

# A Preliminary Study on the Intonation of Interrogative Sentences in Yaburoki Japanese

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## 1. Introduction

Japanese intonation is relatively well-studied compared to the intonational systems of other world languages (e.g., Pierrehumbert and Beckman 1988, Koori 2020, just to name a few). However, most previous studies on Japanese intonation have gathered research materials mainly from Tokyo or from what is known as Standard Japanese. Even though numerous studies have examined the accentual systems of Japonic dialects, descriptions of dialects other than the Tokyo dialect in terms of intonation are still scarce, and attempts to classify the diverse patterns of dialectal intonation are nascent (Igarashi 2021; Kibe 2010, 2013, 2019). Thus, it is essential to thoroughly describe the intonation systems of dialects at this early stage of the research.

Moreover, Japan has been experiencing a steep decline in the number of traditional dialect speakers, and the rich diversity of dialects currently faces a severe crisis partly due to the standardization of language, including in Nagasaki. Additionally, with the exception of Nakamura (2019) and Kadoya (2020), no comprehensive study has been conducted on dialectal grammar, including intonation, in Nagasaki, despite the fact that Nagasaki dialects differ from each other not only in terms of phonology but also in syntax and morphology even within the same prefecture. These are some reasons why descriptive studies of dialects in Nagasaki are now highly anticipated. Thus, this study aims to describe the intonation of interrogative sentences in Yaburoki as a first step into the rich world of Yaburoki phonology, which is thought to have no distinction in accentual patterns (Tokyo Toritsu Daigaku Toshi Kenkyuu Iinkai 1969). We conclude that the Yaburoki system should be characterized as the “falling” pattern in the categorization of Kibe’s (2019) intragenetic typology.

Yaburoki island is located in the northern part of the Goto archipelago, Nagasaki (see the map in Figure 1). The island has remained unpopulated since 1972 when all its residents left. Although Yaburoki Japanese has numerous interesting features, it remains

underdescribed. The survey participant (hereafter, the participant), who was born and raised on Yaburoki, currently resides in Nagasaki City.

This paper is organized as follows. Section 2 summarizes previous studies on Japanese dialectal intonations and Nagasaki dialects. Section 3 describes the methods adopted for this research. The results are presented in Section 4, and the discussion follows in Section 5. In Section 6, some remaining issues are discussed.



Figure 1. Map of Yaburoki

## 2. Literature review

The first subsection introduces Kibe's (2019) intragenetic typology of Japanese dialect intonation; this is the framework used in the present study. The second subsection summarizes two studies on sentence-final intonation of Nagasaki dialects.

### 2.1. Intragenetic typology of interrogative intonations in Japanese dialects

Kibe (2010, 2013, 2019) proposed an intragenetic typology of the final intonation of interrogative sentences in Japanese dialects. Kibe (2019) describes four main types as presented in Table 1.

Table 1. Four main types of interrogative intonation in Japanese dialects as described by Kibe (2019)

1. Rising	The intonation rises at the end of the sentence, regardless of the existence of any morphological marking of a question (e.g., Tokyo).
2. Falling	The intonation falls at the end of the sentence (e.g., Kagoshima).
3. Complementing	The intonation falls at the end of the sentence when there is a morphological marking of a question. In the absence of any morphological marking of a question, the intonation rises (e.g., Matsumoto).
4. Gradual Rising	The pitch rises from the question marker to the end of the sentence gradually (e.g., Fukuoka).

According to Kibe et al. (2013: 40-41), the Nagasaki City interrogative intonation pattern aligns with the “falling” pattern, where the pitch of the interrogative sentence always falls regardless of the presence or absence of a morphological question marking.

## 2.2. Previous studies on interrogative sentence-final intonations of Nagasaki dialects

As mentioned in Section 1, descriptive studies on Nagasaki dialects are scarce, and language description in this geographically diverse prefecture is desperately needed. To the best of our knowledge, Nakamura’s (2018) description of Uku-Nogata is the only exception in terms of research on sentence-final intonation in Nagasaki. According to Nakamura (2018: 27-29), the intonational patterns of WH- and YES/NO-questions are different in Uku-Nogata. In YES/NO-questions, the pitch falls at the end of the sentence. However, in WH-question, the pitch at the end of sentence does not follow a specific pattern; it could be either rising or falling. Therefore, the pattern of Uku-Nogata does not fit into Kibe’s (2019) intragenetic typology. The Uku-Nogata case needs scrutiny as there might be differences in meaning between falling and rising contours in WH-questions, which can be of scientific interest.

Another description contrasting Nakamura’s (2018) observations was found in Sakaguchi (1998: 14), who states, “it is difficult to grasp how it is objectively, in Nagasaki Prefecture dialects, there seems to be rising intonation for encouraging others to do things, along with the rising intonation for interrogative sentences which can be observed in the Standard Japanese as well.” However, Sakaguchi (1998) does not provide a detailed description, as this argument is a part of a general introduction to the dialects of the whole of Nagasaki Prefecture. Sakaguchi’s (1998) description is also contrary to that of Kibe et al. (2013: 40-41).

As we have shown in this section, descriptions on interrogative intonation in Nagasaki Prefecture dialects have striking differences. This indicates variations in interrogative intonation in Nagasaki and underscores the urgent need for descriptive linguistic research on each individual dialect in the prefecture. The present study offers one on Yaburoki.

