

A Comparative Analysis of the Intonation of British and American English

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1. Introduction

This study compares the intonation contours of RP (Received Pronunciation) British English and General American on the basis of auditory and acoustic experiments. The purpose of this paper is to present the characteristics of the intonation of these two dialects by comparison between them and to characterize the differences which make them sound different.

The differences of the two dialects of the English language, American English (henceforth, AE) and British English (BE) have been often observed and studied by those who are interested in them. As for the phonetic area, suprasegmentals do not seem to have been examined so extensively and fully as phonetic segments probably because they are often subtle and difficult to analyze.

Despite this fact, however, suprasegmental features are quite important and significant to explore in terms of comparative studies of the two dialects, and as Ward points out, it is perhaps in intonation, stress and rhythm that the greatest general differences are found between British and American English.¹ This paper does not compare stress or rhythm, but stress is taken into consideration when pitch patterns of AE are analyzed because it is an important factor of intonation.

2. Method

To compare British and American English intonation in this paper, I picked up sample sentences from four tone groups (Tone Group 1, 2 and 3) categorized in *Intonation of Colloquial English* by J. D. O'Connor and G. F. Arnold and had three American subjects read them using various types of intonation to express the speakers' attitudes which were then analyzed according to the interpretation of O'Connor and Arnold.

The three American subjects were born and brought up in Indiana where General American English is generally spoken. One is a male in his forties teaching at university and the others are a male and a female in their twenties, both of whom are graduate students. Recordings were made on Roberts (AKAI) tape recorder with an omni-directional, high-impedance, condenser-type quality microphone.

British English intonation is taken from the tapes on which practice drill sentences in *Intonation of Colloquial English* are recorded by O'Connor and Arnold, to compare

the same sentences recorded by the American subjects. The tapes were played back on SONY LL/Stereo Cassette-corder (TC-2610). Intonation curves and fundamental frequencies were analyzed by Visi-Pitch (model 6087, KAY) and KYOWA Photo-corder (Rapet RMS-11). Intonation contours were perceived by this writer's ears as well as these acoustic instruments.

3. Findings

Intonation contours used in the sentences taken from the three tone groups classified by O'Connor and Arnold will be compared between AE and BE in this section. Each tone group consists of one or more different types of tunes and conveys the same attitude on the part of the speaker. The speaker's attitudes, however, differ from sentence type to sentence type in a tone group. In this section, the intonations of BE and AE in each tone group are examined with main focus on nuclear tones and Head tones.

3.1 Tone Group 1

Tone Group 1, what O'Connor and Arnold call the Low Drop, will be first examined. This tone group has a low rise nuclear tone. Pitch patterns of Tone Group 1 used in AE in this experiment are indicated in Table 1, in comparison with those used in BE. The three American subjects are alphabetized; A represents a female in her twenties, B, a male in his twenties, and C, a male in his forties.

When we look at nuclear tones of AE in Table 1, they do not coincide with those of BE in all sentences. Even among the Americans, the types of nuclear tones do not coincide in the same sentence. In some cases, the place of the nucleus in AE is shifted to another different from that in BE. It is different from subject to subject in AE. It can be presumed that variety of the nucleus and nuclear tones in AE is attributed to the individual difference in interpretation and in expression of the speaker's attitudes provided in the experiment. The nucleus shift can be seen in the following sentences:

- No. 19. BE: And i¹magine us^omeeting_here of_oall_oplaces!
 A: And i¹magine us_omeeting_here of^oall_hplaces!
 B: And i¹magine us_hmeeting_here of_oall_oplaces!
 C: And i¹magine us^omeeting_here of_oall_oplaces!

There are five cases of the nucleus shift in Table 1: 8 A, 9A, 9B, 19A, and 19B.

Let us examine the relationship between sentence type and nuclear tones. The nuclear tone, low-fall in this group, coincides most between AE and BE in statements, but least in yes-no questions.

