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# The Remnants of Japanese Phonology in the Micronesian Chuuk

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## 1. Introduction

We present the result from a survey of Micronesian Chuuk or Truk according to the following categories.

- 1.1 Outline of the survey
- 1.2 Differences in the Conditions of the Informants
2. The Phonology of Chuuk, Differences and Similarities with Japanese
  - 2.1 Comparison of the Phonological Systems
  - 2.2 Phonological Environment and Allophones
3. Phonetic Materials
4. Survey Results
  - 4.1 The Phonetics of the Elderly Speakers
  - 4.2 Phonology of the Younger Generation (High School Japanese Language Learners)
  - 4.3 Differences in the Two Groups
5. Analysis and Comments

### 1.1 Outline of the Survey

This survey was conducted over three years from 1994 to 1996. In the beginning, we called on people who had been introduced to us by an experience field researcher in the area. After this we narrowed the field to those with certain memories and who responded well to the survey. Furthermore, as we entered the second and third year surveys, we met new people and were able to find and select informants on our own.

On the whole we looked for both men and women informants over 65, but overall the direct interviews were mainly with men. The reason for this was that when Japan

received the mandate of the League of Nations and began administration of these islands, it seems that the students attending the public elementary schools and proceeding on to the higher supplementary schools were mostly boys.

The methodology of the survey was to have the informants respond to a prepared questionnaire and to have them discuss their everyday and school life during the colonial years. This was tape recorded with a digital DAT recorded and a tie pin microphone on the informants' chest.

The prepared questionnaire consisted of riddle questions and repetition questions, because it was concluded many of the speakers would not be adept at reading aloud tasks.

In order to make a comparison with these people who had learned Japanese 50 years ago, we also conducted interview surveys of local high school children who were studying Japanese in school. However, in the case of most of the schools, Japanese classes amounted to only 2 or 3 hours a week and therefore our speakers had not yet learned much Japanese. For this reason, most of the data we gathered from these speakers consisted of repetition data.

## 1.2 Differences in the Conditions of the Informants

The education system for Micronesian children during the Japanese Mandate administration consisted of a 3-year elementary (*honka*) school, followed by a 2-year supplementary (*hoshūka*) school and a further 1-year program in Carpentry Vocational classes. As a rule, elementary school began at eight years of age, but more than a few students entered this when they were 15 or 16. At the end of the 3-year elementary school, a few of the students considered the best (we were told 2 or 3 per school) were allowed to continue on to the supplementary course. Moreover, the best boy students in this program continued on to the carpentry course to learn vocational skills (along with a small number of female auditor students). Some students who excelled here were chosen as teaching assistants or auxiliary police officers, while others were hired at military hospitals or by the Japanese-run South Seas Trading Corporation, providing them with a comparatively stable livelihood.

From a composite of our interviews, we received the impression that Japan brought with it the '*gakureki shakai*' concept of a "society based on academic achievement". There was no education beyond the '*mokkō*' carpentry course, but we gathered from our individual interviews that the level of education completed laid the

foundation for one's future livelihood.

For example, a Mr. X who finished only elementary school was employed by a 'panpan-ya' (house of prostitution). While someone who went on to the supplementary or vocational level might be employed as what we today would term a white-collar job; those who did not would go into blue-collar work.

During our survey, these occupational differences sometimes presented themselves as differences in a speaker's Japanese repertory as well.

A typical example of this were curse words. Mr. X reenacted the way Japanese used to "give him a whaling" used the slang term for this, 'bunnaguru', as well as the threatening phrase 'keene yarō' (kono yarō). We failed at our attempts to elicit this type of rough language from those who continued their education. Although those people too must have heard this kind of rough Japanese talk many times, perhaps they did not encounter this phrase in such a situation which had as great an impact as this one appears to have had on Mr. X.

The differences in the input resources for each individual's natural language acquisition after school must have been responsible for the differences in individual speaker repertories.

## 2. The Phonology of Chuuk, Differences and Similarities with Japanese

### 2.1 Comparison of the Phonological Systems

According to the Doctorate dissertation of Hiroko Chinen Quackenbush entitled "STUDIES IN THE PHONOLOGY OF SOME TRUKIC DIALECTS" (The University of Michigan, 1970), the phonological system of the Moen dialect spoken in the central part of the Chuuk State is as follows:

(1) Each of the phonemes may occur long or short except /r, j, w, h/ which are phonetically long only when they occur in like clusters across morpheme boundaries,

i.e., -r+r-, -j+j-, -w+w-, -h+h-\*

\* However, this "h" does not appear in the phonological system below.

(2) The minimal possible phoneme sequences between the word boundaries,

i.e., (# \_\_\_\_ #) are

CVC

CVV

(3) No consonant clusters or sequences of different vowels can occur except in loan words.

**Moen Vowels:**

	Front	Back	
		Unrounded	Rounded
High	i	y	u
Mid	e	ʌ	o
Low	æ	a	ɔ

**Moen Consonants:**

	Labial				
	Velarized	Plain	Dental/Alveola		Velar
Stops*	p <sup>w</sup>	p	t	c*	k
Fricatives			f	s	
Nasals	m <sup>w</sup>	m	n		ŋ
Trills			r		
Glides			j		w

Note that all consonants may occur in the word-initial, -medial or -final position.