### 3. Methods

This study aims to investigate the characteristics of sentence-final intonations of interrogative sentences in Yaburoki. To ensure variety in the types of interrogative sentences, we collected sentences with high/low information demand, YES/NO and WH-questions, and questions with/without sentence-final particles. Following Kibe (2019), the sentences used as survey material in this study are divided into categories according to question types and high/low information demand sentences. The details are presented in Table 2.

The person who participated in this study was born on Yaburoki in 1944 and lived there for 28 years before leaving the island in 1972. The sentences were presented to the participant in Standard Japanese on paper, and he was asked to translate them into the

Table 2. Details of the sentences used as survey material

Information demand		Model sentence	Number of sentences
High	YES/NO	その車に アキラも 乗ったの? (Did Akira also get in the car?)	34
		それ、全部 買うつもり? (Are you going to buy it all?)	
	WH	その車に だれが 乗ったの? (Who got in the car?)	24
		明日の 集まりは 何時に 始まるの? (When will the meeting tomorrow begin?)	
Low	YES/NO	この前 行ったお店も 悪くないじゃない? (The shop we went to last time is not bad, is it?)	22
		天気も 良くないし、今日は 中止する? (The weather isn't very good today, so shall we cancel it?)	
	WH	あれ、どこにやったかな? (Oops, where did I put it?)	10

Yaburoki dialect and enunciate them in face-to-face sessions. Data were collected over three sessions, totaling approximately 3 hours and 40 minutes, in March, April, and June 2022. The recording equipment used for the sessions was a Zoom H4n Pro audio recorder with a built-in microphone. The acoustic analysis software Praat (ver. 5.3.34) was used to extract the pitch.

Since sentence-final particles are very common in interrogative sentences in Yaburoki, the speech data collected were divided into seven groups according to the type of sentence-final particle used: a. *ka*, b. *na*, c. *tsu* or *to*<sup>1</sup>, d. *tsuka* or *toka*, e. *tsuna* or *tona*, f. others, and g. none (no sentence-final particle).

To determine the sentence-final intonation, we employed the following procedure. First, if the sentence did not have a sentence-final particle, we checked the F0 value at the beginning and end of the final syllable of the sentence. If the sentence had a sentence-final particle, we checked the F0 value at the beginning and end of the sentence-final particle. Then, we subtracted the F0 value at the beginning from the F0 value at the end and obtained the subtracted value. If the value was a positive number, we classified the intonation as “rising”; otherwise (i.e., subtracted value equaled zero or a negative number), we classified the intonation as “non-rising.”

## 4. Results

A total of 90 sentences were used in this study, and 157 utterances comprising pronunciation data were collected. The results are shown in Table 3.

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<sup>1</sup> *To* and *tsu* seem to be allomorphs; however, the details have not been specified yet.

Table 3. Results

Information demand		Intonation	Sentence-final particles						
			a. <i>ka</i>	b. <i>na</i>	c. <i>tsu/to</i>	d. <i>tsuka/toka</i>	e. <i>tsuna/tona</i>	f. others	g. none
High	Y/N (52)	Rising (9)	-	-	-	12.5% (2)	-	40.0% (2)	83.3% (5)
		Non-rising (43)	100% (9)	100% (2)	100% (1)	87.5% (15)	100% (12)	60.0% (3)	16.7% (1)
	WH (51)	Rising (1)	-	-	-	-	-	-	50% (1)
		Non-rising (50)	100% (7)	100% (5)	100% (7)	100% (14)	100% (13)	100% (3)	50% (1)
Low	Y/N (34)	Rising (4)	-	-	-	14.2% (1)	-	11.1% (1)	25.0% (2)
		Non-rising (30)	100% (6)	-	-	85.8% (6)	100% (4)	88.9% (8)	75% (6)
	WH (20)	Rising (2)	-	-	-	-	-	9.1% (1)	33.3% (1)
		Non-rising (18)	-	100% (1)	-	-	100% (5)	90.9% (10)	66.3% (2)

\*Raw frequencies are shown in parentheses.

These samples have the typical non-rising intonation. The pitch contours are shown in Figures 2-7.

- (1) *son kurume akiramu nottatsuka* (“Did Akira also get in the car?”)
- (2) *soruba zenbu kau tsumoruka* (“Are you going to buy it all?”)
- (3) *son kurumane daaga nottatsuna* (“Who got in the car?”)
- (4) *ashitan yoriewa nanji hajimattoka* (“When will the meeting tomorrow begin?”)
- (5) *kon mae ita misemu waruwanakattata*<sup>2</sup> (“The shop we went to last time is not bad, is it?”)
- (6) *hiyorumo yonakaken, kyowa yamuuka* (“The weather isn’t very good today, so shall we cancel it?”)

<sup>2</sup> Examples (5-6) seem to be non-interrogative sentences. However, we included these samples into the current study since we have no detailed knowledge on Yaburoki modality. Further research is needed on the Yaburoki grammar as a whole.