Low-rise is used instead of low-fall in most cases of yes-no questions in AE:

- 10) BE: 'Will you^ostick to the_hpoint? B: Will_h'you_hstick to the_hpoint?
 A: 'Will you_hstick to the_hpoint? C: Will_h'you_hstick to the_hpoint?

11) BE: But ^ˈcan we ^ˌafford it? B: But ^ˈcan we ^ˌafford it?

A: But ^ˈcan we ^ˌafford it?

In interjections, high-fall is employed in nine cases out of twelve in AE:

17) BE: Of ^ˌcourse they're ^ˌnot the ^ˌsame! B: Of ^ˌcourse they're ^ˌnot the ^ˌsame!

A: Of ^ˌcourse they're ^ˌnot the ^ˌsame!

18) BE: ^ˈWhat a ^ˌgood i ^ˌdea! B: ^ˈWhat a ^ˌgood i ^ˌdea!

B: ^ˈWhat a ^ˌgood i ^ˌdea!

In terms of the pitch degree of nuclear tones, BE uses, on the average, a wider falling range than AE in low-fall nuclear tones. Fundamental frequency (F₀) of a beginning and an end-point of this low-fall contour is indicated in Table 2.

On the whole, an end-point of low-fall in AE is higher in pitch than BE, and as a result, the degree of terminal fall in AE is smaller than BE. It is presumed that the small degree of nuclear fall is one of the reasons why AE sounds flat or level.

Let us look at the head next. The heads used in BE in this tone group are all High-Head. It is often said that BE starts utterances higher in pitch but AE, lower. Hans Kurath states as follows:

The precontour varies regionally within the English-speaking world without affecting communication adversely. For instance, a relatively low beginning with little variation in pitch before the pitch figure is common in the American Midwest, whereas in Standard British English the pre-contour often starts rather high and descends by steps to the onset of the pitch figure²

In AE there are, of course, the sentences where the head begins low in pitch. However, more than half of the sentences in Table 1 begins as high as in BE. And what is noticeable here in AE is that down-glide occurs in the high-head or at the beginning of a sentence. Some examples are as follows:

7) BE: ^ˈWhy can't you ^ˌleave things a ^ˌlone? B: ^ˈWhy can't you ^ˌleave things a ^ˌlone?
A: ^ˈWhy ^ˌcan't you ^ˌleave things a ^ˌlone?

18) BE: ^ˈWhat a ^ˌgood i ^ˌdea. B: ^ˈWhat a ^ˌgood i ^ˌdea.
A: ^ˈWhat a ^ˌgood i ^ˌdea.

19) BE: And ^ˈimagine us ^ˌmeeting here of ^ˌall ^ˌplaces.
A: And ^ˈimagine us ^ˌmeeting ^ˌhere of ^ˌall ^ˌplaces.

Down-glide occurs on the stressed syllable with higher pitch and usually at the place where a high level tone is used in BE. Down-glide does not fall to the bottom of the speaker's base pitch line, but maintains almost the same pitch height as that of the unstressed syllable before or after the down-glide.

Kazuyuki Watanabe points out that down-glide can also be heard in BE but that the frequency of this tone used instead of a high level tone is higher in AE than BE, which seems to be one of the major characteristics of AE.³ E. T. Anderson also perceives down-

glide in AE. Ward mentions down-glide in AE as follows:

In American speech a falling intonation in a succession of stressed syllables appears to be common. This usually denotes emphasis in British English, so that a non-emphatic statement with these frequent falls gives the impression of an emphatic speech.⁴

Another noticeable thing in AE is that Falling-Head is employed where High-Head or successive high-tone syllables are used in BE:

- 10) BE: ¹Will you ^ostick to the ₁point? B: Will ¹you ₁stick to the ₁point?
 A: ₁Will you ₁stick to the ₁point? C: Will ¹you ₁stick to the ₁point?
 14) BE: ¹Don't be ridiculous. B: ₁Don't be ridiculous.
 A: ₁Don't be ridiculous. C: ₁Don't be ridiculous.
 15) BE: Stay as ¹long as you ^opossibly ₁can. C: ₁Stay as ₁long as you ^opossibly ₁can.
 A: ₁Stay as ₁long as you ^opossibly ₁can.

