Prosodic units and phonological processes of the Miyako-jima and Tarama-jima systems in Miyako Ryukyuan*

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(1) Many of the accent systems of the languages of the Miyako archipelago (hereafter Miyako-Ryukyuan) are traditionally understood as:

   a. having only one pattern. (i.e., there is no lexical accentual distinction)

   b. the two-pattern accentual systems were recognized, but the distinction between the two patterns is unclear; in addition, they are currently undergoing change into one-pattern accentual systems (Hirayama et.al 1967, Hirayama(ed.)1983).

(2) But recently they have been found

   to have clear-cut three-pattern systems; their three-way distinctions become

   clear only if a prosodic unit PW (prosodic word) is assumed.

> Tarama-jima : Matsumori (2010, 2014) , Igarashi (2015, 2016a), Aoi (2016, 2017)
>
> Ikema-jima : Igarashi et. al (2012, 2017), Igarashi (2016a,b)
>
> Miyako-jima: Yonaha: Matsumori (2013)
>
>   Karimata: Matsumori (2015)
>
>   Uechi: Matsumori (2017)

(3) Prosodic categories: major phrase / minor phrase=*Bunsetsu* / prosodic word (PW) / foot (Ft) / syllable (σ) / mora (μ)

   '⋯an utterance is parsed into a sequence of prosodic constituents at each level of the hierarchy. In the unmarked case, prosodic structure is *strictly layered*, in the sense that a constituent of a higher level in the hierarchy immediately dominates only constituents of the next level down in the hierarchy. ⋯In addition, within a prosodic constituent, in the unmarked case, one of the daughter constituents constitutes the *prosodic head*, the locus of prominence or stress (Selkirk 2001: 53).

(4) Many of the three-pattern accentual systems in Miyako-jima are clearly recognized by assuming PW, foot, and mora: especially significant is PW.

(5)   cf. the accent patterns in Tokyo Japanese:

   Hereafter, **High-toned moras are marked with capitalized bold fonts.**

   { } Minor phrase boundary   ga: NOM

   { **BA** na na }   'banana'   { **BA** na na   ga }

   { ta **MA** go }   'egg'   { ta **MA** go   ga }

   { o **TO KO** }   'man'   { o **TO KO**   ga }

{ u SA GI } 'rabbit' { u SA GI GA }

⇒ The difference between all accentual patterns in Tokyo appears when attaching a mono-moraic particle to a word.

⇒The domain of accent assignment in Tokyo Japanese is minor phrase (MiP).

(6)**Part 1: Prosodic system of the Uechi dialect in Miyako-jima:**

Contrary to Tokyo Japanese, the three accentual patterns are hard to observe in isolated forms or in minor phrases in the Uechi dialect. (ï indicates /ɨ/.)

	[isolated forms of nouns]		[noun + a bimoraic particle *mai* (also)]
[A]	KUUSU	'chili pepper'	KUUSU mai
	BUUGï	'sugar cane'	BUUGï mai
	GAma	'cave'	GAMA mai
[B]	SUMNA	'long onion'	SUMNA mai
	MAmi ～ MAMI	'wheat'	MAMI mai
[C]	BAsoo	'banana'	BA soo mai
	Ukin	'turmeric'	Ukin mai
	NAbi	'pot'	NABI mai

(7) However, the distinction between the three lexical patterns in Uechi clearly appears when a phrase consists of more than three PWs.

The three accentual patterns in Uechi:

a.

	PW1	PW2	PW3	
[A]	KUUSU	PARI	KAradu	'from a field of chili peppers'
	BUUGï	PARI	KAradu	'from a field of sugar cane'
[B]	SUMNA	pari	karadu	'from a field of long onions'
	MAMI	bari	karadu	'from a field of beans'
[C]	BAsoo	bari	karadu	'from a field of bananas'
	Ukin	bari	karadu	'from a field of turmeric'

'pari～bari: field , kara: ABL, du: FOCUS'

b.

