Tales of two Diphthongs of an Indigenous Minority Language[1]

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Abstract
This study investigated the phonological variation and sound change in the Yami diphthongs (ay) and (aw) (e.g., *mangay ~ mangey* "go", *araw ~ arow* "day, sun"), a Philippine language spoken on Orchid Island, 60 kilometers southeast of Taiwan. Previous studies (Rau & Chang 2006, Rau & Dong 2006) found that the two diphthongs were undergoing vowel raising on the island with an isogloss separating the more progressive northeast from the more conservative southwest. However social factors were not discussed and thus no interpretation of vowel raising was provided.

This study examined both linguistic and social factors accounting for vowel raising, with a goal of interpreting the indexical meanings of sound change in the two diphthongs on the island. The data were 20 narratives taken from a Yami corpus (http://yamiproject.cs.pu.edu.tw/yami), 10 narratives from Dong & Rau (1999, 2000), and word list elicitation collected in 1995.

Our results from VARBRUL analyses confirmed that vowel raising is a geographical feature and that the rates of change have formed a clear isogloss separating the northeast from the southwest varieties. However vowel raising of (ay) has progressed slightly faster than that of (aw). The preceding segments of (ay) and (aw) favoring raising are mainly determined by the feature of [continuant]. For both diphthongs, [+continuant] favors raising whereas [-continuant] disfavors it. There was stylistic variation with more raising in narrative style than in word list reading. Vowel raising was preferred by males; however, young females seem to have surpassed young males in adopting this feature in narrative style, a phenomenon corresponding to the social mobility of women. Perhaps vowel raising has ceased to be a gender marker and shifted to an ethnic identity marker.

1. Introduction

Sociolinguistic studies on phonological variation in post-insular island communities have found male islander identity in the nucleus change of (ay) and (aw). Labov's seminal work on linguistic change in progress on the island of Martha's Vineyard (1963, 1972) has established a paradigm of sociolinguistic variation. He correlated centralization of the (ay) and (aw) diphthongs with social factors (i.e., identity, occupation, age and ethnicity) and linguistic factors, and predicted real time changes from apparent time data collection.

Several studies on variation of (ay) and (aw) in the last decade have focused on moribund dialects, such as Ocracoke Island and Smith Island, North Carolina (Wolfram & Schilling-Estes 1995, 1996; Schilling-Estes 1996, 1997; Schilling-Estes & Wolfram 1997; and Wolfram, Hazen & Schilling-Estes 1999). The islanders of Ocracoke are known as 'hoi toiders' (their pronunciation of 'high tiders'), turning [ay] into [oy], and [aw] into [ay], such as hice 'house' and dine 'down'. The backing of [ay] to [oy] is a social stereotype, a feature commonly associated with the islander, whereas the glide fronting of [aw] to [ay] remains a social indicator because there is no stylistic variation among the islanders. As a social stereotype, the backing of [ay] to [oy], as in 'hoi toiders', was shared mostly by middle aged male speakers having a strong identity with the island (Schilling-Estes 1997). The young women on the island, in contrast, preferred the standard variant [ay] (Schilling-Estes & Schrider 1996). Among the Lumbee Indians in the Outer Banks of North Carolina, (ay) is raised, e.g. [roId] 'ride', and (aw) is glide-fronted, and/or raised, e.g. [saInd] or [seInd] 'sound'.

Although most of the work on (ay) and (aw) variation has been done on English dialects, similar sound change patterns have also been found in indigenous minority languages. In Rau & Chang's (2006) investigation on the sound change of (ay) and (aw), a nucleus raising and fronting was identified from [ay] to [ey] ~ [iy] for (ay) and from [aw] to [ow] ~ [uw] for (aw), respectively. The change has also spread from word final position (e.g., *mangay* "go", *araw* "day, sun") to environments such as a-i and a-o across morpheme boundaries (e.g. *asa keyli* 'one village' (< *asa ka- ili*), *makowbot* 'go out' (< *maka-obot*)). A chain shift has also occurred whereby the peripheral high front vowel [i] in verbal prefixes *mi-* and *pi-*and suffix -i is shifting to the diphthong [ey].

The results of the previous study revealed that the nucleus raising rule was an innovation in Yami and had progressed faster and longer in (ay) than in (aw). In addition to linguistic factors, only geographical differences were found to be significant. Social factors were excluded from the discussion because they were not found to be significant. However, we observed that (ay) and (aw) had moved beyond the stage of indicators and had developed into sociolinguistic variables because the conservative forms were still used in Bible translation whereas raising was clearly observed in spoken data, but the stylistic variation was not investigated empirically before.