In examples A and C in 15), the repeated falling head can be seen. O'Connor and Arnold call this type of head 'Sliding Head' referred to as the emphatic falling head.⁵

3.2 Tone Group 2

As O'Connor and Arnold call this tone group 'the High Drop', its contour is high fall, high falling to very low pitch. The result of the experiment is shown in Table 3.

When we focus on the nuclear tones in this group, we find that AE uses a rising tone in all cases except one in yes-no questions but that the nuclear tones of the other sentence types accord with BE. These sentence types except 11, C have the same pitch direction, falling, as BE, no matter how much the degree may be, that is, whether the tone is high fall or low fall.

Fundamental frequency of high fall is measured in Table 4. Excluded are the cases where pitch contours are not clear enough to measure Fo. Keatley, in her recent dissertation⁶, concludes that females have a greater degree of pitch range in the terminal contour than males by 27.78 Hz. Taking this into consideration, we can conclude that there is not so great a difference in the degree of high-fall pitch range between the two dialects.

There are some cases in AE where the nucleus does not coincide with that of BE. In sentence 10, all the American nuclear tones fall on the second stressed syllable "mean" of the sentence:

- 10) BE: By ₁all ₁means. B: By ¹all ₁means.
 A: By ₁all ₁means. C: By ₁all ₁means.

There is no great change of attitudinal meanings among these tunes.

Another interesting phenomenon of the nuclear tone different between AE and BE can be seen in sentence 5) :

- 5) BE: ₁Thank you. B: ¹Thank you.
 AE,A: ¹Thank you. C: ₁Thank you.

The nuclear tone starts to fall within the nucleus, 'thank', in BE whereas in AE the fall comes after the nucleus, even in case C where high fall is used. In AE, C, the tone on 'thank' is rather level and the fall is completed by the tail syllable, 'you'. Subjects A and B employ a rising tone on 'thank'. Consequently, the nuclear tones used in A and B are classified as rise fall. As far as our data is concerned, in AE a falling tone cannot be heard on the nucleus when 'thank you' is said in a falling intonation with a nuclear tone on 'thank'. This is one of the interesting characteristics of AE intonation different from BE one.

Rise fall sometimes takes the place of high fall in AE as indicated in Table 3 . It seems that AE tends to employ rise fall and high fall interchangeably.

AE employs falling head where BE uses high head in this tone group, too:

- | | | | | |
|------|-----|---|----|---|
| 11) | BE: | 'I'd pre ^o fer ^{te} . | B: | ↘I'd pre _o fer ^{te} . |
| | A: | ↘I'd pre _o fer ^{te} . | C: | ↘I'd pre _o fer _{te} . |

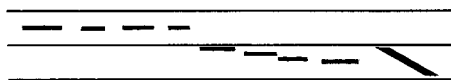
According to Pike, falling clause beginnings connote 'insistence' (↘3-1) or 'insistence and unexpectedness' (↘4-1) in AE.⁷ But the speaker's attitude provided in this experiment was 'a sense of involvement, light, airy' according to BE interpretation of the tune, 'high head + high fall.' Therefore it seems so far that AE tends to avoid striking the successive high pitch syllables, unlike BE. As a result of this, the fall gives the necessary variety to AE, such as down-glide, falling head or stepping-down to be shown later in this section. However, quite long successive low-level pitch syllables seem to be welcomed in AE as in the following examples:

- | | | | | |
|------|-----|--|----|--|
| 15) | BE: | Would you ^l like to ^o borrow ^m ine? | C: | Would you _l like to _o borrow _m ine? |
| | A: | Would you _l like to _o borrow _m ine? | | |

Ward points out that it gives the impression of monotony to British ears that the same pitch is struck frequently in AE.⁸

Let us examine subject B's intonation contour of sentence 16:

- 16) B: 'Try^oturning it^{*}the_other way_oround.