	PW1	PW2	PW3	
[A]	KUUSU	BARI NU	NAKA n du	'inside a field of chili peppers'
	BUUGï	BARI NU	NAKA n du	'inside a field of sugar cane'
[B]	SUMNA	BA ri nu	naka n du	'inside a field of long onions'
	MAMI	BA ri nu	naka n du	'inside a field of beans'
[C]	BAsoo	bari nu	naka n du	'inside a field of bananas'
	Ukin	bari nu	naka n du	'inside a field of turmeric'

'nu: GEN, naka: inside, n: LOC, du: FOCUS'

(8) Generalization: In each minor phrase, accent is assigned to

[Pattern A] the 3rd PW

[Pattern B] the 2nd PW

[Pattern C] the 1st PW

(9) PW in the Miyako dialects consists of

1. a noun: [kuusu]PW 'chilli pepper'

2. a root of a compound: [kuusu]PW + [bari]PW 'chilli pepper field'

3. a bimoraic particle:　[pari]ᴾᵂ = [kara]ᴾᵂ　　'field ABL'

4. a noun + a monomoraic particle:　[kuusu =nu]ᴾᵂ　　'chilli pepper GEN'

5. a bimoraic particle + a monomoraic particle: [kara=du]ᴾᵂ　　ABL FOC

6. a root + a monomoraic particle: [kuusu] ᴾᵂ + [bari =nu]ᴾᵂ　'chilli pepper field GEN'

7. a noun+the first mora of the particle *nkai* (ALL: to, towards)

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[pari = n]ᴾᵂ [kai]ᴾᵂ　' field ALL'

</div>

(10) 2-mora noun ＋3-mora particle sequences (ABL +FOCUS) in Uechi

Two-way distinction appears in the following context:

[A]　**MIZU KARADU**　'water ABL FOC'　　　**KAA KARADU**　'well ABL FOC'

[BC]　**YAMA KA**radu　'mountain ABL FOC'　　**MIM KA**radu　　'ear ABL FOC'

　　　NABI KAradu　'boat ABL FOC'　　　**USɪ̈　KA**radu　'mortar ABL FOC'

　　　　　　　　　　　　　　　　　'kara: ABL,　du: FOC'

Generalization: When a minor phrase starts with 2-mora nouns, the distinction between B and C is neutralized, even though the following PW consists of three moras.

(11) However, the distinction between B and C clearly appears when the two-mora nouns are followed by *nkai* (ALL)+ *du*（FOC)

[A]　**GAMA N KAIDU**　'cave ALL FOC'　　　**PANA N KAIDU**　'nose ALL FOC'

[B]　**YAMA N KA** idu　'mountain ALL FOC'　　**AM　N KA** idu　'net ALL FOC'

[C]　**NA**bi n kaidu　　'pot ALL FOC'　　　**U**sɪ̈　n kaidu　　'mortar ALL FOC'

　　　As a result, the three-way distinction clearly appears.

(12) Generalization: The distinction between B and C appears when the first PW consists of more than three moras:

[B]　　[**YAMA N**]ᴾᵂ　　[**KA** i du]ᴾᵂ　　　'mountain ALL FOC'

[C]　　[**NA** bi n]ᴾᵂ　　[ka i du]ᴾᵂ　　　'pot ALL FOC'

[B]　　[**YA MA NU**]ᴾᵂ [**NA** ka n]ᴾᵂ　[ka i du]ᴾᵂ　'mountain GEN inside ALL FOC'

[C]　　[**NA** bi nu]ᴾᵂ　[na ka n]ᴾᵂ　[ka i du]ᴾᵂ　'pot GEN inside ALL FOC'

(13) However, Patterns B and C are **neutralized** when their first PWs consist of only two moras:

[B]　　[**YA MA**　]ᴾᵂ　[**KA**ra du]ᴾᵂ　　'mountain ABL FOC'

[C]　　[**NA BI**　]ᴾᵂ　[**KA**ra du]ᴾᵂ　　'pot ABL FOC'

This will be explained by introducing **a ternary foot** in the prosodic system in Uechi.

Ternary foot alignment:　Align the right edge of a ternary foot to the <u>right</u> edge of the PW to which accent is assigned:　[……　μ　μ　μ　μ]ᴾᵂ

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＜**μ** μ μ＞Fᵗ

</div>

(14) Accentual rules and foot assignment in Uechi in Miyako-jima

a. In each minor phrase, accent is assigned to

[Pattern A] the 3rd PW　　　[Pattern B] the 2nd PW　　　[Pattern C] the 1st PW

b. In accented PW, the right edge of a ternary foot is aligned to the right edge of the PW.

c. High-tone is realized on the initial mora of the foot：＜**μ** μ μ＞Fᵗ

[B]　　[**MAMI**] ᴾᵂ　[**BA*** ri nu] ᴾᵂ　[naka n du] ᴾᵂ　'inside a field of beans'

<div align="center">

＜**μ**　μ　μ＞Fᵗ

</div>

(15) Recursive assignment of ternary feet in Uechi:

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Application of ternary foot alignment: If a ternary foot is not constructed in the accented PW, this will be done in a larger domain, which is made by combining two PWs into one: [na bi]ᴘᴡ [kara du]ᴘᴡ   →   [na bi   kara du]ᴘᴡ

As s result, '**NABI KA**radu' appears with the same tonal pattern as '**YAMA KA**radu'; i.e., **tonal neutralization** is a result of the cyclic application of the foot alignment.

