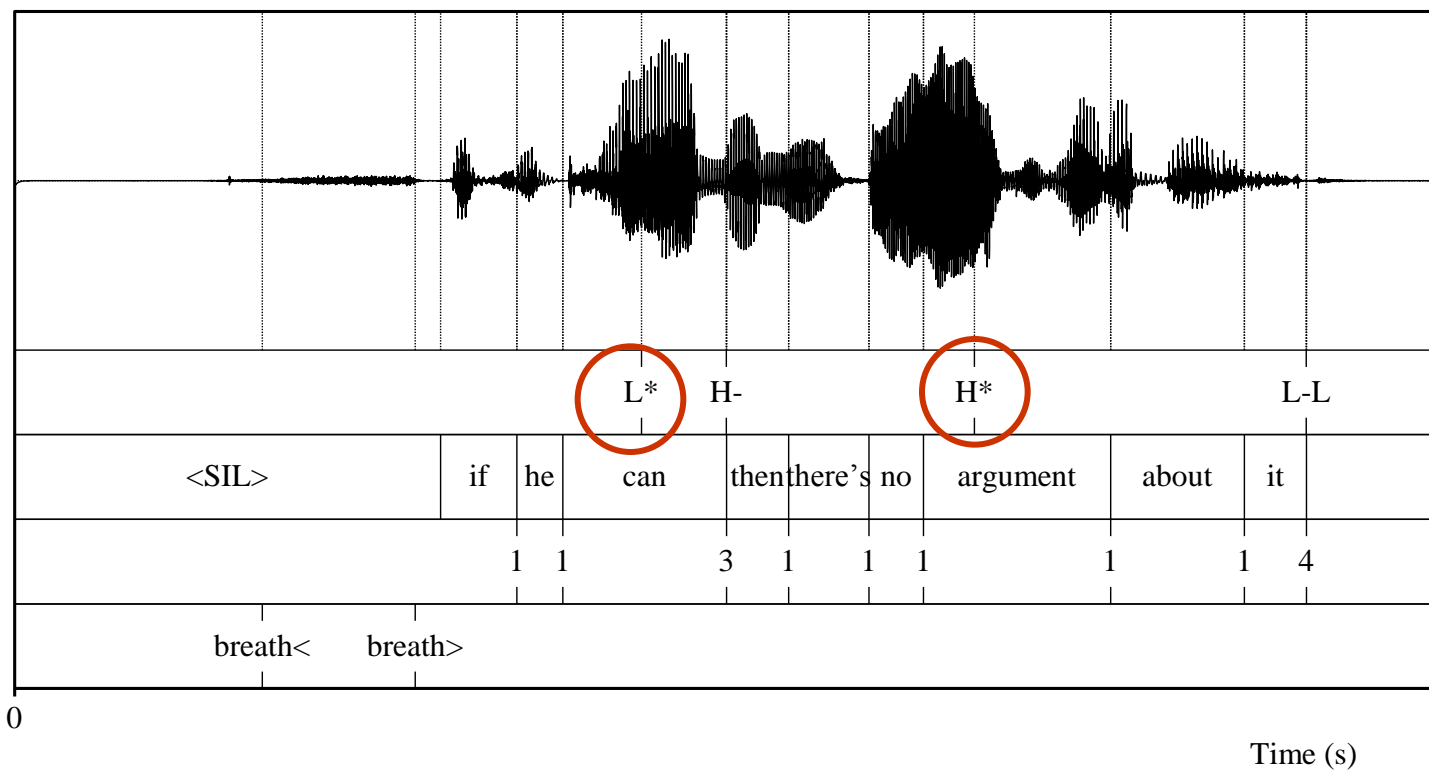
Various types of pitch accents

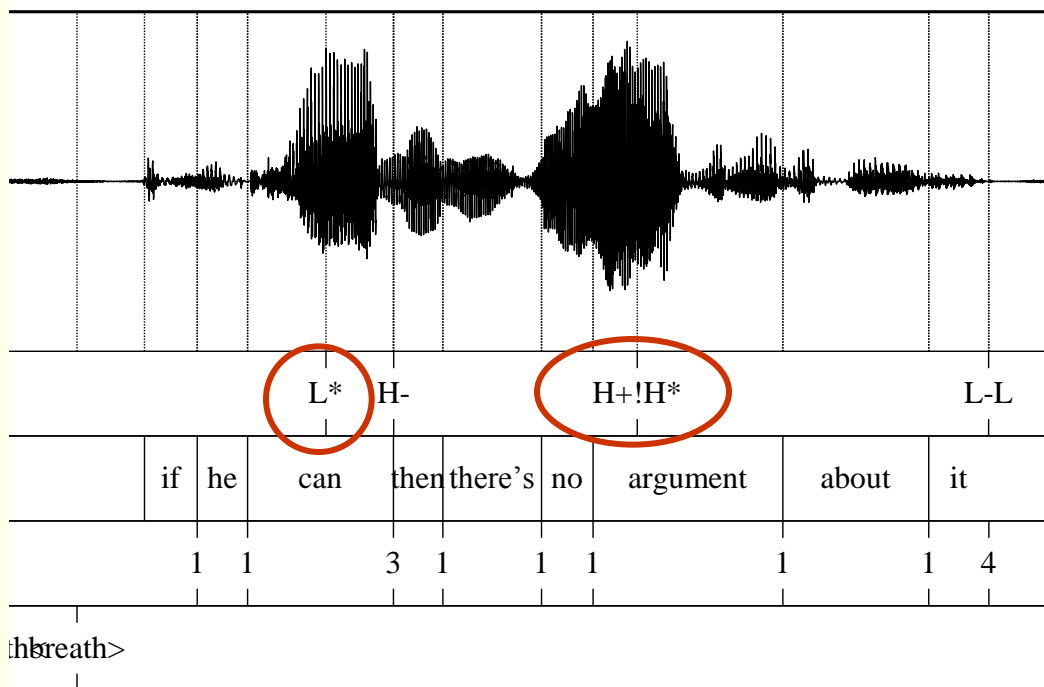


Pitch