The goal of this study was to test the preliminary observations proposed in Rau & Chang (2006) and provide a plausible interpretation of the indexical meanings of nucleus raising of the two diphthongs by examining linguistic, stylistic and social factors, based on data extracted from a Yami corpus. Using better data from a Yami corpus, this paper aims to answer the following questions: (1) how preceding environments, social factors (i.e., age, gender) and region account for vowel raising of the two diphthongs on Orchid Island, and (2) whether there is stylistic variation to confirm that vowel raising of the two diphthongs is a vernacular feature.

2. The Yami Speech Community

Yami is a Philippine language in the Austronesian family, spoken by the indigenous people on Orchid Island (*Lanyu* in Chinese), a small offshore island southeast of Taiwan and at the northern tip of the Batanes Province of the Philippines. Politically, the island belongs to Taiwan, R.O.C.

Yami constitute 93% of the 3007 residents on the island (Rau 1995). Almost half of

the population is either above 50 or below 20 years old. Young adults usually seek employment in Taiwan. Yami people above 60 years of age are mostly monolingual in Yami, whereas those below 20 consider Mandarin Chinese their L1 and Yami their L2, as of Chen's sociolinguistic survey in 1995 (Chen 1998). Young adults code-switch between Yami and Chinese in communication.

There are six villages on the island: Imowrod, Iratay, Yayo, Iraralay, Iranomilek and Ivalino, moving clockwise from the southwest to the northeast coast, as shown in Figure 1.

In and near Imowrod are the airport, post office, clinic, and a hotel. Right across from Imowrod at the opposite side of the island is Ivalino, where the Lanyu Nuclear Waste Plant is located. The administrative center of the island is at Yayo, where a hotel and a secondary school can be found. Iraralay and Iranomilek are further away from the government offices and tend to better preserve the Yami language. However, all villages have primary schools with Mandarin Chinese as the only medium of education. Recently, with the development of tourism, an increasing number of remodeled homes have been opened for room and board for tourists, especially along the more scenic beaches on the northeast coast.

Figure 1.Geographic description of Lanyu
(adapted from http://google.earth.com)

Iraralay is the only community of the six villages on the island where children still

use Yami for daily interaction. Although Yami has been offered as an elective in elementary school since 1998, it is gradually being replaced by Mandarin Chinese. Among the junior high school students on Orchid Island, 60% either believed Yami would die eventually or were uncertain about the fate of the language (Rau, 1995).

Adult speakers use both Chinese and Yami in daily communication. The medium of education in schools is exclusively Chinese. Yami is used primarily in Christian church services and traditional ceremonies. Translation of the New Testament of the Bible into Yami was completed in 1995. There is a locally run radio station on the island, managed by a Christian organization, broadcasting programs in Chinese and Yami.

Three different orthographies have been proposed for Yami, all based on Roman alphabets, but no consensus has been reached. One is used in the newly translated Bible, developed in collaboration between SIL missionaries and local pastors from Iranomilek and Iraralay, whose speech represents the northeastern variety. The second was proposed by Prof. Paul Li (1992), based on the more conservative Imowrod dialect in the southwest, in an effort to standardize the writing systems of all Austronesian languages in Taiwan. The third was jointly developed by Dong and Rau during our collaboration. It is currently gaining ground as our team is actively documenting the language (Rau & Yang 2005). Except for teaching of Yami language in primary and secondary schools and teacher training workshops, Yami orthography is not in general use by anyone in the speech community. The community has various degrees of literacy in Chinese (95%) while the most educated (less than 1%) are also literate in English (Rau, 1995).

The two Yami dialects, Iraraley and Imowrod are mutually intelligible with some lexical differences and systematic vowel changes (Rau & Dong, 2006). One of the most noticeable linguistic features that distinguish the two varieties is nucleus raising of the two diphthongs (ay) and (aw).

3. Data and Sample

The data of this study consist of 20 narratives taken from a Yami corpus from the Digital Archive of Yami Language Documentation (http://yamiproject.cs.pu.edu.tw/yami), 10 narratives from Dong & Rau (1999, 2000), and word list elicitation collected during a 1995 field trip. The 20 narratives were collected by Yami interviewers from the same villages as the interviewees while the 10 narratives were recorded by our research team members composed of eight Chinese female graduate students. All the narratives were transcribed by the third author. The word list elicitation was a translation of Chinese into Yami, recorded and transcribed by a trained Chinese female graduate student on the team and carefully checked by the first author. The original word list comprises a long list of basic vocabulary in Yami, but only the words containing word final (ay) and (aw) were extracted for this study for comparison with those in the narrative style.