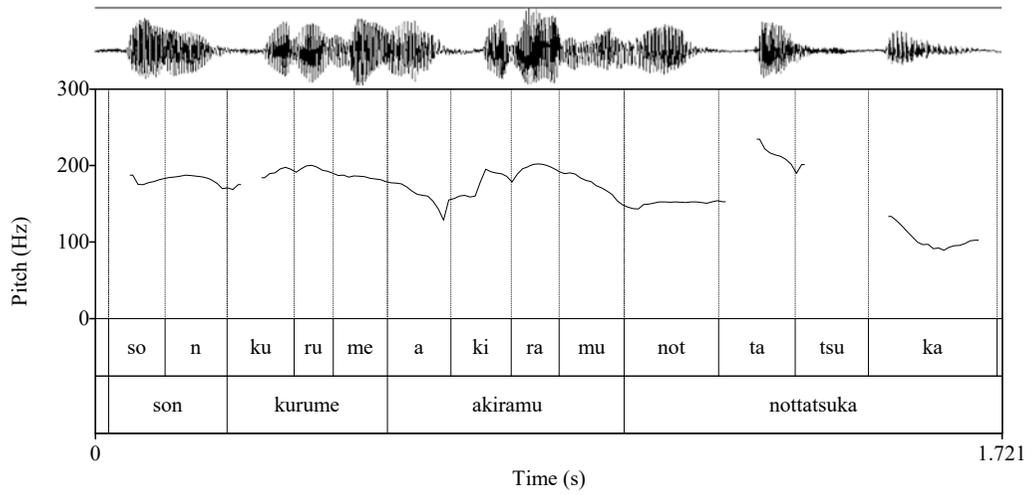


Figure 2. *son kurume akiramu nottatsuka*

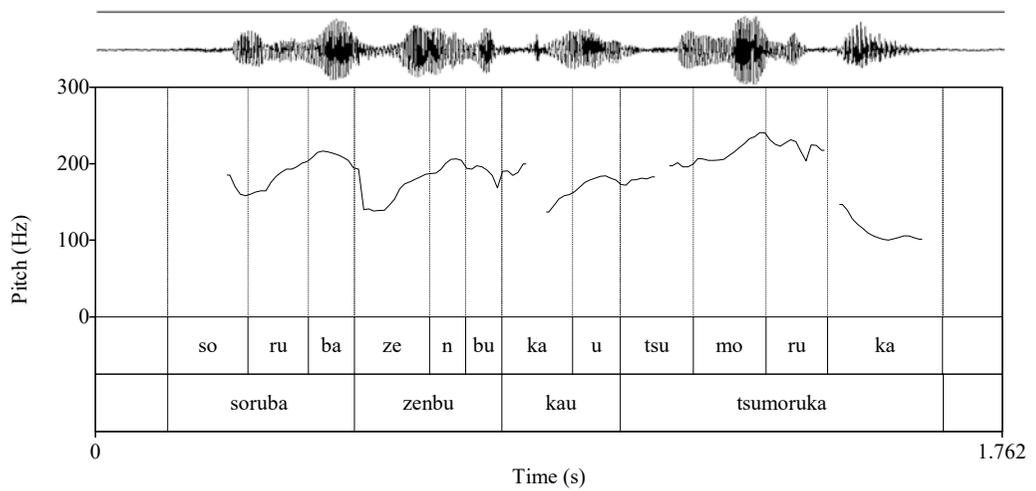


Figure 3. *soruba zenbu kau tsumoruka*

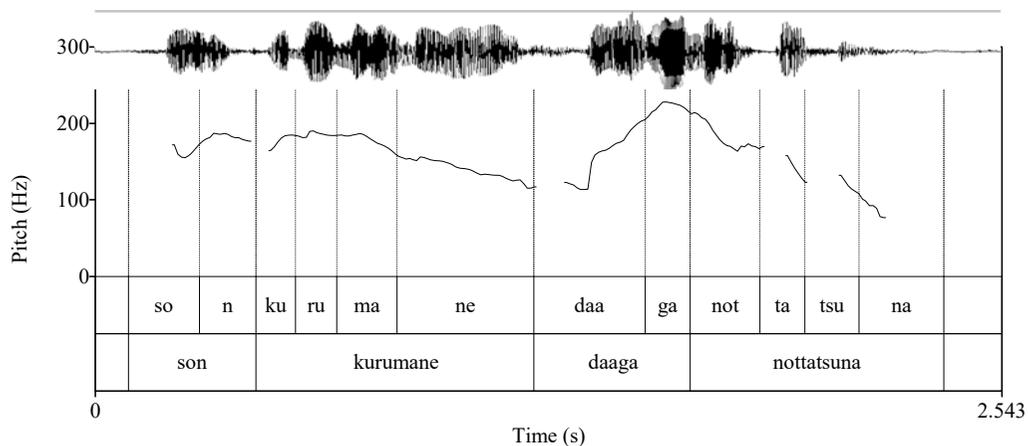


Figure 4. *son kurumane daaga nottatsuna*

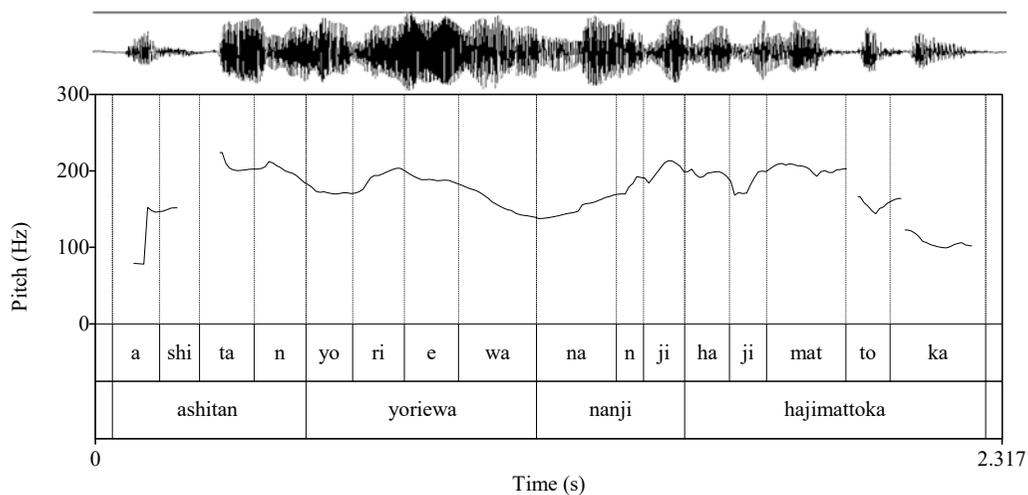


Figure 5. *ashitan yoriewa nanji hajimattoka*

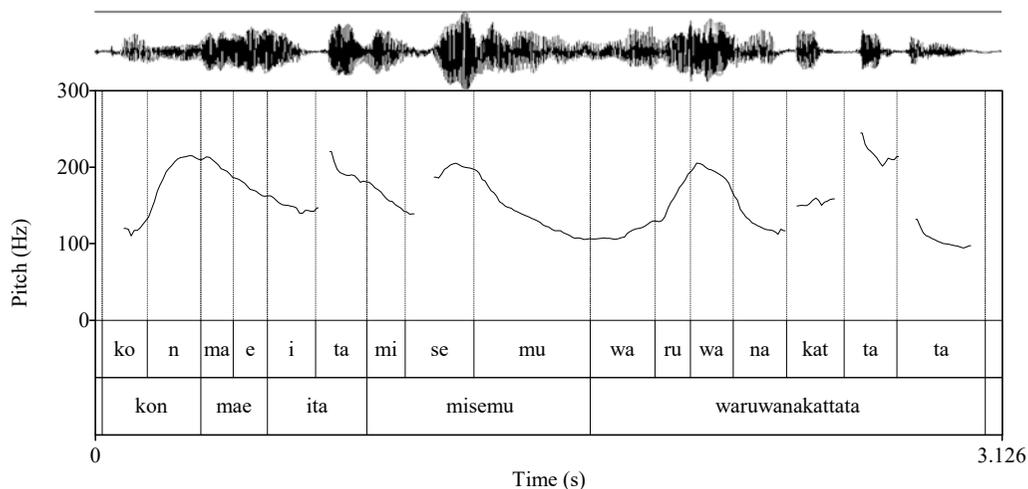


Figure 6. *kon mae ita misemu waruwanakattata*

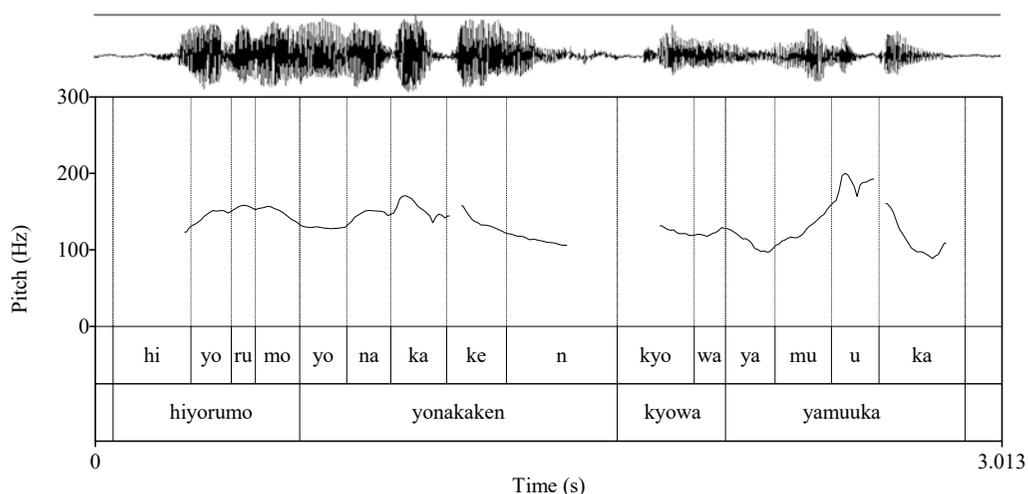


Figure 7. *hiyorumo yonakaken, kyowa yamuuka*

## 5. Discussion

As shown above, the sentence-final intonation in Yaburoki interrogative sentences is non-rising regardless of the level of information demand or question type. This is consistent with Kibe's (2013) description of the Nagasaki City dialect. Intonations of sentences with sentence-final particles *ka*, *na*, *tsu*, *to*, *tsuna*, and *tona* were non-rising without exception. Even for the rest of the samples, that is, sentences with *tsuka*, *toka*, and other sen-

tence-final particles and sentences without sentence-final particles, the non-rising intonation was used the most often. Thus, the Yaburoki interrogative intonation system can be categorized into the “falling” pattern of the intragenetic typology as described by Kibe (2019).

Sentences with the particles *chiya*, *ya*, *ne*, *chii*, *tsue*, and *e* were also realized with a non-rising intonation. In contrast, there are examples with *kai* and *ba* that show a rising intonation (7-8) (Figures 8-9).

(7) *aiya*, *doki yattarokai* (“Oops, where did I put it”)

(8) *e*, *nanba* (“Oh, what?”)