(\* Here /c/ is classified as a stop, but in the Tokyo Standard below, it corresponds to both stops and fricatives.)

A look at the phonology system of Standard Japanese shows the following.

**Tokyo Standard Vowels:**

	Front	Back	
		Unrounded	Rounded
High	i	y*	
Mid	e		o
Low		a	

\* Ordinarily, the symbol used in Japanese is [ɯ], with the [u] being more common in western Japan dialects.

**Tokyo Standard Consonants:**

	Labial				
	Velarized	Plain	Dental/Alveola	Velar	Glottal
Stops		p, b	t, d	k, g	ʔ
Fricatives			s, z		h
Nasals		m	n		
Stop & Fricatives (Trill)			c		
Tap or Flap			r		
Glides		w		j	

Moraic Phonemes : Q (Long Stops /p, t, k/, Long Fricatives /s/)

N (Long Nasals)

R (Long Vowels)

We get only a general idea from this phonological system comparison, but we find the following characteristics.

First, both have a long-short distinction in all the vowel and some of the consonants.

In this respect, these speakers would have an advantage over native speakers of languages such as English or Chinese in the acquisition of Japanese phonetics.

A difference is that the Moen vowel system consists of 9 phonemes, while the Japanese has only 5. However, most of these are contained in the Moen dialect, so there seem to be no problems for Moen speakers to reproduce the Japanese vowels.

## 2.2 Phonological Environment and Allophones

On the level of individual sounds, there are many differences in consonants.

- 1) In the Moen dialect, there is no distinction in Voiced Stops and Non-Voiced Stops. The Voiced Sounds are only Nasals and Trills.
- 2) /h/ is in the Japanese inventory, but not in the Moen dialect.
- 3) The Japanese /c/ is a Dental (realized as an Alveolar before /i/ and /j/), but the Moen dialect has only the alveola.
- 4) The Moen dialect has /ŋ/ (velar nasal) as a separate phoneme, but in Japanese [ŋ] is realized as an allophone of /g/ and /N/. Recently (among native speakers),

the allophone [ŋ] of the phoneme /g/ is giving way to the allophone [g].

- 5) The Japanese /h/ is realized as the allophone [ç] before /-i/, /-j/ and as [Φ] before /-u/, but this is not true of the Moen dialect.

### 3. Phonetic Materials

As mentioned earlier, in the survey we used DAT tape recorders, recording with a tie-pin microphone while monitoring the sound with an earphone to adjust the volume levels in an effort to obtain high quality recordings. When informants were shirtless, we had them wear a lei or a necklace and attached the mike to that. Even so, the noises of people talking or moving nearby often meant that we were not able to maintain the quality of recording environment we desired.

In some cases, we had the informants come to the hotels where we were staying in ensure a quiet recording environment, but on the outlying islands things did not always go as planned. Electrical power sources were insufficient, and on some islands we could not obtain electricity at all. Power outages and a shortage of dry-cell batteries were always a worry in the beginning of the survey.

Because of collecting data under these conditions, there were limitations on the recorded data that would stand up to acoustical analysis on the machines in our research laboratories.

### 4. Survey Results

First, we will examine the Japanese phonetic results for the elderly informants in our survey, at the level of individual sounds, syllables, phrases and sentences.

#### 4.1 The Phonetics of the Elderly Speakers

Below, we use Moen to signify the area formerly known as the Truk (Moen) Atoll, centered around the island of currently known as Weno. Although the survey was centered around Weno, it was difficult to find informants born and raised there.

One reason for this is marriage customs. As a rule, most grooms in this area move into their brides houses, so the fact of a speaker's living in Weno is no guarantee of his having been born there. On the contrary, it is easier to find Weno natives living on the outlying islands. Because of this, our informants are speakers who were born and raised within the Moen atoll area.

The speakers who supplied us with phonetic data in this survey are as follows.

Speaker A, male, born in Moen 1912

Speaker S, male, born in Moen 1916

Speaker J, male, born in Moen 1927

Speaker K, male, born 1920, on Losap Island (outside of Moen Atoll)

What is the foundation of the Japanese phonology that these speakers acquired through the education that they received 50 years ago? The first impression we gained from viewing the situation was that, although there were individual differences, overall their Japanese was very fluent. Our observations yielded results on various aspects, but we found, as with the interlanguage of speakers elsewhere, results which can be seen as transferences of both a negative and a positive nature.

Below, we give actual examples from the results. The phonetic transcriptions represent a Broad Description of the data.

#### 4.1.1 Individual Sounds Level

<Positive transfers>

##### 1) Accuracy of the five vowels

As mentioned previously, there are only 5 vowels in Japanese, but these are basically covered by the 9 vowels in Moen. What is more, the /u/ of Standard Japanese is unrounded, but this vowel is also included in Moen, adding to the similarities in the two vowel systems.

