

An Acoustic Analysis of the Rakugo Story *Kusshami Koushaku*

(second part)

KADOOKA Ken-Ichi

▶ キーワード

Rakugo
Koudan, Koushaku
Nozoki-karakuri
acoustic analysis

▼ 要 旨

この小論は Kadooka (2009, 2011b, 2012a, 2013a, b, 2016, 2017)、角岡 (2011a, 2012b, 2014, 2015) を受けて、落語を音響的に分析しようとする試みである。ここでは落語本編を分析対象とし、落語の中で語られる講釈（講談）と覗き絡繰りを一人語り話芸という観点から落語の語りと対比させてみる。「くっしゃみ講釈」という落語において、講釈「難波戦記」と覗き絡繰り「八百屋お七」の一節が語られる。同じ話者が語っているのであるが、落語－講釈－覗き絡繰りという話芸の種類によって、語り口を変えねばならない。また落語としては登場人物を描き分けるために、声の高さや喋る速さなど語り口を変える必要がある。それが音響分析を通して、どのように分析できるかというのが最大の関心である。

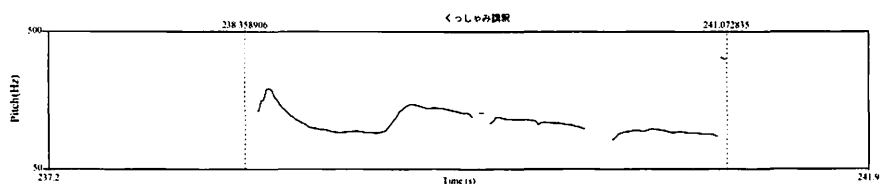
今回の分析を通して、基本周波数（音高）と音圧の相関関係が認められた。即ち「高い声では音圧が大きく、低い声では音圧が小さい」という関係である。また、サゲにおいて特有の間を置いたり声を落とす「サゲ音調」も観察された。

5. Koushaku

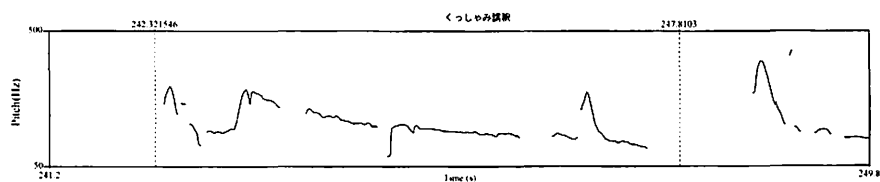
Masa-han thought that in order to secure front row seats, they had to go to the Koushaku-goya theater earlier than other audience members. The Koushaku-telling is the highlight of the story, and even the recitation of Nozoki-karakuri can be considered as the preface. Rakugo and Koushaku have many similarities as narrative arts. First, the performer sits in front of the audience. Second, there is a small desk called *kendai* between the teller and the audience. Third, the teller uses a pair of small wooden clappers and a wrapped fan to clap on the desk. The most significant difference between the two arts is that Rakugo stories are funny but Koushaku are serious. The style of Rakugo is for the teller to talk as if he/she were the character himself/herself. That of Koushaku is for the teller to tell the story objectively.

When Kiroku and Masa-han went to the Koushaku-goya theater, Gotou Issan appeared on the stage and made an opening remark. There he introduced the program of that night. There were three parts of the program, and Issan told all the stories. The first part is to tell *Namba Senki*, a story of the summer battle in Osaka castle between the Toyotomi and Tokugawa troops on May 7th, 1615. The title of the second part is *Genroku Gishi Meimeiden*, stories of 47 loyal samurais who achieved the revenge for their former lord in 1701. The title of the last part is *Tu ga sode no Otokichi*, a story of chivalrous person Otokichi. These stories are lengthy and cannot be finished in one night. So every night, each story is told little by little, continued on the following night. Below are some opening remarks of that night by Gotou Issan, beginning with the introduction of part 2 (*Chuushin-gura*), then to parts 3 (*Otokichi*) and 1 (*Namba Senki*):

(19)

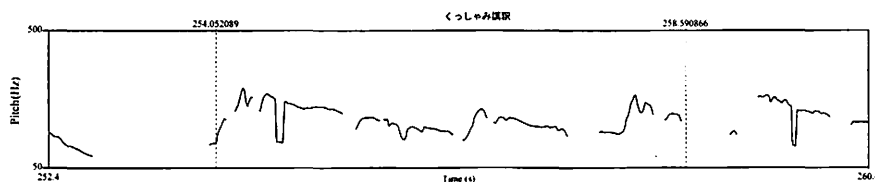


1. Maiyo yomi-agete orimasuru no wa, (1.28)
(Every night I tell the stories)



2. zenkoku izure no tsutsu-uraura-tanidani he mairi-mashite mo, on-najimi-fukaki
(0.75) (which are familiar nationwide)
3. Genroku Chuushin-gura (0.80) (stories of loyal samurais in the period of Genroku (1701))

4. Meimei-den no o-uwasa. (0.98) (chronicle of each samurai)



5. Goseki wa Naniwa Kyoukyaku-den Ta ga sode no Otokichi, maezeki (0.41)

(Part three tells the story of a chivalrous person Otokichi in Naniwa (Osaka).)