The narrative data were contributed by 21 speakers, whose demographic distribution is represented in Table 1. Only region, age and gender were coded; social class was not considered[2]. The six villages were represented by a range of 2 to 6 speakers each. The

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[2] We did not code for social class due to (1) an emic perception of Yami as an egalitarian society, whose level of achievement was measured by culturally specific values, and (2) problem with comparability of this construct in different communities. The first author created an index of social class based on one's occupation, income, education, and style of housing in a study on phonological variation of Atayal (Rau

age as of year 2000 was divided into two groups with 9 old (equal to or above 55 years old) and 12 young (below 55 years old) participants, ranging from age 36 to 75. There were 11 females and 10 males.

Table 1. Speaker demographic characteristics (narrative style)

Participants	Region	Age	Gender
1. HMJ	Iranomilek	69	M
2. JXY	Iranomilek	49	F
3. HLL	Iranomilek	54	F
4. WJY	Iranomilek	66	M
5. XQR	Iranomilek	74	F
6. HYE	Iranomilek	58	F
7. LJL	Yayo	53	M
8. WRD	Yayo	75	M
9. WQY	Yayo	58	F
10. ZZJ*	Imowrod	54	M
11. SFS*	Imowrod	59	M
12. XQM	Imowrod	54	F
13. ZDS	Ivalino	47	M
14. ZQL*	Ivalino	48	F
15. LSZ	Iraralay	39	F
16. LYL*	Iraralay	45	F
17. GJP	Iraralay	36	M
18. ZSX	Iratay	64	F
19. DGY	Iratay	53	M
20. DYC	Iratay	51	M
21. SSL	Iratay	70	F

The sample of speakers who provided the word list reading style consists of 22 speakers whose demographic characteristics are shown in Table 2. The six villages were represented with a range of 2 to 7 speakers each. The group was divided into 9 old (equal to or above 55 years old) and 13 young (below 55 years old) participants, with an age range from 40 to 77 as of the year 2000. Gender was equally divided.

Table 2. Speaker demographic characteristics (word list style)

Participants	Region	Age	Gender
1. WXY	Iraralay	40	F
2. LYL*	Iraralay	45	F
3. ZNY	Yayo	56	F
4. YZW	Yayo	50	M
5. HDH	Iranomilek	59	M
6. XJH	Iranomilek	63	F
7. XJY	Iratay	51	F

2000), another indigenous language in Taiwan. However the four levels identified in that study could not be considered equivalent to the construct of social class usually found in variationist studies.

8.	SLZ	Iratay	47	M
9.	SSY	Iratay	45	M
10.	ZSH	Iratay	55	M
11.	ZYJ	Iratay	51	F
12.	ZZJ*	Imowrod	54	M
13.	SFS*	Imowrod	59	M
14.	LZ	Imowrod	77	M
15.	LXS	Imowrod	53	M
16.	LDY	Imowrod	56	F
17.	ZXM	Imowrod	41	F
18.	STM	Imowrod	47	M
19.	LLM	Ivalino	76	M
20.	XWY	Ivalino	69	F
21.	ZLH	Ivalino	51	F
22.	ZQL*	Ivalino	48	F

Only the four speakers marked with an asterisk behind their initials contributed data for both narrative and word list reading styles. The four speakers came from three villages with one above 55 and three below 55 years of age. The gender of the sample was equally distributed. The results of word list elicitation were compared with those of the narrative style.

4. Circumvention of the variables

The variables of diphthongs in this study were restricted to word final (ay) and (aw), such as *volay ~ voley ~ voliy* "snake" and *araw ~ arow ~ aruw* "sun". GOLDVARB 2001 (Robinson, Lawrence & Tagliamonte 2001) was used for the VARBRUL analysis with the assistance of Tagliamonte's (2006) manual as a guide for step-by-step procedures. Application of the rule includes all raised, fronted or monophthongized variants, e.g., *voley ~ voliy* "snake" and *arow ~ aruw* "sun". Non-application of the rule refers to the conservative non-raised (ay) and (aw).

The independent variables include one internal factor group and three external factor groups. The linguistic and social factors that were coded include:

> **1. Preceding environments**
>
> i = high front vowel (e.g., *maviay* 'alive', *makaniaw* 'taboo')
> a = central vowel (e.g., *kangaay* 'usual')
> o = back high vowel (e.g., *isaboay* 'lift', *mitotoaw* 'out')
> h = uvular fricative (e.g., *vahay* 'home')
> d = retroflex stop (e.g., *adaday* 'all, full', *midadowdaw* 'very sad')
> t = alveolar stop (e.g., *miatay* 'pass by', *attaw* 'sea')
> p = labial stop (e.g., cinapay 'vegetable', *yapapaw* 'miss')
> s = retroflex fricative (e.g., rasarasay 'bottom board', *kazisaw* 'cursing')
> k = velar stop (e.g., *mehakay* 'male', manakaw 'steal')
> z = alveolar trill (e.g., *vazay* 'thing', *nivozaw* 'leave')
> r = retroflex liquid (e.g., *kararay* 'companion, friend', *mararaw* 'noon')
> l = alveolar liquid (e.g., *awalay* 'Ouch!', *iyaipasalaw* 'swallow')
> n = alveolar nasal (e.g., *aonay* 'long time', *meynaw* 'strong fishy taste')

m = labial nasal (e.g., *pangamay* 'cursing', *tazmamaw* 'illusion')

ng = velar fricative (e.g., *nongay* 'move forward')