##### 2) Loss or Devoicing of High Vowels

In Standard Japanese, High Vowels which fall between two voiceless consonants, and in some cases those preceded by voiceless consonants, undergo elision or are devoiced changing to egressive. The actualization of this is difficult to for many speakers, but for speakers of Moen it is accurately realized. One factor contributing to this is the fact that the basic syllable structure of Moen is CVC and that the all voiceless consonants may appear in the syllable-final position.

Example : /nihonnohito/ [Japanese (person)] -[nihonnoç(i)to]

( ) parentheses show the elided vowel.

/sjoRjutukete/ 「put shōyu(on food)」 -[ʃo:ju tʃ(ʊ)kete]  
 /-desu/ 「-desu(copula)」 -[-des(ʊ)]\*

\* elided in some formal situations.

### 3) actualization of the nasalized /g/

Traditionally, the /g/ in standard Japanese has been nasalized in the medial position. But in contemporary speech, this is present in the speech of relatively old speakers and speakers of the Tohoku dialect and not used that much among younger speakers. It is encouraged among actors, announcers and singers, but there are not many who usage of it is stable. The usage of the nasal /g/ by Moen speakers is however, stable.

Example :	/kagami/	「mirror」	-[kaŋami]
	/nihongo/	「Japanese」	-[nihonŋo]
	/eRgo/	「English」	-[e:ŋo]
	/nokogiri/	「saw」	-[nokoniri]

The reasons for this are both language-internal and -external. The external reasons are that at the time these speakers learned Japanese, the sound was still in wide usage among Japanese people and encouraged. If the nasal [ŋ] had been in decline among the Japanese language teachers and the non-nasal [g] had been taught, and the phenomenon had been perceived in that way, things would have been different. These speakers, who have basically have no voiced plosives, would be just like the present-day speakers of Thai who, after much difficulty, substitution the voiceless [k] for this sound.

One thing which could be considered a language-external factor is that the Japanese language teachers (during the colonial days) had the nasal [ŋ] and encouraged it. If the nasal [ŋ] had been declining among the teachers at the time, with them teaching the [g], and if the sound had been perceived in this way, the language learners (who basically have no voiced plosives) would have, after much difficulty, replaced the [g] with a [k] much in the way that modern Thai speakers do when acquiring Japanese. Then this would have been classified as a negative transfer.

One thing which can be considered a language-internal factor is that in Moen,

the velar nasal [ŋ] can appear in either consonant position in the CVC syllable structure. Incidentally, even in the phonology of native Japanese speakers who do not have the velar nasal for /g/, the syllabic nasal is realized as a velar nasal when it falls in the syllable-final position and precedes a syllable beginning with a velar consonant.

<Negative transfers>

We can divide these into two large categories.

A : those cases where there was no voiced plosive or voiced affricate in the original Moen, and with insufficient perception of the voicing, the corresponding voiceless consonant was substituted.

B : those cases in which similar consonant but one with a different point of articulation is substituted, namely in the form of palatalization.

C : those cases in which no appropriate substitution can be found, and the consonant position is left blank.

D : although it perhaps has no a full-fledged “negative-”, a sound with a different sound value is used, prompting comment from native speakers of Japanese.

Let us examine some specific examples.

A : There are individual differences, but even among those speakers we encountered outside of the survey, there do not seem to be many speakers who have avoided this feature. Even among those who do, they produce voiced plosives or affricates only occasionally, with voicing tending to appear in positions in a sentence which are not particularly salient.

Example: The following sounds are often devoiced: /b/, /d/, /g/, /dz/, /dʒ/.

/b/

/kibidaŋgo/            [millet dumplings]    -[kipitaŋŋo]

/bjoRin/                [hospital]                -[pioin]

/obeŋkjoR/             [studying]                -[openkio:]

/d/

/nihoŋdekosiraeta/    [made in Japan]        -[nihontekoʃiraeta]

/wakitokidake/        [only when young]      -[wakitokitake]

/kodomo/	[child]	-[kotomo]
/g-/		
/geNki/	[healthy]	-[keŋki]
/guNziN/	[soldier]	-[kuuntʃiN]
/gaQkoR/	[school]	-[kakko:]
/z/		
/zibuN/	[oneself]	-[tʃipʉN]
/niziQpun/	[twenty minutes]	-[nitʃippʉN]
/onazi/	[same]	-[onatʃi]
/kaNzume/	[canned goods]	-[kantʃuume]
/zjuRmai/	[ten sheets]	-[tʃu:mai]

Most of these devoicings are not simply a case of the vocal chords not vibrating, but of a suppression of aspiration, much as if they were attempting to produce the unaspirated consonants of Chinese and other languages.

B : These are mostly cases of the alveolar affricate being produced as (hard) palatals. With sounds like /z/, devoicing is also apparent, with no individual differences observed.

Example : /c/ (In Japanese, it is alveolar, in Moen it is palatal), /z/ (in Japanese, it is realized as both alveolar and palatal, but examples of the devoicing were given above.)