6. O-hito-gatame to shite ukagai-masuru wa, Kei-Gen ryoudo wa Namba Senki no o-hanashi. (0.46) (As a trial, I will tell you the story of the war chronicle in Osaka, in the eras of Keichou and Genna.¹⁾)

The style of the narration in the Koushaku performance is different from that of ordinary conversation, which is common with the narrative style of Rakugo. Below is the table of the acoustic analyses.

(20)

	ave.	min.	max.	range	duration	μ	tempo	pause	dB
1	204.73	145.53	414.88	269.35	2.71	15	0.18		66.04
2	187.66	84.21	314.84	230.63	5.49	24	0.23	1.28	62.66
3	196.81	118.23	431.26	313.03	1.65	10	0.17	0.75	64.94
4	242.20	59.88	397.94	338.06	2.13	11	0.19	0.80	64.50
5	209.98	87.71	312.58	224.87	4.54	21	0.22	0.98	65.16
6	204.23	92.49	476.77	384.28	5.72	37	0.15	0.41	63.22
ave	207.60	98.01	391.38	293.37	3.71	19.67	0.19	0.84	64.42

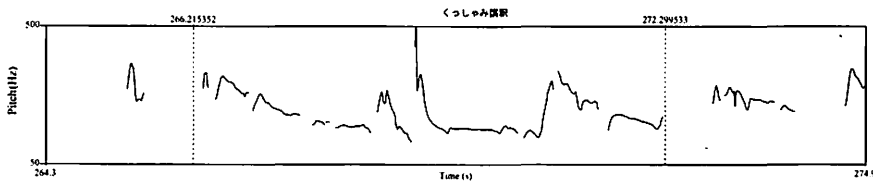
It would be insightful to contrast this analysis of the opening remarks as the Koushaku teller Gotou Issan with that of the greeting by the master Beichou in section 2 (Kadooka (2018)). As a naïve impression, the remarks as Gotou Issan would seem to have lower pitch and lower intensity than the greeting by the master Beichou. The result is, however, the contrary. Both the pitch and the intensity are higher in (20) than in section 2 of Kadooka (2018). The numbers of the morae are rather similar to 20.5 in section 2 and 19.67 in (20). Characteristic in the style of Koushaku is that the pauses are inserted in some unnatural places. In other words, the intonation units do not match with the syntactic chunks. In lines between 3 and 4, a pause of 0.80 second is inserted between *Genroku Chuushin-gura* and *Gishi meimei-den*, which are one title of the stories and must be uttered in one intonation unit. Another instance is *maezeki* in line 5, which is the introduction of line 6. The separation of these two with a pause of 0.41 second sounds unnatural.

Another comparison of the lengths of the pauses reveals the difference of the styles in section 2 and (20) above. The pauses in the Koushaku style are longer than those in section 2.

These longer pauses indicate the more formal style of the Koushaku performance.

Following the opening remarks, the main story begins. *Namba Senki* deals with the battle in Osaka castle on May 7th, 1615. In the Koushaku performances, the sounds of the wooden clappers and the wrapped fan keep time. There are two ways of clapping: single clap indicated by an exclamation mark (!) and the serial ones by three of them (!!!) in the following transcriptions; in some of the charts, such as in 5, 7, and 8, lines are added as the indications of the overall tone in each line:

(21)



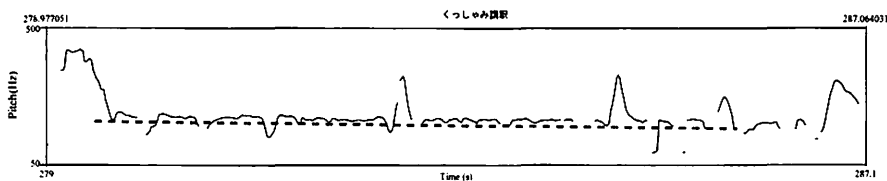
1. Koro wa (0.64) 2. Keichou juu-ku-nen mo ai-aratama-ti, akureba Genna gan-nen go-gatsu nano-ka no gi ni sourou ya. (0.45)

(It was the era of the transition from Keichou to Genna, the nineteenth year,
May the seventh)

3. Oosaka jouchuu (0.46) (In the castle of Osaka)

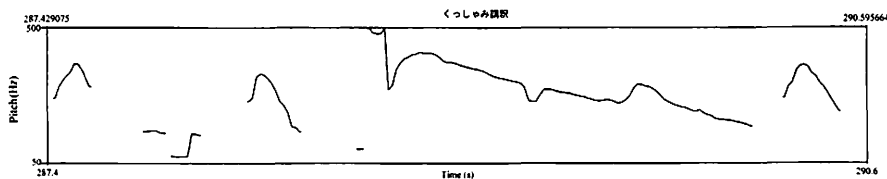
4. sen-jou-jiki on-gojoudan no ma ni wa !!! (1.62)

(the room of one thousand tatami, its upper portion)