Various types of pitch accents



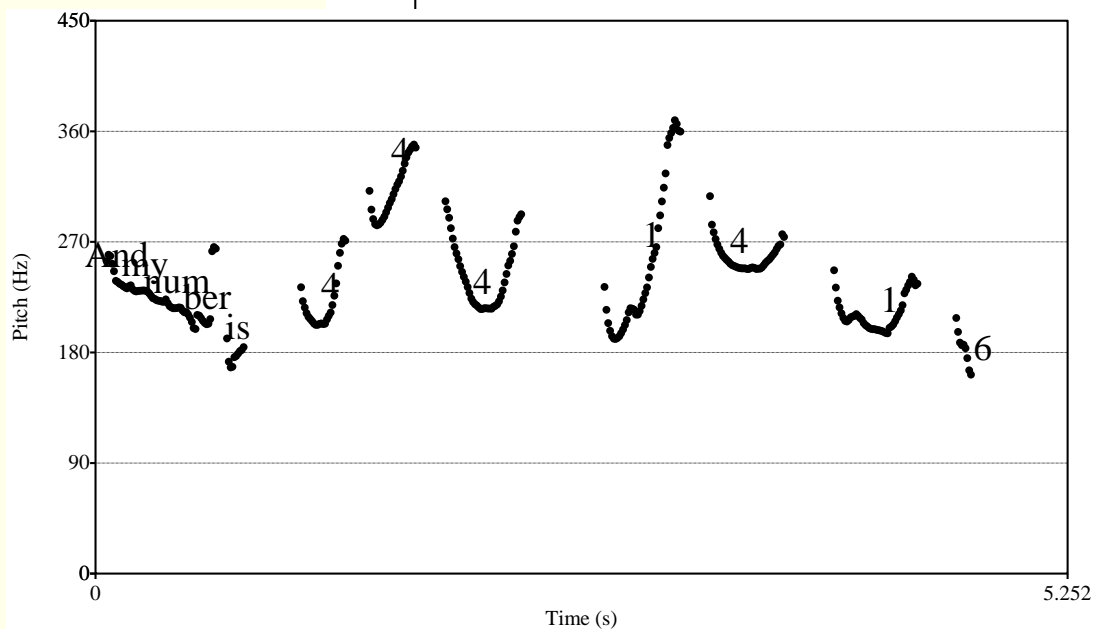
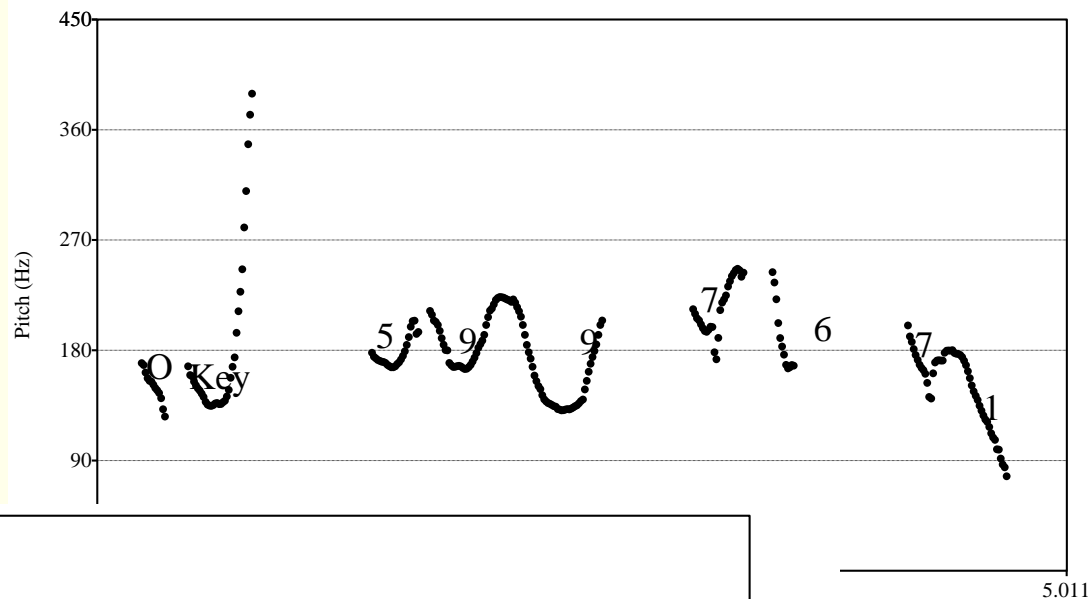