1) :

/c/		
/cjuRgakuseR/	[commuter student]	-[tʃu:ŋakuʃe:]
/cugino/	[next]	-[tʃuŋino]
/s/		
/taisoR/	[physical exercise]	-[taiʃo:]
/sukosi/	[a little]	-[ʃuʃkoʃi]
/sinsecu/	[kind]	-[ʃinʃetʃu]

2) :

/z/ (here we show examples of the palatalization of the alveolars)		
/kaNzume/	[canned foods]	-[kantʃuume]
/gozaimasu/	[(polite copula)]	-[gotʃaimaʃ]

C : There are cases in which the word-initial /h/ is elided, but there are individual differences. Especially with advanced speakers who are consciousness of this elision, we see hypercorrection.

1) :

/h/ (general elision)

/harusima/	[Harushima, colonial name of Weno Island]	-[aruʃima]
/hoNka/	[Honka, elementary course of colonial school]	-[oŋka]
/hataraitē/	[working]	-[ataraitē]

2) :

/h/ prosthesis of /h/ due to hypercorrection

/asaninaruto/	[when it becomes morning]	-[hasaninaruto]
/eNpicu/	[pencil]	-[hempitʃu]

D : /r/ Japanese uses a Flap, Moen uses a Trill. This substitution showed almost no individual speaker differences.

Examples :

/r/ Flap produced as a Trill

/sindari-/	[ (or) dead]	-[ʃindari]
/irete/	[put inside]	-[irete]
/kosiraeta/	[made]	-[koʃiraeta]
/jorosii/	[good]	-[joroʃii]
/hairumaeni/	[before entering]	-[airumaeni]

#### 4.1.2 Syllabic Level

As we mentioned previously, because Moen has a distinction between short and long vowels and consonants, we found no problems in the production of these or with the syllabic nasal, nor with the diphthongs [ai] [oi] or [ui].

However, the palatalized consonants known as 'yō-on' in Japanese, are depalatalized.

Examples :

/bjoRiN/	[hospital]	-[pioiN]
----------	------------	----------

\*Chuuk standard orthography is "pioin"

/obeNkjoR/	「studying」	-[opeŋkio]
/kjoRsitu/	「classroom」	-[kioʃitʃu]

### 4.1.3 Word Level

Standard Japanese has a word pitch accent which is phonemically significant. It is a shifting accent, which means that two words with the same segmental structure may differ in meaning if their pitch accents are different. Thus in Japanese, pitch accent often distinguishes different lexical items, but Moen accent is not like Japanese. Moen accent is like the Seoul dialect of Korean. Moen is a fixed accent language. We attempted pronouncing various Japanese accent patterns and having the informants repeat them after us. The Japanese accents we used are shown below as <A>, the ones the informants used in repeating the words are shown as <B>. ‘H’ shows high syllable, and ‘L’ shows low syllable in the simple description.

		<A>	<B>
/naga/	「菜が(greens+particle ‘ga’)」	: HL	- HL
/ame/	「飴(candy)」	: LH	- HL
/mado/	「窓(window)」	: HL	- HL
/uta/	「歌(song)」	: LH	- HL
/haru/	「春(spring season)」	: HL	- HL
/iro/	「色(colors)」	: LH	- HL
/naga/	「名が(name+particle ‘ga’)」	: LH	- HL
/ega/	「絵が(pictures+‘ga’)」	: HL	- HL
/ega/	「柄が(grips+‘ga’)」	: LH	- HL
/juga/	「ゆが(hot water+‘ga’)」	: HL	- HL
/kega/	「毛が(hair+‘ga’)」	: LH	- HL
/ame/	「雨(rain)」	: HL	- HL
/ame/	「飴(candy)」	: LH	- HL
/mado/	「窓(window)」	: HL	- HL
/uta/	「歌(song)」	: LH	- HL
/haru/	「春(spring season)」	: HL	- HL
/iro/	「色(colors)」	: LH	- HL
/usino/	「牛の(of cows)」	: LHH	- LHL

/edano/	「枝の (of branch)」	:	LHH	-	LHL
/kaono/	「顔の (of face)」	:	LHH	-	LHL
/hanano/	「鼻の (of nose)」	:	LHH	-	LHL
/inega/	「稲が (rice plant + 'ga')」	:	HLL	-	LHL
/janega/	「屋根が (roof + 'ga')」	:	HLL	-	LHL
/hanaga/	「花が (flowers + 'ga')」	:	LHL	-	LHL
/muraga/	「村が (village + 'ga')」	:	LHL	-	LHL

In this way, Japanese accent patterns consist of some types of patterns like HLL, LHL, LHH(L) and LHH(H), but even when the informants heard these accents, their pronunciation tended to accent the penultimate syllable. Thus, the examples above for “hana ga” and “mura ga” in which the speakers appear to use the correct Japanese accent are simply coincidences when the original accent happened to be on the second syllable from the end. Moreover, the informants used stress (rather than pitch as is the case in Japanese) to indicate accent.

#### 4.1.4 Sentence Level

Here we will examine the results from the portion of the survey wherein we had informants repeat sentences back to us.