It is noticed that the tone of the word with the asterisk is stepped down from high to middle pitch level. BE employs the high-pitched syllables from 'Try' to 'way'.

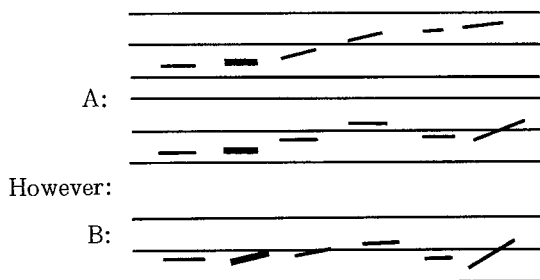
3.3 Tone Group 3

Tone Group 3 is characterized by a low-rise nucleus tone. As shown in Table 5, a falling tone on the nucleus surpasses a rising tone in AE. In other words, the pitch direction in AE is different from that in BE in most cases of this tone group as far as this experiment is concerned. The American subjects prefer a falling intonation particularly in WH-Question and Commands. In Yes-No Questions, on the other hand, they use a rising intonation more

frequently than in any other sentence type.

The interesting feature of this nuclear tone is that without Tail the nuclear tone rises from low to medium pitch while with Tail it runs at low level pitch and the rise is completed by the tail syllables. This fact is common in both BE and AE. Thus:

11) BE: D'you like 'breakfast in 'bed?



Rising begins on the nucleus in subject B whereas in BE and A, it occurs after the nucleus. It is commonly observed both in BE and in AE in this experiment that the nuclear tone with Tail begins to rise after the nucleus.

The difference between the two dialects in this tune lies in the fact that as is shown in the above examples, BE intonation gradually rises after the nucleus until the final boost while in AE the rising degree is smaller and syllables after the rising post-nucleus manifest an almost level or a slightly falling contour before the terminal rising. And as indicated in 6, the degree of pitch change in BE is greater than that in AE. This is probably because the pitch onset F_0 is higher in AE than in BE. In other words, as far as this experiment is concerned, this tune starts at mid level in pitch in AE as seen in the above subject B's intonation contour.

Another interesting intonation can be found in subject A's sentence 8. Her intonation contour is as follows:

8) A: Thank you.

The diagram shows a 'Thank you' sentence with a stylized fall intonation contour, characterized by a sharp drop in pitch followed by a slight rise and then a final drop.

Ladd refers to this contour as 'stylized fall'. According to Ladd, the stylized intonations are used in face-to-face situations like 'thank you' or 'excuse me' or 'good morning', appropriate for stereotyped conversation between clerk and customer, or strangers passing in a crowd.⁹ He maintains that stylized fall is a modification of 'plain fall' intonation, that is, steadily falling pitch. Thus to a clerk or a bank teller we might say either

(1) Thank - - you - - or (2) Thank y o u

But to someone who had just returned our lost wallet to us we would not say

Thank - - you - -¹⁰

Both intonation (1) and (2) cited above are employed by all American subjects. BE,

however, uses a low-rise tone. The attitude of stylized intonation can be interpreted as the same as that of a low-rise tone in sentence (8): calm, casual acknowledgment of a not unexpected matter. Therefore in this situation AE does not seem to use low-rise. This is supported by Ladd's statement that the connotation of stylized low-rise, modification of low-rise, emerges as tiredness, resignation, or 'I been there before.'¹¹ Whether BE has the stylized intonations or not may be left an open question.

4. Conclusion

Some different intonation aspects between AE and BE have been examined in the previous chapter. This study shows us that although AE is said to sound flat, in many cases AE actually changes tones within a whole contour using falling tones, such as down-glide or stepping down.

O. D. Gregory suggests in his dissertation that the pitch movement in the clause ends in the two dialects seems almost always to be in the same direction and that the differences lie in the extent of the movement more commonly than in the direction.¹² The experiment of this paper can support this suggestion. Although the two dialects use different nuclear tones in many cases in the experiment, the direction of their pitch movement is mostly the same except Tone Group 3. The degree of pitch change of nuclear tones is found to be generally smaller in AE than in BE. On the whole, the two dialects differ phonetically rather than phonemically.