2. Region: Northeast (Yayo, Irannokilek, Iraralay, Ivalino) and Southwest (Imowrod, Iratay)

3. Age: old (equal to or above 55) and young (under 55)

4. Gender: male and female

The data extracted from the narratives for analysis include 685 tokens of (ay) and 202 tokens of (aw).

The word list representing formal citation style includes the following words:

(ay): *anay* "sand", *atay* "liver", *mehakay* "male", *miray* "to lie down", *mivazay* "to work", *mangay* "to go", *vahay* "house", *volay* "snake", *wakay* "sweet potato"

(aw): *araw* "sun", *araraw* "every day", *maraw* "day", *pakaw* "shoulder", *zagaw* "neck"

Since only a small number of speakers provided comparable data for comparison of styles and the demographic distribution was not balanced, we did not include style as a factor group for our initial VARBRUL analyses. However, we did include a comparison of styles in the second stage of our analysis to determine if (ay) and (aw) variables show any stylistic variation.

5. Results

The results of the first question on how preceding environments, social factors (age, gender) and region account for vowel raising of the two diphthongs on Orchid Island are shown in Table 3. All the independent variables, except for age, were selected to account for diphthong raising, which followed the same constraint rankings for the internal factor group. The more continuant the preceding segment the more conducive environment it is for raising. Furthermore, region had the greatest influence on the variation, followed by preceding environments and gender based on the differences of range of the probability weights for each linguistic variable.

Table 3. Phonological variation of (ay) and (aw)

Factor groups	Nucleus raising	
	Probability weight (ay) N (%)	Probability weight (aw) N (%)
Villages		
Northeast	.83	.81
	382/426 (89%)	102/127 (80%)
Iranomilek	213/220 (97%)	42/52 (76%)
Yayo	129/138 (93%)	47/48 (97%)
Iraralay	19/22 (86%)	4/4 (100%)
Ivalino	21/46 (46%)	11/23 (47%)
Southwest	.07	.08
	42/259 (16%)	8/75 (10%)
Iratay	35/215 (16%)	4/46 (4%)
Imowrod	7/44 (16%)	4/29 (13%)
Range	76	73

Age		
young (<55)	[NS]	[NS]
	178/251 (70%)	39/82 (47%)
old (55+)	[NS]	[NS]
	246/434 (56%)	71/120 (59%)
Gender		
male	.65	.60
	243/324 (75%)	69/118 (58%)
female	.37	.36
	181/361 (50%)	41/84 (48%)
Range	28	24
Preceding environments		
vowel/semivowel	.85	.67
i,o,h,y	88/111 (79%)	13/23 (56%)
Consonant [+continuant]	.64	.57
(r,l,d,z,s,v)	65/92 (70%)	62/103 (60%)
Nasal [-continuant]	.38	No data[3]
(n,m,N)	182/327 (55%)	
Consonant [-continuant]	.36	.36
(p,k,g,t,d)	89/155 (57%)	35/76 (46%)
Range	49	31
Total	424/685 (62%)	110/202 (54%)
Input probability	.69	.54

5.1 Internal and external factors

Our results confirmed that vowel raising was a geographical feature and that the clear distinction of the probability weights formed an isogloss, separating the northeast from the southwest varieties. Table 3 shows that the four northeastern villages favored vowel raising in (ay) and (aw) at .83 and .81 respectively. The two southwestern villages retained the conservative, non-raised (ay) and (aw) with very low probabilities of raising at .07 and .08 respectively.

The input probability weights indicate the raising of (ay) was slightly more frequent than that of (aw) at .69 and .54, respectively, and thus (ay) raising is interpreted as more progressive than (aw) raising.

The factors in the internal factor group displayed almost the same constraint hierarchy, determined by the feature of [continuant]. For both diphthongs, the preceding segment with the feature of [+continuant] favored raising whereas that of [-continuant] disfavored it.

Gender was selected as a significant factor. It shows that males preferred raising, whereas females did not favor it for both (ay) and (aw).

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[3] There is only one token *meynaw* "strong fishy taste" in this environment and thus it was excluded from analysis.

Since age was not selected as significant in the step-up and step-down procedures due to interactions with other social factors, several cross-tabulations were conducted to compare the relationship among age, gender and region. In the following paragraphs, we will discuss the two variables separately.