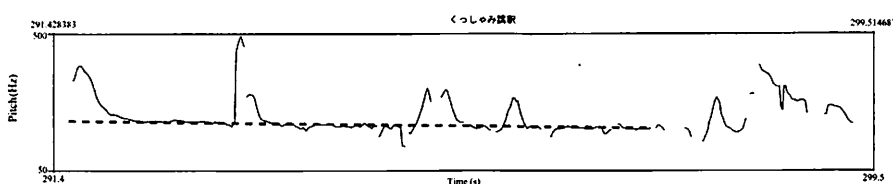


5. Nai-daijin Hideyori-kou, on-hindari-za ni wa go-bokou Yodo-gimi, kaizoe-nin to shite Oono Douken, Shume Shurinosuke Kazuma ! (0.35)

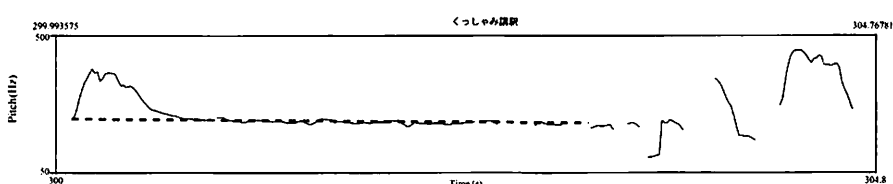
(Minister Hideyori (son of Hideyoshi), his mother Yodo, assistants Oono Douken and Shume Shurinosuke Kazuma)



6. gunshi ni wa Sanada Saemon-no-jou Unno Yukimura² (0.73)
(strategist Sanada Yukimura)



7. shi-tennou no men-men ni wa Gotou Matabyoue Mototsugu, Chousoukabe Kunai-no-shouyuu Hata-no Motochika,³ Kimura Nagato-no-kami Shigenari,⁴ (0.44)
 (as big four, there were Gotou Matabyoue Mototsugu, Chousoukabe Motochika, Deputy Minister of the Imperial Household, Kimura Shigenari, governor of the state of Nagato (current Yamaguchi prefecture))



8. nanate-gumi⁵ no men-men izure-mo izure-mo to hikae-taru tokoro, kira boshi no gotoshi.⁶
 (the members of the group of seven gathered, as a galaxy)

The most remarkable observation through looking at these acoustic analyses would be that the added lines in 5, 7 and 8 imply flat tones of voice. In other words, the tones of voice are monotonous in these lines. These monotonous tunes are in good contrast with those in the Nozoki-karakuri stories in the last section of Kadooka (2018), and it can be estimated that such a style of Koushaku involves a kind of tension.

In addition to such monotonous tones, another feature is the lengths of the lines; the average duration of these lines is 4.34 seconds, as shown below, which is much longer than that of the recitation of Nozoki-karakuri in the last section, 2.50 seconds. It would be interesting to point out that the monotonous tones in lines 5, 7 and 8 are lengthy: 8.09 seconds in lines 5 and 7, 4.77 seconds in line 8. The co-occurrences of these monotonous tones and the lengthy durations are physically natural. That is to say, in short lines with the duration of less than 3 seconds, monotonous tones are difficult to utter, because there are not enough words.

Below is the table of the acoustic analyses of these eight intonation units:

(22)

	ave.	min.	max.	range	duration	μ	tempo	pause	dB
1	354.46	255.69	525.56	269.87	0.31	3	0.10	0.46	67.96
2	215.75	124.65	507.58	382.93	6.08	40	0.15	0.64	65.66
3	253.32	40.72	308.31	267.59	1.23	8	0.15	0.45	66.23
4	266.49	97.79	470.88	373.09	2.87	17	0.07	0.46	65.26
5	216.47	90.59	429.75	339.16	8.09	54	0.05	!!! 1.62	63.96
6	280.81	72.07	488.08	416.01	3.24	22	0.37	! 0.35	65.30

7	227.61	131.48	494.85	363.37	8.09	58	0.06	0.73	65.51
8	251.40	101.07	451.80	350.73	4.77	35	0.23	0.44	65.77
ave	258.29	114.26	459.60	345.34	4.34	29.63	0.15	0.53	65.71

First, we will look at the lengths of the pauses. The average durations of the pauses in these eight intonation units are 0.53 second, which is shorter than that of the opening remarks, 0.84 second, but longer than those of the dialogue between Masa-han and the vegetable store master. These lengthy pauses are partly due to the clapping of the wood. There are two patterns of clapping. One is the single clap with the wrapped fan in the right hand, and another is using both the woods in the left hand and the fan. The former one is inserted between lines 5 and 6, making a pause of 0.35 second, and the latter is between lines 4 and 5, with a longer pause of 1.62 seconds. These insertions of clapping render rhythmical effects and a kind of tension.

Now, let us look at some peculiar acoustic features in each line.

First, in line 2, there is a sudden jump up of the pitch in the midst of the line. At the peak, we can find the maximum frequency of over 500 Hz. This height is realized in the first syllable of Genna, but until then there was a gradual falling in 'Keichou no koro mo ai-aratamari, akure-ba.' This can be regarded as a kind of high paratone, or a change of topics. In this case, the transition of the names of era from Keichou to Genna would be equivalent to the change of topic.