This paper confines AE to General American, especially AE spoken in Indiana, and BE to a male English. There will be need for further research in comparative studies of AE and BE intonation to examine wider corpora in terms of age, sex and English-speaking area.

Tables

TABLE 1
PITCH PATTERNS OF BE AND AE
WITH THE MEANINGS OF TONE GROUP 1

Sentence No	Type	BE	A	B	C
1	S	LF	LF	LF	LR
2	S	LF+T	LF+T	HF+T	HF+T
3	S	HH+LF	LH+LF	HH+LF	HH+LF
4	S	LPH+HH +LF	LPH+RH +LF	LPH+LH +LF	LPH+LH +LF
5	W	LF	HF	LR	LF
6	W	LPH+LF	LPH+HF	LPH+LF	LPH+HF
7	W	HH+LF	HH+LF	HH+LF	HH+LR
8	W	LPH+HH +LF	LPH+HR +T	RF+LH +LF	LPH+FH +LF
9	Y	LF+T	RH+LR	FH+HF	HF+T
10	Y	HH+LF	LH+FH+LR	LPH+HH +FH+LR	LPH+HH +FH+LR
11	Y	LPH+HH +LF	LPH+RH +LR	LPH+FH +LR	LPH+LH +HF
12	C	LF	HF	HF	LF
13	C	LPH+LF+T	LPH+LF+T	LPH+HF+T	LPH+HF+T
14	C	HH+LF	FH+LR	FH+LF	FH+LF
15	C	LPH+HH +LF	FH+FH+LF	LPH+RH +RH+HF	FH+FH+LF
16	I	LF	LF	HF	LR
17	I	LPH+LF+T	LPH+HF+T	LPH+HF+T	LPH+HF+T
18	I	HH+LF	FH+FH+HF (DG) (DG)	FH+RH+HF (DG)	HH+LF
19	I	LPH+HH +LF+T	LPH+DG +HF	LPH+HH +HF+T	LPH+HH +HF+T

S=Statement W=WH-question Y=Yes-No question
C=Command I=Interjection
LF=Low Fall LR=Low Rise HF=High Fall
LH=Low Head HH=High Head RH=Rising Head
FH=Falling Head LPH=Low Pre-head
RF=Rise-Fall DG=Down-Glide

The nuclear tones which do not coincide with those in BE are underlined.

TABLE 2
FUNDAMENTAL FREQUENCY IN HERTZ
OF LOW-FALL CONTOUR

Sentence Number	BE	A	B	C
2	170-80 (90)	254-195 (59)	X	X
5	126-63 (63)	X	X	145-78 (67)
6	168-67 (101)	X	176-108 (68)	X
7	160-69 (91)	202-176 (26)	136-98 (?) (38)	X
8	184-74 (110)	X	120-86 (?) (34)	131-92 (39)
13	162-66 (86)	256-175 (81)	X	X
15	131-69 (62)	223-176 (47)	X	138-96 (42)
16	170-65 (105)	247-173 (74)	X	X
18	141-74 (67)	X	X	131-64 (67)
A	(86)	(57)	(47)	(54)

X=Non-low-rise A=average of pitch degree of fall
The numerical values in brackets indicate the degree of low-fall.
The unclear values are followed by (?). The value left to a horizontal line (a hyphen) indicate a beginning point of fall, and the one right to a line, an end-point.