5.1.1 (ay)
As shown in Table 4 and Figure 2, (ay) raising was clearly a geographical feature in the northeast of the island (90% vs. 16%). Although the older people in the northeast had a higher percentage of raising (95%) than the younger people (84%), it is not statistically significant.

Table 4. (ay) raising: region by age

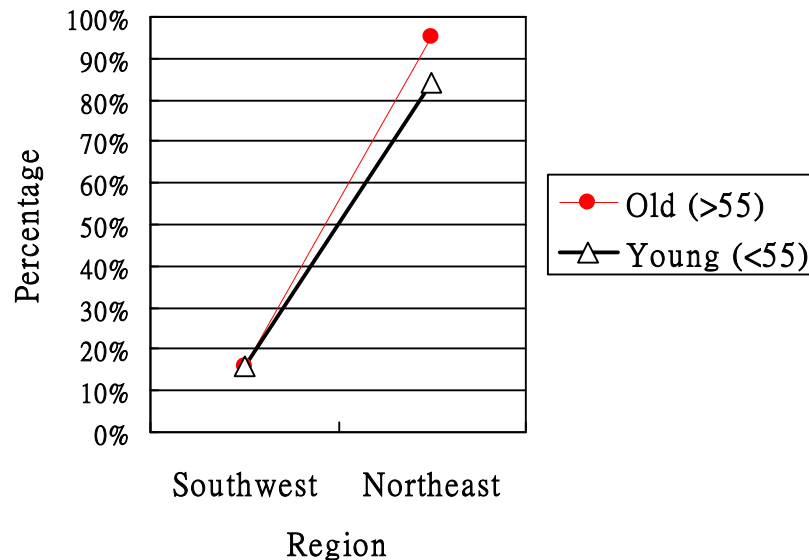|	Northeast	Southwest	Total
Old (55+)	212/224 (95%)	34/210　(16%)	246/434　(57%)
Young (55-)	170/202 (84%)	8/49　(16%)	178/251　(71%)
Total	382/426 (90%)	42/259　(16%)	424/685　(62%)

Figure 2. (ay) raising: region by age

More males preferred (ay) raising than did females (75% vs. 50%), as shown in Table 5 and Figure 3. Vowel raising for (ay) in narrative style was more frequent among men than women in both areas.

Table 5. (ay) raising: region by gender

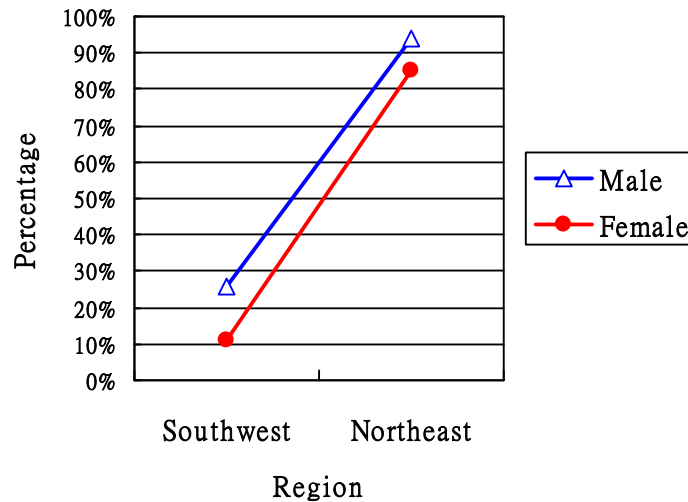|	Northeast		Southwest		Total	
Female	162/191	(85%)	19/170	(11%)	181/361	(50%)
Male	220/235	(94%)	23/89	(26%)	42/259	(84%)
Total	382/426	(90%)	243/324	(75%)	424/685	(62%)

Figure 3. (ay) raising: region by gender

However, when age was cross-tabulated with gender, a surprising pattern emerged. Younger females (78%) seem to have surpassed younger males (62%) in adopting this feature, as indicated in Table 6. The interaction between gender and age is shown in Figure 4. This interesting development will be discussed in Section 6.