Between the monotonous lines 5 and 7, the figure of the tone of voice in line 6 is full of ups and downs. The contents of the lines 5 through 7 are similar to each other: listings of names of the lords and strategists, generals. Line 6 is the shortest among these three lines, and hence the tone of voice is far from monotonous. Line 8, with content other than the names of samurais, is also monotonous in tone, with the duration of 4.77 seconds.

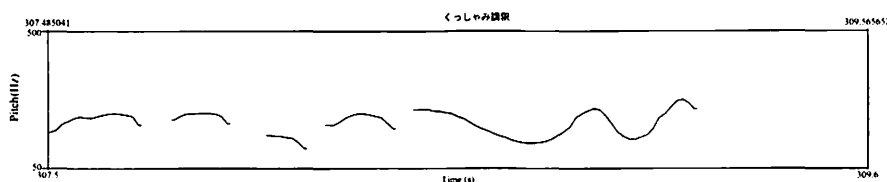
Closely related to the duration is the number of morae in one line. It is physically quite natural that the longer one line is, the more morae it contains. Lines 5 and 7 both last for 8.09 seconds, the former containing 54 morae and the latter 58 morae. In these lengthy lines, so many morae are packed in that each mora is short. The most typical example is line 5 with one mora duration of 0.05 second, followed by line 7 with 0.06 second. The average duration of these eight lines is 0.15 second, so line 5 is spoken three times faster than the average tempo of these eight lines.

When we compare the overall tendency with this passage of the Koushaku (21) with that in the opening remarks (19), we find that both the pitch (114.26 Hz) and the intensity (65.71 dB) of the former are higher than in the latter (98.01 Hz and 64.42 dB). That is to say, the beginning of *the Namba Senki* is told in a high-pitched louder tone of voice.

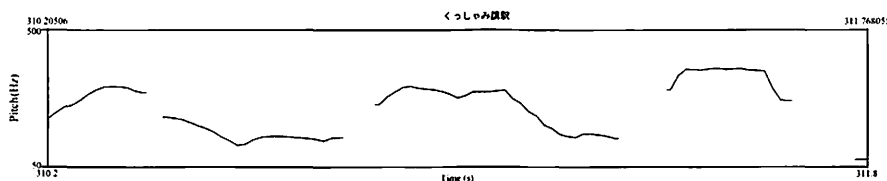
When Kiroku and Masa-han listened to this passage of Koushaku, Kiroku forgot to smolder chili. The opening remarks (19) lasted for about 26 seconds and *Namba Senki* (21) for about 39 seconds, and hence 65 seconds altogether. As well as Kiroku, the Rakugo

audience would also be charmed by the Koushaku performance. At that moment, Masa-han suddenly calls to Kiroku.

(23)



1. M: Oi, (0.39) (Hey!) 2. oi, (1.23) 3. kanshin-shi-te kii-ten-ne ya ara-hen
ya nai kai. (0.55) (You should not be charmed in listening to the Koushaku.)



4. Koushaku wo kiki-ni kita-n to chigau ya ro. (0.55)
(You are not here to listen to it, are you?)
5. K: Oh...

Notice that Kiroku and Masa-han sit in the front row, so Gotou Issan is close by. They must speak in a low voice. Here are the acoustic analyses of these five lines of the short conversation between Masa-han and Kiroku:

(24)

	ave.	min.	max.	range	duration	μ	tempo	pause	dB
1	87.34	87.11	87.58	0.47	0.15	2	0.08	0.60	54.05
2	138.40	133.17	145.28	12.11	0.13	2	0.07	0.39	61.37
3	199.58	119.21	275.96	156.75	2.19	21	0.10	1.23	62.96
4	239.06	74.30	373.07	298.77	1.61	16	0.10	0.55	67.04
5	166.35	164.73	168.32	3.59	0.13	2	0.07	0.55	61.54
ave	166.15	115.70	210.04	94.34	0.84	8.60	0.08	0.66	61.39

We must pay attention to the fact that Kiroku utters only the short response 'oh' in the fifth line, and the rest of the lines are uttered by Masa-han.

From the situation here that Kiroku and Masa-han are sitting right in front of Gotou Issan telling the Koushaku story, the two must speak in low voices. This is verified by the pitches and the intensities. Especially, the first two lines of the calls to Kiroku 'oi' are short and suppressed in order for Gotou Issan not to overhear. There is a large gap between these two lines both in the pitches and the intensities. Both are raised remarkably in the second line, from the average frequency of 87.34 Hz to 138.40, and the intensity from 54.05 dB to 61.37. These are the lowest indices of the pitch and intensity throughout the analyses in this chapter. Then the third and fourth lines became longer and louder as ordinary conversation comes

back. Here Masa-han arouses the attention of Kiroku not to forget the essential mission of revenge on Gotou Issan. Then, Kiroku recollected what to do, and began to smolder chili in the fire. In the old days about fifty years ago, we had braziers as heaters in which charcoal was burned. As Kiroku burned chili in the heater, stimulating smoke rose up to Issan's nostrils. In the Rakugo performance, there is a pause of 8.51 seconds, during which Kiroku fans the charcoal fire. This makes Gotou Issan sneeze during his performance of the Koushaku. In the following transcriptions, the sneezes are inserted as such.