TABLE 3
PITCH PATTERNS OF BE AND AE WITH
THE MEANINGS OF TONE GROUP 2

Sentence No	Type	BE	A	B	C
1	S	HF	LF	HF	HF
2	W	HF	HF	HF	HF
3	Y	HF+T	HR+T	HR+T	L+T
4	C	HF+T	HF+T	HF+T	HH+HF+T
5	I	HF+T	RF+T	RF+T	HF+T
6	S	LPH+HF+T	LPH+RF+T	LPH+HF+T	LPH+HF+T
7	W	LPH+HF	LPH+HF	LPH+HF	LPH+LF
8	Y	LPH+HF+T	LPH+LH+LR+T	FH+LF+LR	HPH+HH+FR+T
9	C	LPH+HF+T	LPH+RF+T	HH+HF+T	LPH+HF+T
10	I	LPH+HF+T	LPH+LH+HF	LPH+HH+HF	LPH+LH+HF
11	S	HH+HF	FH+LF	FH+HF	FH+LR
12	W	HH+HF	RH+HR	HH+HF	LH+LF
13	Y	LPH+HH+HF	LPH+LH+LR	HPH+FH+LR	LPH+LH+LR
14	C	HH+HF	HH+HF+T	HH+FH+LF	HH+FH+LF
15	I	HH+HF	HH+HF	LH+HF	LH+HF
		HH+HF	RF+T	LH+HF	LH+HF

L=level HR=high rise HPH=high pre-head

TABLE 4
FUNDAMENTAL FREQUENCY IN HERTZ
OF HIGH FALL IN BE AND AE

Sentence Number	BE	A	B	C
1	X	X	171-93 (?) (78)	176-74 (102)
2	213-93 (?) (105)	297-181 (116)	265-134 (131)	187-85 (102)
3	231-93 (?) (138)	X	X	X
4	X	342-150 (192)	X	248-92 (?) (156)
5	X	374-204 (170)	X	X
6	X	302-187 (115)	X	192-80 (112)
7	X	336-178 (158)	X	X
9	210-98 (102)	364-188 (176)	X	260-104 (?) (156)
10	X	360-178 (132)	X	217-92 (425)
11	179-86 (?) (93)	X	204-67 (?) (137)	X
12	210-74 (136)	X	X	X
14	160-66 (94)	283-223 (60)	X	X
15	220-80 (?) (140)	355-182 (173)	246-138 (108)	218-85 (133)
	199-88 (?) (111)	358-172 (186)	237-80 (157)	237-80 (157)
A	(115)	(148)	(122)	(130)

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TABLE 5
PITCH PATTERNS OF BE AND AE WITH
THE MEANINGS OF TONE GROUP 3

Sentence No	Type	BE	A	B	C
1	S	LR	LR	LR	<u>HR</u>
2	W	LR	<u>FR</u>	<u>HF</u>	<u>HF</u>
3	C	LR	<u>LF</u>	<u>LF</u>	<u>LF</u>
4	I	LR	LR	<u>HR</u>	<u>HR</u>
5	S	LR+T	LH+ <u>LF</u>	LH+ <u>HF</u>	LH+ <u>HF</u>
6	W	LR+T	LR+T	RH+LR	LH+ <u>HF</u>
7	Y	LR+T	LR+T	<u>LF</u> +T	LR+T
8	I	LR+T	<u>ST</u> (HH+L)	<u>LF</u>	<u>LF</u>
9	S	LPH+LR	LPH+ <u>HF</u>	<u>HF</u> +T	LPH+ <u>LF</u>
10	W	LPH+LR+T	LPH+ <u>HF</u> +T	LPH+ <u>HF</u> +T	LPH+ <u>HF</u> +T
11	Y	LPH+LR+T	LPH+LR+T	LPH+LH+ <u>HR</u>	LPH+LH+ <u>L</u>
12	C	LPH+LR+T	<u>HF</u> +T	<u>HF</u> +T	LH+ <u>LF</u>
13	I	LPH+LR	LPH+ <u>HF</u>	LPH+ <u>HF</u>	LPH+ <u>HF</u>
14	S	LH+LR	HH+LR	HH+LR	HH+LR
15	W	LH+LR	LH+ <u>LF</u>	HH+ <u>HF</u>	LH+ <u>LF</u>
16	Y	LH+LR	LH+LR	HH+LR	HH+LR
17	C	LPH+LH+LR+T	LPH+RH+ <u>HF</u>	LPH+LH+ <u>LF</u>	LPH+LH+ <u>LF</u>
18	I	LPH+LH+LR	LPH+FH+LR	HPR+LH+LR	HPH+LH+LR