Table 6. (ay) raising: gender by age

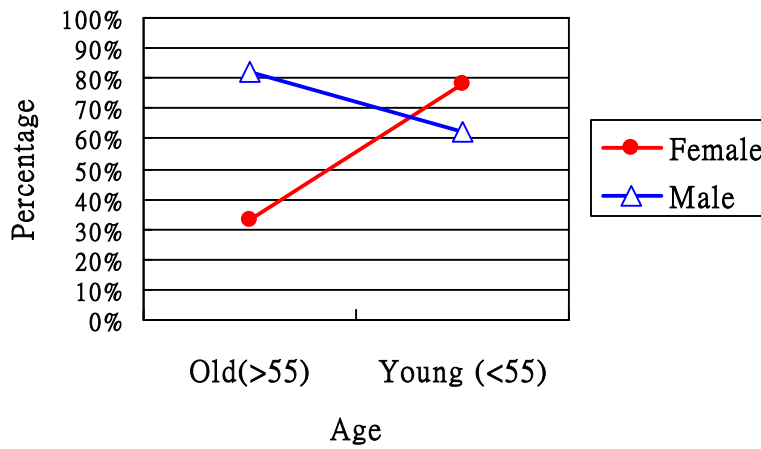|	Females		Males		Total	
Old (55+)	74/224	(33%)	172/210	(82%)	246/434	(57%)
Young (55-)	107/137	(78%)	71/114	(62%)	178/251	(71%)
Total	181/361	(50%)	243/324	(75%)	424/685	(62%)

Figure 4. (ay) raising: age by gender

5.1. 2 (aw)

A similar pattern correlated with social factors was found in (aw). As shown in Table 7 and Figure 5, (aw) raising was also favored by the northeast side of the island. Although old people had a slightly higher rate of raising than did the young people in the northeast (84% vs. 74%), it was not statistically significant.

Table 7. (aw) raising: region by age

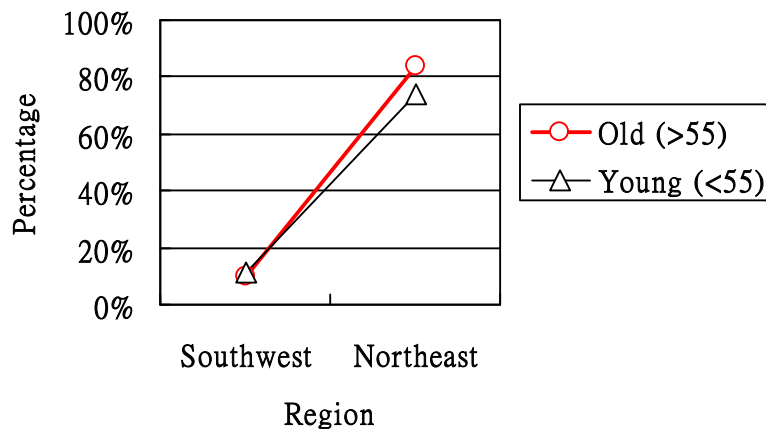|	Northeast		Southwest		Total	
Old (>55)	67/80	(84%)	4/40	(10%)	71/120	(59%)
Young (<55)	35/47	(74%)	4/35	(11%)	39/82	(48%)
Total	102/127	(80%)	8/75	(11%)	110/202	(54%)

Figure 5. (aw) raising: region by age

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Table 8 and Figure 6 also show (aw) raising was favored more by males than did females (58% vs. 49%). Similar to (ay) raising, (aw) raising in narrative styles was also used more frequently by men than by women in both areas.

Table 8. (aw) raising: region by gender

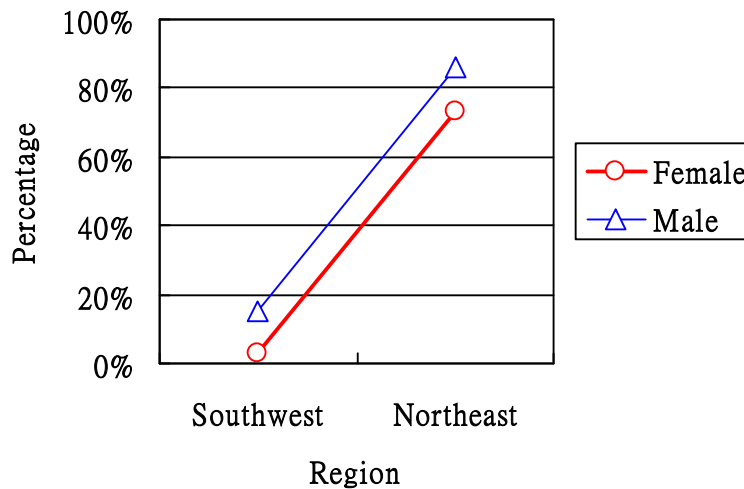|	Northeast		Southwest		Total	
Female	40/55	(73%)	1/29	(3%)	41/84	(49%)
Male	62/72	(86%)	7/46	(15%)	69/118	(58%)
Total	102/127	(80%)	8/75	(11%)	110/202	(54%)

Figure 6. (aw) raising: region by gender

However, once age was cross-tabulated with gender, young females (68%) seem to have surpassed young males (33%) in adopting this feature, as indicated in Table 9. The interaction between gender and age is shown in Figure 7. This interaction between age and gender in (aw) raising is the same as that in (ay) raising and will be discussed further in Section 6.