When two or more phrases are joined together in Standard Japanese, the accent of one is salient and that of the other is suppressed. In these cases, the accent of the suppressed phrase is compressed to approximate a “low flat pattern”. The pronunciation which we had our informants listen to in this experiment displayed both of these characteristics. In this paper, we have simplified this as HML, with the M-L drop being less apparent than the H-M drop. For example, in “ka<sup>1</sup>sa ga a<sup>1</sup>ru” pronounced as HMMML, the drop from “ka” to “sa” is less than that of “a” to “ru”.

Examples:		<A>	-	<B>
/amegahuru/	「雨が降る (rain falls)」	HMMML	-	LHLHL
/madogaaru/	「窓がある (there is a window)」	HMMML	-	LHLHL
/harugakuru/	「春が来る (spring comes)」	HMMML	-	LHLHL
/akigakuru/	「秋が来る (autumn comes)」	HMMML	-	LHLHL
/akigakuru/	「飽きがくる (get tired of)」	LHMMML	-	LHLHL
/hunegairu/	「船が要る (a ship is needed)」	HMMMM	-	HLLHL

/otogasuru/	「音がする (a sound is made)」	:	LHMMM	-	LHLHL
/irogaaru/	「色がある (can see the color)」	:	LHMML	-	LHLHL
/kawagaaru/	「皮がある (there is leather)」	:	LHMML	-	LHLHL
/usigairu/	「牛がいる (there is a cow)」	:	LMMMM	-	LHLLH
/kaogaakai/	「顔が赤い (one's face is red)」	:	LMMMMM	-	LHLLH

The characteristic thing about all of the Japanese sentences the informants heard pronounced for them is that each has only peak in the central phrase and what comes before or after that is low. Furthermore, the accent in the other phrase is suppressed. When the informants repeated these, however, they pronounced them with two high points. In other words, they accent the penultimate syllable in both of the phrases, using equally high accents for the two. However, with original sentences ending in a high level accent, the informants accented the final syllable.

From these results, we see that the informants lack the command of phonological expression sufficient for indicating the informational structure of sentences using intonation, naming by accent the central phrase and suppressing the other accents.

Up to this point, we have examined the Japanese phonology of speakers who learned and used Japanese over 50 years ago. But, we do not know whether the situation has been this way throughout those 50 years, or if the past situation was different from today and what we see now is simply the result of change over that half century. Therefore, we also surveyed the spoken Japanese of some present-day students who were studying Japanese at the local high school.

Of course, the social situation is different than it was 50 years ago, it would be impossible to compare these two groups on the same level. But this being the case, it is nonetheless very meaningful to ask ourselves: what parameters exist as a result of these different conditions? What parameters are the same in spite of the differences?

#### 4.2 Phonology of the Younger Generation (High School Japanese Language Learners)

The four people who helped us this experiment are as follows:

Ms. M (graduate of Chuuk high school)	born 1977 in Moen
Ms. ME (student at Chuuk high school)	born 1979 in Moen
Ms. E (student at Saramen Chuuk High School)	born 1978 in Moen

Ms. K (student at Saramen Chuuk High School) born 1979 in Moen

(All four informants were females simply because these were the students recommended as being cooperative and who volunteered to assist us after school.)

There are three high schools in Weno, with two of these in close proximity to one another. According to teachers, the private Saramen Chuuk High School puts a great of energy into English education. When the present author attended a morning assembly there, there were instruction not to use the local language within the school area. This kind of thing could have had an effect on the Japanese language education at the two schools.

However, there was a great gap between the Japanese language usage of the older generation and these speakers. Although it has been over a half century since the older speakers began learning Japanese, most of them had many opportunities to use Japanese directly, since most reportedly attended the “public schools” (kōgakkō) in the mornings and worked as apprentices or doing menial labor in Japanese homes or facilities in the afternoons. They used Japanese everyday both inside the classroom and out, and had were highly motivated and compelled to use the language.

Compared to this, the high school students take only about 2 hours per week of Japanese, and have almost no opportunities to use the language other than this. Thus, they have not reached the level at which they can use the language freely, and most simply repeated the sentences we read to them back to us as they heard them. Although these repetitions were sometimes accurate, more often than not they revealed the influence of their native language.

#### 4.2.1 Individual Sounds Level

<Fully or partially positive transfers>

1) Accuracy of the five vowels :

As with the elderly speakers, there were no particular problems here.

2) Elision or devoicing of High Vowels :

With the older speakers, we found stability in this feature. The students too showed stability, though not to the extent of the older speakers. With some speakers, we found a few cases in which elision or devoicing did not occur even though the phonetic environments favored it.

Examples in which elision or devoicing occurred

/asita/	「明日 (tomorrow)」	-[aʃ(i)ta]	
/hacusju/	「拍手 (applause)」	-[hak(u)ʃu]	
/hitocu/	「一つ (one)」	-[ç(i)totsu]	Ms.E
/hutacu/	「二つ (two)」	-[f(u)tatsu]	Ms.E

Examples in which elision or devoicing did not occur:

Although overall there were very few examples of this, they were all the result of instability on the part of speaker E.