(16) The prosodic system of Uechi may give supportive evidence to the recursion-based model proposed by Ito (Ito 2010, Ito & Mester 2015):   [[nabi] ω [kara du] ω] ω

Assumption: A foot in Uechi is constructed cyclically starting from a lower level, proceeding to a higher level prosodic word.

(17) The recursive foot alignment is motivated if the accented PW is less than three moras.

[A]   **KUUSU**   **PARI**   **KA** radu   'from a field of chili peppers'
[B]   **SUMNA**   pari   karadu   ' ⋯ long onions'   ←The accented PW is too small.
[C]   **BA**soo   bari   karadu   ' ⋯ bananas'

(18) Solution: Combine the two PWs to make a larger domain:

[sumna] ω [bari] ω [kara du] ω   →   [sumna   bari] ω [kara du] ω

The newly-created domain becomes the host of the ternary foot.

As a result, accent is assigned on the last mora of *sumna* (instead of the accented PW, which is *bari*).

(19) Summary: The distinction between three different patterns in Uechi appears most clearly when: a. each minor phrase consists of more than three prosodic words.
                          b. each prosodic word consists of more than three moras.

(20)   cf. Comparison with Yonaha in Miyako-jima

Uechi: [A]   **MIZU**   **GAMI NU**   **NAKA**   nudu   'water pot GEN inside NOM FOC'
                [B]   **MSU**   **GA** mi nu   naka   nudu   'miso pot GEN inside NOM FOC'
                [C]   **U**pusu   gami nu   naka   nudu 'sea-water pot GEN inside NOM FOC'

Yonaha: [A]   mizu   gami   nu   na**KA NUDU**   'water pot GEN inside NOM FOC'
                [B]   mtsu   **GAMI NU** naka nudu   'miso pot GEN inside NOM FOC'
                [C]   **UPUSU** gami nu naka nudu   'sea-water pot GEN inside NOM FOC'

(21) Uechi and Yonaha both have ternary feet, but their difference lies in the direction of H-tone spreading (Matsumori 2017):

Uechi   Yonaha

… μ   μ   <μ   μ   μ> Ft   … μ   μ   <μ   μ   μ> Ft

H   H

(22) Summary:
a.   Three types of prosodic categories (i.e., mora, foot, PW) are all necessary to explain the prosodic system of Uechi.
b.   Its foot is ternary, and right-headed: < **μ** μ μ > Ft
c.   PW has a recursive structure: [[sumna] ω [bari] ω] ω   'a field of long onions'

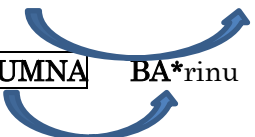(23) A question arises: Is Uechi an accent language?

In Tokyo Japanese, accent is lexically given on a particular mora of each word:

ba'nana,   tama'go,   otoko',   usagi

However, in the dialect of Uechi, accent is <u>not</u> lexically assigned to a particular mora of a word, since they realize in a distant place (except for Pattern C words, within which the accent is realized on their antepenultimate mora):

[A] KUUSU PARI KA* radu   'from a field of chili peppers'

[B] SUMNA BA*rinu nakaNdu   'inside a field of long onions'

(24) Can we say that it is a kind of tone language consisting of the following three tonal melodies, the TBU of which is prosodic word?:   [A] LLH   [B] LHL   [C] HLL

(25) The unit for accent counting, and accent bearing unit in Uechi and Tokyo Japanese:

　　　Uechi: Accent bearing unit: <u>prosodic word (ω),</u>

　　　　　　　Units for accent assignment: accent is counted by foot (Ft), and mora (μ)

　　　Tokyo Japanese: Accent bearing unit: <u>syllable(σ)</u>

　　　　　　　Units for accent assignment: accent is counted by foot (Ft), and mora (μ)

　　　The dialect of Uechi, as well as other Miyako-Ryukyuan varieties, uses a unit which is in rank higher (in prosodic hierarchy) than the one in Tokyo Japanese.