ST=stylized intonation

TABLE 6
Fo IN HERTZ OF LOW
RISE IN BE AND AE

Sentence Number	BE	A	B	C
1	68-166 (98)	188-276 (88)	131-233 (102)	177-220 (103)
2	69-176 (107)	X	X	X
3	66-157 (91)	X	X	X
4	83-196 (113)	191-322 (131)	129-237 (108)	138-201 (63)
5	69-215 (146)	X	X	X
6	85-229 (144)	190-325 (135)	105-240 (?) (135)	X
7	85-168 (83)	202-225 (23)	X	X
8	85-171 (86)	X	X	X
9	73-173 (100)	X	X	X
10	80-229 (149)	X	X	X
11	80 (?) -228 (148)	184-268 (84)	150-210 (60)	(X)
12	X	X	X	X
13	X	X	X	X
14	66-184 (118)	182-192 (10)	X	66-121 (?) (55)
15	X	X	X	X
16	66-204 (138)	188-217 (29)	118-210 (102)	138 (?) -218 (80)
17	77-168 (91)	X	X	X
18	104-160 (56)	176-200 (?) (24)	112-220 (108)	131-204 (73)
A	(112)	(66)	(103)	(75)

Notation of Symbols

Nucleus

{ \ }Low Fall. Medium falling to very low pitch.

{ \ }High Fall. High falling to very low pitch.

{ ^ }Rise-Fall.

(i) without Tail: medium rising to high, then falling to very low pitch.

(ii) with Tail: either medium rising to high pitch or medium level pitch; the rise-fall is completed by the tail syllable (s).

{ / }Low-Rise.

(i) without Tail: very low rising to medium pitch.

(ii) with Tail: very low level pitch; the rise is completed by the tail syllable (s).

Head

{ | }Relatively high level pitch. Stressed, accented syllables.

{ \ }Very low level pitch. Stressed, accented syllables.

{ \ }Relatively high level pitch, with any following head syllables forming a descending pitch scale.

{ / }Very low level pitch, with any following head syllable (s) forming an ascending pitch scale.

Stressed-syllable markers

{ ° }Relatively high level pitch.

{ ° }Very low level pitch.

{ \ }Down-glide. High falling to the same pitch as the following unstressed syllable (s).

Unstressed syllable markers

{ . }Low level pitch.

{ • }Middle level pitch.

NOTES

- 1 Ida C. Ward, *The Phonetics of English*, 5th ed., (Cambridge: W. Heffer and Sons Ltd., 1972), p. 213.
- 2 Hans Kurath, *A Phonology and Prosody of Modern English* (Ann Arbor: the Univ. of Michigan Press, 1971), p. 129.
- 3 Kazuyuki Watanabe, "Eikoku Eigo to Beikoku Eigo no Intoneshon", Mukogawa Women's University Kiyo Vol. 18, 1971, p. 96.
- 4 Ward, p. 213.
- 5 J. D. O'Connor and G. F. Arnold, *Intonation of Colloquial English*, 2nd ed. (London: Longman, 1974), pp. 37-38.
- 6 Mary Ann W. Keatley, "The Influence of Age, Sex and Grammatical Sentence Type on the Fundamental Frequency Component of the Intonational Contour," Diss. University of Colorado 1980, pp. 66-67.
- 7 Kenneth Pike, *The Intonation of American English* (Ann Arbor: Univ. of Michigan Press, 1949), p. 68.
- 8 Ward, p. 215.
- 9 D. Robert Ladd, Jr., *Intonational Meaning* (Bloomington: Indiana Univ. Press, 1978), pp. 177-78.
- 10 *Ibid.*, p. 177.
- 11 *Ibid.*, p. 180.
- 12 O. D. Gregory, "A Comparative Description of the Intonation of British and American English for Teachers of English as a Foreign Language", Diss. Columbia University 1966, p. 290.