5

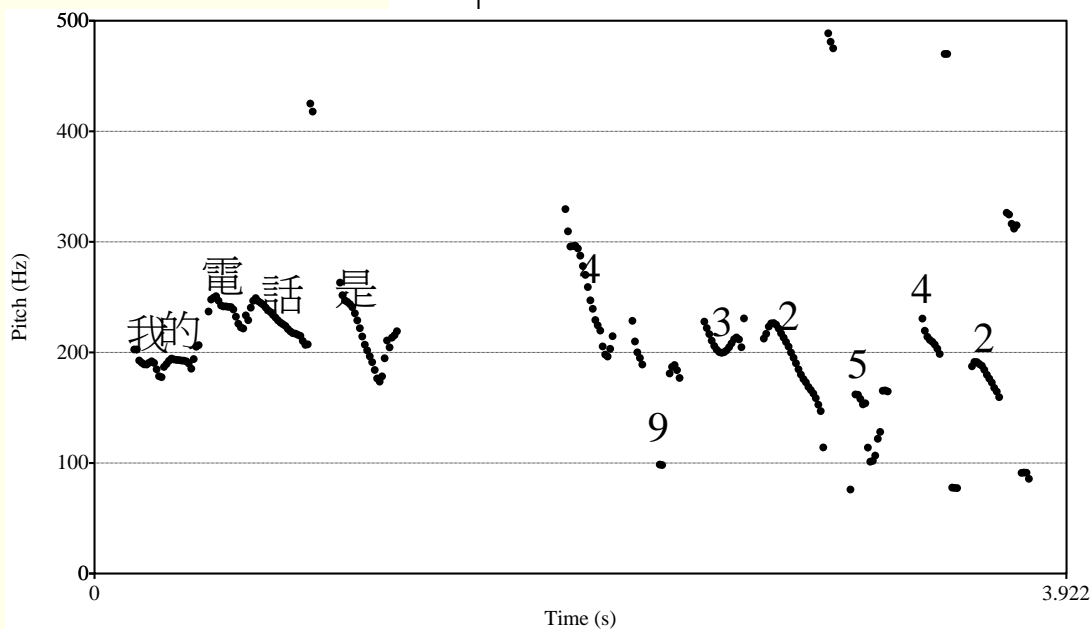
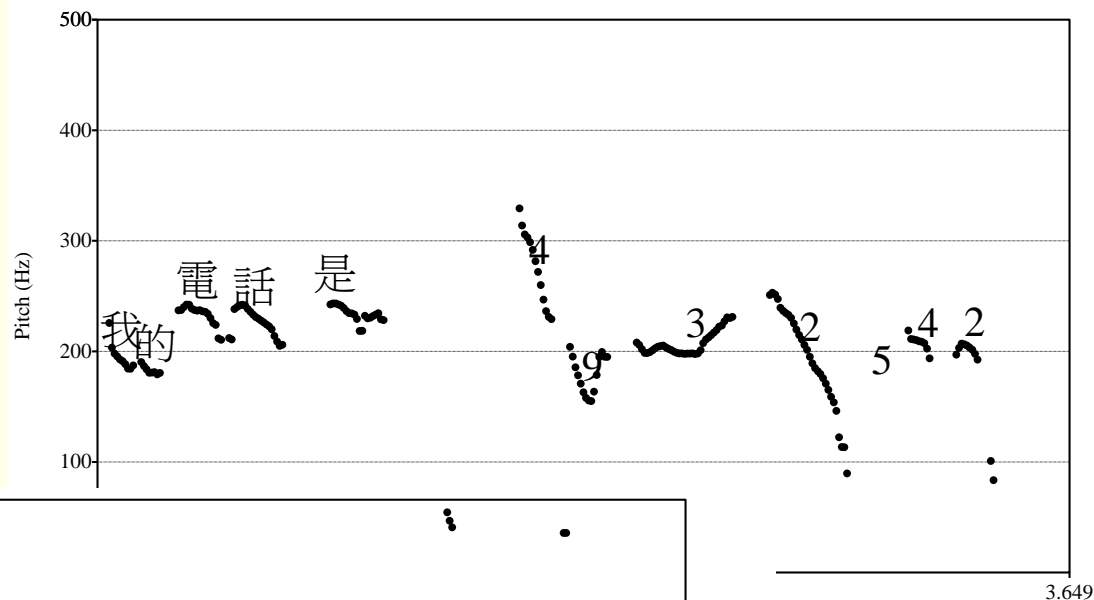
Mismatched patterns