/hitocu/	「一つ (one)」	-[çitotsu]	Ms.E
/hukuro/	「袋 (bag)」	-[fukuuro]	Ms.E

### 3) actualization of nasal /g/:

Here too, we find overall stability, but with a bit of variation among individuals as below.

Examples of nasalization

/joruganagai/	「夜が長い (night time is long)」	-[joruŋanaŋai]	Ms.E
/miganaru/	「実がなる (bear fruit)」	-[miŋanaru]	Ms.K
/kagi/	「鍵 (key)」	-[kaŋi]	Ms.K

As a rule, this tendency was seen in speakers M and Me as well. However, with M and ME, we saw a tendency to use the nasal consonant of /g(i)/ in the pronunciation of /n(i)/ as well.

/miniiku/	「見に行く (go to see)」	-[miŋiiku]	
/asanikuru/	「朝に来る (morning comes)」	-[asaŋ ikuuru]	
/miseniiru/	「店にいる (be in a shop)」	-[misenjiiru]	
/kokoniiru/	「ここにいる (be here)」	-[kokoŋ iiru]	

With some of K's data, we found that potentially nasal /g/ consonants were realized not as nasals, but as voiced plosives or voiced affricates.

/akigakuru/	「秋が来る (autumn comes)」	-[akigakuru]	Ms.K
/kigaaru/	「木がある (there is a tree)」	-[kiyaaru]	Ms.K

<Negative transfers>

A) Japanese voiced plosives and voiced affricates were as voiceless consonants.

/biN/	「瓶(bottle)」	-[piN]
/boRsi/	「帽子(hat)」	-[po:ʃi]
/kabaN/	「カバン(carrying bag)」	-[kapan]
/deNwa/	「電話(telephone)」	-[tenwa]
/midori/	「みどり(green)」	-[mitori]
/giNkoR/	「銀行(bank)」	-[kiŋko:]
/gohaN/	「ご飯(cooked rice)」	-[kohan]
/huzisaN/	「富士山(Mt. Fuji)」	-[fuʃiʃisan]
/zikaN/	「時間(time)」	-[tʃikan]
/zidoRsja/	「自動車(motorcar)」	-[tʃido:ʃa]*

\*Here the word-medial voiced plosive [d] is pronounced as such. These kinds of examples were found in data of all the high school students.

/boRsi/	「帽子(hat)」	-[bo:ʃi]
/obentoR/	「お弁当(lunch box)」	-[obento:]
/deNki/	「電気(electricity)」	-[denki]
/hadaka/	「はだか(naked)」	-[hadaka]
/gaQkoR/	「学校(school)」	-[gakko:]
/garasu/	「ガラス(glass)」	-[garasu]
/ziteNsja/	「自転車(bicycle)」	-[dʒitenʃa]
/zidoRsja/	「自動車(motorcar)」	-[dʒidoʃa]

B) In these examples, the consonant used by the informants is similar to the original but different in point of articulation.

/mizu/	「水(water)」	-[midʒu]
/miQcu/	「三つ(three)」	-[mittʃu]
/paNcu/	「パンツ(short pants)」	-[pantʃu]

This phenomenon was produced with relative stability, and little variation among speakers. Furthermore, there was confusion between [ʃ] and [s] as in the following examples.

/sositara/	「そしたら(and then)」	-[ʃoʃitara] ([i] is devoiced)
/sjukudai/	「宿題(homework)」	-[sʉkudai] (first [u] is devoiced)

## C) Elision of the glottal /h/

/hasi/	「はし (bridge)」	-[afj]
/hako/	「はこ (box)」	-[ako]

In addition to these examples, however, we did also find relatively accurate actualization of /h/ as in /ha/[tooth]-[ha], /gohan/[rice]-[kohan]. Additionally, we found the prosthesis of /h/ as well as in the following.

/erabu/	「選ぶ (to choose)」	-[herabu]
/koega/	「声が (voice is-)」	-[kohenə]

## D) Flap pronounced as a Trill

This phenomenon is stable, but usually tends to be less pronounced than it was in the elderly speakers.

## 4.2.2 Syllabic Level

As we mentioned with the older speakers, Moen has a distinction between long and short vowels consonants, and our younger speakers had no problems with these or with the syllabic nasal. They did not show as clear a tendency as their elders had, however, to depalatalize the palatalized consonants changing to /bjo:/ to [bio], or /kjo:/ to [kio].

## 4.2.3 Word Level

Here, we had the informants repeat the words after us as we had done with the older informants. With the high school students, we found a great deal of variation among informants, with some using accent patterns similar to those of their elders and some closely approximating the original Japanese pronunciation.