(25)



1. Mochiguchi, mochiguchi wo ma-kubat-tari-shi ga, ima ya ososhi to ai-mat-taru tokoro, (0.60)

((the group of seven generals) each got to the post and awaited)

2. Kantou-gata no (0.28) (the Eastern)



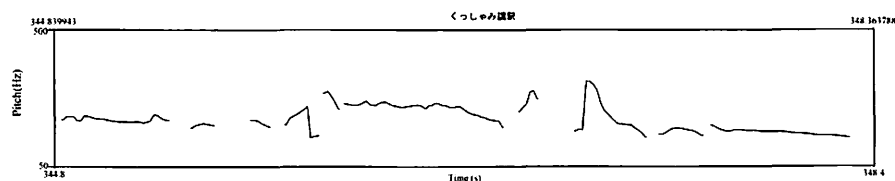
3. gunzei go-man san-zen-yo ki, tatsu no itten yori jouchuu me-gakete oshi-yose-tari-shi ga, naka ni mo (0.38)

(troops of more than 53,000 cavalry, flooded from the direction of the northeast into the castle, among them ...)

4. sakite no taishou, so ... (2.94) 5. heekushon, (1.42) 6. heekushon, (0.94)

(was the general of the head, ... achoo, achoo)

7. aa, kore wa o-kyaku-san, doumo (0.56) (oh, dear guests, sorry)



8. shitsurei wo itashi-mashi-ta. Koushaku nakaba ni kusshami wo suru to iu you na ... (0.54)

(that was such a rudeless thing to sneeze during the Koushaku performance)

9. iya, (0.32) 10. yatsugare mo utata-ne wo shi-te kaze wo hii-ta mono to ai-mie-masu. Daga mou daijoubu, shitsurei wo itashi-mashi-ta.

(well, while I had a doze, I may have a cold. But it is alright, I am sorry)

The pause of 0.28 second after line 2 is unnatural. It seems that instead of 'gunzei' master Beichou wanted to say 'douzei' (troops). Hence he hesitated which is to say and had a pause. Soon we will see that the repetition of the same scene has 'douzei' below.

Below is the table showing the analyses.

(26)

	ave.	min.	max.	range	duration	μ	tempo	pause	dB
1	276.97	111.86	449.23	337.37	5.28	33	0.16	8.51	67.31
2	306.66	210.96	406.82	195.86	1.21	7	0.17	0.60	68.96
3	239.93	60.79	429.49	368.7	6.02	42	0.14	0.28	64.95
4	374.42	125.73	475.01	349.28	1.28	9	0.14	0.38	70.58
5	432.66	391.24	458.70	67.46	0.49	5	0.10	2.94	74.63
6	420.81	276.02	452.41	176.39	0.45	5	0.09	1.42	74.46
7	231.06	61.07	469.58	408.51	1.98	10	0.20	0.94	65.60
8	203.88	133.31	353.45	220.14	3.52	21	0.17	0.56	64.46
9	207.86	200.44	211.09	10.65	0.57	2	0.29	0.54	64.73
10	183.07	58.14	237.03	178.89	6.01	47	0.13	0.32	62.75
ave	287.73	162.96	394.28	231.33	2.68	18.10	0.16	1.65	67.84

Lines 5 and 6 are those of the sneezes, and hence both the pitches and the intensities are physically raised, but the durations are of only 0.49 and 0.45 second respectively. Henceforth, we must pay attention to these intensional sneezes during the Koushaku performance.

Compared with the results of the former opening remarks (20) and the beginning part of *the Namba Senki* (21), the pitches and the intensities are higher and the durations are shorter here in (26). These are mainly due to the intentional sneezes, as pointed out above. Also the pauses are longer since there must be some preparations before and after the sneezes.

In this stage, it can be estimated that half of Kiroku's purpose to interrupt Issan's Koushaku performance was fulfilled. Still Kiroku continues to smolder chili, and Issan had to repeat the part of the Koushaku story (the English translations of the repeated parts are omitted):

(27) 1. Mochiguchi, mochiguchi wo ma-kubat-tari-shi ga, ima ya ososhi to ai-mat-taru tokoro, (0.36) !!

2. Kantou-gata no douzei go-man san-zen-yo ki, tatsu no itten yori jouchuu me-gakete oshi-yose-tari-shi ga, naka ni mo (0.51)

3. sakite no taishou, sono hi no idetachi ika-ni to mite-yare-ba ... (5.04)

(the general, how was the costume of the day, we wondered to see)

4. hee-akkushon, (1.07) 5. hee-akkushon, (1.18)

6. tabi-tabi shitsurei wo itashi-mashi-ta. (0.85) 7. Iyaa, doumo ... (1.12)

(repeatedly I am sorry. Ah, well ...)

8. Shikashi mou sappari-to itashi-mashi-te, (0.38) (But I am alright now.)
9. aa, kore ga de-osame rashuu gozai-masu. (0.35)
(this seems to be the last one)
10. O-kyasan-gata mo go-youjin asoba-san to, kono-goro no kaze wa hiku to naori-nikuu-te hitsukoi. (no pause)
(dear guests, you must be careful not to catch a cold, it is persistent)
11. Ee-kagen-na koto iu-tooru. (He is talking irresponsibly.)