Between English speakers
and Mandarin speakers



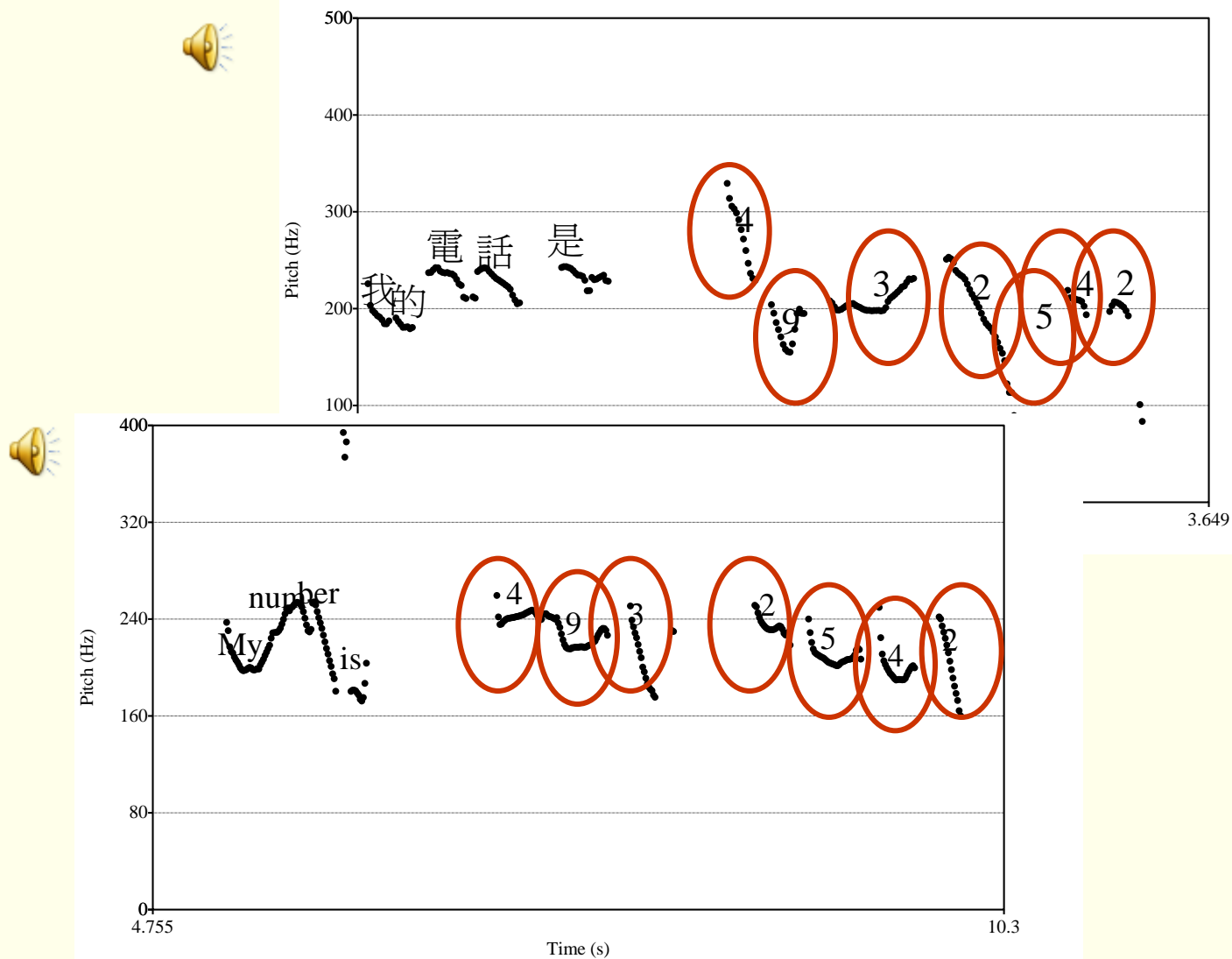
Numbers

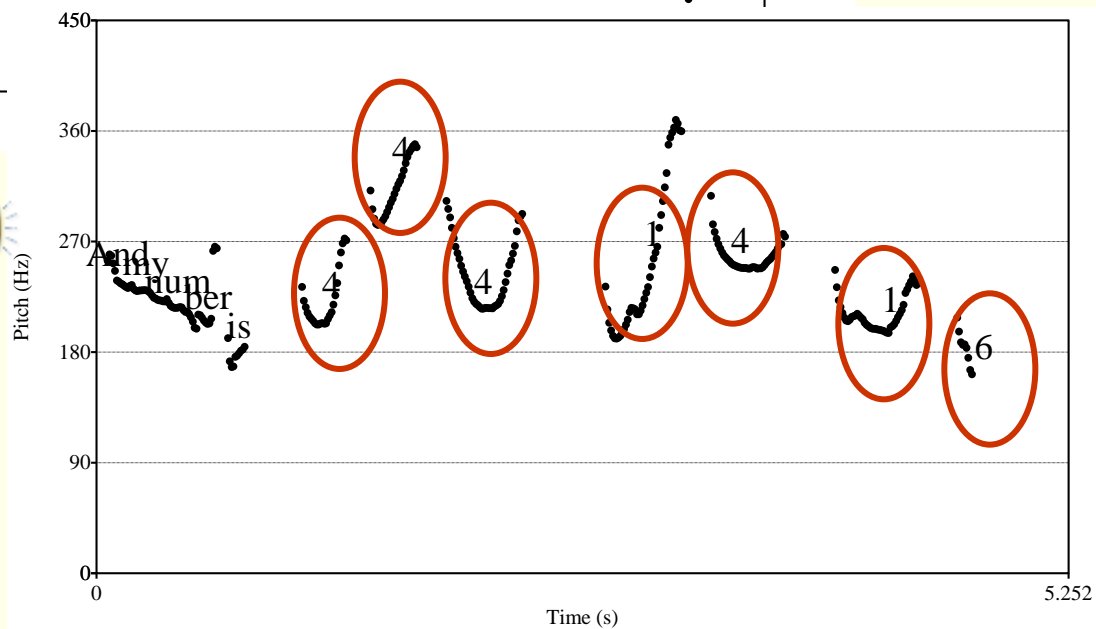
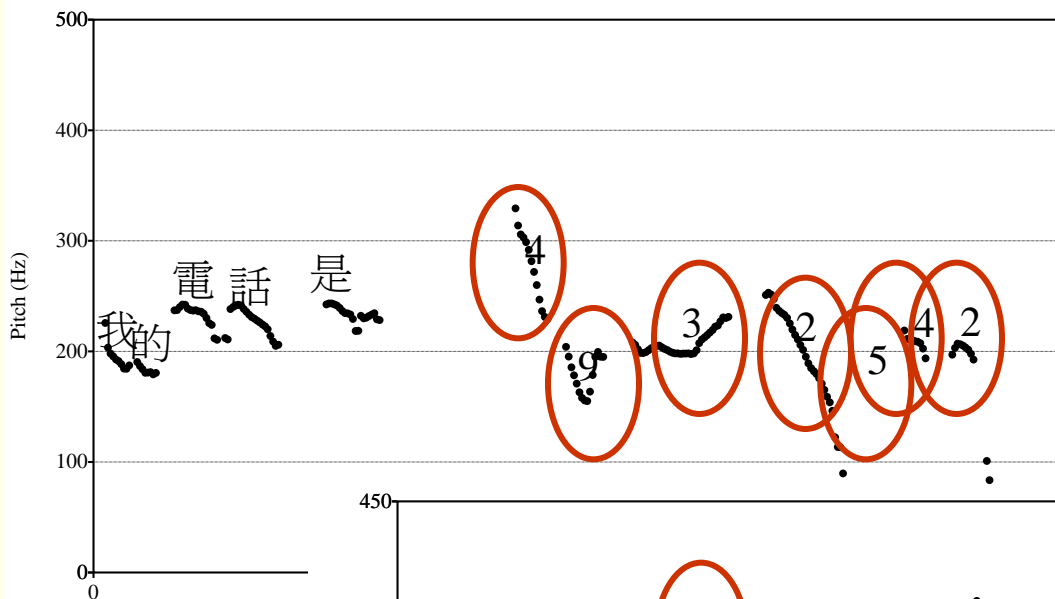
Mandarin patterns in adjacent syllables