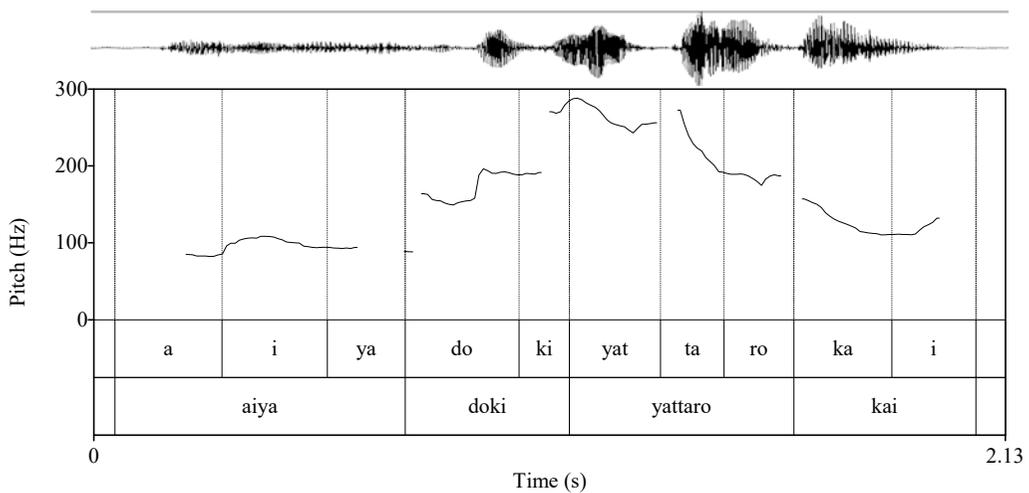


Figure 8. *aiya*, *doki yattarokai*<sup>3</sup>

<sup>3</sup> The unvoiced consonant [k] at the beginning of the sentence-final particle *kai* seems to affect the F0 value. Moreover, we can see the rising within the vowel /i/.

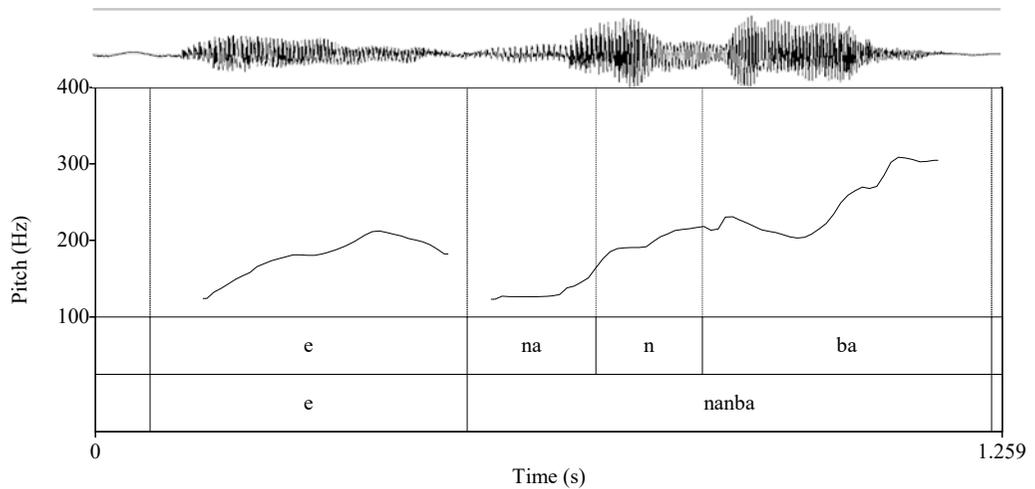


Figure 9. *e, nanba*

These examples show self-questioning and questioning in return. As will be discussed in the final section of this paper, we did not have a sufficient number of samples to draw a clear conclusion on this issue, but this seems to be an interesting observation. Additionally, there are some samples without any sentence-final particle where the intonation rises nevertheless (9) (Figure 10).

(9) *ang*<sup>4</sup>, *soba* (“What? Soba?”)

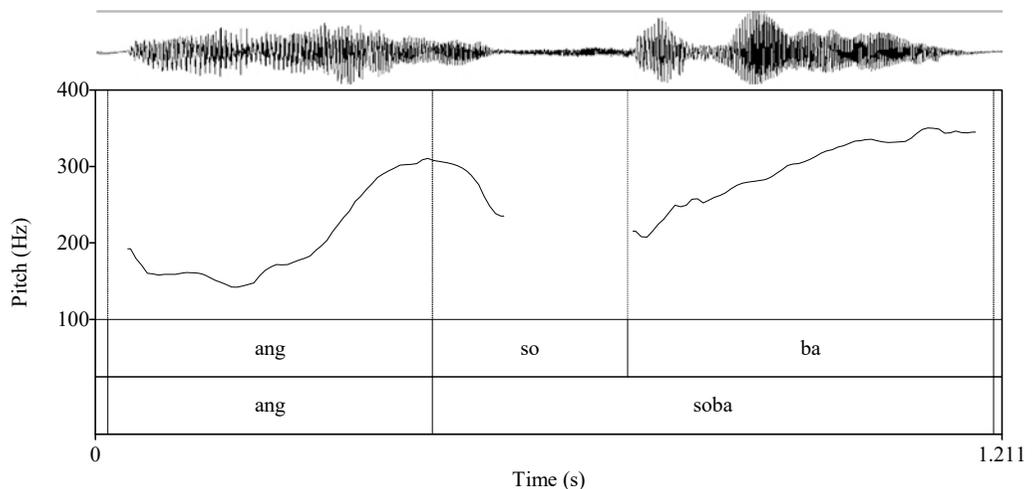


Figure 10. *ang, soba*

<sup>4</sup> The expression “ang”, which is an expression of question-in-return, seems to be realized as a nasalized vowel [ã] (or a vowel [a] followed by a velar nasal [ŋ]) which is extremely rare in normal utterances in Yaburoki. Thus it must be interesting to scrutinize this topic. This is the reason why we utilize the unusual transcription “ang” for this expression.