Only the last line of eleventh is the remark by the master Beichou, and the lines from 6 to 10 told by Issan are not the main story, but his apologies to the guests. The acoustic analyses are as follows:

(28)

	ave.	min.	max.	range	duration	μ	tempo	pause	dB
1	233.08	111.39	446.55	335.16	4.90	35	0.14	0.74	65.28
2	232.44	88.55	432.34	343.79	6.78	48	0.14	0.36	66.99
3	339.12	173.82	512.59	338.77	3.37	25	0.13	0.51	68.37
4	434.21	349.75	455.90	106.15	0.59	7	0.08	5.04	76.03
5	438.32	389.55	456.31	66.76	0.58	7	0.08	1.07	73.87
6	142.18	119.15	169.86	50.71	1.55	15	0.10	1.18	63.38
7	140.10	123.76	152.64	28.88	1.13	6	0.19	0.85	65.68
8	243.41	143.55	340.43	196.88	2.05	16	0.13	1.12	60.23
9	235.08	102.43	381.85	279.42	2.07	17	0.12	0.38	67.36
10	217.58	120.47	454.23	333.76	4.36	41	0.11	0.35	64.48
11	160.48	112.90	313.21	200.31	1.23	13	0.09	0.00	67.49
ave	256.00	166.85	374.17	207.33	2.60	20.91	0.12	1.05	67.20

Among these 11 lines, sneezes occupy two of them: lines 4 and 5. Again with these sneezes, both the pitches and the intensities rose extremely than in the other lines. In these sneezes, the counting of the numbers of morae is different from the one in (25): here 'hee akkushon' is counted as 7 morae. The more chili Kiroku smolders, the more serious become the sneezes, is one of the possibilities. Henceforth, the times of the sneezes increases and the intervals between them become shorter and shorter. Another factor with these artificial sneezes is the longer pauses before and after them. The most typical one is that of 5.04 seconds between lines 3 and 4. If we look at the video of this scene, it would be certain that the Koushaku teller Issan's nose tickles with the chili smoke. Other than this, there are three pauses longer than one second.

Through the telling of *the Namba Senki* in (25) and (27), the sneezes were inserted between the main story. After (27), however, the sneezes are so frequent that the main story is interrupted and Issan finally gave up telling it. He apologizes to the audience and asks to leave with free tickets for the next performances. All the guests except Kiroku and Masa-han

left the theater. First, Masa-han accused Issan that he came to listen to the Koushaku, not to listen to the sneezes. Following Masa-han, Kiroku tried to accuse Issan, but he did not do so well as Masa-han did. Then, the punch line follows like this:

(29) Issan: 1. Aiya, (0.26) 2. sore he o-koshi no o-futari-san, (0.33)

(Hey, the two of you, here)

3. hoka no o-kyaku-san-gata wa, soregashi no kurushimi wo mi-te kinodoku gat-te okaeri kudasare-ta ga, (0.33)

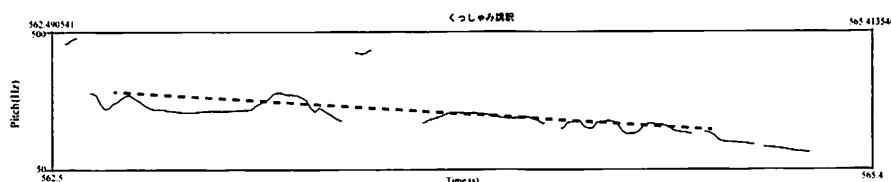
(other guests, sympathizing with me and leaving,)

4. anta-gata o-futari wa nani-ka koshou-meita koto wo mousa-ru-ru. (0.45)

(you two, a kind of accuse me)

5. Nani-ka watashi ni (0.19) 6. koshou de mo o-ari ka. (0.27)

(Have you got something wrong with me?)



7. Kiroku: Koshou ga nai-n de, (0.23) tongarashi kusube-ta-n ya ga na.

(As we had no pepper, we smoldered chili.)

The punch line of smoldering chili instead of pepper may be uttered by Masa-han, as they two did it together. As the development of the story, it is unnatural that Kiroku or Masa-han confessed the smoldering against Issan. As the punch line of the Rakugo story, however, here the word 'koshou' has triple meanings: one is *trouble*, another one is *pepper*, and the other is a *page* of a temple, such as Kichiza in the story of Yaoya O-hichi.

This is a dialogue between Gotou Issan and Kiroku or Masa-han. The turns are occupied by Issan, except the punch line by Kiroku.