Numbers

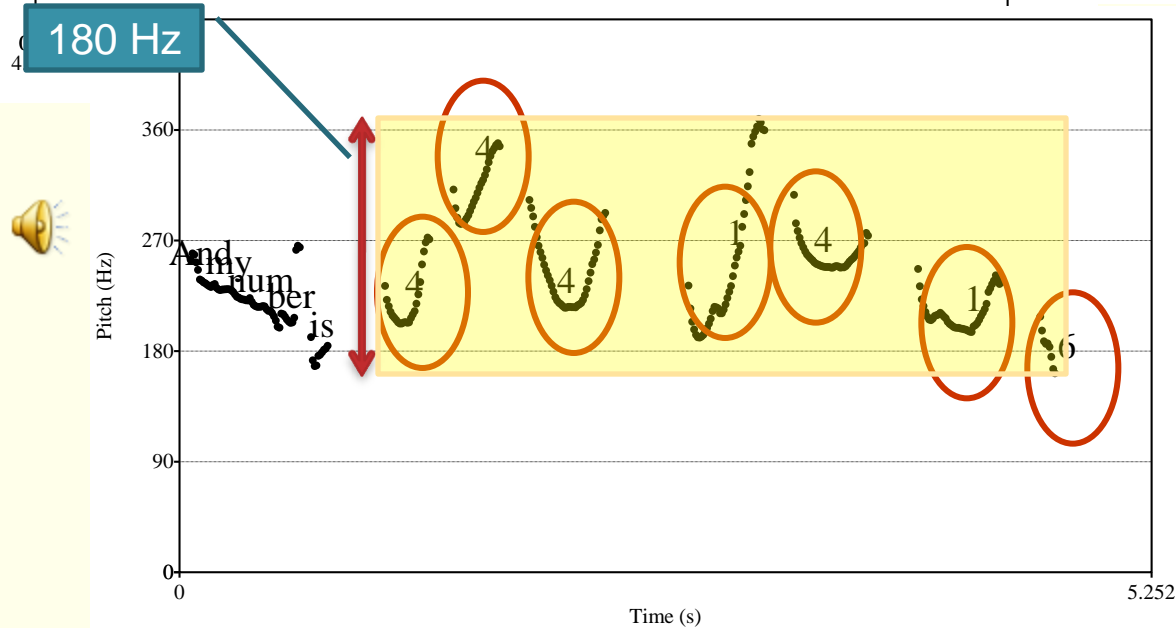
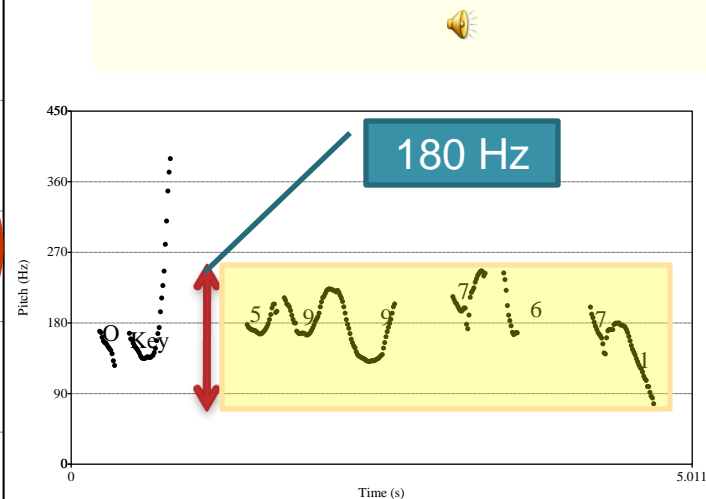
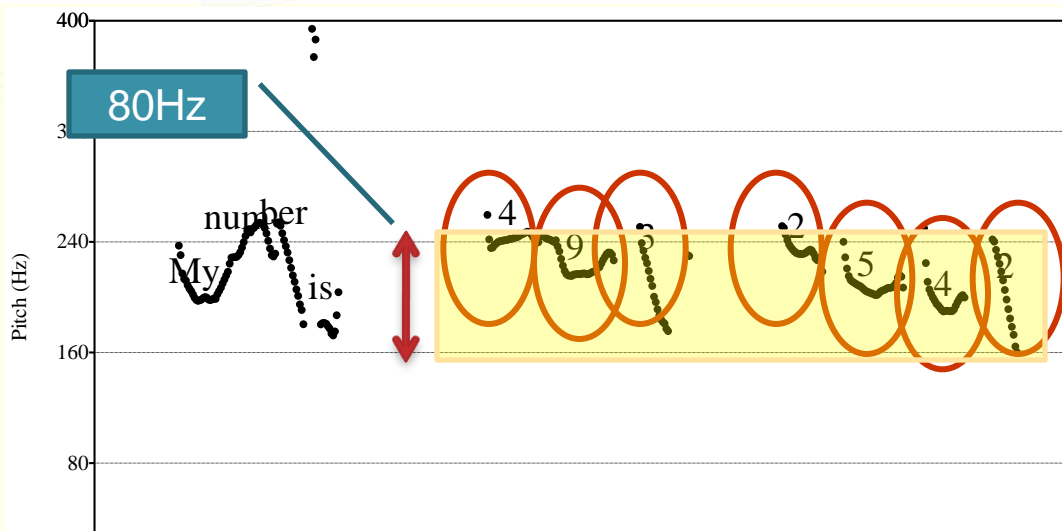
Contrasts in adjacent syllables