		<A>	<B>
/hasi/	「橋 (bridge)」	: LH	HL
/isi/	「石 (stone)」	: LH	HL
/hana/	「花 (flowers)」	: LH	HL
/mura/	「村 (village)」	: LH	HL
/hata/	「旗 (flag)」	: LH	HL

/misaki/	「岬(cape)」	:	LHH	LHL
/kuruma/	「車(wheel)」	:	LHH	LHL
(Ms.M)				
/kami/	「紙(paper)」	:	LH	LH
/isi/	「石(stone)」	:	LH	LH
/sima/	「島(island)」	:	LH	LH
/inu/	「犬(dog)」	:	LH	LH
/tuki/	「月(moon)」	:	LH	LH
/kuruma/	「車(wheel)」	:	LHH	LHH
/otona/	「大人(adults)」	:	LHH	LHH
/senaka/	「背中(the back)」	:	LHH	LHH
/kemuri/	「煙(smoke)」	:	LHH	LHH
/mukasi/	「昔(ancient time)」	:	LHH	LHH
/midori/	「緑(green)」	:	HLL	HLL
/tajori/	「便り(news)」	:	HLL	HLL
(Ms.K)				

#### 4.2.4 Sentence Level

At the sentence level as well, we found we found some speakers pronunciation similar to that of their elders, while some speakers approximated the original Japanese. These respective tendencies were seen among the same speakers who had displayed them with the pronunciations at the word level.

The following are examples which approximate the pronunciation of the older speakers and are thought to reflect characteristics of the speakers' native language.

			<A>	<B>
/asegaderu/	「汗が出る(sweats)」	:	HMMML	LHLHL
/amegahuru/	「雨が降る(rain falls)」	:	HMMML	LHLHL
/koegaderu/	「声が出る(finds ones voice)」	:	HMMML	LHLHL
/harugakuru/	「春が来る(spring comes)」	:	HMMML	LHLHL
/madogaaru/	「窓がある(there is a window)」	:	HMMML	LHLHL
/hasigaaru/	「箸がある(there are chopsticks)」	:	HMMML	LHLHL

/kazegahuku/	「風が吹く (wind blows)」	:	LMMML	LHLHL
/edagaaru/	「枝がある (there are branches)」	:	LMMML	LHLHL
/otogasuru/	「音がする (a sound is made)」	:	LHMMM	LHLHL
/inugairu/	「犬がいる (there is a dog)」	:	LHMMM	LHLHL
/utagaumai/	「歌がうまい (good at singing)」	:	LHMMML	HLLLHL
/usigairu/	「牛がいる (there is a cow)」	:	LMMMM	LHLHL
/torigairu/	「鳥がいる (there is a bird)」	:	LMMMM	LHLHL
/kaogaakai/	「顔が赤い (one's face is red)」	:	LMMMMM	LHLLHL

The following are examples in which the repeated pronunciation closely approximates the original Japanese pronunciation given.

			<A>	<B>
/asegaderu/	「汗が出る (sweats)」	:	HMMML	HMMML
/amegahuru/	「雨が降る (rain falls)」	:	HMMML	HMMML
/koegaderu/	「声が出る (find ones voice)」	:	HMMML	HMMML
/harugakuru/	「春が来る (spring comes)」	:	HMMML	HMMML
/madogaaru/	「窓がある (there is a window)」	:	HMMML	HMMML
/hasigaaru/	「箸がある (there are chopsticks)」	:	HMMML	HMMML
/kazegahuku/	「風が吹く (wind blows)」	:	LMMML	LMMML
/edagaaru/	「枝がある (there are branches)」	:	LMMML	LMMML
/otogasuru/	「音がする (a sound is made)」	:	LHMMM	LHMMM
/inugairu/	「犬がいる (there is a dog)」	:	LHMMM	LHMMM
/utagaumai/	「歌がうまい (good at singing)」	:	LHMMML	LHMMML
/usigairu/	「牛がいる (there is a cow)」	:	LMMMM	LMMMM
/torigairu/	「鳥がいる (there is a bird)」	:	LMMMM	LMMMM
/kaogaakai/	「顔が赤い (the face is red)」	:	LMMMMM	LMMMMM

### 4.3 Differences in the Two Groups

It would have appeared that no comparison was possible between the two groups in our survey; that is between the fluent older speakers who learned Japanese in the colonial period, had a reasonable command of vocabulary and an overwhelming advantage in the use of the language, and the high school students who have studied the

language only a few hours a week for one or two years. Moreover, much of the data from the high school students is the repetition of native pronunciations, so it is difficult to guaranty the extent to which these characteristics are firmly rooted in the language of the younger speakers. However, an examination of even that limited amount of data which we assembled in this survey reveals to us that the characteristics of the two groups are rooted in the different circumstances under which each acquired Japanese.