Below is the table of the acoustic analyses:

(30)

	ave.	min.	max.	range	duration	μ	tempo	pause	dB
1	265.46	214.54	293.58	79.04	0.36	3	0.12	1.69	71.68
2	194.62	121.84	335.03	213.19	1.34	13	0.10	0.26	67.19
3	193.16	81.90	349.24	267.34	4.87	40	0.12	0.33	64.09
4	206.26	97.68	362.56	264.88	2.72	26	0.10	0.33	64.30
5	228.16	126.40	304.91	178.51	0.86	7	0.12	0.45	65.74
6	288.36	238.11	378.68	140.57	1.44	9	0.16	0.19	70.41
7	268.64	208.69	302.58	93.89	1.05	8	0.13	0.27	69.90
ave	185.37	106.22	237.00	130.78	1.55	13	0.12	0.23	67.60

Let us compare these figures with those of the last passage of the Koushaku, with sneezes, i.e. (28). Issan's address to Kiroku or Masa-han is the tone of daily conversation, not that of telling a Koushaku story. The lower pitches and the intensities than in (28) reflect such a style. After the trouble of sneezing and the cancellation of the Koushaku telling in the midst of the performance, Issan seems to recover his calmness.

Line 7 must be paid attention to as the punch line. The most peculiar point in this line is the pause of 0.23 second between the first half 'Koshou ga nai-n de' and the beginning of the latter half 'tongarashi kusube-ta,' which sounds unnatural in ordinary utterance. This pause is the typical realization of the punch line paratone defined in Kadooka (2011b). Together with the diagram of the F0 above in (29), the adaptations of the definitions of the paratone are as follows:

- (31) 1. The high pitch on the onset syllable is in the initial intonation unit.
2. There is a relatively high baseline in the initial unit.
3. There is a gradual lowering of F0 line from the beginning toward the clause terminal, as indicated by the added line in the chart.
4. The depth of fall in the final unit is the lowest in the whole paragraph.
5. There is a slowing down process; the tempo in line 7 is 0.13 second for each mora, just a little slower than the average of 0.12 second.
6. There is a longer pause of 0.27 second before line 7 and one of 0.23 second midst in the line.

Judging from these factors, it would be appropriate to say that the intonation pattern in line 7 is the realization of the paratone. Further, as this is the punch line of the whole story *Kusshami Koushaku*, it is the punch line paratone defined in Kadooka (2011b). As a mere hypothesis, currently I assume the effects of the punch line paratone at the end of the Rakugo stories as follows:

- (32) 1. With the punch line told in a calm, slow and less loud way, the audience feel a kind of afterglow.
2. By the special manner of telling in the punch line, the performer announces the end of the story.

As for the second point of the announcement of the end of the story, there is either an *o-hayashi* play or drumming. Considering that the end of the performance is announced in these ways, the effect of the punch line paratone must be evaluated from the theatrical viewpoint.

6. Further Analyses

In the story of *Kusshami Koushaku*, there have been several occasions of changes of scene. First, Kiroku visited Masa-han and talked for a while. Then, Kiroku went to the vegetable store. After Kiroku returned to Masa-han's house, they went to the Koushaku theater. In addition to the four characters of Kiroku, Masa-han, the store master and Gotou Issan, the teller master Beichou greeted the audience as the opening remarks. As a summary of each character in the scene, let us look at the table of the acoustic analyses of the scenes. In the following table, the first 'open' signifies the opening remark in section 2, and the second one refers to that of Gotou Issan. *NS* refers to *the Namba Senki* while *PL* is the abbreviation of the punch line.

(33)

	ave.	min.	max.	range	duration	μ	tempo	pause	dB
open	176.18	90.75	263.46	172.71	2.90	20.50	0.15	0.49	62.95
Kiroku	221.81	101.28	360.63	259.6	1.14	10.17	0.11	0.53	66.63
Masa	198.77	83.68	272.59	188.92	1.35	14.29	0.10	0.49	65.58
Karakuri	253.25	129.73	367.51	237.78	3.36	16.27	0.22	0.30	68.47
master	217.92	127.56	320.15	192.59	1.46	15.00	0.10	0.40	67.49
open	207.60	98.01	391.38	293.37	3.71	19.67	0.19	0.84	64.42
NS	271.26	119.81	455.26	335.45	4.23	29.07	0.15	1.10	66.54
PL	200.47	118.04	307.80	189.76	2.58	19.44	0.16	0.69	64.30
ave	218.41	108.61	342.35	233.74	2.59	18.05	0.15	0.61	65.80

We can find various tendencies from these figures. The most remarkable is the tone of voice with the indices of pitches. When we arrange them from the highest to the lowest in F0, the result is as follows:

(34) Karakuri > the master > *Namba Senki* > punch line > Kiroku > opening of the Koushaku > opening remark by master Beichou > Masa-han

This seems to be a quite insightful result of the acoustic analyses up to this point, and we must carefully look at them, as various factors are concerned. Both the highest pitches and the intensities are found in the Karakuri performance, being recited with melodies. Among other factors, it would be the top priority that a certain passage is *sung with melodies*, not told as narrative. With this factor, this passage is outstanding in F0 and intensity.

The second highest in both the F0 and the intensity is found in the vegetable store master's turns. This is mainly because he was upset and excited by the crowd of the passers-by who were attracted by Kiroku's reciting of the *Yaoya O-hichi* Nozoki-karakuri.

Then follows the Koushaku performance of *the Namba Senki*, which is against the expectation that the Koushaku telling was done with a suppressed tone of voice, with the low

itches and intensities. This unexpectedness is partly because of the addition of the sneezes.