(26) **Part 2: Sentence-level prosody of the Tarama-jima dialect**

　　　The prosodic system of Tarama-jima is characterized by

　　　　a. Three-pattern accentual system（Patterns A, B, and C）

　　　　　　–　　Pattern A is <u>un</u>accented

　　　　　　–　　Pattterns B and C are accented

　　　　b. Accent is assigned on: [B] the 2nd PW   [C] the 1st PW

　　　　c. Prosodic word (the same prosodic unit as Uechi) is necessary:

　　　　d. The foot is <u>binary</u> and right-headed   < **μ** μ > Ft

(27) As in Uechi in Miyako-jima, the distinction between the three patterns is clearly seen in the sequence of three PWs; but the foot of Tarama-jima is binary.

　　　　[A] **GUMA**　　　**MSYU**　　**MAI**　　'sesami miso, too'
　　　　[B] **SÏMA**　　　**M**syu　　　mai　　'island miso , too'
　　　　[C] **WA** a　　　　msyu　　　mai　　'pork miso, too'
　　　　　　ZÏMA mi　　msyu　　　mai　　'peanut miso, too'

(28) The generalization made so far on the prosodic system of Tarama-jima (e.g., Matsumori 2014, Igarashi 2015, 2016a, Aoi 2016): Accent in the Tarama-jima system is realized with H*L;　i.e., the pitch <u>drop</u> from High to Low-tone is significant.

　　　However, it was recently found that its accent is also realized with L*H; i.e., with pitch <u>rise</u> (Matsumori 2016), which is often observed in levels larger than an MiP.

(29) Sample (1):　　　Hereafter, { } indicates minor phrase boundary.

　　　　a. {**NAMA**a}　{mango**O ZYUUSU　NU DU**}　{**YU**u}　{vvaiL ga**YA**u doo}

　　　　b. {　Ø　}　{**MANGO**o zyuusu nudu}　　{juu}　{**VVAIL GAYA**u doo}

　　　　　　　namaa　　　mangoo zyuusu　　nu　　du　　juu　　vvaiL　gajau　doo

　　　　　　　now FOC　　mango juice　　　NOM　FOC　well　sell　　seem　PARTICLE

　　　　　　　'Now, mango juice seems to sell well, indeed.'

(30) Sample (2):

      a. 〔**HIKOOZYOO** nu   maccya**N**〕　〔**KUNU KAASÏ**i〕　〔tumii–**MI**i〕

      b. 〔**KUNU KAASÏ**i〕　　〔hikoo-zyoo **NU MACCYA**n〕　〔tumii–**MI**i〕

      hikoo-zjoo　　nu　　　maccja　　N　　　kunu　　kaasɨɨ　　tumii　　-mii'

      airport　　GEN　　store　　LOC　　this　　snack　　look for　　try-to

      'I'll look for this snack at the airport shop next time I go there.'

(31) Tonal Patterns in Tarama-jima (1): Accent is marked by ' ***** '.

  {A} {A} {A}　　　〔**PÏL MAI**〕　〔**MIZÏ GAMI U**〕　〔**AREE-BUTAL**〕

              '(They) were washing a water pot at noon, too.'

  {A} {B*} {A}　　　〔**PÏL MAI**〕　〔**MIM GAMI*** u〕　〔aree-buta**L**〕

              '(They) were washing a pot with ears at noon, too.'

  {A} {C*} {A}　　　〔**PÏL MAI**　〕　〔**UPU***syu gami u〕　〔aree-buta**L**〕

              '(They) were washing a sea-water pot at noon, too.'

(32) Tone Succession: Succeed the final tone of the preceding MiP.

    Tone Reversal: At every accent (*), switch the value of the tone to the opposite one (i.e.,

              H is switched to L, L is switched to H.)　(Matsumori 2016)

(33) Tonal Patterns in Tarama-jima (2):

  {B*} {A} {A}　　〔**KYUU MA*** i〕　〔mizɨ gami u〕〔aree-buta**L**　〕

              '(They) were washing a water pot today, too.'

  {B*} {B*} {A}　　〔**KYUU MA*** i〕　〔mim gami***** u〕〔**AREE-BUTAL**〕

              '(They) were washing a pot with ears today, too.'

  {B*} {C*} {A}　　〔**KYUU MA*** i〕　〔upu*** SYU GAMI U**〕　〔**AREE-BUTAL**〕

              '(They) were washing a sea-water pot today, too.'