We can simplify the results for each survey category and summarize them as follows.

	older speakers	high school students
five vowels	: same as Japanese, no difficulties	same as Japanese, no difficulties
devoicing, elision of vowels	: mainly the same as Japanese,	mainly the same as Japanese, no difficulties but with some devia- tions
nasalized /g/	: mainly the same as Japanese,	mainly the same as Japanese, no difficulties but with some devia- tions
lack of voiced plosives	: some differences among speakers,	mainly absent some differences among speakers, but many cases are present, possible influence of English
palatalization of alveolars	: frequent	frequent, with confusion in both directions
absence of /h/	: absent, some hypercorrection	absent, but to lesser extent
Trill	: obvious	less obvious than in older speakers
pitch accent	: only one accent pattern with accent on penultimate syllable	differences among speakers
intonation	: almost no examples of suppressing the non-focused phrase accent	differences among speakers, sup- pression of non-focused phrase accent possible

There are many possible reasons why these disparities were observed between the two groups, but it will more time and various types of interviews and experiments to determine them. Although it is not possible to follow up these questions with only the

current data, we will attempt some final comments on the results we have analyzed thus far.

## 5. Analysis and Comments

We began here by considering the present state of the Japanese spoken by those people who studied Japanese over fifty years ago, and asking whether their pronunciation has come about as the result of their not having used the language for such a long period, or whether their speech has retained much of the character it had when they learned it and used it in daily life.

First, we compared the peculiarities of the Japanese phonology of the older speakers and the younger ones and found that the characteristic features of the groups were the same in both number and content, with differences only of degree or among individuals.

What about the possibility that the Moen language itself has changed with this period of time? Looking at our results from high school and elderly speakers in relation to the phonological systems reported in a 1970's survey reference, it would be difficult to conclude that there has been any great change in the language. If we expected to find any change at all, it would have been as the direct result of the loan words from Japanese and other foreign languages. A look at either the orthography or at actual pronunciations, however, fails to turn up such changes. We do not find, for example, that voiced plosives have appeared and become commonplace, or that /h/ appears with any stability in the word-initial position. In both age groups, we find that there are no alveolar plosives, and that there is a preponderance of palatalized plosives.

What then are we to make of the differences which do appear between high school and elderly speakers? Even though some of the differences may be simply be questions of degree or characteristic of the individual speakers, in the end it still appears that the fundamental reason for the variance lies in a structural variance in the form of the second- and third-language learning.

What then are we to make of the differences which do appear between high school and elderly speakers? Even though some of the differences may be simply be questions of degree or characteristic of the individual speakers, in the end it still appears that the fundamental reason for the variance lies in a structural variance in the form of the second- and third-language learning.

The older informants have the Moen dialect of Chuuk as their first language with Japanese as a second language covering that. Then they may or may not (depending upon the individual) have English as a third language covering that. But even with these older speakers who received training in Hawaii, we observed nothing which would lead us to believe that their English had influenced their Japanese phonology. The long period of time involved is probably one factor that Moen dialect characteristics are so apparent and so stable in the Japanese of the older speakers, but another factor influencing the stability of the peculiarities of their Japanese pronunciation must have been the clear two-level structure of first and second language. Contrasted with this, the high school students have the Moen dialect of Chuuk as their 1st language, English very heavily weighted as their second language, and Japanese as not so much a third language but a foreign language. Factors we have seen here, such as the accurate reproduction of accent patterns or intonation, particularly by speakers from a high school which emphasizes English, and deviations from Japanese phonology being less predictable than those among the older speakers, along with the frequent appearance of voiced plosives and voiced affricates, all seem to be due to the speakers' contact with English prior to their contact with Japanese.

These characteristics, which may be seen as positive transfers, are all features which are not found in the Chuuk language, but which are found in English such as voiced plosives and voiced affricates, shifting accent, and accent-weakening due to intonation. Of course, the linguistic "adaptability" of young language learners is an important factor, but we have to remember that older speakers were much younger than our current high schoolers, they were only eight, when they began to study Japanese, so this adaptability alone can not explain this difference.

Something else we might consider is the pronunciation of the native Japanese teachers themselves. For example, as we noted earlier, the stable production of the nasal /g/ may be due to the presence of a similar feature in the Chuuk language, but it also may have been a stable feature of the Japanese spoken by the original native teachers who went there. (It may be relevant that our older informants told us that many of their Japanese teachers were from Eastern Japan, where the nasal sound has been more common, but we have statistics to support this.

By contrast, when we recorded and observed the pronunciation of the young native Japanese language teachers with whom the high school informants have daily

contact, we found that they have lost the nasalization in word-medial /g/ as is common in Japanese language teachers these days. Even though these students have a sound similar to the nasal /g/ in their native tongue, there is no way for them to utilize this similarity if they do not hear the nasal consonant used by their teachers in class. Rather it is more realistic to view their Japanese pronunciation as the result of appropriating voiced velar plosives or voiced fricatives from their English repertoire. Finally, we should add that in order to simplify explanations here, we contrasted first language features with second language features, and considered that features which were absent from the first language were appropriated from the second language. However, even though the acquisition and application of phonological perception and repertoire generation may appear from the end result to be as simple as a diagram for changing out machine parts, in reality we know that it is never that simple, but in fact the result of complex processes. We will not be able to account for all of the exceptional examples which actually occur until we develop some sort of strategy for dissecting the intermediate processes. In order to get one step closer to this level, we must consider an appropriate methodology, and moreover, find younger speakers whose Japanese is more advanced so that we might obtain interview data from them gathered and analyzable according to the same criteria used for the older speakers.

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