Table 9. (aw) raising: age by gender

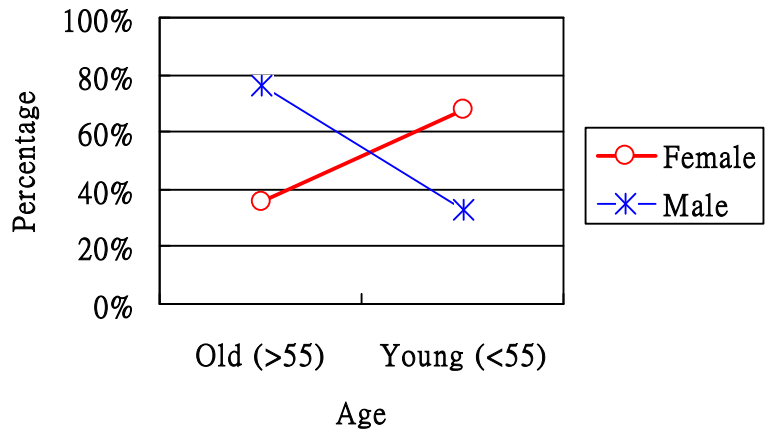|	Old (>55)		Young (<55)		Total	
Female	18/50	(36%)	23/34	(68%)	41/84	(49%)
Male	53/70	(76%)	16/48	(33%)	69/118	(58%)
Total	70/120	(59%)	39/82	(48%)	110/202	(54%)

Figure 7. (aw) raising: age by gender

5.2 Stylistic variation

The second stage of our analysis presented the results of word list reading in the two diphthongs and compared the results of the four speakers who had data for both word list reading and narrative styles to answer the question of whether the two diphthongs indicate stylistic variation.

The results of raising in word list style are presented in Table 10. The numbers 1, 0/1, and 0 indicate the percentages of raising are high (60~100%), mid (40-60%), and low (0~40%), respectively. Among the four villages in the northeast region, three (Iraralay, Yayo, Iranomilek) indicate high rate of raising of (ay), followed by Ivalino in the mid range between 40-60%. The two villages in the southwest region indicate a low rate of raising.

There is also a clear implicational scale between the two diphthongs in that (ay) raising is progressing faster than (aw). In other words, if a speaker indicates a high level of raising in (aw) by being assigned the number 1, she should also display a high level of raising in (ay), but not vice versa.

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Table 10. Raising in word list reading style

Name	Region	Age	Gender	ay	aw
WXY	Iraralay	40	F	1	1
LYL*	Iraralay	45	F	1	1
ZNY	Yayo	56	F	1	1
YZW	Yayo	50	M	1	1
HDH	Iranomilek	59	M	1	1
XJH	Iranomilek	63	F	1	0
LLM	Ivalino	76	M	0/1	0
XWY	Ivalino	69	F	0/1	0
ZLH	Ivalino	51	F	0	0
ZQL*	Ivalino	48	F	0	0
SSY	Iratay	45	M	0	0
SLZ	Iratay	47	M	0	0
XJY	Iratay	51	F	0	0
ZYJ	Iratay	51	F	0	0
ZSH	Iratay	55	M	0	0
ZXM	Imowrod	41	F	0	0
STM	Imowrod	47	M	0	0
LDY	Imowrod	56	F	0	0
LXS	Imowrod	53	M	0	0
ZZJ*	Imowrod	54	M	0	0
SFS*	Imowrod	59	M	0	0
LZ	Imowrod	77	M	0	0

Table 11 shows the results of the four speakers who had data for both word list reading and narrative styles. Except for the speaker LYL, a young woman in the Iraralay region who had 100% raising in the word list reading style for both (ay) and (aw), the rest of the speakers had more raising in the narrative style but showed no raising categorically in word list reading. The results confirmed that the two diphthongs had moved from indicators to variables because there was a stylistic difference.

Table 11. Comparison between styles for (ay) and (aw)

Name	Region	Age	Gender	ay		aw	
				word list	narrative	word list	narrative
LYL*	Iraralay	45	F	100%	67%	100%	100%
ZQL*	Ivalino	48	F	0	87%	0	48%
ZZJ*	Imowrod	54	M	0	71%	0	20%
SFS*	Imowrod	59	M	0	45%	0	0

6. Discussion

The most important finding of this paper is that although vowel raising was a regional vernacular feature and was generally preferred by men, young women (below 55 years old) on the island were in lead in the development of this feature in narrative style. A young woman in the northeast region even exceeded her own rate of raising in the narrative style by using categorical raising in word list style. Unfortunately, as an endangered language, we could not find enough capable speakers under 30 to serve as participants, thus sound change in progress could not be tested.