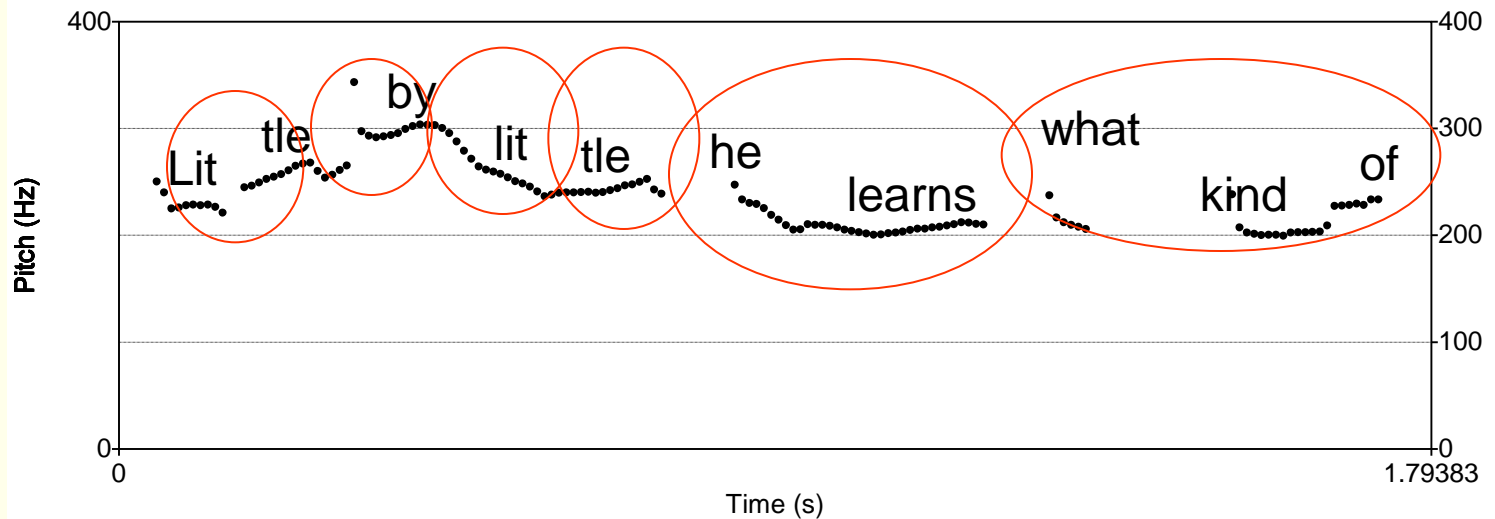
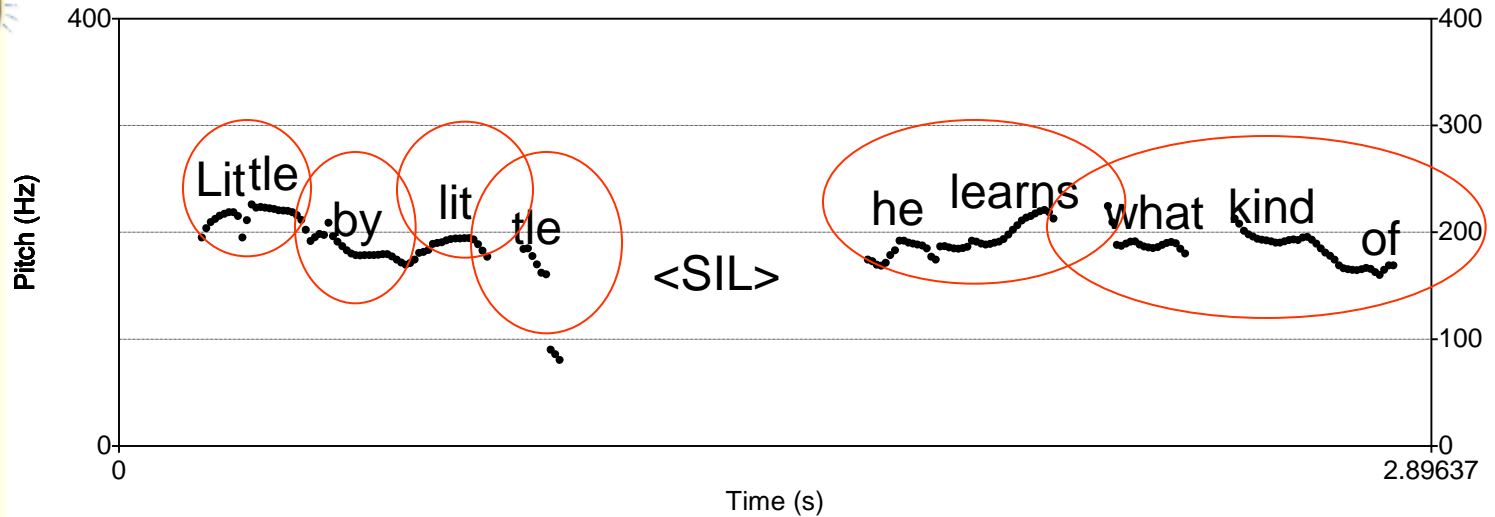