(34) Tonal Patterns in Tarama-jima (2):

  {C*} {A} {C*}　　　〔**KÏNU*** u mai　〕　〔mizɨ gami u〕　〔katami*** I-BUTAL**〕

            '(They) were carrying a water pot on their shoulders yesterday, too.'

  {C*} {B*} {C*}　　〔**KÏNU *** u mai〕　〔mim gami*****u〕　〔**KATAMI*** i-buta**L**〕

          '(They) were carrying a pot with ears on their shoulders yesterday, too.'

  {C*} {C*} {C*}　　〔**KÏNU ***u mai〕　　〔upu' **SYU GAMI U**〕　〔**KATAMI***i -buta**L**〕

         '(They) were carrying a sea-water pot on their shoulders yesterday, too.'

(35) The tone reversal is post-lexical (Matsumori 2016):

  The tone reversal is **not** motivated by abstract accent (*); Potential accent do not change

   the value of the tone if it is **not** realized on the surface.

    {B*} {A} {A}　　〔　**KYUU　MA***i　〕　〔mizɨ　gami u　〕　〔aree -buta**L**〕

                '(They) are washing a water pot today, too.'

    But,　　　　　　〔　**KYUU**　　〕　　〔**MIZÏ GAMI U**〕　〔**AREE-BUTAL**〕

                '(They) are washing a water pot today.'

(36) As a result, the tonal difference between sentences starting with Pattern A and

    Pattern B is neutralized, if the minor phrase contains only one PW.

    {A} {A} {A}　　　　〔**PÏL　MAI**　〕　　〔**MIZÏ GAMI U**〕　〔**AREE-BUTAL**〕

                '(They) are washing a water pot at noon, too.

                But,

{PÏL} {MIZÏ GAMI U}{AREE-BUTAL} '(They) are washing a water pot at noon.'

{KYUU}{MIZÏ GAMI U}{AREE-BUTAL} ' (They) are washing a water pot today.'

(37) Summary: Sentence-level tonal realization in the prosodic system of Tarama-jima

   a. Start every major phrase with High-tone.

   b. The initial tone in a minor phrase is succeeded from the previous minor phrase.

   c. Polarized tone assignment (tentative title): At every accent in the same major phrase, switch the tone to the opposite value.

(38)   { {   }MiP { * } MiP   {   } MiP   {   *   } MiP   ··· }MaP
         H   H L   L   L H
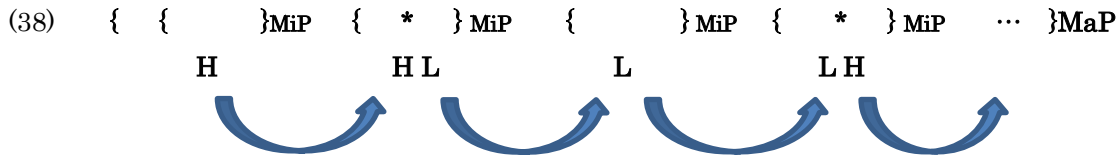
(39) Some questions arise

   Does this system have Basic Tone Melody?   If so, is it H*L? , or L*H?

(40) High-tone may <u>not</u> be a property of minor phrase in this system; Instead, High-tone may be assigned at the level of major phrase, from its left edge (i.e., on the initial minor phrase); then, the rest of the tones in the same major phrase are automatically determined by (37b) and (37c).

(41) Uniqueness of the sentence-level tonal patterns in Tarama-jima:

   a. High-tone is given at the beginning of every <u>major phrase</u>.

   b. The initial tone of every minor phrase is succeeded from the preceding minor phrase.

   c. Accents in the same major phrase is realized by the tone opposite to the preceding one.   Polarized tone assignment (tentative title):

        At every accent (*), switch the value of the tone to the opposite one.

(42) How did such uniqueness of Tarama-jima's prosody come about?; Is there any correlation to the fact pointed out in (25), that Miyako-Ryukyuan varieties, including Tarama-jima, use a unit which is in rank higher in prosodic hierarchy than the one in Tokyo Japanese (or other varieties of Japanese)?

(43) cf. The previous generalizations made on Japanese prosody:

   Minor phrase: a domain of realization of (lexical) accent and initial rise

   Major phrase: a domain of downstep and pitch reset.

(44) Will the prosody of the languages of Miyako-Ryukyuan, as represented by those in Uechi in Miyako-jima and Tarama-jima, be explained in the same way as Tokyo Japanese?   How will their uniqueness be accounted for?

   →Further cross-dialectal studies are required to answer these questions.

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