Our data show that the phenomena of (ay) and (aw) raising might have began as cases of change from below (the level of consciousness) but have gradually developed into cases of change from above (the level of consciousness) because native speakers were aware of this variation and even commented on it. As shown in the different input probability weights in Tables 3 and 10, (ay) raising was probably progressing further than (aw) raising in terms of change from above.

In the following excerpt (1), a middle aged man from Iraralay comments on the variation between *ivey* and *ivay*, while discussing the importance of the *ivey* fish caught in the evening.

(1)
o   ivey   iya   am,
NOM[4]   fish.name   this   TM
i-panci   d(a)   ori   no   kadoan   l-ili   a   ivay   koan   da,
IF-call   3PG   that GEN   other   RED-village LIN   fish.name   say   3PG
mi-ángay   ori   aka   no   ivey,
AF-same   that and GEN   fish.name
ta   yamen   Jiraraley   am,
because 1PNEXCLF   village.name   TM
i-panci namen   a   ivey,
IF-call 1PGEXCL LIN fish.name
sira   do   Jimowrod   a   Jiratey   am,
3PNOM LOC village.name   LIN   village.name   TM
i-panci   da   ivay,
IF-call   3PG   fish.name

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[4] Abbreviations: 1PGEXCL = first person plural genitive exclusive, 1PNEXCLF= first person plural nominative exclusive free, 3PNOM = third person nominative, 3PG = third person genitive, GEN= genitive, IF = instrumental focus, LIN = linker, LOC = locative, NOM = nominative marker, RED= reduplication, TM = topic marker

"*Ivey* is called *ivay* in other villages. But it has the same meaning as *ivey*. We in Iraraley call it *ivey*, whereas those in Imowrod and Iratey call it *ivay*."

As shown in excerpt (1), the word final (ay) indicates variation. The speaker draws the distinction between his raised pronunciation of *ivey* and the non-raised *ivay* in the other two villages, i.e., *Imowrod* and *Iratey*. Notice in his reference to *Iratey*, he uses his raised variant [ey], although the speakers from that non-raising area would refer to their own village as *Iratay*.

    As vowel raising has shifted to the status of change from above, it is natural for young women to adopt this non-stigmatized feature, in the same way as New Zealand women who were involved in the non-stigmatized on-going sound change of the front vowels (Maclagan, Gordon & Lewis 1999). Similar to Haeri's (1994) study on the female speakers of Cairene Arabic (Haeri 1994) who increased palatalization in the word list style, our study also found a young female in Iraralay who increased vowel raising in the formal style. However, due to a small number of speakers who provided comparable data, this speculation awaits further confirmation.

    It is also reasonable to infer that vowel raising is a vernacular feature, as the percentages increased in the narrative style and decreased in the word list reading style. As many sociolinguistic studies have found that young women are often the innovators of sound changes that are not stigmatized, but tend to be conservative in sound changes or with stable sociolinguistic variations that are stigmatized (Labov 1990, 1994), we have shown that young women on Orchid Island are the innovators of vowel raising, using the vernacular feature more than men. This probably indicates that young women on the island are gaining visibility and power, commensurate with the status enjoyed by traditional men. As the language and culture of Yami are dying on the island with a language shift to Chinese and increasing dependence on tourism, the traditional division of labor and role expectations of males and females are no longer clear-cut. In fact, the number of women has surpassed that of men in taking up important roles in schools and civil services on the island, although politics is still mostly the domain of males.[5] Following Eckert's (1989) interpretation, women's roles in the community would explain why young females were in the lead in the indigenous community.

    Being a vernacular feature, the vowel raising rule may not have been stigmatized but rather served as a positive identity marker, as explained in Eckert (2000: 227). Vowel raising of the two diphthongs on Orchid Island started as a regional and male feature but was indexed with positive social meanings as young women began to surpass young men in adopting this vernacular feature.

7. Conclusion

    This study has provided another interesting case of diphthong raising in post-insular island communities. Using data from our Yami corpus, we found that region, preceding environments and gender could account for vowel raising of the two diphthongs on Orchid Island. We also confirmed that vowel raising was indeed a vernacular feature because whereas the narrative style promoted vowel raising, word list reading inhibited it.

    Our results confirmed that vowel raising was primarily a geographical feature and that the rates of change had formed a clear isogloss separating the northeast from the

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[5] The four candidates of a recent Township Chief election were all males.

southwest varieties. Although vowel raising of (ay) and (aw) followed the same constraint rankings for the internal factor group, determined by the feature of [continuant], vowel raising of (ay) had progressed slightly faster than that of (aw).

There was stylistic variation with more raising in narrative style than in word list reading. Although vowel raising was preferred by males, young females seem to have surpassed young males in adopting this feature in narrative style, a phenomenon corresponding to the social mobility of women. Perhaps vowel raising has ceased to be a gender marker and shifted to an ethnic identity marker.

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