The following are the turns of the punch line, Kiroku in the beginning of the dialogue with Masa-han, the opening remarks of the Koushaku, and so on. As the range between the highest pitch of 129.73 Hz in the Karakuri performance and the lowest of 83.68 in the Masa-han's turn is relatively narrow, we will stop the discussion here.

Next are the order of the intensities from the loudest to the least:

(35) Karakuri > the master > Kiroku > Namba Senki > Masa-han > opening of the Koushaku > punch line > opening remark by master Beichou

When we compare the order with (34) above, it will be clear that these two coincide. The first two items of Karakuri and the vegetable store master are exact the same in these two orders. *The Namba Senki* Koushaku occupies the third in (34) and the fourth in (35), and so on. At this point, it would be probable to assume that the two indices of the F0 and the intensity are highly related to each other.

It would be more meaningful, then, to calculate the correlation coefficient of these two indices. Below is the result, with the abbreviation NK for the Nozoki-karakuri:

(36)

open 1	Kiroku	Masa	NK 1	master	NK 2	NK 3	open 2	Koushaku	ave
0.70	0.51	0.15	0.15	0.91	-0.05	0.58	0.57	0.68	0.47

The average coefficient is 0.47, with the only one minus value of -0.05. This passage includes the turns of the master and those of Kiroku: the index of the former is 0.17 while that of the latter is -0.17 with the interjected chants 'korya,' with high pitch but with low intensity. Taking such exceptional factors into account, the average coefficient would be higher, and hence the correlation between the pitches and the intensities would be closely linked together. Physically, it is natural to assume that higher pitch entails higher intensity.

Other than these two main indices, we must analyze such factors as duration, the number of the morae, tempo and pauses. The correlation coefficients of them are as follows:

(37)

	duration	μ	tempo	pause	dB
min.	0.26	0.19	0.34	-0.03	0.66
duration		0.85	0.77	0.61	-0.13
μ			0.34	0.77	-0.26
tempo				0.09	0.03
pause					-0.29

There are two categories of these indices; one is those concerned with time, i.e. duration, the number of the morae (μ), tempo and pause, and the other is those of minimum frequency (F0)

and the intensity. It is inevitable logically that the coefficients between those indices concerned with time, emphasized with shadow in the table, are high. In fact, of the six coefficients, four are over 0.50. Those of less than 0.50 are the one between the tempo and the numbers of the morae with 0.34, and another one between tempo and pause with 0.09. As the tempo is calculated by dividing the duration by the number of the morae, these three are closely related to each other. Pauses are basically independent of these three, but there is the possibility of the co-occurrences of the longer durations and the longer pauses, which is suggested by the coefficient 0.61 in the table above.

Those coefficients related to F0 and the intensities, on the other hand, are lower in general. The only expectation is the one between F0 and the intensity of 0.66. This is attested repeatedly in the previous discussions that the high pitches and loud intensities often cooccur. All the other coefficients are, however, less than 0.50 and three of them have minus values: the one between the durations and the intensities, -0.13, the one between the numbers of the morae and the intensity, -0.26, and the one between the pauses and the intensities, -0.29. It can be assumed, then, the intensities and the time-related features are independent of each other.

7. Conclusion

In this chapter, a Kamigata Rakugo story *Kusshami Koushaku* has been analyzed mainly from the acoustic viewpoint. In this story, other narrative arts of Koushaku and Nozoki-karakuri are told. As a concluding remark of this chapter, the results of the analyses are summarized:

(38) daily conversations in Rakugo: the durations are between 1 and 2 seconds, 10 to 15 morae per one intonation unit

Koushaku: high pitches and high intensities – raised voice, durations of over 4 seconds, 20 to 30 morae per one intonation unit, use of wooden clappers and a wrapped fan during pauses, flat level monotonous tones in longer lines

Nozoki-karakuri: high pitches and high intensities with melodies – raised voice, durations of between 3 and 4 seconds, 16 morae per one intonation unit

The most insightful finding would be the flat, level monotonous F0 patterns in longer lines in Koushaku. Such a style is far from the daily conversations in Rakugo, and hence the gap between these two styles is the source of the laughter in this story.

Another finding is the punch line paratone. As the definition, the paratone has to fulfill the six phonetic conditions, and the punch line paratone is destined to be located in the very last line of the story.

Notes

- 1) The name of the era Keichou was renewed as Genna on July 13th of the twentieth year of Keichou. Hence, as a historical fact, May 7th was in the era of Keichou. Genna should be marked as the beginning of a peaceful time without major battles in Japan, for the first time since the eleventh century.
- 2) In another source such as Katsura Beichou (2003), another strategist Sanada Yukiyasu, Yukimura's son, is added.
- 3) As a historical fact, Motochika was dead at that time, and his son Morichika participated in the battle.
- 4) The last member of the big four should be Susukida Haito-no-shou Ki-no Kanesuke, according to Katsura Beichou (2003).
- 5) As the members of the group of seven, Itou Tango-no-kami (governor of the state of Tango (Kyoto prefecture)) and Hayami Kai-no-kami (governor of Kai (Yamanashi prefecture)) are listed (ibid.).
- 6) Etymologically, 'kira hoshi no gotoshi' (fine cloth is like stars) is correct.

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