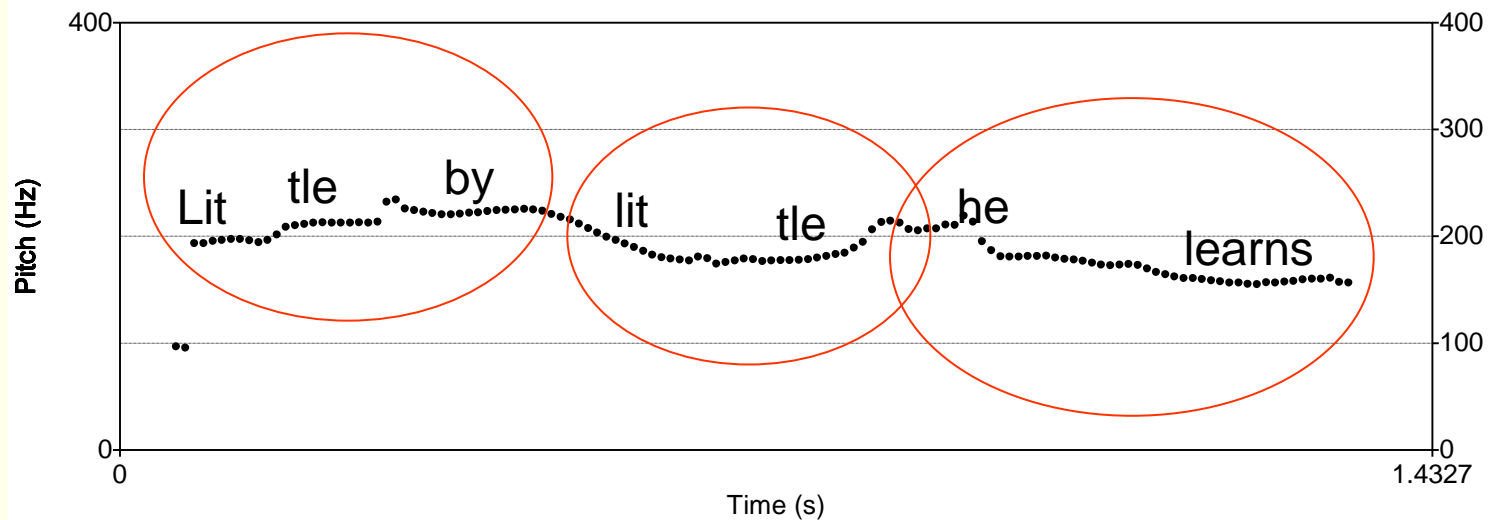
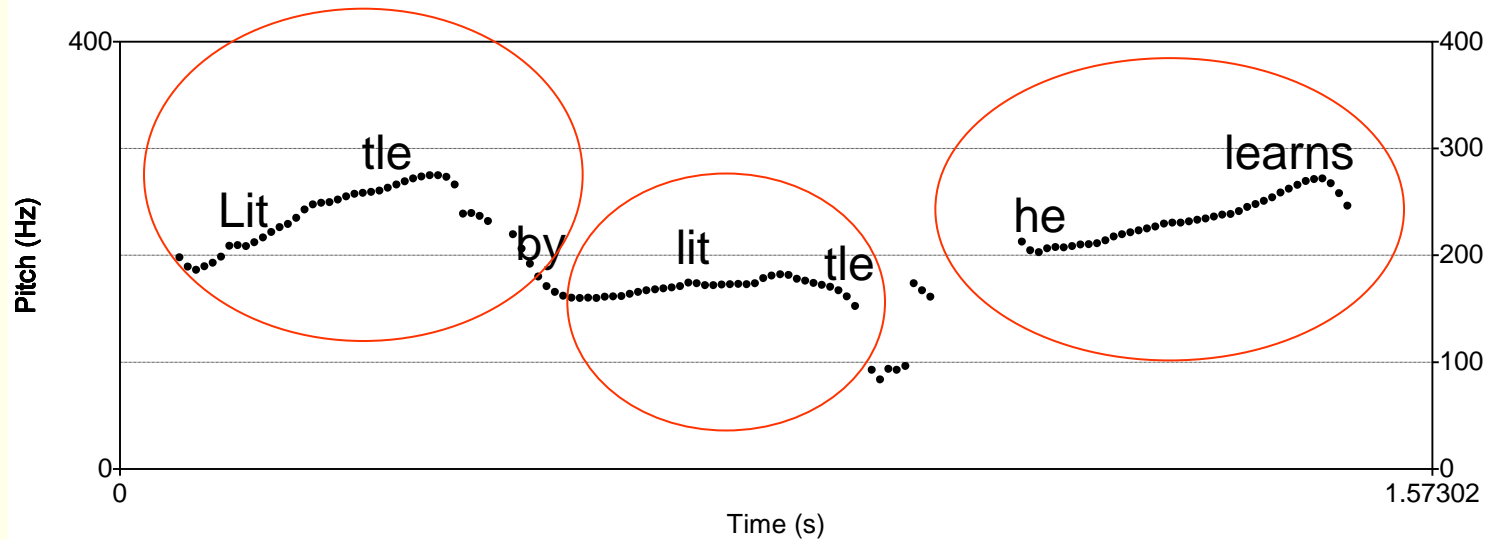


Numbers

Contrasts in adjacent syllables









Declination



A: Have you seen my camera?

B: What camera?

A: It's a digital camera.

B: Is it the one you put on the bookshelf?

A: No. That's not digital; it's just regular.

B: Well, what color is it?

A: It's black, with a gold chain on it.

B: Hunnn! I think I saw that somewhere.

A: Where did you see it?

B: It was on the dining room table.



A: Did you like that movie?

B: Yeah, I thought it was really good. What about you?

A: Yeah, it was good. But it was a bit too long.



A: Excuse me. How much is this?

B: It's sixteen dollars.

A: Sixteen? I thought it's ten. Isn't it 40 percent off today?

B: The big sale starts on Tuesday. That's tomorrow.

A: What? Today is Monday, not Tuesday?

B: Yeah. Sorry about that. Do you want me to keep this for you?



A: Who's gonna help us today?

B: Well, Mary said she'd help, but

A: Good. Where is she?

B: She is in her room,

A: If she's in her room, ask her to get ready. We're leaving in two minutes.

B: Ok. But you know, she has to leave early, though.

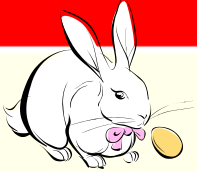
A: No. She can't. She has to be with us until the work is done.



“OK, today we’ll continue our discussion of pollution.... Yesterday we defined pollution....Today we’ll talk about the impact of pollution...its far-reaching effects. Many people think pollution is just a problem for scientists... but it’s not just a problem for scientists. It’s a problem that affects everyone...since it affects human lives, it’s a health problem...since it affects property, it’s an economic problem...and since it affects our appreciation of nature, it’s an aesthetic problem.”



When a student from another country comes to study in the United States, he has to find out for himself the answers to many questions, and he has many problems to think about. Where should he live? Would it be better if he looked for a private room off campus, or if he stayed in a dormitory? Should he spend all of his time just studying? Shouldn't he try to take advantage of the many social and cultural activities which are offered? At first it is not easy for him to be casual in dress, informal in manner, and confident in speech. Little by little he learns what kind of clothing is usually worn here to be casually dressed for classes. He also learns to choose the language and customs that are appropriate for informal situations. Finally he begins to feel sure of himself. But let me tell you, my friend, this long-awaited feeling doesn't develop suddenly, does it? All of this takes will power.



There once was a slimy, green frog with a very big mouth. That frog drove everybody crazy. He was always going up to others and shouting. “Who are you? I’m the big, wide-mouth frog!”

One morning, he decided to find out what everybody else ate for breakfast. He hopped out of his frog pond, went straight to the zoo, and began to bother the animals.