Again, this example is a question in return. Interestingly, however, some sentences without any sentence-final particle that are not questions in return or self-questions have a rising intonation. See (10-11) (Figures 11-12).

(10) *yapparu kurumawa mada kawanhooga yokachu omou* (“Do you think we should not buy a car yet?”)

(11) *moo meshe kuta* (“Have you already had a meal?”)

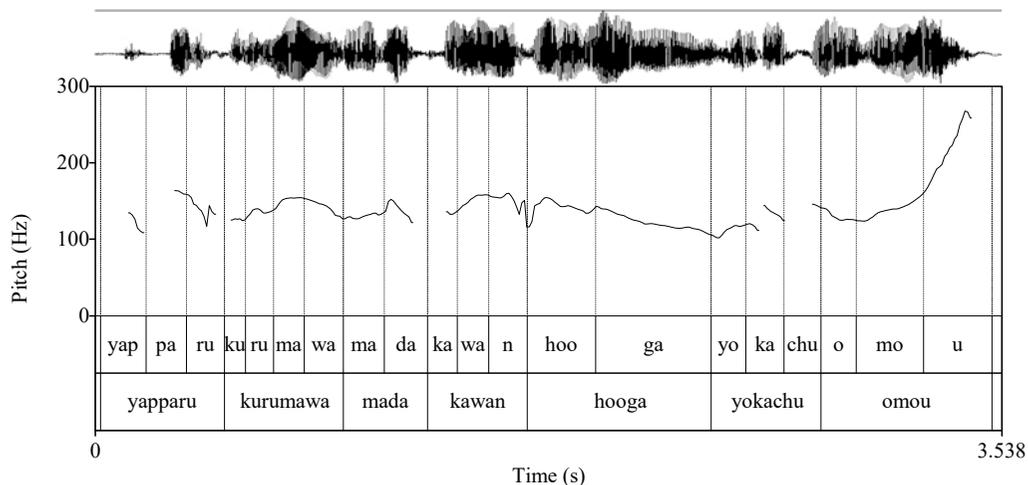


Figure 11. *yapparu kurumawa mada kawanhooga yokachu omou*

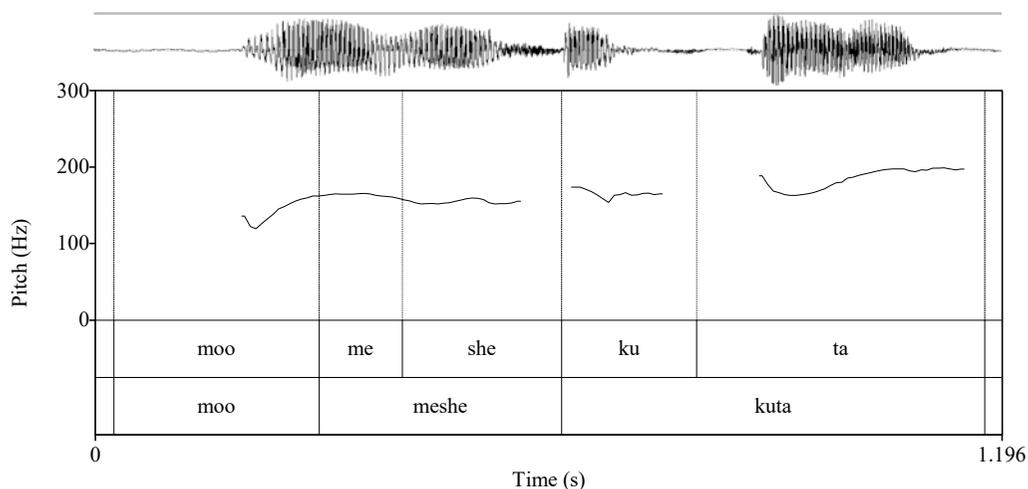


Figure 12. *moo meshe kuta*

These are not questions in return or self-questions, but they have a rising intonation. This seems to indicate that Yaburoki falls into the “complementing” type of Kibe (2019)’s intragenetic typology, since these examples without any interrogative markings are seen to be rising. However, it is important to note that interrogative sentences without any morphological marker are considerably rare<sup>5</sup>. Thus, we have drawn the conclusion noted above. However, if further examination reveals that interrogative sentences without any markers are common, the present conclusion must be reconsidered.

Finally, let us consider examples of seemingly rising pitches in sentences with the sentence-final particle *tsuka*. In this study, sentences with *tsuka* or *toka* were realized mainly with non-rising contours. However, these three samples sounded like they had a rising tone even though the F0 values appeared to be flat (12-14) (Figures 13-15).

(12) *e, koruga ichiban yasukatsuka* (“What? Is this the cheapest?”)

(13) *ee, moo itatsuka* (“What? Has he gone already?”)

(14) *aa, chanponba kutatsuka* (“Did you have *champon* noodles?”)

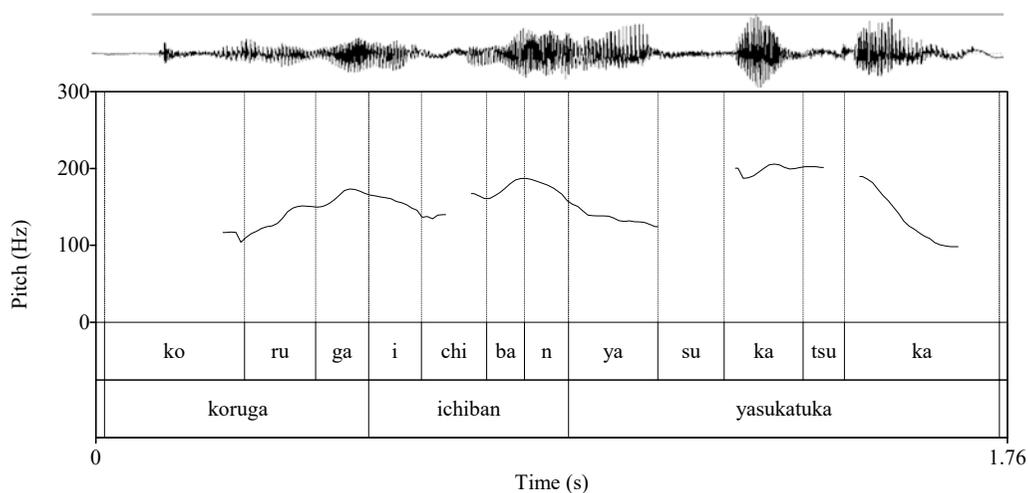


Figure 13. *koruga ichiban yasukatsuka*

<sup>5</sup> Only 16 samples out of 157 in total were realized as rising. Moreover, some of these samples were obtained by requests from the researcher to omit sentence final particles.

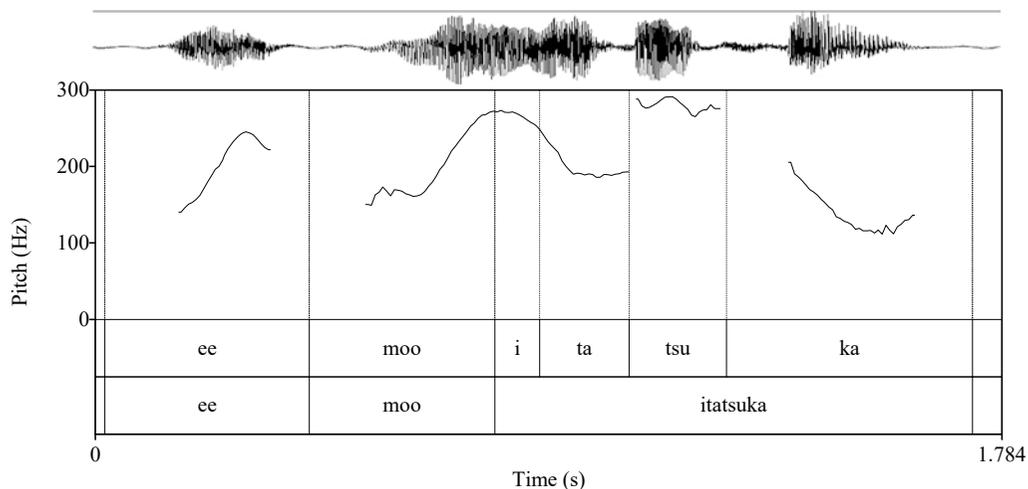


Figure 14. *ee, moo itatsuka*

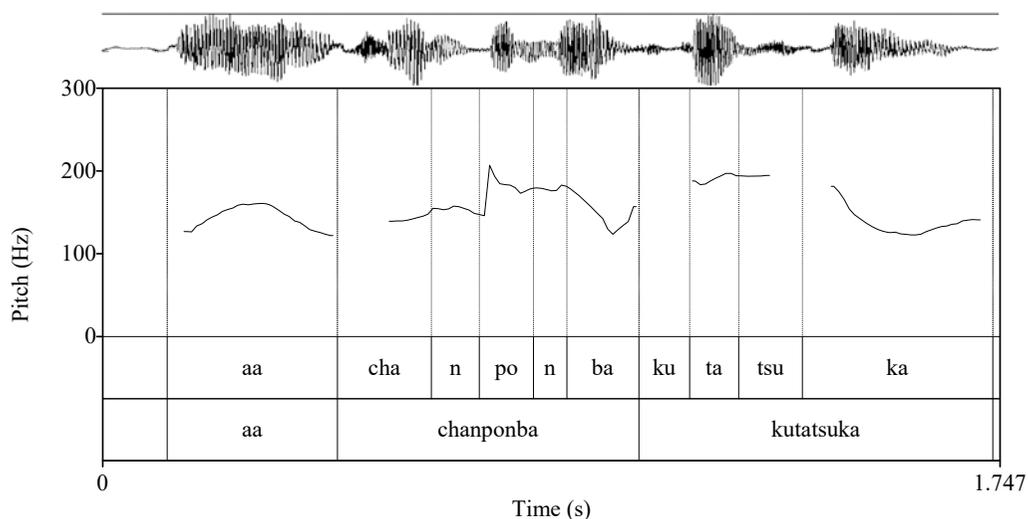


Figure 15. *aa, chanponba kutatsuka*

The reason for this disparity is unclear, as there are very few examples of this type of sentence, but several factors can be considered to be influential. First, there is the influence of vowels. In the final particle *tsuka*, there is a change from the narrow vowel “u” to the broad vowel “a,” and it is possible that the change in pitch during the transition caused these sentences to sound as if they were rising. In addition, all three samples were collected at the very end of the survey, which was conducted over a long period of time,

and the possibility of fatigue and changes in the physiological condition of the participant cannot be ruled out. Thus, in this paper, these samples are treated as exceptions.