First, he met the giraffe. “Who are you? And what do you eat for breakfast?”

The giraffe looked down. ‘I’m a giraffe, of course. I eat leaves for breakfast.’”

The big, wide-mouth frog bellowed, “Well, I’m the big, wide-mouth frog! I eat flies for breakfast!”

Next he visited the elephant. “Who are you? And what do you eat for breakfast?”

“I’m an elephant, of course. I eat plants for breakfast.”

“Well, I’m the big, wide-mouth frog! I eat flies for breakfast!”

Next he went to visit the crocodile and shouted in his usual, obnoxious way, “Who are you? And what do you eat for breakfast?”

With a sly, hungry look in her eyes, the crocodile answered, “I’m a crocodile, of course. And I just love to eat big, wide-mouth frogs for breakfast. Have you seen any big, wide-mouth frogs about?”

When the big, wide-mouth frog heard that, suddenly his wide mouth closed up and got very, very small. Then he said with a squeak, “Nope, I’ve never heard of a creature called a big, wide-mouth frog. Hope you find one. Sorry, I’ve got to go now.”

The big, wide-mouth frog hopped all the way back to his pond as fast as he could. And after that, he always remembered that sometimes it’s better to keep your big, wide mouth shut.



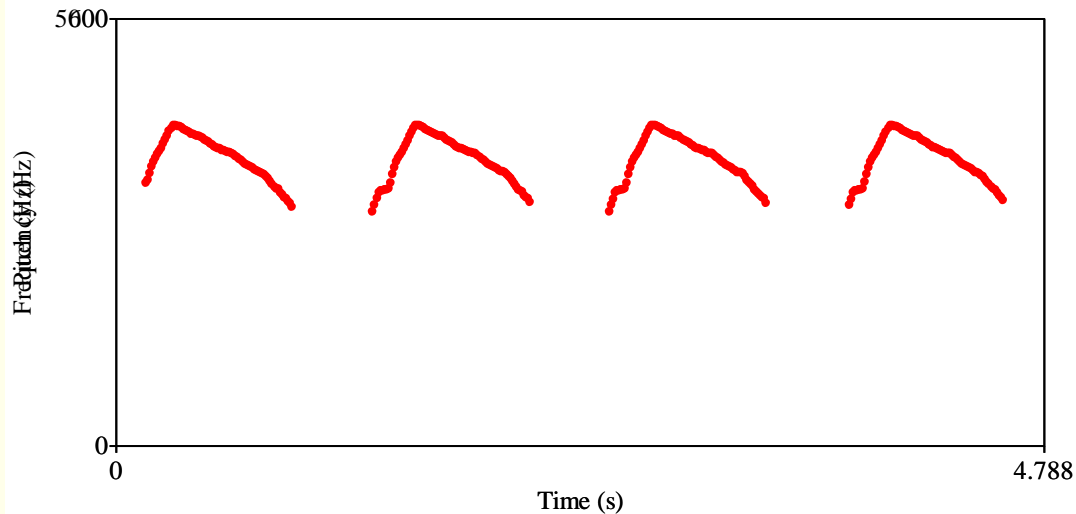
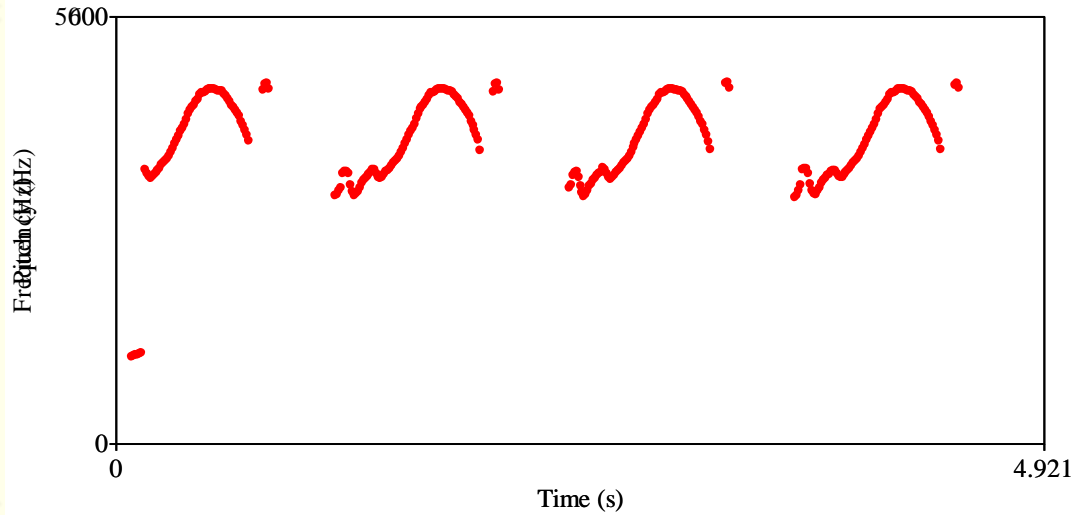
In a small town by a lake, there lived three little mice. They were the happiest mice in the world. They learned to fish in the river, play with natural toys, and had fun every day. They painted their house red like the sun, and thanked the Lord for giving them food.

One day, a big cat with long fangs and sharp claws came into the woods to look for three little mice, who were sleeping by the lake. They snored so loudly that the cat just followed the sound and soon found them. When the cat was about to catch the mice, an owl called out. “Wake up! Run for your lives!” The mice woke up and ran. Luckily, they got away.

“It’s my fault!” cried Mother Mouse, “we shouldn’t have fallen asleep.”

Father Mouse thanked the owl, who just said, “my pleasure.”

- a. Stress & rhythm
- b. Intonation units
- c. Pitch accents
(The invariable quality of the stressed syllable/sound)
- d. The break index
- e. Mismatched patterns
(The relation between the adjacent syllables)
- f. Declination



Mampe et. al.
(2009). *Current
Biology* ,19: 2.

The End

Comments and suggestions, please!




Thank you!