## 6. Remaining issues

Two significant issues remain, and we would like to mention them here. These two points are related to something “regarded as a near universal pattern,” that is, “the use of rising intonation as a mark of a question (typically, a polar or yes/no question)” (Maddieson 2011: 539-540). First, we would like to touch upon the intonational difference between interrogative and affirmative sentences ending with *tsu* or *to*. As aforementioned, while *tsu* and *to* can be an interrogative marker, they are not necessarily interrogative. They can also appear at the end of affirmative sentences. Thus, the difference in intonation is interesting. It seems that affirmative sentences take a non-falling intonation, whereas interrogative sentences take a clear falling intonation, as shown in Figures 4 and 16<sup>6</sup>.

(15) *konmae nmakatta tse takoyattatsu* (“What was tasty last time was octopus.”)

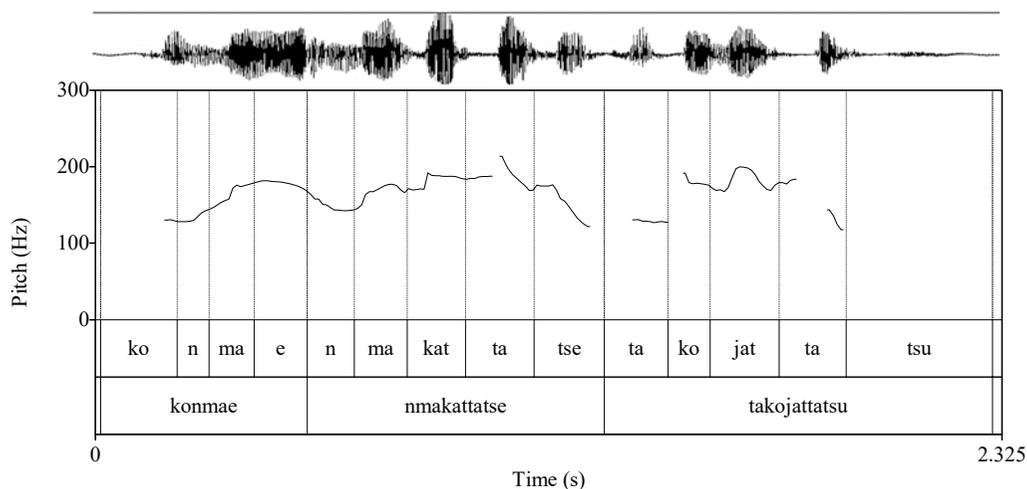


Figure 16. Affirmative sentence ending with *tsu*

This pair is a counterexample of the “near universal pattern.” More examples are needed to scrutinize these patterns in depth.

The second point is the intonation of self-questioning sentences. In the course of the

<sup>6</sup> It is impossible to judge if the sentence-final particle *tsu* realized as falling or non-falling from Figure 16 because it is devoiced. However, we have concluded tentatively that it is non-falling because the vowel would not be devoiced if *tsu* was realized as falling.

fieldwork for the present study, we collected a few samples of self-questioning sentences that appear to have a rising intonation, as shown in Figure 17.

(16) *kyowa honnakotsu ikajidemu yokaccharokai* (“I wonder if it really is good not to go today.”)

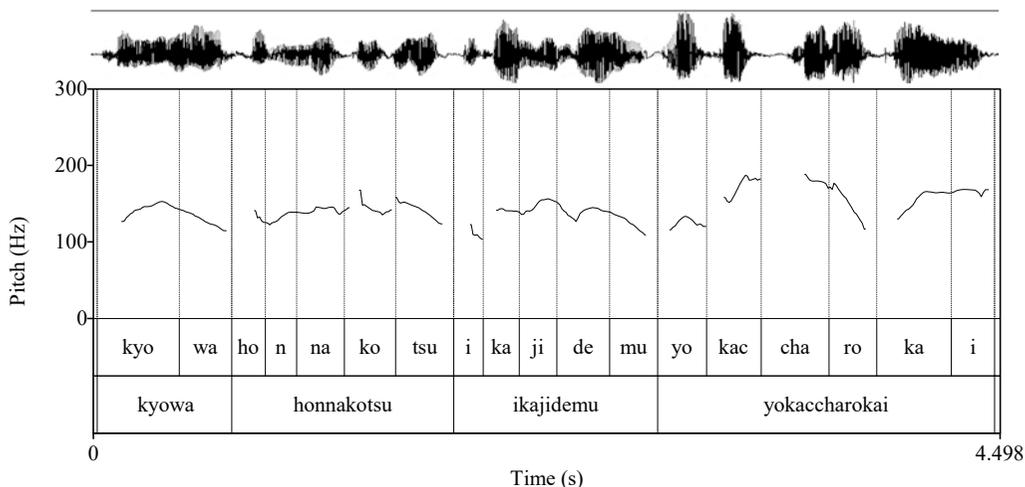


Figure 17. *kyowa honnakotsu ikajidemu yokaccharokai*

While we do not have sufficient samples to determine whether self-questioning sentences in Yaburoki have a rising intonation, this might be interesting because interrogative sentences in Yaburoki have a falling intonation. This combination of intonations observed in Yaburoki seems to be contrary to the general understanding of intonations discussed above. While there are numerous interesting aspects of Yaburoki phonology, these two issues will be the priority of our research pursuits in the near future.

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